# Packaging curiosities:

# Towards a grammar of three-dimensional space

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# DECLARATION

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person where due reference is not made in the text.

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# ABSTRACT

Western museums are public institutions, open and accessible to all sectors of the population they serve. Increasingly, they are becoming more accountable to the governments that fund them, and criteria such as visitation figures are being used to assess their viability. In order to ensure their survival in the current climate of economic rationalism, museums need to maintain their audiences and attract an even broader demographic. To do this, they need to ensure that visitors feel comfortable, welcome and secure inside their spaces. They also need to give visitors clear entry points for engaging with and valuing the objects and knowledge on display in exhibitions.

This thesis maps a grammar of three-dimensional space with a strong focus on the interpersonal metafunction. Building on the social semiotic tools developed by Halliday (1978, 1985a), Halliday and Hasan (1976), Martin (1992) and Matthiessen (1995), it identifies two interpersonal resources for organising space: Binding and Bonding. Binding is the main focus of the thesis. It theorises the way people's emotions can be affected by the organisation of three-dimensional space. Essentially, it explores the affectual disposition that exists between a person and the space that person occupies by focussing on how a space can be organised to make an occupant feel secure or insecure. Binding is complemented by Bonding. Bonding is concerned with the way the occupants of a space are positioned interpersonally to create solidarity. In cultural institutions like museums and galleries, Bonding is concerned with making visitors feel welcome and as though they belong, not just to the building and the physical environment, but to a community of like-minded people. Such feelings of belonging are also crucial to the long-term survival of the museum.

Finally, in order to present a metafunctionally diversified grammar of space, the thesis moves beyond interpersonal meanings. It concludes by exploring the ways textual and ideational meanings can be organised in three-dimensional space.

# PREFACE

This thesis has brought together several strands of my professional life. These include my background as an English/History teacher working with secondary school students, and my teacher training in the progressivist pedagogy of process writing. It has also been influenced by my retraining, during my Masters in Applied Linguistics, in both Systemic Functional Linguistics (SFL) and the explicit pedagogy of genre writing. At this time, I also became familiar with the Teaching/Learning model first developed by Joan Rothery at North Sydney Demonstration School in 1985.

In addition, this thesis has drawn on my experiences as the Manager of Education Services at the Australian Museum from 1994 to 1999 and my role as Coordinator of Educational Programs at djamu Gallery from January 1999 to June 2000. In both positions I was involved in initiating, coordinating and overseeing the development of educational programs such as the writing and publishing of teaching materials for primary, junior secondary, senior secondary and adult NESB students. Both positions also involved the organisation and delivery of professional in-service development for teachers and teacher trainees as well as the coordination of teacher previews of exhibitions, and an annual Teachers' Open Night which hosted approximately 800 teachers and their families.

Most importantly, this thesis has drawn on my involvement in the development of the *Indigenous Australians* exhibition at the Australian Museum from 1995 to 1997. My role in the exhibition was that of coordinating the development of key messages and interpretive strategies. The development of key messages involved determining the thematic orientations, or curatorial theses, that informed the organisation of the exhibition. This went 'hand in hand' with the challenge of designing interpretive strategies. Interpretation, in a museum context, is based on the premise that objects do not stand alone. Rather they are presented in conjunction with visual images, other objects, music, text panels, computer interactives, audiovisual materials and so forth. As all of these play a crucial role in realising meanings, this task involved making crucial decisions about which meanings should be realised in which mode.

No other professional experience, to date, has brought me such deep satisfaction alongside such tremendous frustration. The satisfaction was tied to the Museum's decision to break with the anthropological display tradition of artefacts in glass cases and replace it with a commitment to confront contentious and controversial social justice issues. These included deaths in custody, incarceration, the stolen generations, land rights and reconciliation – issues that had not been discussed so openly in an Australian museum before. In fact, the social orientation of the exhibition was considered to be so groundbreaking that in 1997 the project team was awarded the Premier's Inaugural Public Sector Award under the category 'Significant Improvement to Delivery.' Furthermore, the findings that emerged from the visitor research were also heartening. They showed, for example, that the exhibition had not only moved many visitors very deeply but also facilitated new levels of awareness of Indigenous disadvantage.

The frustration and disappointment that stemmed from my involvement in the *Indigenous Australians* exhibition, on the other hand, was the result of several factors. First, the fact that I, and most other members of the project team, were involved in the interpretive processes but excluded from input into the actual design of the exhibition. Second, I realised how disempowered I was, as a member of the project team, because I did not have a metalanguage for discussing design and neither did most of my colleagues. Both factors meant that our ability to participate in the meaning-making processes of exhibition development was significantly curtailed. The positive outcome of this experience was that it inspired me to undertake the research involved in this thesis, and in doing so, has opened up a whole new area of meaning-making for me.

Before closing, I would like to briefly recount the processes I was involved in during the research for this thesis. The work began at the Broadway Shopping Centre in Sydney and a newly opened bookstore, the Collins Superstore. Throughout 1999, using Michael O'Toole's semiotic grid for architectural analysis, I analysed both the Centre and all of the spaces inside the Superstore. At the end of the year, a Binding scale (Figure 3.3) for analysing interpersonal meaning was developed. Early in the year 2000, the scale was applied to the analysis of

exhibition spaces inside approximately 20 museums on the east and west coasts of America as well as the Canadian Museum of Civilisation in Ottawa. In the process of application, the Binding scale was refined (Figure 3.4). Later in the same year, using the refined Binding scale, the phylogenesis of domestic architecture in Australia was charted. By the end of 2000, the Binding scale had been applied to the analysis of domestic, retail and institutional spaces. In the year 2001, the materialisation of Binding was investigated, while 2002 was spent exploring the other resource for analysing interpersonal meaning in space: Bonding. During 2003, the research was written up and preliminary explorations of the textual and ideational metafunctions were conducted in order to present a metafunctionally diversified grammar of three-dimensional space.

# ACKNOWLEDGMENTS

I would also like to thank all the members of the multimodal group, past and present, who have been involved in the ongoing exchange of meanings with me. They are: Chris Clereigh, Anne Cranny-Francis, Emilia Djonov, Talia Gill, Rick Iedema, Mary Macken-Horarik, Jim Martin, Clare Painter, Betty Pun, Louise Ravelli, David Rose, Joan Rothery and Len Unsworth. Of these, I would especially like to acknowledge the generosity of Chris Clereigh and Emilia Djonov. Chris, for always making the time to muse over a myriad of issues with me, and Emilia for her help, comments and support in fine-tuning the final draft.

Special thanks also go to Rhonda Black, my friend and copy editor, who met all her deadlines with consummate professionalism and whose eye for consistency has made the meanings so much clearer.

On a different but equally important note . . .

I would like to thank my family for their infinite generosity. My husband, Roland Stocker, has been unfailing in his support. He has listened to, reflected on and engaged with many issues. He has also transcribed many text panels, drawn many of the figures, assisted with formatting and printing the thesis, and supported me in every way possible for the past five years. This project would not have been possible without him. I would also like to thank both of my step-daughters, Sophie and Verena, who have engaged with Binding time and time again, and enthusiastically reported on any interesting spaces they had encountered in their own travels. Many thank to my parents, brother and sister-in-law, niece and nephew, who never tried to understand what I was doing but just believed in me. I am also deeply indebted to them for their generosity in forgiving me when I forgot to turn up for family celebrations because I was so deeply engrossed in my work! Many thanks go to my brother-in-law, Peter Stocker, who followed up on some very technical engineering/building questions with his colleagues, and my sister-in-law, Magi Grütter, who introduced me to her favourite museum, the villa 'Am Römerholz' in Winterthur. Together with her husband, Christian Grütter, she also accompanied me to the Swiss Expo 2002 at Murten, Biel, Yverdon and Neuchatel – and gave me a cutting-edge experience of architecture that I will never forget!

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# CHAPTER 1

# Introduction

This study investigates the ways semiotic resources are deployed in the organisation of three-dimensional spaces across a range of sites: domestic, commercial and institutional. In particular, it explores the ways semiotic resources can be used with the interpersonal function of establishing a relationship of comfort and security between an occupant and a space. It also outlines the semiotic resources involved in organising the other communicative functions of a semiotic system: the ideational and the textual. Although the grammar of three-dimensional space developed in this study can be generalised to a number of sites, the main field focus of the research will be museums and museum exhibitions, including art galleries. To frame this research, this chapter will begin by exploring the two main issues facing contemporary museums as they move into the 21$^{st}$ century: public access and public display. The chapter will conclude by outlining the scope and organisation of the dissertation.

# 1.1 What is a museum?

A museum is a non-profit making, permanent institution in the service of society and its development and open to the public, which acquires, conserves, researches, communicates and exhibits, for purposes of study, education and enjoyment, material evidence of people and their environment.

(<http://www.icom.org>)

This definition of a museum has been taken from the Statutes of the International Council of Museums, hereafter ICOM[1]. Founded in 1946 by American museologist, Chauncey J. Hamlin, ICOM is an international network of museum professionals that links more than 14, 000 cultural institutions across the world's five continents. ICOM also provides an international forum for advocating norms of museum practice. As a consequence of its stature, this definition, articulated in 2001, is one of the most widely accepted and commonly used within the discipline of museology.

There are two key elements of the ICOM definition that are crucial to identifying the museum as a unique cultural institution[2]. They are its accessibility, or the requirement that public museums are open and equally accessible to all sections of the population they serve, and the museums' concern with exhibiting. The first element — providing access to all members of a given culture — represents an enormous challenge, especially as visitor studies have shown demographically and socio-economically differentiated patterns of museum use (Bourdieu and Darbel, 1969; Merriman, 1989; Bennett, Bulbeck and Finnane, 1991; Bennet and Frow, 1991; Lamont, 1992; Bennet, 1994; Hood, 1995). The second element — the museum's focus on exhibiting or displaying — means that the primary focus of the museums' work involves public display (McLean, 1999: 83; Hooper-Greenhill, 2000: 3; Kelly and Gordon, 2002: 158). Both of these distinguishing attributes will now be further elaborated, beginning with public access.

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[1] This definition of museums was developed by the 20th General Assembly of ICOM, Barcelona, Spain, 6 July 2001. In fact, the definition of what constitutes a museum is regularly revised by ICOM so that it accurately reflects the changing role of museums in society. The latest revision is scheduled for presentation and discussion at the ICOM General Conference in Seoul in October 2004.

[2] Within Martin's stratified model of context, institutions are part of the register variable of field. Martin (1992: 536) defines field as 'sets of activity sequences oriented to some global institutional purpose.'

# 1.2 Public access

The provision of public access is a challenge to the modern museum. This is demonstrated, for example, by Pierre Bourdieu and Alain Darbel in their classic work *For the Love of Art* (1969) shows how in the European context the barriers to participation in museums and galleries were primarily socio-cultural, namely, educational attainment and occupational status[3]. In fact their main finding was that 'museum visiting increases very strongly with increasing level of education, and is almost exclusively the domain of the cultivated classes,' (1969: 14). In order to explain this finding, Bourdieu identifies socialisation as being paramount, especially the 'habitus'[4] or dispositions one acquires through enculturation by the family and the school.

Visitor research studies conducted in England (Merriman, 1989) and America (Adams, 1937; Hood, 1995) have reported similar findings regarding the educational backgrounds of museum visitors, even though some American researchers argue that the differences are not as marked in the United States of America as they are in Europe (Lamont, 1992). In Australia, Tony Bennett, Professor of Cultural Studies in the Faculty of Humanities at Griffith University, argues that strong socio-cultural barriers to access and museum participation are also evident. In the early 1990s he collaborated in two visitor studies (Bennett, Bulbeck and Finnane, 1991; Bennet and Frow, 1991) and conducted a study of his own (Bennett, 1994)[5]. The findings from all three studies showed that history museum-

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[3] The research they conducted in the 1960s was a collaboration. Bourdieu both directed the research and wrote the book, while Darbel formulated the sampling strategy and developed mathematical models of museum visiting. Initially, 21 French art museum visitors were surveyed as part of a pilot study. The sample was then extended to a range of other European museums. These included the National Archaeological Museum, the Benaki Museum and the museums of Delphi and Nauplion in Greece; the Rijksmuseum in Amsterdam, the Gemeentemuseum in The Hague, and the museums of Groningen and Utrecht. In Poland they surveyed the museums of Poznan, Lublin, Warsaw, Krakow and Lodz. In Spain, they surveyed the Prado Museum, the Picasso Museum, the Museum of the Spanish people and the Museum of Modern Art in Barcelona.

[4] The term 'habitus' has its origins in the work of Bourdieu. Essentially, habitus refers to the generative principles, including values, which produce and reproduce the practices of a class (1990: 53).

[5] The first study (Bennett, Bulbeck and Finnane, 1991) consisted of a survey of 510 visitors, administered on site at three social history museums run by History Trust of South Australia. The second asked a related set of questions of 518 visitors, on site, at three art galleries in South Australia (Bennett and Frow, 1991). The third was a telephone survey of 403 non-goers, people who had not visited a museum/gallery in the past five years or more, (Bennett, 1994). Each survey asked about patterns of visiting/not visiting, demographic indicators (age, income, occupation, gender, education), attitudes to art galleries and museums, and participation in other cultural pursuits.

goers had higher levels of education than non-goers, while art gallery visitors had even higher educational profiles. Therefore, Bennett also concludes that, in Australia, social participation in museums and galleries, reflects educational and class distinctions (1995b).

In the Australian context, Bennett's findings were confirmed by another study, *Australians and the Arts (2000).* This was conducted by Saatchi and Saatchi for the Australia Council[6]. Like Bennett, Saatchi and Saatchi found 'a strong link between higher educational qualifications and more positive attitudes towards the arts,' (Saatchi and Saatchi, 2000: 13). Furthermore they found that 'people earning from $25,000 to less than $40,000 give the arts a lower value than the rest of the population and are most likely to feel the social and class issues in relation to the arts in terms of their perceived elitism,'(2000: 13). It therefore seems a well established 'given' that on an international scale — Europe, Australia, and America — public access to museums is impeded by cultural factors, namely levels of educational attainment.

Nevertheless, the pressures on museums to become as accessible to the general population as possible are compounded by the fact that in the post-modern and post-colonial world of the new millennium, museums are increasingly being made accountable by the governments that fund them. In the words of Professor Iain McCalmann of the Australian National University, 'culture is big business,' (2001: 7). Indeed, according to estimates generated by Museums Australia (NSW), in 1996 Australia had nearly 1900 museums with 418 of these in NSW. Collectively, it was estimated that the museums in Australia held roughly 1.8 million objects (Museums Australia, NSW, 1996). Not only are these numbers immense, but the financial resources spent on museum exhibitions are enormous, as are the numbers of people they employ.

Currently Australian governments are using the criteria of visitor attendance figures to assess the ongoing viability of their museums. In recent years, attendance, as a performance indicator, has become the dominant, if not sole, measure of the success of cultural institutions (Edmund Capon, Director of the Art Gallery of NSW, 2001). In the

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[6] The research for the study consisted of both qualitative and quantitative studies. In summary, 16 discussion groups were held with socio-demographic variation (ages from 16 to retirement, people near and far from major cities, people with diverse cultural backgrounds). An initial national survey of 1200 people was conducted as well as a major national survey of an additional 1200 people (using a 30-minute questionnaire). Finally, there were consultations with more than 200 people who work in the arts sector.

current climate of economic rationalism, the consequences of poor attendance for museums are dire. In Sydney alone, insufficient visitor figures have led to the closure of four museum sites in recent years: The Earth Exchange, The Mint as well as djamu Gallery and the Object Gallery in Customs House. In response to such closures, more pressure has been placed on museums to attract larger audiences. Some museums have responded by attempting to stage more exhibitions, while those that can afford to are importing international blockbuster exhibitions. Other museums, such as the Australian Museum in Sydney, are thinking more laterally about strategies to ensure greater public access to their collections. For instance in 2000, the Museum began a new enterprise: loaning objects from its $3 billion collection for financial remuneration. The preconditions for these loans are two-fold: the objects must be displayed securely and that in a public place.

Despite these political pressures, museums need to maintain a realistic approach to the issue of accessibility. Given the strong correlation between education and museum visiting, there may always be a substantial group who are unlikely to visit museums. Bennett (1994, 1995b) labels these people 'confirmed non-goers' because they *actively* choose to stay away from cultural institutions. On the basis of the visitor studies he conducted in the mid-1990s, he has been able to develop a profile of this group: aging, poorly educated men in manual or clerical occupations with little or no involvement in artistic or 'high cultural' pursuits (1995b).

The remainder of the general population seems to be roughly divided into two groups. The first group possesses the habitus and 'cultural capital'[7] needed to access the meanings displayed in museum exhibitions. In other words, they have been socialised into using museums and valuing them positively. So to increase the access this group has to museums, one would need to increase the frequency of their visitation. The second group has come to light since Bourdieu's research into museum visitors in the 1960s. It comprises people who tend to be indifferent to museums and the arts but *have the potential* to become visitors. Saatchi and Saatchi (2000: 20) refer to these people as sleeping giants.

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[7] Bourdieu uses the term 'cultural capital' to extend the Marxist idea of economic capital and refers to a wealth or knowledge which legitimate the maintenance of social status and social power (1991).

According to Saatchi and Saatchi (2000) 'sleeping giants' comprise a substantial proportion of the Australian public — 35% of the people they interviewed fell into this category. Moreover 'sleeping giants' are neutral towards the arts — they are neither for them nor against them. However, as Saatchi and Saatchi point out, 'they have enormous potential to be influenced in either a positive or negative direction if given new information, encouragement and options related to the arts,' (2000). In terms of public accessibility, this group is significant to the museum sector because increasing the use of museums by 'sleeping giants' would also broaden the visitor base and open up the museum to a more representative public.

Some years ago, in the British context, Nick Merriman, Assistant Keeper of Antiquities at the Museum of London, also identified the existence of a large social group with the potential to become museum visitors (1989). He interviewed members of this group, as well as museum-goers, and concluded that the existence of the group may be attributed to a number of social and cultural factors. First, a general expansion in secondary education. Second, a steady increase in the amount of disposable income and the amount of leisure time that is available to people. Finally, an increase in both the number of museums and the quality of museum display. All of these, he argues, mean 'that more people than ever before have the structural and intellectual opportunity to take advantage of heritage presentations,' (Merriman, 1989: 169).

However, in order to influence potential museum goers, cultural institutions need to deal with the following challenges — first, what is required to facilitate an initial visit; second, how to create a lasting disposition of regular museum visiting. Some light was shed on this issue by Merriman's national survey of attitudes to, and uses of, heritage in Britain (1989). Merriman found that of all the questions asked in the survey, the most significant one related to relevance. He found that 55% of non-visitors and 38% of rare visitors felt that museums had no relevance to their daily lives. Merriman thus suggests that, 'one of the more important factors in influencing whether a museum visit is undertaken is the museum's perceived relevance to the individual,' (Merriman, 1989: 156). Similarly, the Saatchi and Saatchi study found that 35% of Australian population felt 'the arts are OK, they are just irrelevant to me,' (2000: 13).

Relevance has also become crucial in education in the late 20th and early 21st centuries. Prior to this, it was not seen to be as important, as in the past, education tended to be valued for its own sake, or for its contribution to a person's professional development. It is a fairly recent development, then, that education needs to make a point of contact with a person's everyday life and interests. Interestingly, Bourdieu's (1969) study of museum visitors found a strong correlation between their class and the display of everyday objects. He found, for example, that a broader cross-section of the population attended exhibitions of objects drawn from everyday life such as furnishings, ceramics and folk objects. Bourdieu suggests that this is because people of all classes are familiar with everyday objects, know what they are used for and can therefore relate to and appreciate them.

Establishing the relevance of exhibitions to people's daily lives appears to be crucial for broadening the visitor base. Although challenging, this task is not impossible to achieve. For example, the Casula Powerhouse, located in the outer western suburbs of Sydney, succeeded in attracting the audience group considered the least likely to attend a museum —young –to-middle-aged males from low socio-economic backgrounds (Peach, 2001). How? By staging *Speedway*, an exhibition on drag car racing which proved to be so popular that visitors were literally 'knocking on the doors' demanding entry long before the official opening hours.

The third challenge, the creation of a lasting disposition to cultural practice, such as museum visiting, constitutes the greatest hurdle for museums. The creation of such a lasting disposition has two complementary facets — one is long term, the other short term. From a long-term perspective, to promote museum visiting, cultural institutions need to work in tandem with socialising agencies, namely the family and the school.

Bourdieu (1969) strongly argues that socialisation plays a key role in providing the cultural training, and the interests, associated with participation in museums and galleries. Regarding the family's role in socialisation, he says, 'there is nothing better placed to give the feeling of familiarity with works of art than early museum visits undertaken as an integral part of the familiar rhythms of family life,' (1969: 67). The research conducted by Saatchi and Saatchi (2000) confirms this view. One of their key findings was that 'there is also a strong relationship between a person receiving parental encouragement when they

were young and eventually placing a high value on the arts. This appears to exceed the influence of formal school education alone,' (2000: 21).

Bourdieu also places a strong emphasis on schooling in terms of opening up access to museums. He suggests that one of the functions of schooling is to apprentice people into acquiring and internalising the codes associated with cultural practices such as museum going — an apprenticeship that requires prolonged contact between the individual and the cultural institution. In fact, Bourdieu argues that schools have an *obligation* to provide people with a large 'capital of experience'. Such capital includes museum visits, listening to concerts, visiting monuments and so forth. Bourdieu also maintains that 'the more schooling leaves the task of cultural transmission to the family, the more schooling tends to sanction and legitimate existing inequalities,' (1969: 66).

Although Bourdieu's point is both valid and pertinent, on the basis of personal experience as the former Manager of Schools Programs at the Australian Museum, I have found that many schools do not regard museums as integral to the school curriculum. Nor do they appear to accept that cultural transmission — apprenticing people into acquiring and internalising codes of cultural practice — is part of their role. Consequently, despite the fact that some museums provide teachers with substantial materials containing pre-visit, museum-visit and post-visit teachers' notes, as well as suggestions for teaching students appropriate behaviour in the unfamiliar setting of a museum, this potential is taken up by teachers on an ad hoc basis. Many schools, it seems, regard museum visits merely as 'fun' outings.

Museums and cultural institutions can, however, take the initiative of generating a lasting disposition towards museum visiting, especially amongst young people. This is not solely the responsibility of the family and the school. For instance, the Art Gallery of New South Wales (AGNSW) launched the Bridget Battersby Bequest in 2002. This Bequest involves giving a free pass to every senior high school student whose work is selected for display in the *Art Express* exhibition held annually at the Gallery. The pass entitles each student to free entry into all paying exhibitions at the Gallery for a year. Not only does the Bequest honour the achievements of the students, it also has the potential for developing a lasting disposition to cultural practice by encouraging ongoing access to the Gallery. A bequest

such as this also gives a sense of the directions that are open to all cultural institutions to take.

However, many of the potential museum visitors identified by Merriman (1989) and Saatchi and Saatchi (2000) have not been socialised into using museums or seeing them as worthwhile. Therefore, during their first visit, the initial challenge for museums lies in making these newcomers feel welcome and secure inside the spaces, as well as helping them become familiar with the codes of behaviour and practices of meaning-making in exhibitions. It also involves giving them clear entry points for understanding the collections on display in exhibitions. Finally, it involves developing strategies that invite them to join a community of like-minded people. Herein lies the nexus between public access and public display.

# 1.3 Public display

As articulated in the 2001 ICOM definition, the second aspect of museums that sets them apart from other cultural and pedagogical institutions[8], such as schools or universities, is public display. In a museum context, public display refers to the means by which museums present their collections to visitors in carefully constructed spatial compositions known as exhibitions. Public display distinguishes museums (and galleries) from other pedagogical and cultural institutions because museum pedagogy is predominantly realised through display (Hooper-Greenhill, 2000: 3, Kelly and Gordon, 2002: 158)[9]. In fact, this function is best encapsulated by Kathleen McLean, Director of Public Programs at the Exploratorium, San Francisco.

> Museums are not museums without exhibitions. The most prominent and public of all museum offerings, exhibitions are the soul of a museum experience for the millions of people who visit them, as well as for many of the people who create them. As unique three-dimensional compositions, exhibitions show things, whether a work or art or a working machine, a history timeline or a bit of bone. This showing or exhibition is the

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[8] The term 'pedagogical institution' comes from the work of Bernstein (1975, 1990) and will be explored in more detail in Chapter 2 (see Section 2.2.4.2 on social context and semogenesis which traces the emergence of a pedagogical role for museums).

[9] There are also many other ways in which museums and schools differ. The first concerns freedom of choice. The well-known museologists, Falk and Dirking, foreground this difference by referring to museums as 'choice-free' learning environments (2000). Choice-free attendance at museums stands in stark contrast to attendance at other pedagogical institutions, such as public schools, which have been compulsory in Australia since the end of the 19th century.

Time and stratification are two other dimensions that differentiate museums from educational institutions such as schools, universities, TAFE colleges and community colleges, such as WEA and the Centre for Continuing Education at Sydney University. Museum visitors do not, on the whole, spend as much time in the museum, or attend it as frequently, as they would if they were enrolled in full time or part time studies. In fact, several visitor studies have shown that the average time visitors spend in an exhibition is less than 20 minutes (Kelly, 1996; Kelly, 1997; Serrell, 1997).

Finally, museums do not differentiate their visitors according to their ages and/or their abilities in the way other educational institutions, such as schools, and to a lesser extent, universities and TAFE colleges, do. In fact the potential reach for museum audiences is enormous and more diverse than for most other educational institutions. For example, museums are trying to reach and retain visitors of all ages, ranging from the infants and young children to retirees. They are also targeting those with tertiary qualifications as well as those who have completed only the most elementary levels of schooling, school groups, specialist local audiences, native speakers of English as well as people from non-English speaking backgrounds, the tourist market, families and so forth.

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one feature common to all museums, from institutions engaged in scholarly research for a small professional audience to large multidisciplinary organisations providing services for the broadest spectrum of people.

(McLean, 1999: 83)

Similarly, Derek J. Nicholson, exhibition designer and lecturer at the School of Design Studies, University of NSW, argues that it is 'display which separates museums from schools, television, theatre and virtually all other forms of communication of ideas and/or learning,' (1997: 14). It is important to note at this point that the converse is equally true — for it is a focus on learning and education that has hitherto distinguished the museum from other display-oriented institutions such as travelling fairs, circuses and theme parks (Bennett, 1995a: 222).

In essence, therefore, to make their collections and scholarship accessible to the general public, museums design exhibitions using a range of media (objects, images, language, sounds) and display them in their public spaces. Public spaces can be defined in the following way.

A place is generally considered to be public when it is accessible to all, when every person can be physically present and circulate freely within it. Conversely a place is considered to be private when access is controlled, reserved to certain people.

(Thibauld, 2001: 42)

The social purpose or institutional rationale for staging displays in public spaces is that exhibitions provide unique and enjoyable learning and social experiences for an undifferentiated general public (Lewis, 1989; Caulton, 1998; Hooper-Greenhill, 2000; Falk and Dirking, 2000; Scott, 2001).

Discussions concerning the practices of museum display have long revolved around two issues. The first is the importance of objects, object selection and object grouping. The second is text, including the contentious museological debate over text and 'dumbing

down' (Saatchi and Saatchi, 2000: 24). In fact these concerns have been extensively engaged with in the discourse of museology for many years (Bourdieu and Darbell, 1969; Vergo, 1989; Wright, 1989; Corrin, 1994; Bennett, 1995a; Emmett, 1996; Serrell, 1996; Falk and Dirking, 2000; Hooper-Greenhill, 2000).

However two equally important but largely neglected dimensions of public display are also crucial to meaning making. They are:

- the physical construction of the exhibition space in which objects and text panels are to be displayed
- the way exhibitions can be designed to evoke other places.

The organisation of three-dimensional museum spaces is a challenging undertaking. Firstly, moving through an exhibition requires the visitor to move through a series of connected spaces that unfold in both place and time. These spaces may be designed to change markedly as the exhibition unfolds or they may remain essentially the same. They may be domestic in scale and therefore feel comfortable and familiar, they may be small and claustrophobic, or they may be vast and overwhelming. Some spaces may be dark, while others may be brightly lit. None of these choices is peripheral, for each choice makes a meaning that is just as important to the overall meaning(s) of an exhibition as the objects on display in the space or the text panels adjacent to them.

In the introduction to his semiotic analysis of the *Shark* exhibition[10], Peter White draws our attention to the importance of the construction of space to public display.

> A third perspective for analysis involves the way the viewer responds to and interprets the exhibition's design features. Here we are concerned with the way the design of individual stages creates certain atmospheres and triggers emotional reactions, with the meanings associated with the exhibition's overall architectural organisation and with the symbolism of its various visual, auditory and tactile elements. Our concern here is with 'meaning' in a broad sense going beyond the simply verbal. We are interested, for example, in the way that the use of colour,

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[10] The *Shark* exhibition was held at the Australian Museum in Sydney in 1994.

lighting, sound effects, spatial organisation, furnishings, vantage point and different types of images can influence the way the viewer responds to and interprets the information being presented. Although non-verbally communicated, these meanings are just as much part of the exhibition and contribute just as strongly to its overall impact as those elements which constitute explicit informational content.

(White, 1994: 3)

Throughout his analysis White assigns great importance to the construction of each space within the exhibition and identifies key design elements, such as colour and lighting, that are important in evoking a strong interpersonal response from visitors. He also makes reference to the design metaphors used in the space — the shark's natural habitat and the classifying house of biology. Examples of this include:

We enter *Shark* through an archway in the form of an open-ended shark cage. We enter a dark, shadowy, confined space with deep blue walls. We are immediately confronted by the head and gaping jaws of huge sharks which loom out of the darkness of either side… The design features provide a sense of a direct, unmediated experience of the shark in its natural state with as much immediacy and reality as possible.

(White, 1994: 7)

The second stage (which will be labelled the 'Scale-Model space' for ease of reference) continues the dark blue colour scheme, the general architectural style and the dimmed lighting of the initial 'Jaws' space. We remain therefore within the shark's world, within a space designed to represent or at least invoke the natural environment.

(White, 1994: 9)

…we move from the narrowly enclosed 'Scale Model' space with its dim, shadowy lighting and dark blue walls into a brightly light, open airy space. We have a sense of moving out of a tunnel into the open, of moving from darkness into light…the shark

no longer looms up at us out of the darkness, jaws agape, but submits to the ordering, order-making power of science.

(White, 1994: 11)

In extracts such as these White draws our attention to the way the space has been deliberately constructed to evoke a strong interpersonal response from the visitor. In the first two spaces, choices for colour and subdued lighting make the space 'close in on' the visitor while simultaneously evoking the shark's natural habitat. Not surprisingly, the reaction elicited in these parts of the exhibition is one of insecurity and fear. In the third space, however, White is able to show how the brightness and openness of the space, when combined with the contextual metaphor of a scientific classificatory house, is able to produce an 'antidote to the alarm and drama of the unmediated, unruly experience of nature in the raw,' (1994: 11). The result of such co-articulation of meaning in the exhibition is a marked shift, from insecurity to security, in the way many visitors respond to sharks.

The significance of White's analysis to museology is immense for not only does he show how meaning in an exhibition resides in a multiplicity of semiotic systems — linguistic, visual, aural and spatial — but he also foregrounds the need for a grammar of three-dimensional space, especially one that is able to account for the way spaces can be designed to evoke different interpersonal meanings. Significantly, designing spaces to evoke strong interpersonal responses is not the sole domain of museum design. These trends can also be identified in the design of houses, shops and workplaces. A local retail example of spaces designed to evoke strong emotional responses is the Collins Bookstore at Broadway in Sydney.

Collins Bookstore Broadway opened in the late 1990s with four very differently designed spaces. Given the constraints of this thesis, only the first two rooms will be discussed, as they are articulated using very different choices for spatial enclosure. The first space, adjacent to the main store entrance, was a dark, firmly enclosed and dimly lit space. It had the highest ceiling of all of the spaces in the store — a rounded, dome ceiling that was painted a dark shade of blue and illuminated by a myriad of twinkling fairy lights. Interpersonally, it was a soothing, calming space — a space of retreat and solitude from

the clamour and bustle of the shopping centre outside. Appealing to the bookworm, it strongly recreated 'another world' — the world of bedtime reading, fantasy and vicarious escape. As some shoppers moved inside the space, they noticed, tucked away in the right-hand corner, an enclosed area known as the Collector's Corner. Drawing on the metaphor of the cabinet of curiosities, this area appeals to the shopper interested in displaying and acquiring 'cultural capital'. In other words, buying any one of the rare and precious collector's books on offer here enables the shopper to enact, and display, their appreciation for and membership of the rarefied Australian community of 'literati'[11].

The second space in the Collins Bookstore is designed to contrast, markedly, with the first. It is an energising, invigorating space — one that suggests release and escape into the bright open landscape of the Australian outdoors. Its design is characterised by strong bursts of natural and artificial lighting, corrugated iron roofing, light-coloured walls with splashes of an ochre red evoking the red, hot centre of Australia. Crowning the room is the ceiling, a recessed dome containing a twinkling recreation of an expansive Australian night sky complete with the Southern Cross. Embedded in the flooring, directly below the domed ceiling, is a circular collector's map of Terra Incognita, Terra Australis and New Holland with depictions of indigenous flora and fauna. The dual evocations of the red centre and the collector's cabinet used in this space suggest that here the visitor can buy authentic parts of Australia's cultural heritage— contemporary or traditional, outback or urban, Indigenous or non-Indigenous — and in doing so, belong to and become part of the wider Australian community. In other words, the design of space in the store manipulates the context in such a way as to add 'value' to the commercial transaction of buying and selling goods. It is hardly surprising that the marketing angle for Collins is, 'More than just a bookstore.'

Ravelli's analysis of the Olympic Store in Sydney (2000) uncovered similar display practices. In relation to the configuration of space, Ravelli describes the Olympic Store in the following way: 'Even though underground, there is no sense of closure about the space; the store conveys a sense of both significant breadth, with open vistas through its various sections, and depth, with the escalators reaching up to street level and a kind of pit in the middle' (Ravelli, 2000: 490–1). Complementing this spatial openness, Ravelli

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[11] Even though the connotations currently associated with the term 'literati' tend be slightly perjorative, the term is used here in a positive way.

describes the way that the display practices in the Store functioned to evoke the Olympic experiences of the past. She describes the way 'real Olympic memorabilia' was displayed together with recreations of Olympic tracks, long jump pits, swimming blocks and spectator stands, and how both of these display choices are positioned alongside merchandise for sale. Furthermore, inside the Olympic Store shoppers could have their photos taken in their winner's stand and meet former Olympians. In other words, what Ravelli describes is the way choices for display have transformed the commercial transaction of buying and selling goods into an historic and cultural recontextualisation. This means that the purchase of products enables the buyer not only to gratify their needs and wants, but to simultaneously become a member of the international Olympic community. When they leave the Store and wear the products they have purchased, consumers display and enact their membership of a worldwide sporting community.

A workplace example of space designed to evoke similar interpersonal responses is the restoration of a 1950s skyscraper, the MLC building in Miller Street, North Sydney. The fundamental design concept involved constructing the workplace as a 'place to meet' instead of a 'place to work'. Consequently, a variety of different meeting spaces were constructed on each floor. Some are small, dark, dimly lit and firmly enclosed with low ceilings and raised floors (see Plate 1.1), while others have been deliberately designed to be bright, light and open, with permeable ceiling grids, sliding doors and diaphanous glass enclosures (see Plate 1.2).
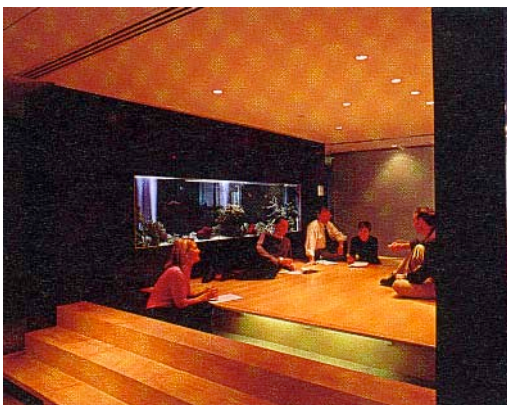


Plate 1.1 Dark, enclosed space               Plate 1.2 Bright, open space

Furthermore, both spaces are deliberately designed to evoke natural habitats. In the first, the habitat is an underwater cavern. This is suggested by the firm enclosure of the space, together with the dim lighting and the tropical fish tank. The fish tank is pivotal to the articulation of this spatial metaphor as the way it has been embedded, along the length of one of the walls, makes it a salient feature of the space. The spatial metaphor evoked in the second space is a beach. The designers have configured the space to evoke this metaphor through the use of strongly saturated blue and yellow striped flooring and bright lighting. Beaches are open, outdoor spaces that abound in light and are places of relaxation and escape. It does not come as a surprise to read, therefore, that one of the aims of this workplace redesign was to create an environment where people feel so at ease that '. . .being at work is preferable to going home!' (Goad, 2001: 56). According to Philip Goad, Associate Professor of Architecture at the University of Melbourne, this project 'represents one of the most profound shifts in the history of postwar Australian office design,' (2001: 54).

In summary, the preceding discussion of some of the ways three-dimensional spaces are organised in museum exhibitions, retail sites and offices, demonstrates that space is a semiotic mode with enormous potential for meaning making in a culture. In addition, the analyses undertaken by White (1997) and Ravelli (2000) using tools drawn from Systemic Functional Linguistics (SFL) have shown that space can be interpreted as a meaning-making resource within the culture in the same way that language (Halliday, 1978; 1985a; Halliday and Hasan, 1976; Martin, 1992; Matthiessen, 1995), visual images (Kress and van Leeuwen, 1990; 1996; O'Toole, 1994), music/sound/speech (van Leeuwen, 1999) and movement (Martinec, 1997; 1998a; 1998b; 2000a; 2000b) have been.

The potential for analysing architecture as a semiotic is further reinforced by O'Toole's work (1994), van Leeuwen's *compositional* analysis of an exhibition at the Old Royal Observatory in Greenwich (1998) as well as Pang's framework for analysing circulation routes through exhibitions (in press, 2004)[12]. In particular Pang has developed system networks for analysing two aspects of a Circulation Path: Traffic Flow and Flow Rate.

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[12] Pang's analysis of the *From Colony to Nation* exhibition (in press for 2004) examined more than just Circulation Paths. It explored the ways a number of semiotic systems (visual images, language, three-dimensional spaces and objects) were co-deployed in the exhibition to make meaning. However, the analysis of the actual spaces in the exhibition focussed solely on Circulation Paths which is why only this aspect of his work was commented on.

Traffic flow is concerned with the route visitors follow as they move through a series of exhibition spaces, while flow rate is concerned with the actual pacing of visitors (in press, 2004: 97). The analyses undertaken by van Leeuwen and Pang thus point to the ways the elements in three-dimensional spaces can be compositionally organised to create meaningful wholes.

Returning briefly to the interpersonal metafunction, White and Ravelli's work seems to have identified several important challenges to understanding the organisation of three-dimensional spaces. The first is concerned with the physical construction of the space — the ways the walls, ceilings and floor, together with colour and light, are organised to make the space feel either comfortable and familiar, small and claustrophobic, or vast and overwhelming. The second is concerned with the ways visual metaphors can be used to evoke other spaces such as natural habitats, the classifying spaces of biology or sporting venues at the Olympic Games. This strategy, in turn, seems to have the potential to align the users of the space into multiple communal belongings. Thus, people in the Olympic Store described by Ravelli (2000) are more than just shoppers — they are made to feel that they are pseudo spectators in the Olympic Games, or even pseudo athletes. When they leave the store, and wear the products they have purchased, these consumers display and enact their membership of an international sporting community.

# 1.4 Research focus and limitations

As the discussion in Sections 1.1, 1.2 and 1.3 of this chapter has shown, the issues of public access and public display in which cultural institutions engage are both multi-faceted and complex. Issues related to public access can be summarised as the following three challenges:

- making newcomers feel welcome and secure in the museum
- giving newcomers entry points for understanding the objects on display
- developing strategies for inviting newcomers to belong to a community of like-minded people.

Issues related to public display can also be summarised into three key challenges.

- space-related issues (how to physically design/organise the exhibition space; selecting the most appropriate design metaphors for the content of the exhibition)
- issues related to the display of objects (selection, grouping and the juxtaposition of objects)
- text-related issues (whether or not to display large thematic text panels as well as object labels; the amount of text to display; the issue of 'dumbing down').

Clearly, it is beyond the scope of this thesis to address all of these issues. However, given the current pressures on museums to expand their visitor base or perish, the most pressing challenge, it seems, is that of designing spaces which make people who have not been socialised into the practices of museum visiting feel safe, comfortable and secure in the unfamiliar institutional surroundings of museums. The second most important challenge seems to involve giving newcomers entry points for engaging with the objects, knowledge and understandings on display in exhibitions and inviting them to join a community of like-minded people. The aim of this thesis is to address these issues drawing on social semiotic tools from Systemic Functional Linguistics, hereafter SFL, (Halliday, 1978, 1985a; Halliday and Hasan, 1976; Martin 1992; Matthiessen, 1995). In particular this

dissertation will map a grammar of three-dimensional space with a specific focus on interpersonal meanings. The over-arching question that will be pursued is:

> How can museum exhibitions be organised to make visitors feel comfortable and secure in their spaces?

The research presented in this thesis has been limited by space constraints. Although the ultimate goal is to develop a comprehensive grammar that explores all three potential communicative functions of three-dimensional space, the interpersonal, the ideational and the textual, it will only be possible to explore one of these *in detail* in this thesis, that is, the interpersonal. Two resources for theorising interpersonal meanings in three-dimensional space have been identified: Binding and Bonding. Binding is concerned with the interpersonal relationship established between a space and its occupant(s), while Bonding is concerned with the ways visual metaphors can be used to not only evoke other spaces such as natural habitats but also align users into communal belongings. Binding will be described in detail in Chapters 3 and 4, while Bonding will be presented in Chapter 5, together with descriptions of the resources needed to make ideational and textual meanings in three-dimensional space.

Finally, it is hoped that the research undertaken for this thesis will complement the body of work on written texts in museum exhibitions which has been undertaken using tools drawn from SFL (MacLulich, 1993; Ferguson, MacLulich & Ravelli, 1995; Ravelli, 1996; Ravelli, 1998; Purser, 2000).

# 1.5 An overview of this study

This thesis is divided into five chapters. Chapter 2 introduces the theoretical tools that will be drawn on for the research, as well as anchoring the museum in its evolutionary development. The chapter begins by exploring the two main schools of semiotics: the philosophical and the structural. It then explores social semiotics with a particular focus on identifying and describing three theoretical tools from SFL that can be applied to descriptions of non-verbal social semiotics. It also reviews the body of work on different modalities that has been completed within social semiotics to date, with a particular focus on the work of O'Toole (1994), Kress and van Leeuwen (1996), and van Leeuwen (1998) in relation to architecture. Finally, it explores the genesis of the museum as a cultural institution. This is done so that issues of access and equity, as well as the display practices of museums, can be reflexively engaged with in the remainder of the thesis.

In Chapter 3, Binding, the theoretical tool for analysing the construction of space from an interpersonal perspective is introduced, described and exemplified. Binding is located within the content plane of architecture and theorises the interpersonal dimension of spatial semiosis, with a particular focus on how spaces can be constructed to make occupants feel secure or insecure. The chapter begins by exploring how cultural orientations to space can impact on security. It then looks closely at how built spaces can be organised to construct a negative relationship of insecurity with their occupants by making people feel either smothered and suffocated, or vulnerable and exposed. This is followed by an exploration of how built spaces can construct a positive relationship with their occupants by making them feel comfortable, safe and secure. Finally, the discussion shifts from the semiosis of space to the semiosis of language with the aim of exploring the connections between the two semiotics, especially with reference to the APPRAISAL system (White, 1997; White, 1998; Martin, 2000; Martin and White, in press; < http://www.grammatics.com/appraisal>).

In Chapter 4, the focus shifts to the materialisation of Binding. The objective of Chapter 4 is to identify the material elements constructing Binding. To do this, the chapter explores the expression plane of spatial semiosis which is concerned with two principal systems of

choice: permeability and ambience. The permeability dimension is concerned with the fixed, structural elements that create a three-dimensional space, namely the walls, the overhead plane and the base plane. Ambience, on the other hand, is concerned with the changeable elements used to organise a space such as colour, light, texture and pattern.

The final chapter of the thesis is divided into two parts. The first part discusses the implications of Binding for museums. The second part sketches the remaining communicative functions of three-dimensional space. It continues with the exploration of interpersonal meanings by investigating Bonding. Bonding is concerned with the interpersonal resources needed for building solidarity. In particular, it is concerned with ways of building togetherness, inclusiveness and affiliation. There are at least three analytical tools for considering the ways Bonding is negotiated in three-dimensional space. The first involves the use of three-dimensional bonding icons which reconstruct spaces for communing. The second involves Kress and van Leeuwen's notion of symbolic attributes (1996). The third involves the hybridisation of spaces so that one space serves many functions.

In addition, Chapter 5 outlines resources for making ideational and textual meanings. Textual meanings are concerned with the way 'texts' such as buildings are organised as semiotic reality. Buildings, like written and spoken texts, unfold in time but they also unfold in space. To account for this, two types of tools are required. Firstly, tools that describe the *static* organisation of a building, after all, a floor plan is a fixed entity. Secondly, tools that describe the *dynamic* unfolding of space through the unfolding of a user's pathway.

# CHAPTER 2

# Theoretical Foundations

The aim of this chapter is to establish the theoretical foundations on which a grammar of three-dimensional space will be based. This grammar is part of the theoretical framework of semiotics. Semiotics has derived its name from the Greek terms *semainon*/*semainomenon* meaning 'signifier' (expression) and 'signified' (content/meaning). It was first used by the Stoic philosophers (Halliday, 1985b: 3). Following the Stoics' doctrine of signs, Roman architect Marcus Vitruvius distinguished 'that which signifies' from 'that which is signified'. Hence Vitruvius wrote: 'In all things, but especially in architecture, there are two inherent categories: the signified and the signifier,' (1999: 22).

Two thousand years later, Swiss-French linguist Ferdinand de Saussure developed these ideas further in his lectures, *Cours de linguistique genérale* (1916 [1966]), which were instrumental to the development of semiotics in Europe. Essentially, de Saussure's theory of semiotics is concerned with the study of 'the life of signs within society' (de Saussure, 1916 [1966]: 16). According to MAK Halliday, however, semiotics is not an academic discipline (1985b). It is better seen as a field of study that cuts across disciplines and involves many different theoretical stances. So there is considerable variation about what semiotics refers to, as well as multiple definitions of key semiotic terms such as *langue* and *parole*. There are also divergent interpretations of the relationship between these key terms.

Given the existence of so many competing theoretical assumptions, to set the parameters for this thesis, it is essential to first briefly review the major traditions of semiotics that have influenced the ways semioticians have interpreted de Saussure's ideas, and then identify, and

elaborate on, the approach with which this thesis is aligned. This chapter is divided into two main sections. Section 2.1 will review the two main approaches to semiotics, the philosophical and the structural, while Section 2.2 will review social semiotics as developed by Halliday (1978, 1985a), Halliday and Hasan (1976), Martin (1992) and Matthiessen (1995).

# 2.1 The major traditions of semiotics

There are two major traditions in semiotics: the philosophical, reviewed in Section 2.1.1, and the structural, reviewed in Section 2.1.2. Structuralism can be further sub-divided into two schools: the Eastern European, the focus of Section 2.1.2.1, and the Paris school, presented in Section 2.1.2.2. The discussion in each section is oriented to exploring the contributions made by each tradition/school to the semiotics of architecture. Section 2.1.2.3 will then present Preziosi's (1979a, 1979b) research on architecture, as it blends both schools of structuralism, the Eastern European and the Parisian. Section 2.1.2.4 concludes the first half of the chapter by discussing some of the limitations of structuralism and points the reader forward to the exploration of social semiotics in Section 2.2.

# 2.1.1 The philosophical tradition

According to Lemke (<http://www-personal.umich.edu/~jaylemke/theories.htm>), there are two main traditions in semiotics: philosophical and structural. The first is based on the work of American philosopher Charles Sanders Peirce who was initially inspired by the ideas on semiotics developed by English philosopher John Locke (Morris, 1964: 1). Peirce extended the logic of reasoning in the natural sciences to semiotics by construing semiotics as 'a formal doctrine of signs' closely related to logic (1955: 99). He developed elaborate and sophisticated typologies based on three fundamental types of sign: 'icon', 'index' and 'symbol' (1955: 102-3).

Inspired by Peirce's work, Charles W Morris, in his monograph *Foundations of the Theory of Signs* (1938: 1–2), recontextualised semiotics as 'the science of signs'. He then defined signification as being tri-dimensional in nature, a process by which signs function as vehicles, interpretants and interpreters (1938; 1964). Morris then proposed three complementary areas for investigation: semantics (which studies the relationship of sign-vehicles), syntactics

(which explores the relationship of signs to objects they represent) and pragmatics (which studies the relationship of signs to interpreters). Morris's ideas were later taken up by some of the semioticians belonging to the Paris school and are still used in architecture by semioticians working with a model of semiotics grounded in analogies with language[1].

The work grounded in analogies with language has been primarily conducted by Geoffrey Broadbent (1977) and Charles Jencks (1984). The result is a broadly semiotic conceptualisation of architecture. Broad in the sense that they primarily draw analogies between architecture and language, and bridge between them using terms such as ' "words", "phrases", "syntax", and "semantics"'. For example, when they apply their semiotic notion of 'word' to architecture, they refer to an element such as a window or door. Furthermore, they define 'semantics' as referring to meaning in the sense of content, while 'syntax' refers to 'the rules for combining the various words of door, window, wall, and so forth' (Jencks, 1984: 63).

# 2.1.2 The structural tradition

The second tradition of semiotics is based on the theories of de Saussure and is known as structuralism. According to Thibault (1997), structuralism became a fully developed movement in France during the 1950s and 1970s, and then spread to other parts of the world. Thibault (1997: xvii–xviii) indicates that it is based on a distinctive reading of de Saussure's concept of *langue* and consequently espouses the following tenets. First, structuralists separate *langue*, the language system, from *parole*, that is, speech or the sum of what people say

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[1] The broadly semiotic approach to architecture developed by Broadbent (1977), Charles Jencks (1984) and Richard Bunt (Broadbent, Bunt & Jencks, 1980), which is grounded in analogies with language, has influenced another group of scholars researching the ways buildings shape society by constraining or enabling, producing or reproducing, social relations. Their work falls within social archaeology (Gregory and Urry, 1985; Locock, 1994; Pearson and Richards, 1994). These social archaeologists conduct formal analyses of space known as spatial analysis (Locock, 1994: 9) and their interest in semiotics comes from 'a shared feeling that despite the obsessive practice of recording architecture and physical features in the greatest detail imaginable, archaeologists were somehow missing the point in their substitution of description for understanding,' 1994: xi. Although they are interested in social meaning-making practices, they do not draw on a theoretical framework such as the one developed by Halliday (1978, 1985a). So they tend to rely on the language analogies developed by Broadbent and Jencks.

(Thibault, 1997: 6). This means that the language system and language in use are treated separately (and not as two interrelated areas of investigation). Second, structuralists focus exclusively on *langue*, the language system (Thibault, 1997: 8). This means they foreground the study of the *internal* structures involved in the organisation of sign systems such as language. In particular, they are concerned with the search for 'deep structures' underlying the surface features of a semiotic system.

Third, structuralists marginalise both the roles played by individuals and the social practices of a community in the making of meanings (Thibault, 1997: 5). As a result, they are concerned with causal mechanisms.

> …structuralists sought a conceptual framework in which the mechanisms which are postulated as lying 'behind' and causing the observed phenomenon might be studied. Such generation mechanisms would then constitute the explanation of the phenomenon.

> (Thibault, 1997: 4)

In fact, they regard signifying systems as being not only generative but also cognitively pre-determined. This is largely the result of the work done by French structuralist and anthropologist Claude Levi-Strauss who located signifying systems and the principles on which they are organised in the pre-determined structures of the human mind (1972). Taken together, these factors mean that structuralism is essentially a formal theory in which signifying systems are studied out of context. It also means the theory has few resources for investigating and accounting for change in the language system.

The theoretical and intellectual foundations of structuralism, moreover, lay in Eastern Europe with the Russian formalists and the Prague School (Kress and van Leeuwen, 1996: 5; Thibault, 1997: 4). During the 1920s and 1930s, the Russian Formalists focused on defining the formal properties of poetic language (Barry, 1995: 161–3). 'Poetics deals with the question, "What makes a verbal message a work of art?" ' (Jakobson, 1960: 350). Similarly,

the Prague School was strongly committed to the praxis of literary analysis during the 1930s and early 1940s. It essentially extended the poetics of Russian formalism by providing it with a linguistic base (Kress and van Leeuwen, 1996: 5). In Jakobson's words, 'Poetics deals with problems of verbal structure …Since linguistics is the global science of verbal structure, poetics may be regarded as an integral part of linguistics' (1960: 350).

One of the defining characteristics of Eastern European structuralism, moreover, is that it is not only structural but also functional in its orientation. This means it regards semiotic systems as serving a variety of functions. In relation to language, for example, Jakobson (1960: 353) identified six factors as being involved in communication; namely an addresser, an addressee, a context, a message, a contact and a code. From these, he abstracted six corresponding functions of language: emotive (addresser), conative (addressee), referential (context), poetic (message), phatic (contact) and metalingual (code).

## 2.1.2.1 Eastern European structuralism and the semiotics of architecture

Structural functionalists from the Prague school also extended many of the concepts de Saussure developed for language and applied them to the analysis of other semiotic systems within the arts. Thus Honzl studied theatre (1940, 1943), while Bogatyrev studied costume as well as charting the elementary principles of theatrical semiosis (1938, 1940). In addition, Mukarovsky conducted structural analyses of art (1978: 3–150), film (1978: 178–200), theatre (1978: 201–20) and architecture (1936, 1978: 236–50).

Mukarovsky's work on architecture was significant in that it extended Jakobson's notion of communicative functions to buildings. Initially identifying a bi-functional orientation for buildings, utilitarian and aesthetic (1936: 6), Mukarovsky acknowledged that it is difficult to ascertain where one function begins and the other ends. He thus conceived of them more as a continuum than a discrete set of choices. He went on to identify the co-presence of five functions in architecture, known as 'functional horizons', which exist in varying degrees of

dominance. The first is concerned with the immediate purpose of the building; the second with its historical purpose. The third is social in nature, encompassing the organisation of a society including its economic and material resources. The fourth concerns individual choices and preferences (1978: 241–2). Finally, Mukarovsky points to the *simultaneous co-existence* of the aesthetic function — a function that is always 'potentially present'. Historically, it tends to blend with the other functions. However, Mukarovsky claims it can also be lost when the milieu changes as it did with Modernism (1978: 244). Mukarovsky's exploration of architectural semiosis identified the polyfunctional nature of architecture and strongly pointed to the significance of aesthetics.

## 2.1.2.2 Paris school structuralism and the semiotics of architecture

Structuralists from the Paris school of the 1960s and 1970s were also very interested in analysing other signifying systems within the culture. The semiotic modes they have studied include photography (Barthes, 1977; 1981), fashion (Barthes, 1985), cinema (Metz, 1974) and architecture (Eco, 1972; 1980). Like Mukarovsky, Eco (1972) explored the functions of architecture but sub-divided them into primary (utilitarian) and secondary (concerned with aesthetics and symbolic meaning). His work was also strongly concerned with exploring three main types of architectural codes: technical, syntactic and semantic (1980: 38–9). Technical codes are concerned with those structural aspects of architecture; the domain of structural engineering (foundations, beams, the load bearing capacity of reinforced concrete and so forth). Syntactic codes are concerned with spatial types such as circular plan spaces, open plan spaces, Greek-cross plans and so forth. The third type of code is the semantic code which Eco describes as 'the significant units of architecture' (1980: 39). The significance of semantic codes lies in their concern with the relationship between sign-vehicles and connotative/denotative meanings.

Given Eco's structuralist orientation to semiotics foregrounds a theoretical pre-occupation with internal structures and a search for deeper meaning, much of his work was concerned with componental analyses. These are aimed at showing 'that the meaning of the architectural

sign-vehicle is composed of other, smaller significative units' (1972: 99). He called these spatial units choremes (from the Greek word 'chora' meaning space) and investigated the way they relate to the two functions he identified. Therefore, his account of architecture is constituency-oriented, with a strong focus on part–whole relationships, which are in turn anchored in the disjunctive opposition of signifier/signified. In other words, his theorisation of architecture leans strongly towards a representational theory of semiosis.

Some semioticians from the Paris school, such as Roland Barthes, radically questioned the structural principles of semiosis and reshaped them by fusing the ideas of the Paris school together with those of Peirce and Charles Morris. This hybridised approach influenced other architectural semioticians to adopt a more eclectic approach to semiotics. Perhaps the best example of this can be found in the work of semiotician and art historian, Donald Preziosi (1979a, 1979b). Preziosi embraced many of the theoretical ideas of the Eastern European structuralists, together with those of the Paris school, and blended them with the Peirceian paradigm of signs to develop a theory of architectronics (the scientific study of architecture).

## 2.1.2.3 Architectronics

Architectronics, as developed by Preziosi (1979a, 1979b), is characterised by the following six traits. First, architectronics uses a formal system based on formal structures. Second, it regards architecture as a semi-autonomous system, for Preziosi continually acknowledges the importance of context on the meaning-making practices of a society. Third, Preziosi developed a hierarchical organisation for architecture. The smallest unit in his rank scale are 'features' which combine to create 'forms', which in turn combine to create three-dimensional spaces, which he refers to as 'space cells.' He defines a space cell as 'a co-occurrent space and mass formation,' (1979a: 14). Space cells, in turn, combine to create 'cell matrices' which combine to create individual 'structures' such as buildings. These then combine to produce 'neighbourhoods' which combine into patterns of 'blocks' or 'grids' (1979a: 38–9).

The fourth characteristic of Preziosi's theory is his paradigmatic exploration of architecture based on a series of 'perceptually palpable' binary oppositions. Preziosi's taxonomies include the following paradigmatic choices: vertical/lateral, embedded/non-embedded, peripheral/central (1979a: 55). Preziosi also uses topological resources to explore some of the oppositions in architecture. In particular, he identifies two contrasting topological oppositions between boundedness and unboundedness; and between internal and external spaces (1979a: 57).

The fifth characteristic of Preziosi's theory of semiosis concerns his exploration of architecture as a multifunctional semiotic. With the exception of the aesthetic function, he combines Mukarovky's other four functions with Jakobson's conative and emotive functions (1979a: 92). Finally, he uses the Peirceian paradigm of sign (indexical, symbolic, iconic) to explore the relationship between signifier and signified (1979a: 70–1). One of the main benefits of Preziosi's theory is that it leans more towards a relational, valeur-oriented theory of architectural semiosis rather than towards the formal and representational perspective adopted by Eco.

## 2.1.2.4 Limitations with the structural semiotics of architecture

The theories of architectural semiotics discussed so far have emphasised the poly-functional nature of architecture, identified a rank scale and some of the important constituency-based relationships, as well as some of the contrastive oppositions that characterise built spaces. Architecture, however, is not simply the sum of all the structural elements such as the doors and the windows. Nor is it the mathematical sum of width x length x height. Nor is it a sum of the functions a space has been designed to fulfil. Nor is it a theoretical account of aesthetic principles. It would therefore be productive to move on to a framework that is able to capture more of the emotional dimension of architecture.

Architecture is more like a hollowed-out sculpture which occupants enter and feel through the direct experience of being enveloped inside it. So, a theory of semiotics that gives meaning to

how a space makes its occupants feel is needed — does it make them feel *free*, does it *dominate* them, does it *stifle* them, does it make them feel *vulnerable* and *exposed*, or does it make them feel *protected* and *secure*? In other words, we need a system–structure theory that enables semioticians to map choices as choices for meaning, and think about the semantic effect of structural configurations. The starting point should not be how structural elements are put together, but what the different combinations mean. For it is only if such a theory can be developed that semioticians can begin to understand how space transcends the limits of three, even four dimensions. As museologists John Falk and Lynn Dierking note in relation to physical spaces: '…often their influences are at once the most subconscious and the most powerful, the hardest to verbalise but the easiest to recall' (1995: 31).

We also need a theoretical framework that enables us to focus on two other social dimensions of meaning making: semogenesis and context. Semogenesis refers to the process by which semiotic systems change over time and is an important tool for theorising social change, while context is crucial to our consideration of cross-cultural and situational variation in the ways semiotics like space are organised and used. Buildings, like language, do not exist in a vacuum. Their meanings are made through social activities which are embedded within the social practices of a community. Contextual choices for organising space thus vary in response to social and cultural factors such as the economic conditions of a country, climate, the availability of building materials, lifestyle, cultural orientations to privacy as well as technology and the applications of science to the development of building construction techniques. Both semogenesis and context, then, fall within the social dimension of meaning making.

Therefore, we need a *social* theory of semiotics such as the one developed by Michael Halliday (1978, 1985a), Halliday and Hasan (1978), Hodge and Kress (1988), Martin (1992) and Matthiessen (1995). In a nutshell, social semiotics is:

> ….concerned with the systems of meaning making resources, their patterns of use in texts and social occasions of discourse, and the social practices of the social formations in and through which these textual meanings are made, remade, imposed, contested, and changed from one textual production or social occasion of discourse to another. The focus is on the

material and dialectical interrelations of copatterned textual meaning relations and their uses in specific domains of social practice. It is a theory of *social meaning making practices*.

(Thibault, 1991: 6, emphasis in original)

Section 2.2 explores social semiotic theory, particularly as developed by Halliday (1978, 1985a) and Martin (1992).

# 2.2 Social semiotics

In theorising the processes of making meaning in architecture, the research presented in this thesis has drawn its inspiration from social semiotics. In particular, it has been influenced by the school of linguistic thought developed by Michael Halliday and known as SFL (Systemic Functional Linguistics). The second half of the chapter aims to introduce SFL and review the SFL-based literature most relevant to this thesis. Section 2.2.1 explores the SFL model of language, focusing specifically on the theoretical tools which are flexible enough to be applied to the theorisation of non-verbal semiotic systems in the culture. Section 2.2.2 then reviews social accounts of semiotic systems of communication other than language. In particular, it examines the work on the following modalities:

- visual images (Kress and van Leeuwen, 1990, 1996; O'Toole, 1994)
- movement (Martinec, 1997; 1998a; 1998b; 2000a; 2000b)
- speech, music and sound (van Leeuwen, 1991, 1999)
- architecture (O'Toole, 1994; Kress and van Leeuwen, 1996; van Leeuwen, 1998).

Of specific interest to this thesis is the research on architecture undertaken by O'Toole (1994), Kress and van Leeuwen (1996), and van Leeuwen (1998). Given its relevance, it will be discussed in more detail than the accounts of the other semiotics mentioned previously. In addition, as the primary field-focus of this thesis is museums, the final two sections of the chapter will introduce the museum as a cultural institution using two social semiotic tools: social context and semogenesis. Section 2.2.3 will thus apply Martin's socio-semantic model of ideology to the museum. This will involve Halliday and Matthiessen's model of semogenesis (1999) projecting social context (Martin 1997, 1999b).

# 2.2.1 The SFL model of language

SFL is primarily based on the work of social semiotician Michael Halliday (1973, 1975, 1977, 1978, 1985a/1994, 1985b, 1985c, 1993) as well as Halliday and Hasan (1976) and Matthiessen (1995). The theoretical framework of SFL has also been further developed by Martin (1992). It is a model that regards language as a *social* system for making meaning. One of its underlying assumptions is that that all semiotic activity is intrinsically social and that meaning occurs only through *inter*action. In fact, by taking this social orientation, together with the other semiotic tools offered by SFL as a point of departure, it is possible to account for the ways a number of semiotic systems operate in a culture to make meaning. It is not surprising, then, that a number of social semioticians have used the tools offered by SFL to theorise other semiotic modes such as visual images (Kress and van Leeuwen, 1990, 1996; O'Toole, 1994), architecture (O'Toole, 1994; Kress and van Leeuwen, 1996); movement (Martinec, 1997; 1998a; 1998b; 2000a; 2000b) sound and music (van Leeuwen, 1991; 1999).

There are three important aspects of Halliday's theory of language as a semiotic that make it a relevant model to use for theorising other modalities. First, and as already mentioned, it has a strong emphasis on the social nature of semiosis. Second, SFL explores the organisation of meaning according to three abstract functions which semiotic systems, such as language, have evolved to fulfil. These are referred to collectively as metafunctions. Finally, it accounts for 'axes of chain and choice' (Eggins, 1994: 201), that is, both syntagmatic and paradigmatic relations in meaning-making.

Before describing these three resources — axes of chain and choice, Halliday's metafunctional hypothesis and a social orientation to meaning — one important point needs to be made. There is another distinguishing feature of SFL that has not yet been mentioned, and that is, it is a theory that regards language as a resource that has been organised into a number of levels or strata. For instance, Hjelmslev (1961) stratified language into two planes: a content plane (meaning) and an expression plane (the sounds we are capable of making in

speech, the letters we are capable of writing and the gestures we are capable of making in sign language). Halliday further stratified Hjelmslev's content plane into semantics and lexicogrammar (1978: 39). This meant he developed a tri-stratal model of language, while Martin has recontexualised Halliday's semantics as discourse semantics (1992: 19). Halliday and Martin, furthermore, both construe the relationship between the strata as one of realization.

However, the stratification of language into three levels, particularly as developed by Halliday (1978) and Martin (1992), has drawn on hundreds of years of investigation into language by many generations of researchers. Given the complexities involved, and the time required to stratify a semiotic in this way, it is beyond the scope of this thesis to develop a multi-stratal account of space. However, by way of working towards such an account, meaning will be the focus of Chapter 3 (on Binding), while expression will be the focus of Chapter 4 (on its materialisation).

The next section of this chapter describes each of the following three resources from SFL that make it a relevant model to use for theorising other modalities: a social semiotic orientation to meaning (Section 2.2.1.1), Halliday's metafunctional hypothesis (Section 2.2.1.2) and axes of chain and choice (Section 2.2.1.3).

## 2.2.1.1 Unpacking the social dimensions of SFL

One of the distinctive features of SFL is the fact that *society* is at the conceptual heart of Halliday's understanding of language as a semiotic (1978). Halliday's emphasis is thus on the social environment. In particular he is concerned with language as 'social behaviour' for it is through language that people are able to interact with one another and the process learn to become social beings. Halliday's theory thus foregrounds the importance of the inter-organism approach to semiosis, for it is through the interactions that take place *between* organisms — an individual and all the people they interact with including the social groups they come into contact with — that they learn about their culture. In Halliday's model, culture

encompasses ways of thinking and acting as well as cultural beliefs and values. The importance of the social dimension to semiosis is best explained in Halliday's own words.

> The striking fact is that it is the most ordinary everyday uses of language, with parents, brothers and sisters, neighbourhood children, in the home, in the street and the park, in the shops and the trains and the buses, that serve to transmit, to the child, the essential qualities of society and the nature of social being.

> (Halliday, 1978: 9)

Thus it is through the social relationships which an individual establishes, develops and maintains during his/her lifetime that language potential develops. At the same time, through such social interaction a culture is transmitted from one generation to another (1978: 18).

In essence, then, one of the most fundamental tenets of socio-semiotic approaches such as SFL is that they construe meaning making in social terms. Furthermore, as language is only one type of social semiotic system, it is possible to use the more general aspects of Halliday's model for language, such as its social orientation to semiosis, as a resource for modelling the ways other semiotic systems make meaning in society. For as Halliday writes:

> Acts of meaning are by their nature social acts, and all symbolic systems are social systems.

> (Halliday, 1985c: 3)

Accordingly, the model developed in this thesis construes meaning-making in social terms. The social dimension which lies at the heart of Halliday's interpretation of semiosis also lies at the heart of the account of architecture as a semiotic which will be developed in Chapters 3, 4 and 5.

## 2.2.1.2 Unpacking Halliday's metafunctional hypothesis

In systemic theory, language as a whole is seen as a resource, which is diversified into three general functions. Halliday explains these as the three communicative *functions* language has evolved to serve. Collectively, he refers to them as metafunctions (1978: 21). *Meta* rather than *macro* because each function is both abstract and generalised. Thus Halliday says, '…if we consider what language is required to do for us, there are certain functions which it must fulfil in all human cultures, regardless of differences in the physical and material environment,' (1978: 21). With respect to function, SFL posits three metafunctions: the ideational, the interpersonal and the textual. Each will now be briefly explained.

### The ideational metafunction

The ideational metafunction is concerned with language as representation of or reflection on human experience. It thus reflects the individual's experience of both the external world and internal world of their own consciousness. In Halliday's words:

> Language has to interpret the whole of our experience, reducing the indefinitely varied phenomena of the world around us, and also of the world inside us, the processes of our own consciousness, to a manageable number of classes of phenomena: types of processes, events and actions, classes of objects, people and institutions and the like.

(Halliday, 1978: 21)

Halliday further sub-divides the ideational metafunction into two components: the experiential and the logical. The experiential is concerned with the direct representation of experience in terms of happenings (actions, events, states, relations), things that participate in these happenings (persons, social groups, institutions, animate and inanimate objects, abstractions) and circumstantial features (location in time and space, extent, cause, manner and so forth).

The logical component, on the other hand, is concerned with recursive logical relations among these patterns of experience.

## The interpersonal metafunction

The second metafunction Halliday identifies is the interpersonal. He defines it in the following way:

> Language has to express our participation, as speakers, in the speech situation: the roles we take on ourselves and impose on others; our wishes, feelings, attitudes and judgements.

(Halliday, 1978: 21–2)

The interpersonal metafunction thus has two fundamental concerns: our participation in speech situations and the expression of our attitudes. To account for the ways individuals *participate* in a speech situation, in terms of the *social roles* speakers take on and those they impose on others, Halliday (1985a) organises the interpersonal metafunction along two axes. The first is concerned with the 'role in exchange' which refers to either giving or demanding a commodity; the second axis is concerned with the 'commodity exchanged' which can either be goods-and-services or information. These two axes combined yield four speech functions — statement, question, command and offer — as exemplified in Table 2.1 below.

| Commodity / Speech Role | goods and services | information |
|---|---|---|
| giving | **offer**: *Would you like some?* | **statement**: *Spiders have eight legs.* |
| demanding | **command**: *Give me that pen!* | **question**: *Are you ready to leave yet?* |

Table 2.1 Speech functions (adapted from Halliday, 1985a: 69)

Participation in speech situations also has another dimension. This dimension is concerned with whether a speaker is responding to, or initiating, the linguistic interaction. Thus, when we interact we use language to establish relationships between speakers and listeners on the one hand, and readers and writers on the other. To establish social relationships in interactions, we also take turns and take different speech roles. In these ways, the speech functions facilitate human *inter*action.

In addition to speech function and exchange structure, as Halliday's opening quotation on the interpersonal metafunction clearly indicates, interpersonal meaning is also concerned with the expression of 'feelings, attitudes and judgements'. To account for these, Martin (2000) and White (1997; 1998) have developed the APPRAISAL[2] network. APPRAISAL offers a complementary perspective on interpersonal meaning. It also moves SFL theory beyond its traditional concerns with negotiation to a more lexically oriented point of departure.

In particular, APPRAISAL offers systems that describe the semantics of evaluation, that is, how participants are feeling, the judgements they make and the value they place on the various phenomena of their experience. APPRAISAL includes three systems for constructing evaluative meaning: ATTITUDE, ENGAGEMENT AND GRADUATION (White, 1997; 1998; Martin, 1997; 2000; Martin and White in press; <http://www.grammatics.com/appraisal>). As APPRAISAL will be explored in detail in Section 3.3 of this thesis and Appendix A, it will not be explored in depth now. (For other developments in the study of evaluation, see Hunston and Thompson, 2000).

## The textual metafunction

The textual metafunction is the final metafunction and is defined by Halliday in the following way.

The textual component represents the speaker's text-forming potential; it is that which makes language relevant. This is the component which provides the texture; that which makes the difference between language that is suspended in vacue and language that is operational in a context of situation. It expresses the relation of the language to its environment, including both the verbal environment – what has been said or written before – and the non-verbal, situational environment. Hence the textual component has an enabling function with respect to the other two; it is only in combination with textual meanings that ideational and interpersonal meanings are actualized.

(Halliday, 1978: 112–13)

Textual meaning thus refers to the organisation of a text, spoken or written, into a meaningful whole. In particular, textual meaning is concerned with two things. First, how information is patterned so that a text 'hangs together', and second, how a text relates to the context around it, including what was said before.

Finally, the meanings made in all three metafunctions are made *simultaneously* and mapped onto one another. According to Martin this generates a 'multi-tiered perspective on the English clause,' (1992: 7). This multi-tiered perspective also forms the basis of SF theories of meaning-making, not only in language, but in other semiotic systems too, as will be explored in Section 2.2. (For more detailed explanations of the ideational, the interpersonal and textual metafunctions, see Halliday 1978, 1985a; Halliday and Hasan, 1985; Martin, 1992; Eggins, 1994).

---

[2] In SFL, several typographic conventions are followed. The names of systems are capitalised (e.g. MOOD, APPRAISAL), functional labels begin with capital letters (e.g. Epithet, Classifier, Binding, Bonding), while formal categories are written using lower case letters (clause, noun, phrase).

## 2.2.1.3 Unpacking the systemic in SFL

In addition to the metafunctions, another distinguishing feature of SFL is that it is a theory of 'meaning as choice' (Halliday, 1985a: xiv). Theories of meaning oriented to choice are paradigmatically organised (Halliday, 1978). Paradigmatic forms of organisation revolve around 'choice' as they are concerned with things that can replace one another. So, the paradigmatic concern is with 'this' *or* 'this' *or* 'this'. The syntagmatic form of organisation, on the other hand, can be described as 'chaining' because it is concerned with grammatical sequences: words that come before *and* after one another in much the same way as links in a chain. Thus syntagms are concerned with the combination of 'this' *and* 'this' *and* 'this' or one thing after another in predictable patterns of classes. To exemplify the differences between the two approaches, Barnard (2001) uses the example of a menu. The Entre, Main Course and Dessert sections of the menu represent a syntagm as the three courses come before and after one another, while the choices for each course represent the paradigms.

Although most of modern linguistic theory gives priority to syntagmatic forms of organisation, especially formal grammars which are grounded in logic and philosophy, SFL accounts for both. The syntagmatic organisation of formal grammar, and the choice of syntagmatic as well as paradigmatic organisation in SFL, will now be exemplified. Formal grammarians model language using syntagmatic relations and represent grammatical structures using tree diagrams. They also label each element of a grammatical structure using class labels as illustrated in Figure 2.1.

```
            NP
          / |  \
       det   A    N
        |    |    |
       the  happy boy
```
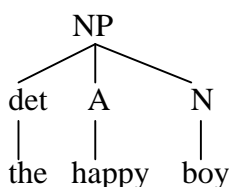
Figure 2.1 Syntagmatic tree diagram (Pinker, 1994: 98)

Thus, the unit of constituency used here is a phrase (or group) as indicated by the letters NP (noun phrase). This phrase, in turn, consists of several words: a noun (N) 'boy' which is preceded by an article or determiner (det) and an adjective (A).

SFL also has the resources to model constituency syntagmatically. However, even when the chosen form of organisation is syntagmatic, SFL uses both class *and* function labels. To illustrate, we can refer to the same example, see Figure 2.2.

```
                        [nominal group]
                              |
           ┌──────────────────┼──────────────────┐
           |                  |                  |
        Deictic            Epithet             Thing
           |                  |                  |
        [article]         [adjective]          [noun]

          the               happy               boy
```
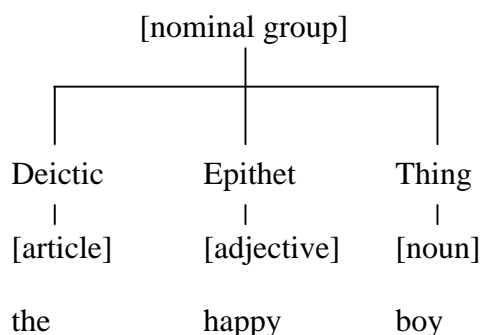
Figure 2.2 Syntagmatic organisation in SFL: class and function labels

Although both diagrams are choices for syntagmatic representation, Figure 2.1 uses class labels only, while Figure 2.2 uses both class and function labels. (Class labels are represented in square brackets and written in lower case, while Function labels contain an initial upper case letter). The semiotic value of function labels lies in the way they describe the actual *function* of each word in the grammatical structure, in this case, a nominal group, and so relate the structure to the choices for meaning which underlie them. Thus 'the' functions as the *Deictic*; it points to or identifies 'which one is meant'. The word 'happy' functions as an *Epithet* – it indicates some potentially gradable quality of the Thing being described, while the word 'boy' functions as the *Thing* or the semantic core of the nominal group.

Labelling of this type is important. Even though a tree diagram is a syntagmatic choice of representation, the use of function labels means 'any given instance [is always related] to the system of the language as a whole' (Halliday, 1985a: 32). Function labels, furthermore, are not randomly assigned: 'they are the outcome of an interpretation of the language in terms of

its systems and structures at every level' (Halliday, 1985a: 32). To understand what Halliday means about interpreting language as systems and structures, a clearer understanding of paradigms is needed.

As just discussed, language can be interpreted in terms of *structures*, that is, syntagms. Paradigms, on the other hand, are concerned with interpreting language in terms of choices, alternatives or networks of interlocking options. In his account of axis, both syntagmatic (structure) and paradigmatic (system) relations, Halliday has given priority to paradigmatic relations as the following quotation indicates.

> I take out the paradigmatic relations (Firth's *system*) and give priority to these; for me the underlying organization at each level is paradigmatic. Each level is a network of paradigmatic relations, of ORs – a range of alternatives, in the sociological sense.
>
> (Halliday, 1978: 40; emphasis in original)

Thus grammatical choices in SFL are most commonly represented as networks of potentials or typologies. Halliday's approach thus involves networking semantic choices into systems, which he defines in the following way.

> …a system is a set of options, a set of possibilities A, B or C, together with a condition of entry. The entry condition states the environment: 'in the environment X, there is a choice among A, B and C.' The choice is obligatory; if the conditions obtain, a choice must be made.
>
> (Halliday, 1978: 40–1)

In SFL, then, system networks provide typologies which are concerned with oppositions or points of difference. This is best represented in the following example of a system network, see Figure 2.3.
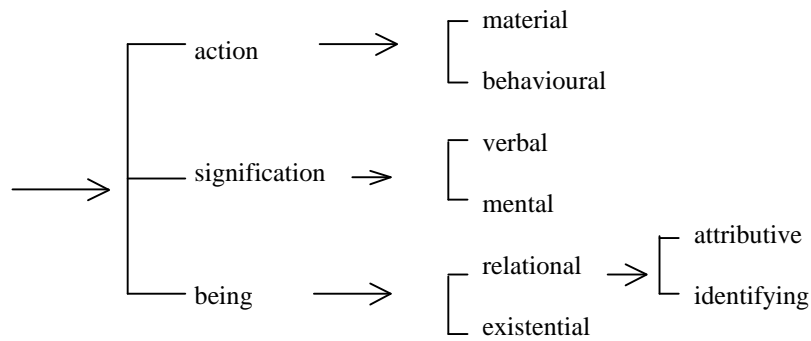
Figure 2.3 System network of Process types in English (adapted from Martin, 1992: 279)

The oppositions presented in system networks such as the one above represent the range of potential for meaning-making, that is, the range of semiotic alternatives. This is what Halliday refers to as meaning-potential. In this way, paradigmatic forms of semiotic organisation — systems rather than structures — are important as they provide a theory of meaning. Halliday's conceptualisation of grammar is therefore not that of a prescriptive set of rules but rather a description of the meaning-potential of a given semiotic.

Furthermore, the paradigmatic axis is not only concerned with choice — it is also concerned with agnation. Agnation involves understanding the ways that the options represented in system networks are related, hence agnate. In other words, agnation is concerned with similarities and differences in relation to particular criteria. Martin and Matthiessen explain this in the following way.

> Taxonomies are theories of similarity and difference with respect to particular criteria. Once a criterion, or more usually a set of criteria, is adopted as a classificatory principle then the parameters are set. Things are similar or different with respect to this criteria — that is the information the taxonomy represents.

(Martin & Matthiessen, 1991: 346)

(For a more detailed explanation of agnation see Martin and Matthiessen (1991), and Martin (1992: 560–9) which explores agnation in relation to factual and story genres).

Typology, however, is not the only semiotic resource for dealing with choices and their agnation. As Lemke (1995; 1998a), drawing on mathematics, points out, there is a complementary perspective on agnation — that of topology. Lemke defines topology in the following way.

> A **topology**, in mathematic terms, is A SET OF CRITERIA FOR ESTABLISHING DEGREES OF NEARNESS OR PROXIMITY AMONG THE MEMBERS OF SOME CATEGORY…Objects which are more alike by the criteria are represented in this space as being closer together; those which are less alike are further apart. There can be multiple criteria, which may be more or less independent of one another, so that two texts, for instance, may be closer together in one dimension (say horizontal distance), but further apart in another (vertical distance).
>
> (Lemke, no date, cited in Martin and Matthiessen, 1991: 370; emphasis in original)

Topology therefore enables us to explore agnation (similarity and difference) from a complementary perspective — from the point of view of multiple criteria, including the criteria that were discarded in the representation of a typology. Thus Martin and Matthiessen write:

> But there are always other criteria that could have been chosen, that have been set aside. And relationships among the things being classified will necessarily look rather different whenever these criteria are taken into account. So a taxonomy is only ever a partial representation of similarity and difference.
>
> (Martin and Matthiessen, 1991: 346)

Within SFL, a clear example of topology can be found in Halliday's account of the two closely related interpersonal systems: MODALITY (degrees of certainty) and MODULATION (degrees of obligation). The topological dimension of this work is materialised in Halliday's use of scaling as shown in Figure 2.4.

MODALIZATION                                    MODULATION

positive

certainly    it must be    always          required    must do    determined

probably     it will be    usually          supposed    will do    keen

possibly     it may be    sometimes         allowed    may do    willing

negative
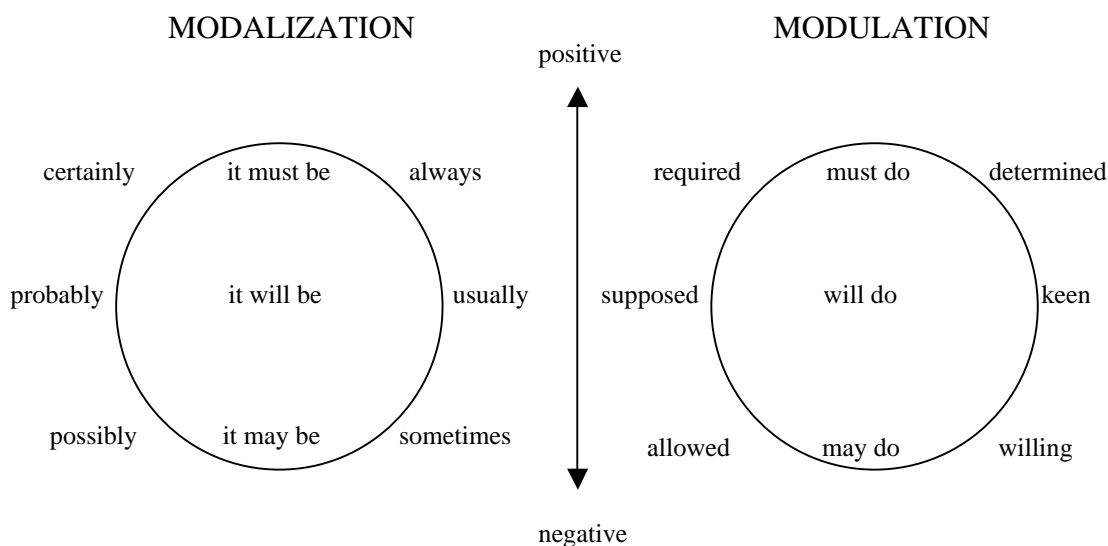
Figure 2.4 Modality and modulation (Halliday, 1985a: 335)

One of the major benefits of topology, as illustrated in Figure 2.4, is the provision of an invaluable resource which enables users to account for gradience in meaning-making. In Figure 2.4 we can thus see how different sets of criteria, namely degrees of certainty and obligation, are represented as clines of nearness along a vertical scale. The double-sided arrows on the central line indicate that the dimensions between the arrowheads are graded. (See Halliday, 1985a: 334–41 for a fuller account of MODALITY and MODULATION). The choice of topology as a way of representing paradigmatic relations (choice and agnation) can also be seen on the cover of Halliday's 2nd edition of *An Introduction to Functional Grammar* (1994) as shown in Figure 2.5.
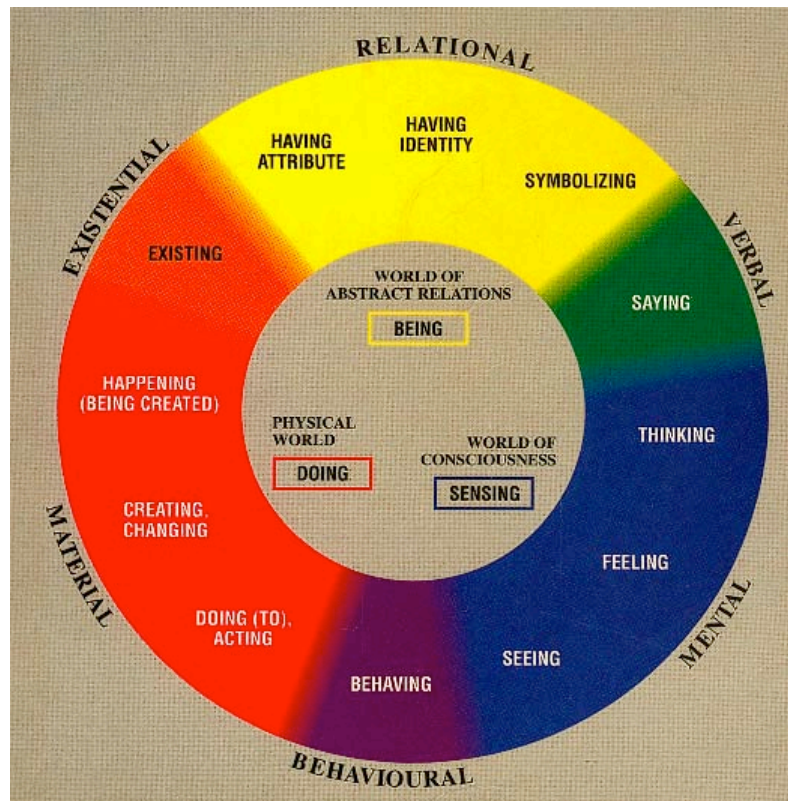
Figure 2.5 A topological representation of paradigmatic relations (Halliday, 1994: book cover)

Using the visual metaphor of a circle, the topology in Figure 2.5 represents the set of processes which constitute the patterns of our experience. In SFL, this is referred to as the system of TRANSITIVITY. Halliday explains the topology representing TRANSITIVITY in the following way.

> …our model of experience, as interpreted through the grammatical system of transitivity, is one of the regions within a continuous space; but the continuity is not between two poles, it is round in a loop. To use the analogy of colour: the grammar construes the experience like a colour chart, with red, blue and yellow as primary colours and purple, green and orange along the borders; not like a physical spectrum, with red at one end and violet at the other.

> (Halliday, 1994: 107)

Rather than presenting the grammatical system of TRANSITIVITY typologically as a system network, see Figure 2.3, Halliday has therefore chosen to use a complementary topological model of a continuous loop.

Topology as a complementary perspective on agnation was thus introduced to SFL as a theoretical tool by Lemke (no date; 1995; 1998a), although the concept of scaling had already been used by Halliday in his work on MODALITY and MODULATION. Moreover, the topological representations of TRANSITIVITY developed by Halliday (1994) and Martin and Matthiessen (1991) clearly show that topology is an important resource for representing paradigmatic relations, in particular agnation, as it clearly has the capacity to complement systemic (typological) descriptions.

## 2.2.1.4 Summary of the SFL model of language

In summary, several general aspects of Halliday's theory of language as a semiotic make it a relevant model to use for analysing the ways meanings are made in other modes. These include:

- an emphasis on the social nature of semiosis
- an orientation to diversifying semiotic modes in terms of three generalised functions
- the construal of semiotic systems as resources with axial organisation that is both paradigmatic (typological and/or topological) and syntagmatic in nature.

The portability of these semiotic resources, especially paradigmatic relations, enables Halliday to make the following statement:

…in semiotics (which is not a discipline, but a thematic organisation of knowledge like mathematics) all phenomena are being investigated and interpreted as systems of meaning, and this makes it possible to use grammatics as a way of explaining them. The most immediately accessible are other, non-linguistic, semiotics such as forms of art…

(Halliday, 1993: 52)

Halliday's comment does not mean to imply, however, that all semiotics can and do mean exactly the same kinds of things in exactly the same ways. Rather, as Martinec concludes in his comparison of the ways language and movement create cohesion:

> …there are both similarities and differences in the way the cohesive systems work in the two semiotic modes. It seems certain that despite the differences, either linguistic and action texts in separation, or texts which are created jointly by both these modes, can be analysed using the same general set of tools.

> (Martinec, 1998: 179)

The next section will examine how this general set of tools has been applied to the theorisation of other modalities in the culture.

## 2.2.2 Social accounts of non-verbal semiotics

Like Saussure and the European structuralists, Halliday regards a culture as having many semiotic systems, both verbal and non-verbal. Thus he writes:

> A culture is a meaning potential of many modes: it comprises many semiotic systems, ranging from kinship systems and modes of community exchange through dance and music, modes of adornment and display, architecture and other art forms, imaginative literature, mythology and folklore. These are the symbolic resources with which people discover, recreate and exchange meanings.

> (Halliday, 1977: 47)

This section will briefly review the ways the three social semiotic resources just discussed have been used to develop theories of some of these non-verbal modalities. These include:

- visual images (Kress and van Leeuwen, 1990, 1996; O'Toole, 1994)
- movement (Martinec, 1997, 1998a, 1998b, 2000a, 2000b)
- speech, music and sound (van Leeuwen, 1999)
- architecture (O'Toole, 1994; Kress and van Leeuwen, 1996; van Leeuwen, 1998).

Of particular interest to this thesis is the work on architecture. Accordingly, social accounts of the other semiotic modes — visual images, speech/music/sound, and movement — will be *briefly* considered, while the work on architecture will be analysed in more depth.

## 2.2.2.1 Social semiotic accounts of visual images, speech/music/sound and movement

The following section aims to present an overview of social semiotic accounts of non-verbal systems of communication. For ease of comparison, their distinguishing features have been summarised in Table 2.2 below. The table has been organised in the following way:

- column 1 presents the social semiotic tools borrowed from SFL
- column 2 presents an overview of O'Toole's framework for analysing paintings and sculpture (1994)
- column 3 presents a survey of Kress and van Leeuwen's theoretical framework for visual image analysis (1990; 1996)
- column 4 presents an overview of van Leeuwen's theory of speech, music, sound (1999)
- column 5 presents a synopsis of Martinec's theory of movement (1997, 1998a, 1998b, 2000a, 2000b).

| Portable tools from SFL | Visual images: O'Toole | Visual Images: Kress/van L | Music: van Leeuwen | Movement: Martinec |
|---|---|---|---|---|
| 1. Social orientation to meaning-making. | √ | √ | √ | √ |
| 2. Metafunctions. | √ Representational, Modal, Compositional | √ Ideational, Interpersonal, Textual. | √ Ideational, Interpersonal, Textual. | √ Ideational, Interpersonal, Textual. |
| 3. Axis (paradigmatic and/or syntagmatic). | √ Paradigmatic (typology). | √ Paradigmatic (typology & topology); some syntagmatic structures | √ Paradigmatic (typology & topology). | √ Paradigmatic (typology & topology). |

Table 2.2 Comparison of non-verbal semiotic systems of communication

Table 2.2 demonstrates how the social semiotic resources borrowed from SFL can be used as a heuristic. First, it indicates that all four accounts of non-verbal semiotics are social in their orientation. Second, it shows that all four accounts diversify each semiotic into three generalised metafunctions. Although each of the three functions O'Toole identifies for painting and sculpture respectively correspond to the ideational, interpersonal and textual metafunctions in language, he names them Representational, Modal and Compositional. His decision to use different labels for the metafunctions is a deliberate one as it reflects the fact that they are describing meanings in a different semiotic (O'Toole, 1994: 5).[3]

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[3] Lemke's description of images and multimodal texts is organised around the following multifunctional labels: presentational, orientational and organisational (1998b), while Ravelli, like O'Toole, uses the labels ideational, interpersonal and textual in her description of the Olympic Store (2000).

Finally, all four accounts are informed by the axial sub-theory of SFL. Like SFL, the paradigmatic axis is the fundamental organising principle used for each semiotic. In terms of the way the paradigmatic axis is modelled, with the exception of O'Toole (1994), the other semioticians use both typological and topological forms of representation. (Examples of this can be found in Kress and van Leeuwen, 1996: 223; van Leeuwen, 1999: 30; Martinec, 1998b: 120). Kress and van Leeuwen's work on the compositional metafunction in visual images (1996) also uses syntagmatic forms of representation: Given–New, Real–Ideal, Centre–Margin. O'Toole, in contrast, favours typology for representing paradigmatic relations (see 1994: 35 for examples).

O'Toole also uses a rank scale in his theorisation of painting and sculpture. Rank scale is a term used in SFL for modelling constituency. In grammar, the scale of RANK is concerned with the hierarchical layering of grammatical units or constituents. Halliday (1985a: 25) suggests the following rank scale be used for analysing language: '…clauses, which consist of groups (or phrases), which consist of words, which consist of morphemes.' Extending this notion, O'Toole proposes the following rank scale for analysing painting and sculpture: work, episode, figure and member (1992: 10).

## 2.2.2.2 Social semiotic accounts of architecture

The following section will review the social semiotic accounts of architecture developed by Kress and van Leeuwen (1996), van Leeuwen (1998) and O'Toole (1994). Although the most comprehensive work on the semiosis of architecture using SFL theory has been completed by O'Toole (1994), Kress and van Leeuwen have also considered architecture, albeit in a very exploratory way, in their work on the third dimension (1996: 260–3). In addition, van Leeuwen has analysed an exhibition in the Old Royal Observatory in Greenwich from a compositional point of view. So all three accounts will now be discussed.

Using the three general analytical tools borrowed from SFL as the point of departure, Table 2.3 summarises the social semiotic approaches to architecture developed so far. The table has

been organised in the following way. Column 1 presents the social semiotic tools borrowed from SFL; column 2 presents an overview of Kress and van Leeuwen's work as well as van Leeuwen's exhibition analysis, while column 3 presents a synopsis of the social semiotic tools O'Toole used to develop his matrix for analysing architecture (1994: 86).

| Social semiotic tools | Kress and van Leeuwen (1996); van Leeuwen (1998) | O'Toole (1994) |
|---|---|---|
| Social orientation to meaning | √ | √ |
| Metafunctions | √ | √ |
| Axis (syntagmatic and/or paradigmatic) | √ | √ |

Table 2.3 Comparison of social semiotic tools for analysing architecture

## 2.2.2.2a Kress and van Leeuwen's social account of architectural semiosis

The following account will begin by examining the work of Kress and van Leeuwen (1996) and van Leeuwen (1998), see column 2 of Table 2.3. First, it is social in orientation. In the introduction to their book, for example, not only do Kress and van Leeuwen align themselves with social semiotics as developed by Halliday (1996: 5), they also incorporate the social dimension into their conception of visual grammar. Thus they 'see grammatical forms as resources for encoding interpretations of experience and forms of social (inter)action,' (Kress & van Leeuwen, 1996: 1).

In terms of Halliday's 'metafunctional hypothesis', Kress and van Leeuwen use all three metafunctions to analyse sculpture, objects and buildings (1996: Chapter 8). As the metafunctions were such a useful resource for mapping meaning-making in relation to visual communication (van Leeuwen, 1999: 190), it is not surprising that the metafunctions also constitute their entry point for exploring 'the third dimension' — sculptures, objects, buildings and so forth. However, van Leeuwen's work on the modality of sound found that Halliday's metafunctional hypothesis has a strong cultural dimension which cannot be overlooked.

The resources of sound simply did not seem as specialized as those of language and vision, and the mode of sound did not seem so clearly structured along metafunctional lines as language and visual communication…Looking back, I would now say that different semiotic modes have different *metafunctional configurations*, and that these metafunctional configurations are neither universal, nor a function of the intrinsic nature of the medium, but cultural, a result of the uses to which the semiotic modes have been put and the values which have been attached to them.

(van Leeuwen, 1999: 190; emphasis in original)

Nevertheless, in their initial exploration of architecture Kress and van Leeuwen are able to identify some metafunctional diversity. They point out, for example, that the design of buildings such as skyscrapers has a strong ideational component. The verticality of a skyscraper means it can be regarded as a vector. Vectors form part of Kress and van Leeuwen's system of narrative representation (1996: 244). In terms of interactive meaning, they do not discuss buildings directly, but identify the power dimension that is inherent in verticality.

What towers over us has, by design, power over us, and is, by design, socially distant: the vertical dimension is the dimension of power and reverential distance, the dimension of 'highly placed' people, places and things.

(Kress & van Leeuwen, 1996: 255)

Clearly, the vertical dimension has strong application to buildings especially tall buildings such as skyscrapers.

Finally, Kress and van Leeuwen touch on architecture in terms of the textual metafunction, in particular compositional meanings. In fact they briefly consider the ways the vertical

dimension polarises 'Real' and 'Ideal' elements in some buildings. The Real dimension presents the more specific or 'down to earth' information, while the Ideal refers to the idealised or generalised essence of the information. In a building, for example, the Real elements would refer to entrances, doorways, stairs leading into a building, while the Ideal elements would include the cross and spire on top of a church, large clocks located high in many Town Hall buildings and so forth. These insights provide another useful starting point for exploring the ways three-dimensional spaces can be organised. However, as Kress and van Leeuwen point out, their work on the third dimension is in its embryonic stages.

> This chapter is intended as a first exploration. We are not yet ready to present a systematic account of the three-dimensional visual similar to that we have presented in the preceding chapters for the two-dimensional visual. But we will at least be able to indicate in which ways three-dimensional visual communication is similar to and different from two-dimensional visuals, and to outline the theoretical issues which follow from this.

(Kress & van Leeuwen, 1996: 242)

Building on this first exploration, van Leeuwen (1998) uses the compositional tools developed for analysing textual meaning in visual images and applies them to the analysis of the textual metafunction in an exhibition housed in the Old Royal Observatory, Greenwich. These tools include information value, salience and framing. Information value is concerned with the meanings conveyed by the ways the elements of the exhibition space are arranged, that is, whether they polarise or centralise the composition of the space. Salience is concerned with the degree to which different elements of the composition are made conspicuous, while Framing refers to the degree to which the elements in and between spaces are dis/connected from one another.

Although the three systems van Leeuwen uses to analyse a three-dimensional exhibition have been developed to describe visual communication, he has found that Framing, in particular, can be used to analyse different semiotics. Thus Kress and van Leeuwen write:

…clearly framing is a multimodal principle. There can be framing, not only between the elements of a visual composition, but also between the bits of writing in a newspaper or magazine layout (Kress and van Leeuwen, 1998), between the people in an office, the seats in a train or restaurant (e.g. private compartments versus sharing tables), the dwellings in a suburb, etc., and such instances of framing will be realised by 'framelines', empty space, discontinuities of all kinds, and so on.

(Kress & van Leeuwen, 2001: 3)

Thus an interesting area to pursue in relation to the textual metafunction of architecture concerns whether or not the other tools Kress and van Leeuwen have developed for analysing compositional meanings in images — salience and information value — are also 'common semiotic principles' or whether they are specific to visual communication.

## 2.2.2.2b O'Toole's social semiotic account of architecture

As indicated in column 3 of table 2.3, O'Toole has also taken a social orientation to meaning-making as the point of departure for the semiotic framework he develops to describe architecture. Like Kress and van Leeuwen, he aligns his work with social semiotics as developed by Halliday (1994: 147, 216). In fact, Chapter 7 of his book, *The Language of Displayed Art* (1994), is devoted to considering 'what kinds of social meanings are at play, linking the functional options selected by their painters directly to the social situation in which they were commissioned and painted,' (O'Toole, 1994: 217). Accordingly, he uses Halliday's model of social context, in particular the variables of field, tenor and mode, to analyse several paintings and consider how social context relates the works to the broader concerns of art and social history.

Like Kress and van Leeuwen, O'Toole has also adopted and applied Halliday's metafunctional hypothesis. Thus he diversifies the semiotic of architecture into three

generalised metafunctions. In contrast with his own work on painting and sculpture, however, he has chosen to adopt the same terminology for the architectural metafunctions as Halliday has used for language. His reason for doing so is that the practical functions of buildings make them more similar to language than the more contemplative visual arts (1994: 85). Thus he has kept the name 'Experiential' for the metafunction concerned with the representation of experience, 'Interpersonal' for the ways buildings demand direct involvement with their users and 'Textual' to address the ways the building has been designed (1994: 85–7).

In keeping with his approach to analysing painting and sculpture, moreover, he applies a rank scale to the semiosis of architecture. He thus divides a building into a number of hierarchical units — BUILDING, LEVELS, ROOMS and ELEMENTS — and then uses the resources of metafunction and rank scale to produce a *matrix* for analysing architectural meanings. He organises the matrix along two axes. The horizontal axis is organised by the metafunctions, while the vertical axis is organised by rank scale. In this way, the three generalised metafunctions spread through all the ranks in the matrix. Within each rank, moreover, O'Toole provides the names of systems that realise experiential, interpersonal and textual meanings.

Third, with respect to the sub-theory of axis, O'Toole primarily favours paradigmatic organisation. In particular, he tends to foreground typology, which he does not represent as system networks for architecture. Rather he chooses to represent architectural choices for meaning-making in some of the cells in his grid in the following way. This example is taken from the experiential metafunction at the rank of BUILDING.

Practical function: Public/Private;
Industrial/Commercial/Agricultural/
Governmental/Educational/Medical/
Cultural/Religious/Residential;
Domestic/Utility

(Taken from Figure 3.1, O'Toole 1994: 86)

Thus O'Toole uses semi-colons to separate simultaneous systems and slashes to separate features. Using a system network, O'Toole's typology could be represented in the following way (Figure 2.6).
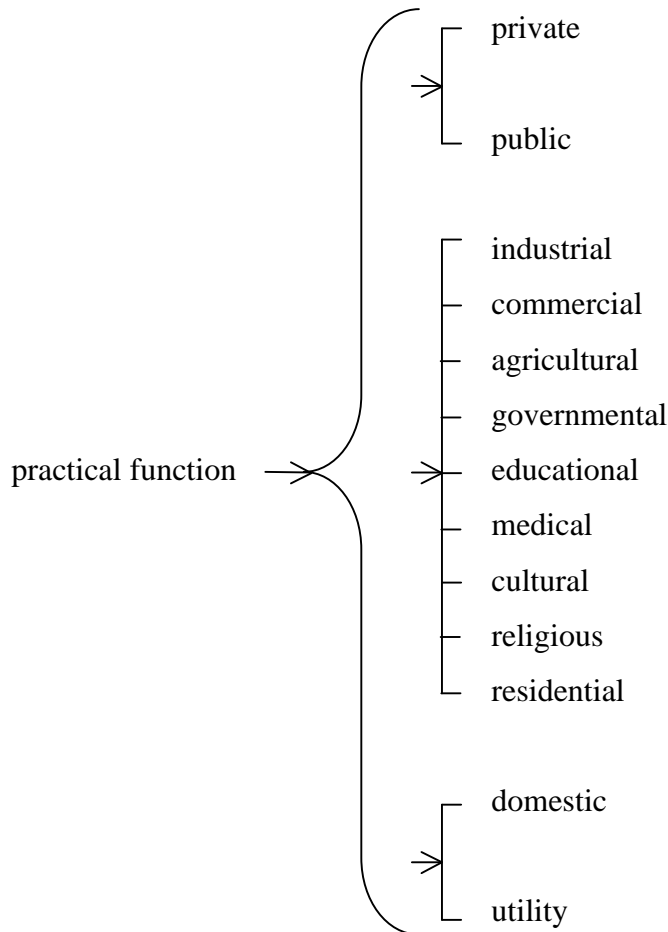


Figure 2.6 System network — experiential metafunction at BUILDING rank (adapted from O'Toole, 1994: 86)

O'Toole has therefore used the tools of SFL to develop a comprehensive chart for analysing the meanings in three-dimensional spaces. In particular, his use of rank scale, metafunctions and his orientation to paradigmatic forms of organisation ground his work soundly in social semiotics. One of the other distinguishing features of O'Toole's matrix is that it provides a

global perspective on meaning-making rather than an in-depth account of the semiosis of architecture. This global account is invaluable in the way it opens up the semiotic for further investigation.

One area for further investigation that could be pursued would involve exploring whether or not some of the systems named in the grid are more metafunctionally diversified than is presently indicated. An example would be the system of colour, located within the *interpersonal* metafunction at the rank of BUILDING and FLOOR (1994: 86). It would be most illuminating, for instance, to be able to understand O'Toole's motivation for locating colour in this semiotic space. Kress and van Leeuwen, in contrast, have suggested that colour fulfils *all* metafunctions simultaneously (2002). They thus show how colour can experientially denote people, places, things; interpersonally, it can arouse or subdue people; textually, it can create unity and coherence. Similarly, O'Toole's description of a suburban house points to the possibility that colour may be metafunctionally diversified. In discussing the textual metafunction, for instance, he writes: 'Colour [together with Façade and Cladding] also operate in the Textual function to create a harmonious, or discordant, aesthetic whole' (1994: 103). Consequently, it seems highly likely that some of the systems identified could be more metafunctionally diversified than the matrix presently indicates.

Another area for further exploration could examine whether or not some of the systems identified in the matrix co-articulate to produce meanings. One likely possibility would be colour and light. In O'Toole's matrix, light is located in the interpersonal function at the rank of ROOM (1994: 86). However, colour and light appear to have a symbiotic relationship in the way they work to create meanings. For without light, there is no colour; and without colour, there is no light. (Turner, 1998; Green, 1998; Conran & Bond, 1999; Gardiner & Molony, 2001; Holtzschue, 2002). It therefore seems highly likely that these two systems co-articulate with one another. It also seems possible that colour and light could co-articulate with other systems from the matrix, such as texture, for texture can impact strongly on light distribution (Holtzschue, 2002). Thus the mapping out of systems that work together to materialise meaning in three-dimensional spaces seems another productive area to pursue.

A third area for investigation could involve identifying which of the systems named in the grid are obligatory and which are optional. For instance, the system of height, located in the interpersonal metafunction at the rank of FLOOR (1994: 86), could be further explored. The height of structural walls, on the one hand, seems to be a permanent choice. The reason being that a structural wall is a load-bearing wall which means it needs to support a roof. Building standards thus tend to predetermine the height of such walls. In contrast, the height of non-structural walls seems to be more flexible as they can be altered, through renovation, even after they have been in existence for some time. Similarly, texture is an affordance that can be relatively easily changed through materialisations such as soft furnishings. This makes it different in nature from systems which are fixed, permanent and obligatory. In terms of designing spaces, the distinction between optional and obligatory elements seems to be an important one to be able to make.

The work undertaken for this thesis will pursue some of the areas Kress and van Leeuwen and O'Toole have opened up. As mentioned in Chapter 1, a major focus of this thesis is the security dimension of Martin and White's APPRAISAL theory. Thus Chapters 3 and 4 will explore how choices for constructing three-dimensional spaces (walls, ceilings and floors) combine with each other as well as systems from Ambience (colour, light, texture and pattern) to construct enclosures that establish a relationship of security/insecurity with their occupant(s). In this way, the thesis foregrounds interpersonal meanings, its main contribution to the social semiotic map of architecture which O'Toole (1994), Kress and van Leeuwen (1996), and van Leeuwen (1998), have begun charting.

Before considering the role of interpersonal meanings in space, it is important to contextualise museums, as they are the primary field focus of this thesis. To do this, it is essential to draw on two other social semiotic resources from SFL: social context and semogenesis which will be presented in Section 2.2.4.

# 2.2.3 Social context and the museum

> Museums that fail to understand that meaning is contextual, not inherent, run the danger of misinforming their public. Museums that do understand this interaction and are able to account for it in their exhibition practices may not only enrich their visitors' understanding of other cultures but, conceivably, of their own culture as well.
>
> (Weil, 1995: 12)

As Stephen Weil, Deputy Director of the Smithsonian Institute's Hirshorn Museum and Sculpture Garden, Washington DC indicates above, context is very important to the meaning-making practices of a society and its members, including museum professionals. To account for the ways context impacts on meaning-making, SFL has developed a rich socio-semiotic model of social context (Halliday 1978, 1985b, 1985c; Martin 1992, 1997, 1999b). Although this model has primarily been applied to the analysis of verbal texts, and to a lesser extent visual images (see O'Toole, 1994: Chapter 7), it does have the potential to be applied to cultural institutions such as museums as well as the exhibitions they house.

One of the benefits of using the social model of context developed by Halliday and Martin is that it offers staff working in museums a theoretical (as opposed to commonsense) understanding of social context and the way it impacts on their practice[4]. The aim of this section is therefore twofold. First, to introduce the social model of context developed within SFL theory in which social context is construed as a semiotic system (Halliday 1978, 1985b, 1985c) or a set of semiotic systems (Martin 1992, 1997, 1999b). Second, to apply this model to an analysis of the museum as a cultural institution as projected by semogenesis.

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[4] Martin's stratified socio-semiotic model of context (1992, 1997) also offers museum staff a complementary perspective to Falk and Dirking's Contextual Model of Learning (2000), commonly used in museums. Conceptualising learning as a process and a product, Falk and Dirking see learning as an ongoing interaction between three distinct but inter-related contexts: the personal, physical and socio-cultural (2000: 10–65). Even though Falk and Dirking's model of contextual learning is strongly social, and incorporates Vygotsky's ideas, the model is essentially descriptive (2000: 10). Its main limitation, therefore, is that it does little to move museum professionals towards a non-discursive understanding of social context.

Before proceeding, however, it should be noted that within SFL there is some variation in the way social context is modelled. Halliday, for example, proposes a single stratum model (1978, 1985b, 1985c), while Martin has developed a model that stratifies context into several levels. Prior to 1992, Martin's stratified model of context consisted of two levels: context of culture and context of situation (Martin, 1991). Context of culture refers to genre or the staged, goal oriented social processes which people use as they live their lives. Context of situation refers to three dimensions of a situation: the social activity (field), the social relationship between interactants (tenor) and the semiotic channel of communication (mode). (For more information on the earlier work from which Martin's stratified model of context has evolved, see Martin, 1999b; Ventola, 1987.)

In 1992, as Figure 2.7 shows, Martin added a third layer to his stratified model of context: ideology (Martin, 1992: 507–8; 1999b: 48–52). Ideology was added 'to focus attention on the distribution of discursive resources in a culture' (1997: 7). However, it did not foster the positive dialogue with critical theorists that was hoped for. Martin then reverted to his earlier two-layer model which stratifies social context into context of culture and context of situation (Martin 1997: 8, 1999b).
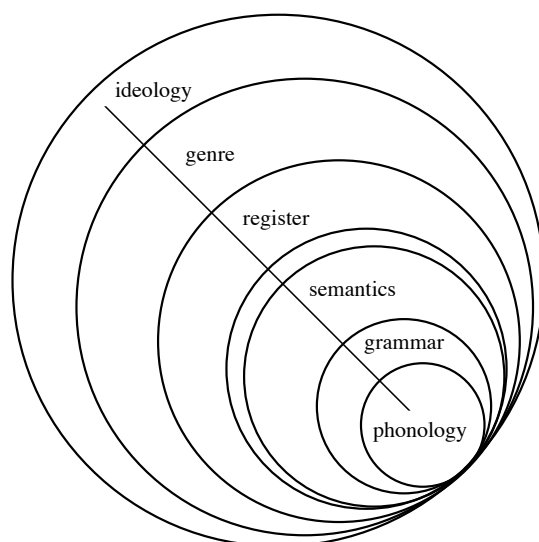


Figure 2.7 Ideology, language and its semiotic environment (Martin, 1992: 496)

Even though ideology has not been part of Martin's stratified model of context since 1992, he has continued to pursue the relationship between language and ideology. He now construes ideology dynamically (1977: 10) by modelling semogenesis (that is, the ways meanings unfold over time) as projecting language, context of situation (register) and context of culture (genre). In his own words, 'language, register and genre constitute the meaning potential that is imminent, from moment to moment as a text unfolds, for the social subjects involved, at the point in the evolution of the culture where meanings are made' (1977: 10).

In this way, Martin's dynamic approach to ideology draws heavily on Halliday and Matthiessen's work on semogenesis (Halliday, 1992, 1993; Halliday and Matthiessen, 1999). In particular Martin has used all three of Halliday and Matthiessen's time-scales to model social-semiotic change. As shown in Figure 2.8, the three time-scales are logogenesis, ontogenesis and phylogenesis. Logogenesis refers to short timeframes such as the unfolding of a text; ontogenesis refers to longer timeframes such as the development of language in the individual, while phylogenesis refers to extended time-depth such as the evolution of language in a culture. To explain how semogenesis projects context Martin writes:

…where a culture has arrived in its evolution provides the social context for the linguistic development of the individual, and the point an individual is at in their development provides resources for the instantiation of unfolding texts…

(Martin and Rose, 2003: 266–7)
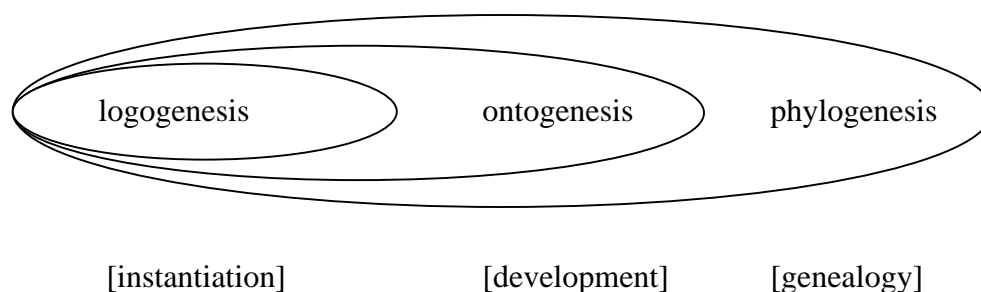


Figure 2.8 Semogenesis (Martin, 1997: 9)

Furthermore, if we consider Halliday's work in SFL, it is clear that semogenesis has provided him with a very rich set of resources with which to account for social-semiotic change. Phylogenetically, Halliday has clearly mapped out the historical and cultural contexts of various schools of linguistics. In particular, he has shown the links to two historical traditions: one can be traced from the Sophists and Rhetoric to the genesis of SFL; the other, the Aristotelian tradition, led to Chomskyan transformational linguistics (1977: 34–8). Similarly, Halliday has given a phylogenetic emphasis to his work on scientific English (1993: 54–123). He has also linked the phylogenetic development of spoken and written language to the development of human societies (1985c; 1993). Ontogenetically, he has written extensively about language development in the life of the child (1975; 1978; 1985c). Finally, Halliday has explored the logogenetic unfolding of texts in his analysis of William Golding's *The Inheritors* (1971), his work on cohesion with Hasan (1976) and his paper exploring the similarities between text and clause (1981, 1982). Halliday's own work has therefore shown that semogenesis offers a very rich set of resources with which to account for social-semiotic change.

According to Martin, moreover, semogenesis can be conceived as projecting semiotic systems such as language, together with *both* stratified planes of social context: context of situation (register) and context of culture (genre) as shown in Figure 2.9. This relationship of projection is an important one as it enables social semioticians to *systematically* explore meaning from the perspective of social change.
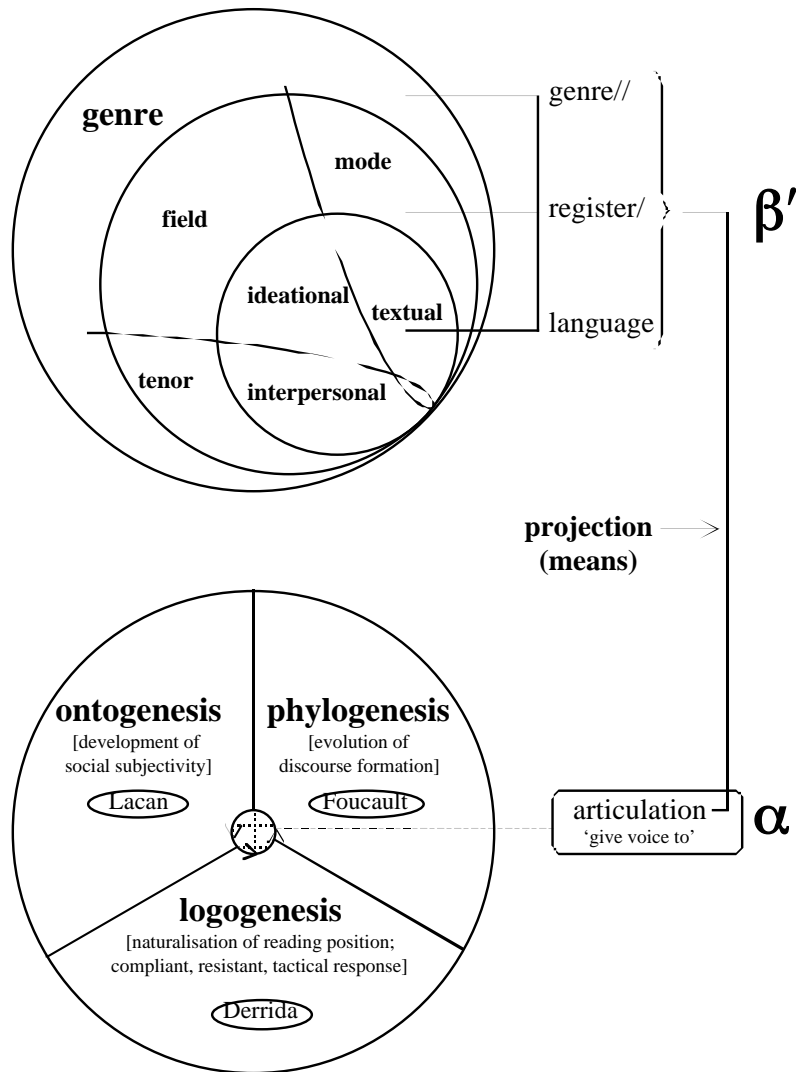
Figure 2.9 Language, register and genre as projections of semohistory (Martin, 1997: 11)

This thesis has been developed using Martin's current model of ideology. Its importance is that it allows the development of a principled understanding of social context and the way genesis projects valeur onto different time-scales (Martin, 1997; Martin and Rose, 2003). Section 2.2.4.1 begins by presenting a more detailed description of Martin's bi-stratal model of social context. Section 2.2.4.2 takes a phylogenetic perspective and explores the configuration of social context (genre and register) in relation to three critical moments in the development of museums. They are the cabinets of curiosities, the emergence of the first public museum and public museums in the new millennium.

## 2.2.3.1 Martin's stratified model of context

Martin (1997, 1999b) interprets context as a stratified semiotic system by dividing it into the following two communication planes: context of culture (also referred to as genre) and context of situation (commonly referred to as register).

### 2.2.3.1a Context of culture (genre)

Context of culture or genre is the highest level of contextual semiosis in Martin's model (1997, 1999b). The most familiar use of the term 'genre' is in literary studies where it refers to different types of literature such as short stories, novels, poems, plays. These can in turn be sub-classified into crime novels, romance novels and so forth (Eggins and Martin, 1997: 235).

Martin's use of the term 'genre' differs from the preceding use in two main ways. First, in line with Bakhtin's perspective on the stability of speech genres, Martin defines the term genre to encompass everyday genres as well as literary genres, in spoken as well as written modes (Eggins and Martin, 1997: 236). Second, he defines genres functionally as 'a system of social processes' (Martin, 1992: 494). This means that 'different genres are different ways of using language to achieve different culturally established tasks' (Eggins and Martin, 1997: 236). Furthermore, Martin sees these social processes (genres) as having a teleological dimension in that they move through stages to a point of closure (1992: 503–4).

Martin (1992) also makes the important point that 'meaning potential is not evenly distributed across a culture any more than material resources are' (1992: 495. This means that access to the semiotic resources of genre (and register) is mediated through discourses of ethnicity, class, gender, generation and disability, which are in constant negotiation with one another, as critical theorist Anne Cranny-Francis explains below.

> The individual is also positioned by discourses of class, ethnicity and generation, by
> discourses which characterise her or his sexuality or sexual preference (for example,
> heterosexual, lesbian, homosexual) in particular ways and also by complex institutional

discourses of education, religion, militarism and so on. To add to the complication, all these positionings are interrelated.

(Cranny-Francis, 1992: 8)

## 2.2.3.1b Context of situation (register)

Context of situation is the second semiotic plane in Martin's stratified model (1997, 1999b). It refers to the way the semiotics of a given situation are determined by the interrelationship between three social variables: field (the social action), tenor (the social role) and mode (the symbolic/semiotic organisation). Collectively, these constitute the semiotic system of register.

Register is thus a semiotic tool that accounts for variation in language use from context to context. Hence it is possible to identify configurations of meanings that are typically associated with specific situational contexts. Thus, service encounters tend to have a specific register configuration, school discourses have a particular register configuration as do weather reports, recipes and so forth.

In addition, Halliday (1978, 1985b, 1985c) and Martin (1992, 1997, 1999b) both relate the register variables of field, tenor and mode to the metafunctional organisation of language, see Figure 2.10. For example, Halliday (1978: 143) makes the point that experiential meaning can be used to construct field, interpersonal meaning to negotiate tenor, and textual meaning to enable mode. This approach thus emphasises systematic links between the metafunctional diversification of language and the organisation of social context into three socio-semiotic variables. This relationship is visually represented in Figure 2.10 below.
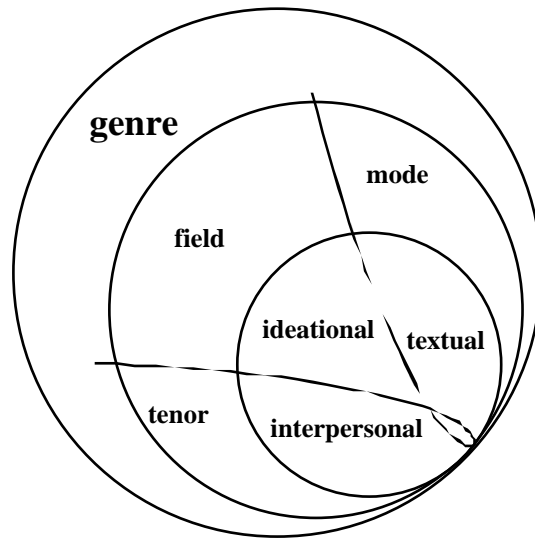
Figure 2.10 The links between metafunctional diversification and social context (Martin, 1997: 8)

More technically, the relationship between the metafunctions (ideational, interpersonal, textual) and register (field, tenor, mode) is one of realization. Realization 'entails that language construes, is construed by and (over time) reconstrues social context,' (Martin, 1997: 4). According to Lemke (1995) this means that social context and language metaredound, that is, social context is comprises patterns of language patterns. Each of the three register variables will now be introduced.

**Field**

Field refers to 'sets of activity sequences oriented to some global institutional purpose' (Martin, 1992: 536). To grasp the 'goings on' in a particular field, Martin (1992) suggests it is important to understand not only the activity sequences of that field but also the participants involved in them. These participants can be either concrete or abstract. Martin also states that both activity sequences and their participants can be taxonomically organised which theorises their paradigmatic relations (1992: 538–9).

**Tenor**

The second register variable, tenor, 'refers to the negotiation of social relationships' (Martin, 1992: 552). In SFL, much of the initial work on tenor was done by Poynton (1985). Poynton's work addresses tenor topologically, by identifying three continua that mediate social relations. They are frequency of contact, power and affect. The frequency of contact continuum ranges from high to low. The power continuum ranges from equal to unequal, while the affect continuum ranges from high to low emotional involvement.

Eggins and Slade (1997) have added a fourth communing dimension to tenor: orientation to affiliation. Orientation to affiliation refers to our inclination or disinclination to affiliate, that is to associate with and become part of, various social groups and communities. They define it in the following way.

> Orientation to affiliation refers to the extent to which we seek to identify with the values and beliefs of those we interact with in these different social contexts. We might be well oriented towards identification with some social groups (e.g. close family), or we may be seeking to be accepted by others as an 'insider' (e.g. a new employee in a workplace). On the other hand we may be happily or unhappily positioned as 'other' in a social group (e.g. the marginalised, unaccepted member of the office), or of contesting an affiliation from earlier time in our social lives (e.g. a rebellious adolescent in the family).

> (Eggins and Slade, 1997: 53)

**Mode**

Mode, the third register variable, is concerned with symbolic organisation and texture as the following definition indicates.

Since symbolic reality (ie text/process) has the function of constructing social reality, mode is oriented to both interpersonal and experiential meaning…Interpersonally it mediates the semiotic space between monologue and dialogue…Experientially mode mediates the space between action and reflection.

(Martin, 1992: 509)

Interpersonally, the way mode or different channels of communication impact on meaning-making is by affecting the types of *interaction* that take place between participants (Martin, 1992). In particular, mode facilitates interaction through feedback — whether interactants can see or hear one another in a communication exchange. In this way Martin indicates that mode is not just a physical channel — script, conversation, website — but a semiotic resource functioning in the culture to construct interaction.

Experientially, moreover, mode mediates the degree to which language is part of 'what is going on' — the action or the reflection. Here Martin (1992: 520) distinguishes between texts that accompany social processes and texts that constitute them. In texts accompanying social processes he distinguishes verbal action according to whether it belongs to the participants or those who are observing the action. In texts constituting social processes he distinguishes between those reconstructing a social process and those constructing one that has not yet taken place.

Mode, as it is currently construed, is primarily oriented to a topological complementarity between speech and writing (Martin, 1992) as well as the context dependence versus independence of language. However in multimodal texts such as museum exhibitions, multiple semiotic systems co-pattern to create meaning, so a broader conception of mode is needed (For a more detailed description of multimodality, see Baldry, 2000; Kress and van Leeuwen, 2001). Multimodal 'texts' thus need a theory that can account for intersemiosis, that is, the ways meanings made in language, visual images, action, sound and space are integrated to create a unified whole. The term 'intersemiosis', moreover, is not used here in the sense in

which it was first coined by Jakobson (1971: 260) to refer to translation between verbal and non-verbal sign systems. Rather, following Ravelli (2000), Martin (2001) and Royce (1998, 2002) it refers to the integration of meanings across semiotics. Given the lack of such a theoretical framework, the focus of mode in this thesis will be semiotic-specific, that is, it will focus on the modality of space and only selectively use the other modalities (language, visual images, speech/music/sound, action) as required.

To summarise, Martin establishes genre as the most abstract level of contextual semiosis in his model. This means it is not only located above the register variables but it functions to integrate the meanings of register. Thus Martin writes, 'In our stratified model, the plane of genre was responsible for specifying just what combinations of field, mode and tenor options were regularly phased into social processes' (1999b: 32). In other words, the way social processes (genres) are related to one another has to do with texture, that is, the ways field, tenor and mode variables are phased together in a given text.

To facilitate a deeper understanding of the museum as a cultural institution, the phylogenesis of the museum will be explored using Martin's stratified socio-semantic model of context. In doing so, the following discussion will also draw heavily on a body of research into museums. Rather than present this research as a separate section of the chapter, every attempt has been made to integrate it, as it is relevant, to the unfolding discussion of social context.

## 2.2.3.2 Introducing the museum: semogenesis projects Martin's stratified model of context

As mentioned in Section 2.2.4, there are three different time scales for understanding semogenesis: the phylogenetic, the ontogenetic and the logogenetic. However, this thesis will

concentrate on phylogenesis only in respect of museums. Ontogenesis[5] and logogenesis, although important, will not be considered. Ontogenesis, in particular, has not been included because the research undertaken for this thesis did not involve one particular museum. Rather, it has attempted to theorise the ways designers have constructed three-dimensional spaces across a range of sites and continents — Oceania (Australia and New Zealand), America (the United States of America and Canada) as well as Europe.

Logogenesis, on the other hand, is clearly crucial to the consideration of semiosis in museum exhibitions as meanings unfold in both space and time as visitors move through them. Although limits on space preclude the consideration of logogenesis in this study, for a logogenetic account of an exhibition see Martin and Stenglin (in press for 2004). It presents both a logogenetic and a metafunctionally diversified account of an exhibition called *Signs of a Nation*. This exhibition is located inside Te Papa Tongarewa, The National Museum of New Zealand, Wellington.

## 2.2.3.2a The phylogenesis of museums: three seminal moments

It is easy to assume that throughout western history museums have always had a focus on public access and public display, discussed in Chapter 1. However, public access and public display *only* distinguish the modern and post-modern museum. Therefore, to better understand the roles museums have served in western cultures, it is crucial to examine three key moments

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[5] Social semioticians seeking to apply the social semiotic theory of space presented in this thesis are strongly advised to begin their exploration using all three of the time scales offered by semogenesis. For instance, the analysis of an exhibition about reconciliation between Maori and Pakeha (non-Maori), in Te Papa Tongarewa Museum, Wellington, New Zealand, showed that the spaces had been logogenetically designed to foster a strong sense of reconciliation and hope amongst museum visitors. Ontogenetically, however, research into the national museum of New Zealand showed that the very land on which the museum building had been constructed was involved in a land claim by the local Maori Iwi or tribe (Tapsell, 2001). For reasons such as these, semogenesis should be incorporated into social semiotic descriptions of three-dimensional spaces.

in their development[6]. They are: the cabinet of curiosities, the emergence of the public museum in the 18th century, and the evolution of the hybrid museum of the late 20th and early 21st centuries[7].

**The cabinets: trophies of power, conquest and domination**

Cabinets of curiosity were commonplace in Europe during the 15th century, especially in Florence, where a wealthy merchant class began to emerge during the Renaissance. To assert their power, the merchants used their wealth to gather treasures, and in this way stimulated collecting practices in Europe (Hooper-Greenhill, 1992: 78). In Germany the cabinets of curiosity were known as 'Wunderkammern', in Austria they were referred to as the 'Kunstkammern', in France they were a 'cabinet', in England a 'closet', while in Italy a range of words were used: 'gabinetto', 'studiolo', 'guardaroba' and 'museo' (Alexander, 1979: 24–6; Hooper-Greenhill, 1992: 86–89). According to Hooper-Greenhill (1992), there were, in fact, two very different types of cabinets. The first was the 15th century 'cabinet of curiosities', the second was the 16th century 'cabinet of the world'. Both are regarded as the precursors of museums, so they will now be discussed.

In terms of genre (Martin 1992, 1997), 15th century cabinets of curiosity were primarily concerned with the social process of private glorification (Hooper-Greenhill, 1992: 47). This was the result of two factors. First, the rise of a wealthy merchant-class in Italy; second, the

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[6] In origin, museums date back to classical times. Most commonly the origin of the museum is traced back to the Ptolemaic *mouseion* at Alexandria, which was a study collection with a library, a repository of knowledge, a place for scholars, philosophers and historians (Vergo, 1989; Hooper-Greenhill, 1992).

[7] Each of these periods in the genesis of the museum corresponds with the three major historical epistemes that Foucault identifies. They are, respectively, the Renaissance episteme, the classical and the modern episteme (1970, 1974). Although it is beyond the scope of the thesis to account for these, they correspond so well with the development of museums that their major characteristics will be briefly enumerated. The Renaissance episteme is characterised by similititude as things are interpreted according to hidden relationships. Thus, knowing is 'a thing of sand' (Foucault, 1970: 30). The classical episteme is concerned with order, through measurement and hierarchy. Its primary focus is on discriminating based on differences. Thus, classification is valued and things are grouped according to visible features. The third episteme, the modern, is motivated by a search for causes. This has led to a focus on explanations, and generated a concern with questioning, especially the interrelationships of the past.

rise of humanism, a movement which stimulated and renewed an appreciation of the ancient world. Although the two appear unrelated, humanism inspired wealthy merchants to begin collecting rare and valued objects from Antiquity. Not only did the merchants amass collections of the classical past, they also displayed them in the semi-private spaces of their homes. The conspicuous consumption at the heart of such display practices was important, as it functioned to signify the power and social status of the collector to *other* wealthy citizens who were invited into these semi-exclusive spaces (Baxandall, 1972; Bennett, 1995a: 24).

The best example of such collecting practices is provided by the Medici family of Florence[8] whose vast wealth facilitated their involvement in both collecting and patronage. Although both activities were central to achieving private glorification, the sole focus of this discussion is collecting. The amassing of collections played an important role in private glorification as it enabled the collector to appropriate objects from the classical past and recontextualise[9] them within their home. Amongst other things, this enabled them to construct a fictional genealogy, linking them to a classical Roman past. Recontextualisations such as these, together with the social processes of private glorification, were pivotal to establishing and legitimising the social power and unconstitutional rule of the Medici family in Florence for half a century (Bronowski and Mazlish, 1970: 42; Wackernagel, 1981: 248).

The 15th century cabinets of curiosity, moreover, were studied by researchers seeking to understand the classical past. Although some scholars had their own collections, most sought access to the vast collections of sovereigns and wealthy merchants for the purposes of research. In addition, many scholars were employed as collection advisers to merchants and

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[8] The Medici family was also amongst the first to establish the tradition of the domestic museum.

[9] The term recontextualisation is used here in the way Bernstein defines it (1990: 184) to refer to the process of taking something out of one context, the original context in which it was produced, and relocating it to a secondary context. The commodity being relocated can either be knowledge or objects. The recontextualisation of knowledge, for example, refers specifically to taking knowledge out of the research context in which it was produced, and relocating it to another context, such as a school textbook or a museum exhibition. Inevitably, through the process of recontextualisation, meanings are changed. For instance, abstract and technical language is often changed into more accessible wordings. Similarly with objects. Objects are often removed from the original context of their production such as a church or temple or artist's studio and relocated in a home or museum collection. The process of relocating the objects also impacts on its meanings. (For a more detailed discussion of recontextualisation as it relates to objects see Fyfe (1988)).

princes. Above all, curiosity drove the collecting practices of the times. The acquisition of unique, rare and curious specimens was highly valued as it was seen to expand knowledge of the past, especially Antiquity, as well as understandings of other cultures (Hooper-Greenhill, 1992: 61).

Cabinets of the world from the 16th century, in contrast, were more concerned with different social processes: explaining natural phenomena (Hooper-Greenhill, 1992: 82). More specifically, the intellectual curiosity of scholars was preoccupied with uncovering and explaining deeper and hidden truths about the universe. During the 16th century, moreover, imperialist voyages of 'discovery' continued to stimulate collecting practices and yielded an overwhelming array of rare objects, both natural and made. As a result of this, the intellectual curiosity of the period shifted from Antiquity to the 'new world', and the cabinets became encyclopaedic collections referred to as 'cabinets of the world'. Their social purpose was to represent the world in its entirety in one spatial location. Foucault (1970) refers to this practice as the spatialisation of material knowledge.

Scholarly endeavours to explain the universe were strongly influenced by socio-cultural beliefs. At the time, strong religious beliefs in a Creator God and Divine providence existed alongside beliefs in the occult, magic, superstition, alchemy, astronomy and mythology (Cox-Rearick, 1996; Fucikova, 1997). Therefore the supernatural was regarded as providing rational explanations for natural phenomena. Nature, in turn, was thought to be organised according to a system of rules which awaited human discovery and would give access to the secrets of divine Creation. Scholars intent on discovering these 'secrets' studied the cabinets by advising the owners on how to display and juxtapose the objects in accordance with cosmological systems of correspondences that were obscure to the 'outside eye'. Such obscurity was deliberate as it enabled the owners to protect knowledge. The cabinets could thus only 'reveal' the secrets of the universe to the person(s) who arranged them and/or the owner.

Inside the cabinets, furthermore, the mnemonic art of memory[10] was mapped on to cosmology. Together, they yielded idiosyncratic, hidden and secretive explanations of the universe. Knowledge was consequently subjective, idiosyncratic, socially exclusive but highly valued. The telos driving the production of knowledge, moreover, was not only concerned with explaining natural phenomena but also with *controlling* the forces of nature (Evans, 1973: 197; Hooper-Greenhill, 1992: 90). So, the underlying objective driving the explanation of natural phenomena was the material domination of the universe. Inspired by the imperial and colonial practices of pillaging and appropriation that characterised the 16th century, the collecting and display practices of cabinets of the world were motivated by the desire to understand and control natural phenomena.

Having considered the main social processes involved in the amassing of Renaissance cabinets, using Martin's stratified model of context (1992, 1997, 1999b), the following sections will consider how combinations of mode, field and tenor were phased into these social processes. The discussion begins with a consideration of mode.

**Mode**

Cabinets from the 15th and 16th centuries involved three key modalities: language, space and objects. As written labels and text panels were not a feature of Renaissance cabinets, and spoken language is ephemeral in nature, it is difficult to comment on the modality of language. Similarly, given that a comprehensive grammar for analysing objects is not yet available, the types of objects that were collected can only be listed. Written descriptions and some photographs of the actual cabinets in which the objects were displayed do exist. So, the following discussion of mode will begin with a brief consideration of the objects collected, but the main focus will be the modality of space.

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[10] The art of memory was a mnemonic technique which emerged during classicism as a technique of rhetoric. It was basically concerned with identifying a series of loci or places and attaching parts of the text which was to memorised to each loci. The loci then functioned as an anchor: when the memory was needed, each space was mentally revisited and the corresponding sections of the speech retrieved (Yates, 1966).

Following in the tradition of the medieval princes, the cabinets of curiosities began with collections of *small* treasures (Hooper-Greenhill, 1992: 48-53). These included precious metals, coins, jewels, cameos and carved gems. Some of these, such as the jewels, were highly sought after as they were believed to possess magical powers. Small objects also meant that the collection was highly portable, especially important during periods of political instability and social upheaval. The objects that were collected later in the 15th century changed particularly in terms of their scale. Thus they included larger items such as classical manuscripts, sculptures and statues, mosaics, paintings, fragments of classical buildings, classical codices and inscriptions as well as arms and armour.

During the 16th century, moreover, there was another shift in the type of objects collected. As the aim of the collection was now encyclopaedic, objects of every conceivable type were amassed. These included scientific instruments, mirrors, lenses, minerals, fossils as well as human and animal remains (Vergo, 1989). The animal collections consisted of exotic creatures such as armadillos, chameleons, iguanas, seahorses and birds of paradise (Fucikova, 1997).

With regard to the modality of space, a range of very differently organised spaces housed the Renaissance collections. One of the main dimensions along which they varied was size. Some of the cabinets, especially those housing 15th century curiosities, were literally small cupboards with lots of drawers in which the objects were stored. Other cabinets, in contrast, consisted of single rooms. Clearly, small objects could easily be housed in cupboards but larger objects required a larger volume of space.

A well-known example of cabinet comprising a single room was the studiolo of Francesco I, the second Grand Duke of Tuscany (Rossi, 1966: 31; Hooper-Greenhill, 1992: 105–6; Cox-Rearick, 1996). It was a small, dark room without windows, which was very firmly enclosed. It had a solid floor, high walls and a barrel-vaulted ceiling. It was lined with cupboards containing the objects, but the doors were closed. Instead, an image of each object was painted on the door. This painted image, moreover, was crucial to the explanation of the cosmos.

Hooper-Greenhill explains the function of the painting in the following way: these paintings are 'references to specific concepts that relate to each other within the magical cosmological system' (1992: 106). In other words, Francesco I would have used the images of the objects to recall the concepts and subjective correspondences at the heart of his particular explanation of the cosmos.

Cox-Rearick (1996) offers the following interpretation of some of the correspondences in the studiolo of Francesco I. First, each of the walls enclosing the studiolo represents one of the four elements. Second, there are two portraits of Francesco's parents located at either end of the room in frames frescoed with the zodiac signs. These zodiac signs commemorate the linked astrological destinies of the couple as well as several important oppositions: male and female, active and passive, public and private. (Public because the portrait of his father, Cosimo, is located on the wall adjoining the Salone; private because the portrait of his mother adjoins Francesco's bedroom.) These correspondences, in turn, especially the construction of an astrological destiny, would have enabled Francesco I to claim his right to rule as Duke of Florence.

As the merchants' social practice of collecting was part of conspicuous consumption, they purpose-built 'palaces' in which they displayed their collections. The Medici palace, in Florence, began this trend. However, although it is a large and permanent dwelling made up of many interconnected interior spaces, all used for the display of objects, it is not an ostentatious or highly ornate building in comparison to other palaces such the Pitti (Rossi, 1966; Mosco, 1997). In fact, merchant palaces such as the Medici's developed from fortified beginnings with vaulted shop openings on the ground floor and apartments located above them (Heydenreich and Lotz, 1974). The Medici palace is therefore a solid, strongly enclosed, heavily grounded and fortress-like construction.

These descriptions also suggest that the cabinets encompassing a single room shared the following characteristics with cabinets which were purpose-built palaces. First, both were private, strongly enclosed spaces. These choices were important in achieving the social

purpose of *private* glorification as heavily enclosed and strongly sealed spaces excluded ordinary people from entering their confines. Second, they also separated the activities of collecting and display from the everyday lives of ordinary people — only those who were privileged could participate in such socially exclusive practices. In addition, the solidity of the Medici palace symbolised endurance and stability — important meanings for a family seeking to become rulers. Similarly, with the pursuit of the secrets of the cosmos, a strongly enclosed space functioned to seal the cabinet from the rest of the house. This, in turn, ensured that the objects and associated activities remained private, hidden and exclusive.

The cabinets housing the collections, furthermore, enclosed both the objects and the people involved in viewing, collecting, displaying and studying them. Thus the physical space of the cabinet simultaneously enveloped around the activity sequences of field together with the participants involved in them. The cabinets also enclosed the processes and participants involved in enacting tenor relations. The other register variables of field and tenor will now be discussed.

**Field**

The main activity sequences involved in creating Renaissance cabinets can be divided into four main groups: collecting, conserving, researching and viewing rare and curious specimens from the material past. In considering the activity sequences of a given field, the first step is to identify them. It is then possible to taxonomise them. Systemic relations among the four activity sequences might be conceived as the taxonomy outlined in Figure 2.11. However, the activity sequences represented in the taxonomy are not exhaustive, and as a result, the taxonomy is an indelicate one.

These activities, moreover, provided a compelling dynamic which sparked the development of museum collecting practices. They also gave birth to several museum professions which are still in existence, namely curatorship and materials conservation. Curatorial practices emerged during the 15th century when scholars were commissioned to compile and study collections,

advise collectors and source or 'track down' material evidence from the past. The employment of artists to repair and remake classical objects, on the other hand, resulted in the emergence of materials conservation practices.

The activity of viewing the objects, moreover, was different for 15th century cabinets of curiosity and sixteenth century cabinets of the world. Viewing the cabinets of curiosity involved assessing the monetary value of the objects on display, and by implication, the wealth, prestige and social power of the owner (Baxandall, 1972). Viewing the cabinets of the world, on the other hand, was primarily concerned with deconstructing hidden systems of correspondences (Hooper-Greenhill, 1992; Cox-Rearick, 1996; Fucikova, 1997).

```
                          ┌ gathering (objects)
        ┌ collecting  ⇒ ┤ sourcing (objects)
        │                 └ sorting (objects)

        │                 ┌ repairing (objects)
        ├ conserving ⇒ ┤
        │                 └ recreating (broken objects by piecing them back together)

        │                 ┌ displaying (objects)
⇒      │                 ├ observing/studying (objects)
        ├ researching ⇒ ┤ interpreting (objects on the basis of hidden correspondences)
        │                 ├ translating (primary source materials from antiquity)
        │                 └ sharing (knowledge with the owners of the collection)

        │                 ┌ assessing (the wealth, social power and status of the owners)
        └ viewing    ⇒ ┤
                          └ unpacking (hidden cosmological correspondences)
```

Figure 2.11 Activities associated with the Renaissance cabinets

The participants involved in these four activities have been represented in the compositional taxonomy shown in Figure 2.12. It should also be mentioned that during the late 16th and early 17th centuries, the social roles of merchants and scholars engaged changed quite substantially, especially in Italy. For instance, merchants lost their political foothold to monarchs, especially after the invasion of Florence by Charles VII of France. Consequently, their role as collectors of objects of power diminished. Instead they were able to draw upon their extensive field knowledge of classicism to became expert curators involved in compiling and selling 'collections of the world' to those who could afford to pay for them (Hooper-Greenhill, 1992).

Many scholars no longer studied the collections of others to gain knowledge of the classics[11]. They now compiled their own collections, housed in universities, which they studied to acquire empirical knowledge of the natural world. A well-known example is Giganti's museum in Bologna (Laurencich-Minelli, 1985). Collections such as these were open to other scholars and in this way they established cooperative networks of researchers dedicated to accumulating knowledge of the natural world.

```
                             ┌─ princes
            owners  ⇒┤─ merchants
                             └─ scholars


                             ┌─ owners (princes, merchants, scholars)
                             ├─ other wealthy citizens
 ⇒ ┤─ viewers ⇒┤─ scholars including travelling scholars
                             └─ collecting agents from other countries


            ┬─ researchers/scholars


            └─ conservators/artists
```
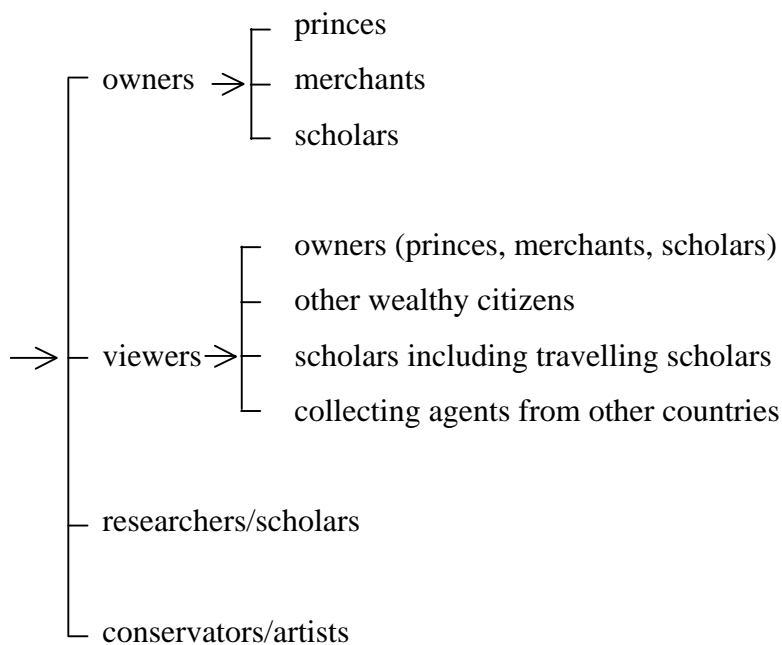
Figure 2.12 Participants associated with the Renaissance cabinets

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[11] Sixteenth century scholars who did choose to study *royal* collections, such as those belonging to Rudolf II in Prague, either received official titles such as court astronomer, court naturalist or court mathematician, temporary payments, or were granted favours (Fucikova, 1997).

**Tenor**

Tenor involves identifying the three continua that mediate social relations: power, frequency of contact and affect (Poynton, 1985). It also involves the orientation to affiliation as presented by Eggins and Slade (1997). Each variable will now be considered beginning with the power continuum.

For the most part, power relations as they were enacted in the cabinets were unequal as the cabinets were primarily expressions of private affluence or royal power. Moreover, their location in private and domestic spaces meant that access was restricted and determined by the owner. In addition, knowledge was not available to all and was consequently an important signifier of social status. So, 15th century scholars studying the cabinets of curiosity were asked to discuss their observations, interpretations and findings with the owner (Hooper-Greenhill, 1992). In this way, merchant owners developed extensive and specialised knowledge of the classical past, which in turn gave them social power and prestige. By the late 16th century, it also gave them the field expertise required for performing highly specialised curatorial roles.

Throughout the 16th century sovereigns continued to use their vast private collections for the diplomatic function of imperial display (Fucikova, 1997). The enormity of these collections, and of the buildings in which they were housed, functioned as very real and concrete manifestations of a sovereign's power. Furthermore, gaining access involved some degree of reciprocity in that the sovereign would grant access only in exchange for gifts worthy of the collection. Social relations thus affirmed both the ruler's status and power (Fucikova, 1997).

With regard to the frequency of contact, the unequal social relations between the owner and other viewers meant that this was also unequal and at the discretion of the owner. Some of the early cabinets owned by princes, such as the studiolo of Francesco I, were exclusively used by the prince, so the frequency with which he visited this private realm varied in accordance with his own idiosyncratic desires. The frequency of access to the Medici cabinets, on the other

hand, was determined by how often viewers such as scholars, artists, other wealthy citizens and collecting agents were *invited* into this private space for viewing. Similarly with scholarly collections, colleagues required an invitation before they could enter cabinets housed in universities.

Power and status thus dominated tenor relations throughout the 15<sup>th</sup> and 16<sup>th</sup> centuries. In terms of affect, there seems to be a strong enthusiasm amongst those who are privileged enough to have access to a cabinet to view its objects. In fact, according to Bennett (1995a: 2), the main concerns of the cabinets were 'to create surprise or provoke wonder'. Such feelings of wonder and awe are not only evoked by the curios that have been collected, but also by the knowledge and understandings that are generated. The orientation to affiliation, furthermore, seems to be mainly restricted to a very small and privileged group of wealthy individuals with high social standing, as well as scholars with expertise in a variety of subjects ranging from classicism to cosmology and the occult.

All four dimensions of tenor in conjunction with the preceding discussion of genre, mode and field therefore indicate that social relations were characteristically private, privileged and elitist at this time. The cabinets were neither used nor intended for public access or public display.

**The emergence of the public museum: the palace of the people**

The philosophy of Enlightenment that was prevalent during the 18<sup>th</sup> century, together with the advent of democracy, provided the stimulus for another seminal moment in the genesis of the museum (Einreinhofer, 1997; Hooper-Greenhill, 2000). During this period, museums entered the public sphere as secular institutions with collections held in trust for the public, but even more importantly, they were open to the citizens of entire nations[12]. Thus, public museums such as the Louvre in Paris and the British Museum in London were created. The Louvre was

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[12] One of the first public museums to have opened to the public was the Capitoline Museum in Rome. It opened in 1737 to display the oldest collection of antiquities.

born of royal and aristocratic collections which were appropriated, gathered, reorganised and displayed by the French revolutionary government. The British Museum, on the other hand, originated in the private collections of Sir Hans Sloane. These were first housed in Great Russell Street. They were subsequently purchased by the British Parliament and installed in Montagu House in Bloomsbury[13]. It opened to the public on 15 January, 1759, while the British Museum's South Kensington location opened to the general public on 19 April, 1881.

Alongside the development of public and national museums, museums became increasingly specialised at this time (Bennett, 1995a: 2). The 18th century was characterised by the emergence of at least three distinct museum types. They were art museums such as the Louvre, natural history museums such as the British Museum, and history museums such as the Capitoline in Rome. The development of these specialisations was tied to the proliferation of science during the 17th and 18th centuries, and the valuing of classification and hierarchy that followed (Bennett, 1995a: 2). In particular, this period saw Newton's research into astronomy, motion, gravitation and optics, which led to a 'discourse of experimentation' (Halliday, 1993:57-62). Scientific advances also resulted in the development of technological innovations such as the compound microscope (1590) and the telescope (1608). These were important as they meant that scientific observations became more precise than ever before. Together with mathematic advances (the development of logarithms, co-ordinate geometry and integral calculus), and scientific method, science discredited magic and sorcery. As a result, the 18th century was characterised by the appeal to 'logic' and 'reason'.

With the transition from the private to the public realm, the shift from hidden correspondences to scientific method, and the reversal of the museum's social exclusivity, the social purpose of museums also changed. Instead of private glorification and the discovery of the universe, the museum became a means of enlightenment. Its social purpose was to educate the masses and the citizens of the nation state by teaching them about the universe through the display of objects. Objects, moreover, were regarded as 'sources of knowledge, as parts of the real world

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[13] The British Museum, however, was initially a semi-public institution as its Trustees immediately initiated a system of fee-paying in order to restrict the number and type of the general public who could enter its spaces.

that had fixed and finite meanings that could both be discovered, once and for all, and then taught through being put on show' (Hooper-Greenhill, 2000: 5).

The museum's instructional social purpose, moreover, was strongly influenced by the widespread belief that people could be morally and intellectually 'improved' through education (Gay, 1984: 14–17; Ozouf, 1988: 198–203; Bennett, 1995a: 18–20). In other words, the 18th century museum became a pedagogical institution. According to British sociologist Basil Bernstein, pedagogical institutions are concerned with pedagogic discourses which he defines in the following way:

> Pedagogic discourse is a principle for appropriating other discourses and bringing them into a special relation with each other for the purpose of their selective transmission and acquisition.

> (Bernstein, 1990: 183–4).

A focus on the selective transmission and acquisition of knowledge meant that the 18th and 19th century museum shared a common pedagogical function with schools; that of cultural transmission. In fact, the museum's pedagogical function evolved alongside that of schools, in turn, linked to Matthew Arnold's call to 'educate the masses' (Christie, 1976; Hunter, 1988). According to Bennett (1995a: 18–20), the aim of British government at this time was to 'civilise' the population and 'transform' its citizens by regulating their behaviour. One of the ways it attempted to do this was through the provision of mass education. This included encouraging the 'lower classes' to visit libraries, museums and art galleries (Bennett, 1995a: 19). The idea was that by engaging with cultural institutions such as these, the masses would learn to imitate the behaviour, dress, morals, manners, norms and values of their 'social superiors'.

The museum as an 18th century pedagogic institution was thus involved in cultural transmission. It achieved its educational goals of *enlightening* the public through didactic and

'logically organised' exhibitions. In particular, museum exhibitions were organised as macro genres. At the Louvre, for instance, which opened to the public on the 10 August, 1793 (the first birthday of the French republic), the first exhibition was a display of the national collection of art, involving almost 1200 works. The overall aim of the opening exhibition was instructional: to provide visitors with a broad understanding of the history of French art, especially the western influences that had shaped it.

So, the objects were thematically grouped into two schools of art: the Italian and Northern. The Italian schools were allocated two 'courts' of the Louvre's Grand Gallery, while four 'courts' were dedicated to the northern schools. Embedded within these geographic classifications, moreover, were a series of recounts. The aim of each recount was to document and showcase the professional development of individual artists. The exhibition was a macro genre as it classified the art objects geographically into a report and then embedded a series of biographical recounts within them.

Similarly, the aim of the natural history exhibitions at the British Museum were to show visitors 'the plan of creation' (Miles, 1982: 3). These, too, were macro-genres. In particular, the exhibitions were organised as taxonomic reports foregrounding the Linnean system of classification (Saumarez Smith, 1989: 7). To a lesser extent, the exhibitions provided explanations of natural phenomena (Miles, 1982: 3). Thus, the first section, the central hall, presented an elementary overview of creation for the uninformed layperson. Behind the central hall, was the Gallery of Zoology. This gallery was specifically developed for collectors. Its aim was to assist them with object identification. The remaining spaces were dedicated to providing a comprehensive and complete view of all the different classes of animals, plants and minerals and the inter-relationships between them.

By organising objects into genres in this way, it was believed that exhibitions were able to 'enlighten' the masses. They did this by presenting visitors with knowledge in clear and logical ways as Hooper-Greenhill explains.

The relationships expressed in the sequences of displayed objects were thought to demonstrate universal laws about the disciplines, such as what counted as the history of art, or the family relationships of birds or plants. Making this knowledge visible and available through public museums was in itself a pedagogic act; a walk through museum galleries would result in learning…It was thought that large numbers of people could be taught in this way at the same time and thus a huge social gain would occur.

(Hooper-Greenhill, 2000: 5–6)

In addition to being organised as staged, goal-oriented genres, another distinguishing feature of exhibitions was that they unfolded in space and time as visitors moved through them. So mode, especially the modality of space, was critical to achieving the museum's pedagogical social purpose as Hooper-Greenhill indicates above.

**Mode**

Even though objects and collections were still at the heart of the public museum of the $18^{th}$ century, the modalities of space and language played increasingly pivotal roles in assisting the museum to achieve its underlying pedagogic social purpose. First, the organisation of the Louvre's spaces into semi-enclosed hubs housing either the Italian or Northern schools of art, played a pivotal role in organising the objects into distinct but inter-related semiotic units. This meant that, although spatial enclosures such as walls functioned to separate one semiotic array of objects from another, the divisions were not concerned with sealing objects from one another. Rather, they were concerned with grouping the objects into distinct but related categories — in this instance, schools of art. Within each school, moreover, chronology was used to organise the display of works in such a way that the visitor's logogenetic movement through each hub dynamically corresponded with the unfolding of several distinguished artists' careers. In these ways the organisation of spaces was crucial to achieving the social purpose of educating visitors about the history of western art. Similarly, in the British

Museum, objects were organised and displayed as semiotic units. Thus, one spatial enclosure housed the fish gallery, another the insect gallery, a third the reptile gallery and so forth.

Given that the public museum of the 18$^{th}$ century was 'an educational institution for the common people' (Einreinhofer, 1997: 26), language, both spoken and written, began to play an important role in exhibitions. First, the spoken mode became part of the guided-viewing experiences offered to visitors interested in joining curators for floor talks about the works on the display in the exhibition (Hooper Greenhill, 1991: 258, 1992). The written mode complemented these talks via the display of explanatory text panels and the development of catalogues, written by curators and sold cheaply, in order to encourage visitors to purchase them and read more about the history of western art in their homes (Hooper Greenhill, 1991: 258, 1992). In these ways, the modalities of space and language were co-deployed to assist the museum in transferring knowledge from specialist curators to a general audience.

**Field**

Essentially, the four global activity sequences of the cabinets — collecting, curating, conserving and viewing — continued. However, some activities, such as curating, did change in nature, while others, such as conserving, became more specialised. The following taxonomy thus presents systemic relations among the activity sequences of the 18$^{th}$ century public museum, see Figure 2.13.

```
                              ┌─appropriating
                              │
                              ├─inspecting
                              │
                              ├─cataloguing
                              │
           ┌─ collecting    ╞═╡─packaging
           │                  │
           │                  ├─shipping
           │                  │
           │                  ├─sorting
           │                  │
           │                  └─storing
           │
           │                  ┌─cataloguing/documenting (archives)
           │                  │
           │                  │                ┌─selecting (works)
           │                  │                │
           │                  │                ├─grouping
           │                  │                │
           ├─ curating      ╞═╡─exhibiting ╞═╡─sequencing
           │                  │                │
           │                  │                ├─arranging/displaying (objects)
           │                  │                │
           │                  │                ├─producing (text panels/catalogues)
           │                  │                │
╞═╡        │                  │                └─teaching
           │                  └─documenting (inventories)
           │
           │                  ┌─cleaning
           │                  │
           ├─ conserving    ╞═╡─repairing
           │                  │
           │                  ├─re-lining
           │                  │
           │                  └─transferring works (from canvas to wood)
           │
           │                  ┌─corresponding
           │                  │
           ├─ administering ╞═╡─accounting
           │                  │
           │                  ├─surveilling/policing
           │                  │
           │                  └─cleaning
           │
           │                  ┌─looking
           │                  │
           └─ viewing       ╞═╡─reading/listening
                              │
                              └─learning
```

Figure 2.13 Activities associated with the 'people's palace'

One of the other major differences with the cabinets of the past concerned the addition of a new activity: that of administering. As the size of the collection entrusted to the public museum for safekeeping was large (and kept expanding in response to imperialist conquests), the need to administer museums was identified and Directors were appointed. Their role was to supervise all of the museum's activities including new front-of-house duties such as cleaning and surveillance.

In response to the museum's social purpose of educating the masses, which included the improvement of their morals and manners, surveillance also came into being. In particular uniformed security guards were employed to patrol the public spaces and ensure the safety of the collections, as well as regulate the behaviour of visitors (Bennett, 1995a: 24). In this way, the activity of visiting museums and viewing their exhibitions became 'one of the central acts of democratic citizenship' (Davidson, 2001: 13).

Furthermore, as the activity sequences of collecting indicate, 18th century national museums were sites of imperialism and colonialism. In particular, national museums such as the Louvre became depositories for the spoils of wars fought by military leaders such as Napoleon. This meant that specialised curatorial staff accompanied leaders on war campaigns in order to inspect, appropriate and transfer the most valuable works to their national museum (Einreinhofer, 1997: 25-26). In fact, the reward Napoleon bestowed on the greatest 'collector' of such spoils, Dominique Vivant Denon, was the directorship of the Louvre.

Finally, the activity sequences involved in developing exhibitions, that is, selecting, grouping, sequencing and displaying objects to achieve a social purpose are not neutral. Contrary to the popular opinion of the time, the 18th century museum did not depict social realities such as the history of art or the plan of creation in 'neutral', 'rational' and 'objective' ways (Hooper-Greenhill, 2000: 17–18; Davidson, 2001). Thus Weil (1995: 17) writes:

As museum workers, we are not merely passive reflectors of the world — simple recorders of its seven wonders — but active participants in how the world is perceived and understood, participants in the creation of meaning, shapers of reality.

So, the selection of some objects was always made at the exclusion of others. Similarly, the grouping and sequencing of objects also makes meanings. As Peter Vergo, Reader in the History and Theory of Art at the University of Essex, states: '…the same material can be made to tell quite different stories not just by the means of captions or information panels or explanatory texts but by the sequence in which works are displayed, the very way the material itself is divided up…' Vergo (1989: 54). Yet the ways in which these meanings were made remained largely implicit throughout the 18$^{th}$ and 19$^{th}$ centuries.

A superordination taxonomy of the participants involved in activities of the 18$^{th}$ century public museum is represented in Figure 2.14.
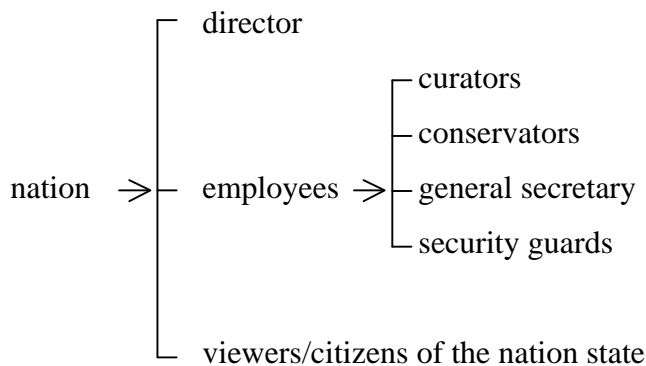


Figure 2.14 Participants associated with the 'people's palace'

**Tenor**

As with the cabinets, the power relations enacted in the public museum were unequal. Rather than being expressions of private affluence or royal power, social relationships were distinguished by power differentials related to knowledge and social status. At one level,

social relations tended to be that of specialist to layperson; or expert to apprentice. The status of the expert curator was so high that the curatorial voice was regarded as being 'transcendent' (Weil, 1990: 51).

At another level, social relations were those of nation-state to citizen. It is not surprising, then, that many of the exhibitions held in public museums coincided with celebrations of national events such as the birthday of Napoleon (Einreinhofer, 1997). The aim of such activities was clearly to foster a deep sense of pride, solidarity and national identity amongst the citizens. Thus national museums were actively involved in constructing the citizen in relation to the nation state (Duncan, 1998; Davidson, 2001: 13).

Frequency of contact, moreover, was controlled to some extent by the institution. Attendance at the Louvre, for example, was organised in accordance with a ten-day roster. During the first five days of the cycle, the museum was exclusively open to artists and copyists. During the next two days it was closed for cleaning, while the last three days of the cycle were dedicated to the use of the general public and open to them free of charge (Hooper-Greenhill, 1992: 183). This effectively meant that 50% of the contact time was apportioned to artists, 20% to maintenance and the remaining 30% to the general public. Therefore, the closure of the museum to the general public for 70% of its operational time constrained the frequency of contact ordinary citizens could have with the institution.

Affectually, the recontextualisation of a royal palace into a democratic institution dedicated to serving the general public is a very powerful one. At the heart of it lie many polarities: the transformation of a powerful icon of monarchy, aristocracy and wealth into an icon of liberty, equality and fraternity. This, in turn, implies that what was once hidden and accessible to a privileged few is now open to all citizens regardless of age, wealth, social status or education. However, the public museum of the 18th century is also a pedagogical institution controlled by the state. This means that it is simultaneously one of 'the technologies designed to create docile bodies, and to reform the population as a resource for the government,' (Hooper-Greenhill, 1992: 195). Herein lies one of its central anomalies. On the one hand, the public

museum represents free and open access to the collective treasures of the nation, while on the other hand, it is a powerful instrument for propaganda and social control (Bennett, 1995a: 20-24). This anomaly also indicates that as with the Renaissance cabinets, social power still dominates tenor relations in the eighteenth century museum.

Finally, with respect of orientation to affiliation, national museums such as the Louvre were strongly dedicated to evoking pride in the might and greatness of the nation state. This, in turn, facilitated a strong sense of unity and solidarity, that is, nationalism. According to Andrew McClellan, one of the ways the state achieved this was by 'dazzling' the public with the spectacle of the nation's great treasures (1994: 99). The power of objects for bonding people was equally evident in its negative form after Napoleon's defeat. Although Einreinhofer (1997: 27) describes the despoiling of the Louvre as 'a bitter and humiliating experience for the French people, who were deeply angered and openly displayed their feelings', these intense and negative emotions also functioned to unite people in their adversity.

The final watershed in museology is the hybrid museum of post-modernism and post-colonialism which was introduced in Chapter 1. It will be the focus of the discussion that follows.

**The emergence of a hybrid: the post-modern and post-colonial museum**

From the closing decades of the 20th century to the beginning of the new millennium, a new type of museum has began to emerge: the hybrid museum of post-modernity and post-colonialism. As its name suggests, the post-modern and post-colonial museum is a blend or a mixture of very different social purposes. Two stand to the fore: education and entertainment, and their differences make them extremely challenging to reconcile.

The overriding social purpose of the post-modern museum remains pedagogic (Anderson, 1997; Anderson, 1998; Hein and Alexander, 1998: Hooper-Greenhill 1991, 1992, 2000; Falk

and Dirking 1992, 1995, 2000; Weil, 1990, 1995; Leinhardt, Crowley and Knutson, 2002). This is encapsulated in the following statement:

> Museums are among our preeminent cultural institutions for learning. Museums are where society gathers, preserves, and displays visible records of social, scientific and artistic accomplishments; where society supports scholarship that extends knowledge from paleontology to meteorites; and where people of all ages turn to build understandings of culture, history and science.

> (Leinhardt, Crowley and Knutson, 2002: ix)

To achieve its educational goals, the post-modern museum, like its predecessor, is organised as a complex of genres and macro-genres. Thus, some of its exhibitions are recounts (van Leeuwen, 1998), while others are scientific information reports which often contain embedded explanations of life cycles and reproduction. Others present thematically organised interpretations of art (the Christian body, the Ideal body and so forth), while some are a blend of persuasive genres, such as expositions, discussions and directives (White, 1994)[14].

Like the 'people's palaces', the hybrid museum still aspires to 'civilise the masses' (Bennett, 1995a: 8). In the hybrid museum, however, this telos has changed slightly. Rather than striving to improve people's manners and dress, it prefers to construe its role as 'an agent of social change' (Weil, 1990: 43-56; Serrell, 1996: 9; Kelly and Gordon, 2002: 153). The type of social change it is interested in facilitating, moreover, remains moral or ethical in nature.

Some examples of the transformations museums aim at facilitating include:

- promoting reconciliation between Indigenous and non-Indigenous Australians (Griffin and Sullivan, 1997: 11; Kelly and Gordon, 2002: 168–9)

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[14] Most museum professionals involved in exhibition design, however, are not explicitly aware of the range of genres they work with. Rather, they tend to work implicitly with the notion of the exhibition as a story, storyline or narrative (Verlarde, 1988; Vergo, 1989; Dean, 1994; Serrell, 1996).

- inspiring the conservation of the oceans (Anderson, 1988: 104)
- combating violence and bigotry (Anderson, 1988: 5).

In other words, the telos of education in the hybrid museum is oriented to realigning visitors into a new subjectivity. The way in which the organisation of spaces can contribute to creating interpersonal meanings that facilitate such attitudinal change will be further explored in Chapter 5 (Section 5.2.1.3b).

Conflated with its educational goals, the hybrid museum has developed another social purpose, that of entertainment. Entertainment, as a social purpose for the museum, first has its genesis in the Great International Exhibitions of the 19th century (Greenhalgh, 1989). These were designed to entertain, as well as educate, the general public. The goal of entertainment in the hybrid museum, moreover, appears to have arisen in response to two specific factors. The first is the pressure of economic rationalism as discussed in Chapter 1 (see Section 1.2). The second is the positioning of the museum by market and visitor research as a 'leisure activity', competing with theme parks, leisure centres and shopping malls for market share (Rojek, 1995; Kotler and Kotler, 1998; Kotler and Kotler, 2000; Environmetrics, 2000; Lynch et al. 2000). Incidentally, this is not a new development. Since their emergence in the 18th century, they have been competing with the circus, the fair, the sideshow and the department store for market share (Sorenson, 1989; Bennett, 1995a). In the 18th century, however, the state assumed the total responsibility for funding museums, especially national museums (Davidson, 2001), while today the pressure is on museums to become self-funding.

So, most museums have begun to realise that economic imperatives can no longer be ignored if they are to survive (Weil, 1990). As a consequence, museums have become hybrids, involved in several entrepreneurial initiatives aimed at improving the quality and range of their leisure service provision. The first has involved the development of multiplex functions (retail, dining, providing conference and venue-hire facilities). The second has involved making their exhibition 'offers' more alluring as leisure options to consumers. Most post-modern museums have attempted to do this in the following ways:

- through the development of hands-on learning activities which are seen to provide 'added educational value' to consumers (Caulton, 1998: 2)
- by enabling visitors to actively participate in their own learning through focus groups and front-end evaluations which ask visitors what they wish to see, do and learn in exhibitions
- by involving visitors in learning activities that are fun (Scott, 2001).

Carol Scott, President of Museum Australia and Evaluation Manager at the Powerhouse Museum in Sydney writes:

…the museum of the future has work ahead of it with regard to maintaining audiences. In a post modern world, the increasing pace of life is favouring fun and entertainment over leisure that requires intellectual commitment.

(Scott, 2001: 69)

This commitment to entertainment has been enthusiastically embraced by several sections of the museum community. Firstly, those involved in evaluation/visitor research as well as publicity/marketing; and secondly, those involved in education. From the point of view of publicity and marketing, enjoyment and fun make 'the museum experience' easier to package, promote and sell to consumers. From the point of view of education, fun and curiosity are implicitly viewed as pedagogical scaffolds which bridge visitors into uncommonsense theoretical knowledge. As Hooper-Greenhill states, active learning is 'more likely to produce mental and physical interaction,' (2000: 6) than didactic methods, so participatory, hands-on and discovery learning tend to be favoured.

The social purpose of entertainment, however, tends to sit uneasily with other museum curators, whose work is strongly situated in post-colonial discourses. Embracing the awareness that museum objects have a multiplicity of meanings, post-colonial scholarship is dedicated to exploring these meanings in ways that value the voices of the oppressed and marginalised as well as foregrounding diversity and difference (Jordanova, 1989; Vergo 1989;

Weil, 1990; 1995; Karp, Kreamer, Lavine, 1992; Hooper-Greenhill, 2000; Davidson, 2001).
So their focus is oriented to reinterpreting the past by making invisible histories visible, giving
the marginalised or silenced a voice, and confronting the darker sides of a nation's past
(Hooper-Greenhill, 2000: 19–20; Davidson, 2001: 19-24). This includes some highly complex
and 'emotionally charged' activities such as the repatriation of human remains to indigenous
communities (Kelly and Gordon, 2002).

Given the nature of post-colonial scholarship, the hybrid museum's emphasis on
entertainment and leisure servicing is difficult to reconcile with the curatorial focus on
reshaping and reclaiming the past. In other words, curatorial work sits uneasily with the
pursuits of the leisure industry. This discomfort is encapsulated in a remark made by
Australian historian Geoffrey Blainey, during question time at the Negotiating Histories
National Museum conference in Canberra. Blainey's comment was: 'How do the terms
traumatic and empathetic sit with entertaining?' (12–14 July, 1999).

Having briefly explored the nature of the disparate social processes involved in the
development of the emerging hybrid museum, the following sections will consider how
combinations of field, tenor and mode are phased into these social processes. The discussion
will begin with a consideration of mode.

**Mode**

The first register variable to be discussed is mode. As mentioned in Chapter 1, museums are
distinguished from most other pedagogical institutions by their focus on public display (see
Section 1.3). Exhibitions in the post-modern museum, moreover, are characterised by a
proliferation of modalities which co-articulate to create a three-dimensional and multimodal
spatial composition. In constructing exhibitions, for instance, the modalities of space, objects
(including visual images) and language are co-deployed (White, 1994; Pang, in press). Not
only does the presence of these semiotics indicate continuity with the museums of the past,
but in the hybrid museum these modes are increasingly co-deployed with other modalities

such as action (through demonstrations, theatre performances and hands-on activities) and sound/music. Furthermore, the post-modern museum is characterised by an abundance of independent multimodal texts, such as, computer interactives, databases and filmic texts such as documentaries.

To explore each of these modalities and their inter-relationship is beyond the scope of this discussion. However, as this thesis is focussed on exploring the organisation of three-dimensional spaces, a few comments about space will be made. First, in a museum exhibition, each of the aforementioned modalities is enveloped by space. So too is the museum visitor, together with all the members of staff, because space is something that each person feels, something that materialises around them, enfolds them and frames the logogenetic unfolding of their pathway through an exhibition. For these reasons, it is an important semiotic to theorise as its affordances create the material environment in which the meaning-making practices of museum exhibitions unfold, including the activities of field and the social enactment of tenor relations, which will now be considered.

**Field**

In the post-modern and post-colonial world of the new millennium, museums are evolving into increasingly complex institutions. The International Council of Museum's definition of a museum (see Section 1.1) points to five main activities that museums are involved in: acquiring, conserving, researching, communicating and exhibiting. Once again, these demonstrate strong continuity with the past, both the public museums of the 18th century and the cabinets of the Renaissance. As before, the activity sequences have been taxonomised and are shown in Figure 2.15. The following taxonomy is based on the activities undertaken by staff working at the Australian Museum, a natural history museum in Sydney.

```
                                                   ┌─ buying
                              collecting    ═>├─ cataloguing
                                                   ├─ de-accessioning
                                                   └─ storing

                                                   ┌─ preventing damage
                              conserving   ═>│
                                                   └─ restoring

                                                   ┌─ classifying
                              researching ═>├─ investigating
                                                   │                      ┌─ publishing
                                                   └─ documenting ═>│
                                                                          └─ presenting

           pedagogic  ═>                                      ┌─ guiding/interpreting
                                                   ┌─ in-house   ═>├─ publishing
                                                   │                      └─ teaching
                              communicating ═>│
                                                   │                      ┌─ travelling (exhibitions)
                                                   └─ out-reach ═>│
                                                                          └─ developing (resource kits)

                                                   ┌─ developing (key concepts)
                                                   ├─ consulting (stakeholders)
                                                   ├─ gathering (relevant research)
                              └exhibiting  ═>├─ designing (the spaces)
                                                   ├─ writing (text panels)
                                                   ├─ selecting/preparing (objects for display)
                                                   └─ building (the exhibition)

                                                   ┌cleaning
                                                   ├securing
  ═>         operational  ═>├building/repairing
                                                   ├ticketing
                                                   └gate-keeping

                                                                          ┌─ human resources
                                                   ┌managing  ═>│
                                                   │                      └─ finances
              administrative ═>│
                                                   ├liaising (with media, community groups, government bodies)
                                                   │
                                                   └promoting
```

Figure 2.15 Activities associated with a hybrid museum (the Australian Museum, Sydney)

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In very general terms, the staff involved in pedagogical activities (collecting, conserving, researching, exhibiting and educating) are involved in highly specialised activity sequences which are dependent on written transmission and institutionalised learning. Although it is difficult to accurately report on the proportion of staff involved in each type of activity, in the late 1990s, the Australian Museum employed approximately 250 fulltime staff; of these, approximately 100 were research scientists and research assistants. This indicates that research, that is, the production of new knowledge, is a crucial and highly valued activity for the museum.

The ICOM definition of museums, however, fails to acknowledge the activities of staff involved in the operational and administrative running of the museum, and yet, these are crucial to the survival of the post-modern museum. For instance, in 1999–2000 when overseeing the development of educational programs in the newly opened djamu Gallery at Customs House in Circular Quay, Sydney, the first six to eight months of the education manager's appointment were exclusively concerned with establishing effective operational procedures such as comprehensive booking systems for schools and tertiary groups. It was only after these were in place, that the development of educational programs, including the writing and publication of teaching materials, could begin.

Although the activities identified by ICOM, together with administering, lie at the heart of the post-modern museum, the development of multiplex functions has considerably extended the type of activities in which museums are involved. For example, the hybrid museum is involved in retailing — large museum stores sell a vast array of merchandise at a range of prices to suit all customers, and often include smaller, thematic shops linked to blockbuster exhibitions. The post-modern museum also offers visitors and staff a range of dining options, which tend to be linked to panoramic views of city skylines, lakes, gardens and so forth. These 'eating-out' choices range from elegant restaurants to family cafeterias and small cafes. Most museums also hire exhibition and function spaces for conferences and 'after hours' social functions, such as cocktail parties and wedding receptions. Naoshima Contemporary Art Museum in Japan, purpose-built as a museum/hotel, has blurred the boundaries even further

by offering visitors overnight accommodation. Such activities are a direct reflection of the way post-modern museums are striving to offer consumers an optimal number of choices for leisure and recreation.

Alongside these activities are the staff or participants who are involved in them. The taxonomy represented in Figure 2.16 is a superordination taxonomy for the Australian Museum. The main distinguishing feature of the taxonomy presented in Figure 2.16 is that people working in museums such as the Australian Museum are strongly classified on the basis of their professional specialisation. As a result, museum staff are organised into divisions: the Exhibitions division, the Corporate Services division, the Education division and so forth. Although the social roles for staff are strongly bound in these ways, there are multiple choices for classifying visitors. Figure 2.16 groups visitors on the basis of frequency of contact but other choices for classification could have been made based on demographic variables: educational qualifications, the social group they visit with (families, singles, couples), age and so forth.
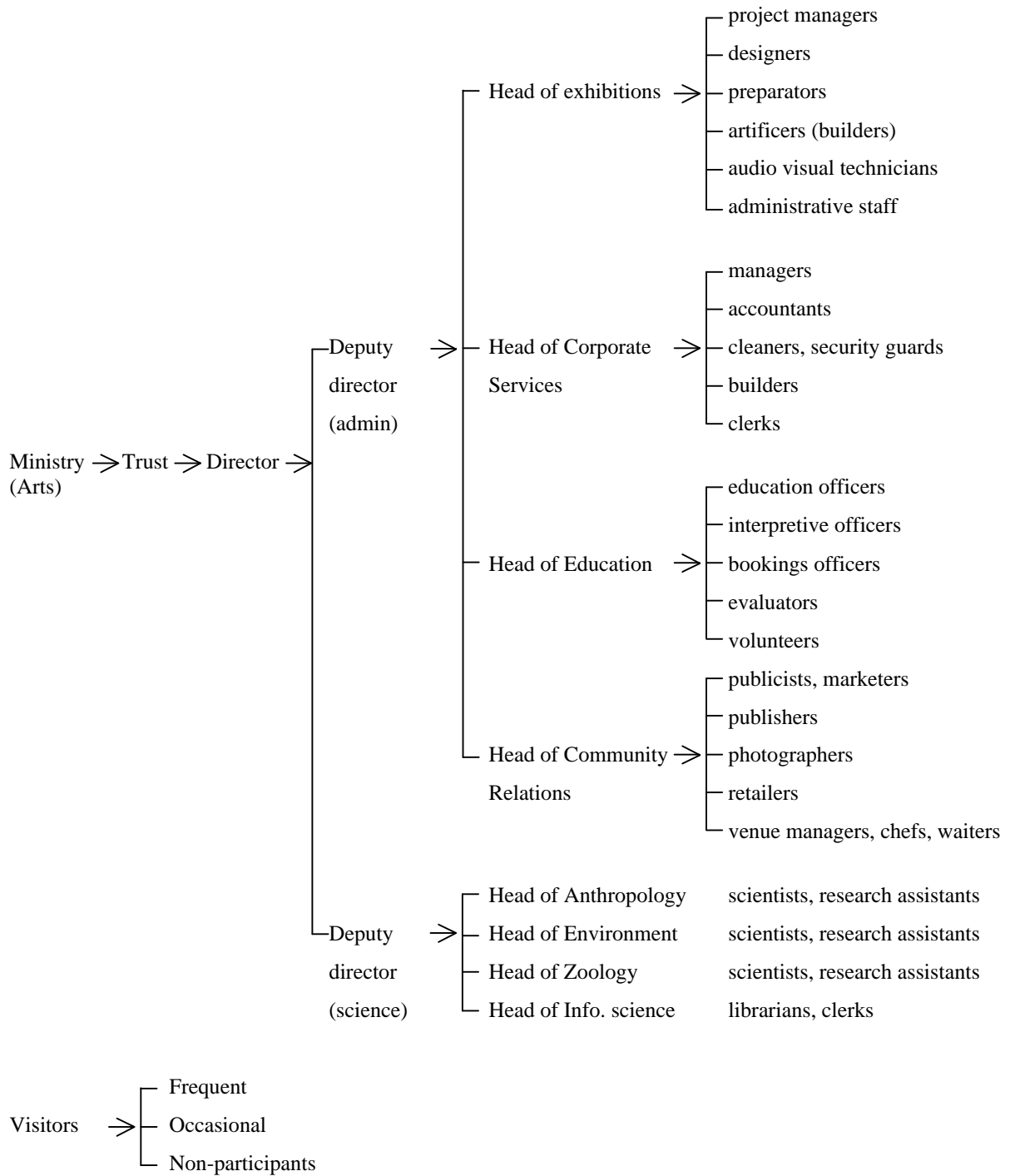
Figure 2.16 Participants associated with a hybrid museum (the Australian Museum, Sydney)

Field can also be applied at the micro-level of a museum exhibition development. In order to present the activities of exhibition design alongside the participants involved in them, a table has been chosen rather than a taxonomy.

| Activity | Participant(s) |
|---|---|
| Writing a brief for the exhibition. | Director/Trust/Senior Management |
| Developing the content themes/sub-themes. | Curator and/or project team. |
| Researching and gathering relevant information. | Curator. |
| Developing budgets, time lines and coordinating meetings. | Head of the project team. |
| Writing text panels and object labels. | Curator and editor. |
| Developing the interpretive strategies (teaching/learning activities for the exhibition). | Educator. |
| Selecting and preparing objects for public display. | Curator and collection manager. |
| Assessing the conservation requirements of objects on public display (eg light and humidity levels). | Conservators. |
| Designing lighting, heating, air/conditioning systems. | Exhibition designer. |
| Designing display cases, flip panels, back-lit displays. | Exhibition designer. |
| Developing dioramas, embedded specimens. | Preparator(s). |
| Arranging the display of objects in the exhibition space and the display cases. | Curator and Exhibition designer. |
| Developing computer interactives. | Multi-media designers (or out-sourcing). |
| Coordinating audio-visual components including sound elements and the projection of moving images. | Audio-visual technician(s). |
| Developing visitor programs (talks, guided tours, demonstrations, theatre performances, touch tables, craft activities, activity sheets and teacher resource packs). | Educator(s). |
| Writing press releases, organising publicity, the launch, previews, interviews and so forth. | Marketer(s) and/or publicists. |

Table 2.4 Activities and participants involved in exhibition development

**Tenor**

Building interpersonal relationships with visitors is a major challenge for the post-modern museum. In general terms, museums have tried to be more inclusive of visitors, to embrace them, involve them as active participants in partnership with the museum and foster a strong sense of belonging and affiliation. To analyse the way in which these tenor relations are enacted, there are several variables that need to be considered. They are power, frequency of contact, orientation to affiliation and affect.

Power is the most complex dimension of tenor for museums to negotiate. The social roles of visitors, in particular, seem to have changed quite dramatically. Although visitors are still citizens, in the hybrid museum they are also consumers, partners and active agents with the power to shape many of the choices museums now offer. For example, museum visitors are able to participate in the activities of the institution through audience surveys and focus groups. These inform the development of exhibitions, including their content, design and learning strategies. In an attempt to become as inclusive as possible, many museums seem to have confused the distinction between authoritarian and authoritative. They regard both as being negative, and yet, as visitors are not experts in the fields of the institution, it is often difficult for them to make informed decisions about exhibition content and interpretation.

Furthermore, museums are also involved in complex and ongoing negotiations of power relations with the multiple communities they serve, especially those who have been marginalised or silenced in the past. One of the most powerful (and perhaps least obvious) ways in which this is done is through the composition of the Board of Trustees whose members may be either appointed, elected or self-perpetuating. According to Anderson (1998: 4), the Board's composition is 'one of the most important external symbols of institutional ownership'. In order to be inclusive, she argues, the Board should not only represent diverse points of view, it should also reflect the mix of communities that the museum serves.

The frequency of contact dimension of tenor also involves a consideration of several elements. First, the contact between members of a culture and a museum is distinguished by varying degrees of regularity. Their contact may thus be classified as regular (which can vary from several times a year to annual contact), intermittent, one-off, or non existent as there may be no contact at all. Clearly, the more regular the contact, the higher the degree of involvement a person has with a cultural institution and a cultural institution has with its visitors. This, in turn, impacts on the strength of the social relationship between them.

Given the importance of contact in establishing and maintaining strong social relationships, it is not surprising that museum staff concerned with evaluation and visitor studies have conducted much research into this aspect of tenor. Hood (1995), for instance, classifies museum visitors according to the frequency of their contact with the institution. For this purpose, she has developed the following categories: frequent participants, occasional participants and non-participants. Frequent participants attend an institution three or more times a year, occasional participants attend once or twice a year, while non-participants attend less than once a year or not at all. In fact, most large museums employ fulltime staff to research the frequency of contact their visitors have with the institution, as well as develop demographic profiles of each visitor group.

Another tenor dimension related to the frequency of social contact is proliferation. The greater the contact between visitor and the institution, the more options can be explored for leisure and learning (and social change) by the visitor. Conversely, the less contact there is, the fewer the choices that can be taken up. Clearly, this has important implications for museums interested in building a strong community of participants.

The final dimension of contact concerns the *amount* of contact time. As previously mentioned in Chapter 1, visitor studies have shown that on average visitors spend less than 20 minutes in an exhibition (Kelly, 1996, 1997; Serrell, 1996). This is an extremely illuminating finding. Given that the amount of contact time is so low, the way visitors spend this time will be crucial to achieving the institution's educational objectives especially the facilitation of social change.

**Orientation to affiliation**

Orientation to affiliation with respect to post-modern museum participation seems to be strongly grounded in the ontogenesis of the individual, especially the museum visitor's childhood. As discussed in Section 1.2, the positive socialising experiences of the museum through the interactions of social groups such as families and school group visits, seem to create a long term predisposition towards museum visiting (Bourdieu, 1969; Saatchi and Saatchi, 2000). Negative experiences, on the other hand, seem to predispose people towards becoming non-participants who hardly, if ever, engage with cultural institutions. As a result, museums strongly foreground the importance of fostering positive experiences for visitors, especially children, through an orientation to fun and hands-on, discovery learning.

The challenge for post-modern museums is, of course, finding ways to facilitate affiliation and expand their audiences by attracting the sleeping giants mentioned in Chapter 1. It also involves making people from communities which have been marginalised and silenced in the past feel safe, secure and welcome in the museum environment. To exemplify, after the opening of the *Indigenous Australians* exhibition, the Australian Museum in Sydney ran a series of seminars for teachers exploring the social justice issues raised in the exhibition such as land rights, the Stolen Generations, Deaths in Custody and so forth. A speaker for one of these seminars, a member of the Stolen Generation, arrived at the Museum early on the morning of the seminar and stood outside the building for some time, trying to summon the courage to walk inside an institution that had been so strongly associated with the social injustices of the past.

As the discussion of tenor so far has indicated, building relationships with people is a major interpersonal challenge for post-modern museums. To assist with this task, museums need strategies to help them meet the challenges involved in creating a positive orientation to affiliation, and perhaps increasing visitor contact time. Consequently, it is hoped that the work on Binding, a resource that mediates the security or insecurity visitors feel in a space, will provide museum staff with some useful resources (see Chapters 3 and 4 of this thesis). After

all, if museums can make their visitors feel welcome, comfortable, safe and secure in their spaces, it is more likely that visitors will remain inside the museum for longer periods of time and feel more positively oriented towards the institution.

**Affect**

The final dimension of tenor is affect (Poynton, 1985). Affect can either be positive or negative, transient or permanent. From a semiotic point of view, affect is more likely in situations characterised by frequent social contact (Martin, 1992: 533). To optimise the affectual dimension of a museum visitor's experience, museums appear increasingly to be responding to this notion in a literal way, by creating 'high contact' exhibitions. One of the ways for doing this is by constructing an almost causal relationship between physical contact, in a literal hands-on sense, and learning, as well as enjoyment. Hands-on activities include 'dress ups' for children as well as craft-making activities, computer interactives, jigsaw puzzles, theatre performances and so forth. Participatory activities such as these are thought to be more enjoyable because they involve visitors in active rather than passive learning experiences (Hein and Alexander, 1998: 26).

In museums around the world, the hands-on learning movement began in science centres such as Questacon in Canberra (Caulton, 1998: 2). It then spread to all types of museums: art, natural history and history. Within the museum profession it is often argued that hands-on learning (or learning by doing) is more fun than didactic learning because it involves the material, physical exploration of objects and phenomena (Hein and Alexander, 1998; Caulton, 1998). Fun, in turn, fosters a positive predisposition to museum participation and is seen as something that should be encouraged. Hands-on learning is commonly regarded as having another important benefit: the provision of 'added educational value' to consumers, especially middle-class parents (Caulton, 1998: 2).

However, as Caulton warns, there is no conclusive evidence that 'hands-on' interactions lead to 'brains-on' learning.

The evidence suggests that visitors to interactive exhibitions thoroughly enjoy the experience, that the visit may change their attitudes to science or other subject areas, and that they can remember the experience for a long period of time after the visit. However the evidence that they have actually learned anything, or indeed have not had previously held misconceptions reinforced, remains unproven.

(1998: 22)

This is an important finding for an institution involved in the transmission and acquisition of knowledge.

Furthermore, museums still retain a strong imprint of their predecessors, the Renaissance cabinets, with respect of curiosity. Curiosity, for instance, is seen the precursor of learning in that it provides the stimulus that attracts the attention of the museum visitor. Museum educators believe, for instance, that once it is stimulated '…curiosity can then be redirected to more detailed information about the animal in question, or it can be used as the basis for presenting new concepts and delivering messages,' (Masters, 2003: 130). In fact, Masters argues that the most important challenge of museum interpretation in exhibitions is to 'capture the imagination and curiosity of visitors. If their interest is not sparked, then no further interpretation is possible,' (Masters, 2003: 131).

In these ways, curiosity and fun are construed as pedagogic bridges leading visitors into uncommonsense knowledge and understandings. ) Drawing on Macken-Horarik's domains of knowledge (1996, 1998), an alternative perspective will be explored in Chapter 5 (section 5.2.1.3b). In particular, Macken-Horarik's research offers a theory of semiosis which can be effectively used to scaffold visitors from their everyday, commonsense understandings into understandings that are theoretical and reflexive in nature.

Finally, and as mentioned earlier in the discussion of social purpose, an important type of learning that occurs in hybrid museums concerns attitudinal change. This is linked to the

moral and ethical social purpose museums have had since the 18<sup>th</sup> century. In order to facilitate such transformation, the ideal, from the point of view of the museum, is to provide visitors with a secure and comfortable environment in which they can explore their feelings, positive or negative (Hubbell Mackinney, 1996: 10). It is hoped, moreover, that in the process of exploring these feelings, ethical changes may occur in such a way that the visitor's 'sense and sensibility' are realigned with those of the cultural institution (Kelly, 2000; Lave and Wenger, 1991; Marton et al. 1993). In the words of two museologists:

> Ultimately, museum learning is about 'changing as a person': how well a visit inspires and stimulates people into wanting to know more, as well as changing how they see themselves and their world as both an individual and as part of a community.

> (Kelly and Gordon, 2002: 161)

Although fun and the facilitation of attitudinal change sit side by side in the post-modern museum, as the quotation above indicates, it is the museum's social purpose as an agent of social change that is paramount. Providing the environment in which the visitor may be attitudinally transformed is a challenge involving at least two key issues. First, understanding how to design spaces that establish a relationship of security with museum visitors. Second, understanding how to negotiate attitudinal change in ways that realign visitors into a new subjectivity. Addressing the first issue will be the main focus of this thesis, especially Chapters 3 and 4 on Binding, for as White (1994) and Ravelli's (2000) analyses have fore-shadowed, three-dimensional spaces can be organised in ways that establish interpersonal relationships with their occupants. The second issue, facilitating attitudinal change, will be the focus of Bonding in Chapter 5 (Section 5.2.1.3b). Bonding is concerned with constructing the attitudinal disposition of visitors in relation to an exhibition. Again, as Ravelli's (2000) analysis has suggested, the organisation of space has the potential to influence the attitudinal disposition of visitors by transforming their social roles (from shoppers to pseudo spectators to pseudo Olympic athletes). These changes, in turn, have the potential to transfer the values of one field to another in ways that can impact on the attitudinal disposition of museum visitors.

**Conclusion to semogenesis**

The preceding discussion indicates several differences and some important continuities in the way ideology has been construed in museums over time. The Renaissance cabinets, for example, which served the social purposes of private glorification and mastery over the universe were dependent on wealth and power. Accordingly, their valuer was concerned with admiring and respecting the triumphs of the collectors and celebrating the material domination of the universe and the colonial world.

The reversal of the cabinet's social exclusiveness coincided with the emergence of a new and liberal middle class. Their aim was to use knowledge to enlighten and morally transform the masses by presenting the world as rational, ordered, logical — as something that can be learnt. Organised around chronological sequences and typologies, museums were the physical embodiment of rationality and progress. In this way the valeur of the 18th century museum was concerned with the triumph of invention and discovery and good citizenship. Citizenship, in turn, depended on respecting knowledge as a means of freely transmitting the appropriate morals, behaviours and social values.

The funding crises of post-modernity, however, have stimulated another epistemic shift in museums. Consequently, the valeur of the hybrid museum is now concerned with consumption, that is, the buying and selling of goods and services. Servicing is strongly focused on the leisure industry and the museum has become a service provider in an increasingly competitive market place. Although the valuing of pluralism and inclusiveness is important to those concerned with scholarship, and opportunities for attitudinal growth and transformation remain highly valued by educators, these coexist alongside the leisure servicing goals driven by global economic imperatives foregrounding entertainment. Nevertheless, realigning visitors into a new subjectivity remains one of the over-arching goals of the hybrid museum.

In essence, the continuity that has remained strong throughout the genesis of the museum has centred on the valuing of objects and collections and their display in three-dimensional spaces. One of the key disjunctions, however, concerns social purpose. The cabinets and people's palaces of the past were places for *musing* — thinking, pondering and reflecting; the hybrid museums, in contrast, are places for *amusing* (Davidson, 2001: 14).

# 2.3 Summary of Chapter 2

The main aim of this chapter was to establish the theoretical foundations for the grammar of three-dimensional space. Section 2.1 began by examining the two major traditions of semiotics: the philosophical and the structural with a particular focus on exploring the research relevant to architecture. Section 2.2 then explored social semiotic theory developed by Halliday (1978, 1985a) and Martin (1992, 1997, 1999b). In particular, it presented three social semiotic tools which can be applied to the theorisation of non-verbal modalities. They are a social orientation to meaning making, the axes of chain and choice, and Halliday's metafunctional hypothesis.

Section 2.2.2 explored how these three resources have been applied by social semioticians to develop theories of the following non-verbal modalities:

- visual images (Kress and van Leeuwen, 1990, 1996; O'Toole, 1994)
- movement (Martinec, 1997, 1998a, 1998b, 2000a, 2000b)
- speech, music and sound (van Leeuwen, 1999)
- architecture (O'Toole, 1994; Kress and van Leeuwen, 1996; van Leeuwen, 1998).

Finally, as the main field focus of this thesis is museums, two other social semiotic tools were also explored: semogenesis as developed by Halliday and Matthiessen (1999) and social context as developed by Martin (1992, 1997, 1999b). In particular, following Martin's model of ideology (1997, 1999b), phylogenesis was used to project social context for three seminal moments in the museum's genesis: the cabinets of the Renaissance, the public museum of the 18th century and the hybrid museum of post-modernity and post-colonialism. In this way a body of museum literature was also reviewed setting the historical and social context for the exploration of Binding (Chapters 3 and 4) and Bonding (Chapter 5).

# CHAPTER 3

# Binding

# 3.1. Introduction to Binding: space and in/security

The goal of this chapter is to theorise the way people's emotions can be affected by the organisation of space. The term 'space' is used here in its broadest sense, to encompass the organisation of indoor and outdoor spaces as well as built spaces and spaces occurring in the natural environment. Although reference will be made to natural spaces in some sections of this chapter, the main focus of this research will be built spaces, in particular museum exhibitions. A built space is a three-dimensional structure that comprises three intersecting planes: an overhead plane consisting of a roof and/or a ceiling; a wall plane; and a base plane comprising a floor. The intersection of these planes not only creates a three-dimensional spatial enclosure — it also defines the limits of the space (Ching, 1996: 99)[1].

To further ground this work, a distinction needs to be made between the terms 'space' and 'building'. In architectural writing, 'building' is defined as 'an object that defines and encloses space,' (Foster, 1982: 8). In architectural writing, the term 'building' can also be used to refer to either a single space, such as a rotunda or hall, or a series of interconnected spaces, such as the apartments in a block of units, which are in turn comprised of numerous smaller spaces such as corridors, bedrooms and so forth.

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[1] It should be noted that this is a current architectural definition but that it may change over time as definitions such as these are neither fixed nor timeless.

In SFL, on the other hand, the relationship between the two words would be defined as the part–whole relationship of meronymy. In other words, the term 'building' would constitute 'the whole', while the spaces partitioned inside the building would be regarded as co-meronyms. This thesis will predominantly be concerned with the ways in which the 'parts' or individual spaces are organised to create a 'whole'. This whole will not always be a building. It will most commonly be an exhibition — a series of interconnected spaces, in a dedicated section of a museum building that unfold logogenetically to create a unified whole. Exhibition spaces, moreover, are most commonly used for the display of material culture and/or artworks. They may also be used for the display of accompanying text panels, object labels, photographs, furnishings, computer interactives, CD-Rom databases and so forth.

Spatiality, as described above,[2] is the domain of this work. From here on, the way a space closes in on a person or opens up around them, will be referred to by the technical term *Binding*. Binding concerns the interpersonal dimension that exists in the organisation of space. Here, 'interpersonal' indicates that the meanings constructed through the organisation of space extend well beyond the materiality of architecture. Binding actually points to the affectual disposition that exists between a person and the space that person is occupying.

In essence, Binding is a theory of the dialectical relationship between affect and space, and constitutes one dimension of the grammar of three-dimensional space. Its particular focus is on how a space can make an occupant feel secure or insecure. In a three-dimensional space, for instance, the interpersonal experience of that space is tied to how *firmly* the space encloses a person. By enclosing a person firmly, a space can make the person feel comfortable, secure and protected. When these enclosures are loosened, the space can still maintain the relationship of security with the occupant but it will probably make them feel unencumbered and free because more room has opened up around them. A person's response to the organisation of space is also influenced by other factors such as light, colour, texture and pattern. These are important as they construct the ambience of a space and can function to alter the way an occupant perceives the degree of enclosure inside a

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[2] The term 'spatiality' pertains to space.

space. This thesis deals with the complex ways the organisation of a space, together with its ambience, interact to make people feel secure or insecure.

This chapter begins by briefly discussing some of the factors influencing cultural orientations to Binding. It then explores some of the ways natural and built spaces can be organised to make their occupants feel either secure or insecure. With the way in which security and insecurity are experienced in the spatial realm established, the focus of the chapter shifts to a consideration of APPRAISAL, the interpersonal nexus bridging the semiosis of architecture and the semiosis of language. The following chapter, Chapter 4, will discuss the materialisation of Binding, both in terms of the vertical and horizontal enclosures articulating a space, as well as choices for constructing ambience, that is, colour, light, texture and patterning.

# 3.1.1 Factors influencing cultural trends and orientations to spatial security

Just as the socio-cultural model of language developed by Halliday (1978, 1985a), Halliday and Hasan (1976), Martin (1992) and Matthiessen (1995) which underpins the research in this thesis posits a relationship between culture and language use, in analysing the way spaces are articulated to make people feel secure or insecure, this thesis will draw heavily on cultural orientations to Binding. Halliday, for example, was strongly influenced by the research on language and culture undertaken by anthropologist Bronislaw Malinowski[3] when developing the SFL model of language (Halliday, 1985b; 1985c). Malinowski highlighted the importance of culture in understanding language use amongst the Trobriander people he studied (1923).

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[3] Malinoswki's research was conducted on the Trobriand Islands in the South Pacific and the language spoken by the people living there was Kiriwinian. Although Malinowski was fluent in the language he found that literal translations of texts written in Kiriwinian did not encapsulate their meaning. As a consequence, he wrote extensive commentaries to accompany the texts and place them into their total environment. He also developed the terms context of culture and context of situation to encapsulate the 'con-text' needed to understand a text. Context of culture refers to the background, histories and practices of the culture in which the text is located while context of situation refers to the immediate environment accompanying the text.

Similarly, people's relationships with spaces in respect of security and insecurity are culturally shaped. To understand cultural orientations to Binding some consideration needs to be given to the way the following factors influence the organisation of space: environmental factors, especially climate and topography; cultural baselines for security; social factors such as cultural processes of change, which are strongly influenced by technological innovations; legal factors such as local government legislation and economic factors, such as project budgets. Economic considerations also extend to whether or not a public building housing a cultural institution, for example, needs to be self-funded, or whether it will receive ongoing financial support from government bodies and/or private sources for maintenance and operational costs. As each of these factors exerts a strong influence on shaping the cultural practices involved in organising space, they will now be briefly explored.

## 3.1.1.1 Environmental factors: climactic and topographic differences and how they impact on Binding

The cultural construction of space clearly differs in response to climactic and topographic variation. This is particularly evident if we compare the subterranean housing found in the historical underground cities of Cappadocia in Turkey, or at Coober Pedy, an opal mining town in Australia, with the open pavilion-style housing constructed by people, such as the Balinese, living in the tropics. Cappadocian housing and a Coober Pedy dug-out are shown in Plates 3.1 and 3.2 below.

Plate 3.1 Cappadocian Housing          Plate 3.2 A Coober Pedy dug-out


In Coober Pedy and Cappadocia,[4] the motivation for subterranean living is and was security. Neither location has an abundance of available building materials — in both landscapes there is no timber, few or no bricks and no decent stone. In addition, the summers are very hot and the ground is soft, so subterranean dwellings or cave houses have become the common form of refuge and shelter. The very fact that these dwellings are built *underground* is critical for the comfort and security of the occupants as the soil provides thermal comfort, that is, it keeps the spaces cool in summer and warm in winter. The earth also provides protection from the wind, storms and fire. In fact, early human settlements have always taken advantage of local topography, especially caves, to provide security and shelter from cold winds and the heat of the sun (Pearson, 1998).

In the tropics, on the other hand, the wet season precludes the possibility of subterranean living. In Melanesia, for example, houses are built on stilts to avoid flooding, for water levels can rise quickly during torrential downpours. Furthermore, as air temperatures are consistently warm in the tropics there is no need for domestic spaces to be firmly enclosed

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[4] In Cappadocia there was an additional dimension to the security that cave homes provided as living underground was often the only way people could survive the pillaging armies of the past.

or sealed off from the landscape and the elements (Jowitt and Shaw, 1999). To ensure that occupants feel comfortable and secure, therefore, tropical spaces are frequently constructed in such a way that the flow of cooling air through them is constant (Jowitt and Shaw, 1999). The flow of air is significant to thermal comfort in that it increases heat loss and evaporation. Consequently, some tropical houses, such as the traditional Samoan fale, are built without walls; the total opposite of the way secure spaces are constructed in underground dwellings.

According to Graham Holland, Honorary Associate in the Faculty of Architecture at the University of Sydney, 'In most situations temperature is the most important comfort factor,' 2000: 199. Holland's statement thus foregrounds climate, and temperature in particular, as the overriding factor in creating spatial comfort. However, it is the creation of comfortable temperature levels which is strongly dependent on both climate and topography and is therefore culturally shaped.

It is thus not surprising to learn that Samoan fale achieve comfort for their occupants by modifying the effects of the tropical climate. For instance, they have a roof, which provides shade from the sun, and a row of posts on the outer perimeters of the space. These posts maximise the flow of air and visually *suggest* wall enclosures. Topographically, fale tend to be built near the sea so that optimal advantage is taken of cooling sea breezes while blinds woven from coconut fronds are lowered, when needed, to keep the rains out. Significantly, these blinds are woven from light local materials that allow the air to pass through them easily, so that the large internal space remains cool and the space can continue to 'breathe'. In this way temperatures are regulated and the comfort and security of the occupants are assured. Such examples are important, as they illuminate how cultural orientations to Binding evolve in direct response to climate and topography.

## 3.1.1.2 Cultural baselines for security

Choices for security and comfort are moreover culturally specific (Locock, 1994: 3). As a consequence, spaces which make one cultural group feel secure may have the opposite effect on a different group which has learnt to feel secure in spaces with a different degree of enclosure. In fact we tend to become most acutely aware of the cultural dimension

involved in the organisation of space, when we move into a different cultural context and experience a dramatic shift in the degree of spatial enclosure. For instance, Lucy Waqairagata, an Australian woman who married and moved to Fiji, describes her initial experience of domestic living in the following way:

> We were staying with his sister. There were 13 in the house and no doors anywhere, only curtains. And the walls didn't go right to the ceiling: there was a gap about one foot wide at the top. Sound just travelled right through the whole house. My sister-in-law had a little 18-month-old boy and he was always popping up everywhere. And us six weeks married!
>
> (cited in Hooton, 2000: 14)

Lucy Waqairagata felt neither comfortable nor secure in her sister-in-law's house because the internal spaces did not provide her with the degree of enclosure she was accustomed to — there were no doors, the walls did not extend to the ceiling and the use of lightweight materials meant there was no acoustic privacy. This lack of enclosure appears to be in response to two factors. First, the cultural practices associated with climate that have evolved for organising spaces in the tropics, and a different cultural orientation to privacy.

Most of the people living in Australia today, for instance, still share the need for privacy that was transported to their continent by the early British settlers (Boyd, 1952: 11; Brown, 2000: 108). In Anglo-Celtic cultures where privacy is strongly valued, intimate activities, such as undressing and sexual behaviours, tend to take place in clearly defined and firmly enclosed spaces. Even in the late 20th century, Welsh architect Simon Unwin stated:

> The bedroom is the innermost, most private, most protected part of the house. It is a place where one must feel safe enough to sleep, or to be ill, and private enough for sex.
>
> (Unwin, 1997: 62)

It is not surprising then that a person who grows up with the strong cultural orientation to privacy that Unwin describes is not likely to feel secure in a culture where intimate activities take place in loosely enclosed spaces. Inside the Fijian house that Lucy Waqairagata describes, for instance, any member of the family can wander in or out of the

bedroom and/or overhear the sounds associated with lovemaking. Such examples are significant, for they clearly illustrate how cultural orientations to privacy not only influence the firmness of spatial enclosures but also determine the degree of enclosure needed for different social functions.

This section has functioned to illuminate several important points related to spatial comfort and security. First, climate, and in particular, temperature, tends to be the overriding factor determining spatial comfort in built dwellings. So much so that it can force the construction of spaces to relax to an absolutely minimal degree of enclosure. It can also have the converse effect. Once climactic factors have exerted their overriding influence on the construction of domestic spaces in this way, other choices for comfort and security tend to be taken up, especially social factors such as cultural orientations to privacy.

While we have just seen the powerful influence that environmental factors can exert on the construction of secure spaces, especially in the domestic sphere, it is likely that the influence they  exert on the construction of public spaces will not be as profound. The primary reason being that due to technological advances and the large financial budgets allocated to public buildings, it is customary and affordable to ventilate these spaces mechanically through the use of expensive air conditioning and heating systems. Such choices are important as they can and do override the influences of climate on the construction of certain types of space. In fact, being able to modify, that is, temper and mitigate against, climactic conditions is interpreted by some as being a strong sign of power and wealth (van der Meer & Sudjic, 1997).

## 3.1.1.3 Individual variation in the interpersonal experience of space

There is likely to be individual variation in the way people respond to space interpersonally. As a result, cultural orientations to space can never be completely deterministic as individual variations may also override them. The confined spaces of lifts and tunnels, for instance, can provoke intense feelings of claustrophobia and insecurity in some individuals. In western cultures, moreover, skyscrapers have become increasingly commonplace from the end of the 19th century onwards, when steep land values in major cities and technological innovations such as steel frames, electric elevators and reinforced

concrete, provided the incentive for developers to erect tall buildings. Although skyscrapers have been commonplace for more than a century, there are still individuals who experience vertigo and strong feelings of insecurity when they find themselves occupying these spaces.

It is likely that these feelings may have become more widespread in response to the terrorist attacks of the early 21st century, especially the attacks on the World Trade Centre, New York, on September 11, 2001. Some of the people living and working inside skyscrapers may feel more vulnerable and insecure as a consequence, especially as the attack exemplified how difficult it can be exit such buildings in a crisis. It is unlikely that skyscrapers made of structural steel, like the World Trade Centre buildings, will be constructed again. So the culture of architecture may also have changed as a result of the attacks[5]. Spaces such as these can therefore continue to challenge some people living and working in cultures where such built spaces are commonplace.

There are also likely to be other instances of variation in the way individuals experience space interpersonally. Adventurers, for example, who delight in pushing boundaries and testing the physical limits of their endurance, could experience spaces with too much or not enough enclosure positively. Cavers, for example, would delight in crawling through dark, tight and narrow spaces. However the intensity of feeling so tightly enclosed by a space would make many, if not most people, feel stifled and smothered. Similarly abseilers, base jumpers, skydivers and bungee jumpers, who lie at the other end of the continuum, revel in the feelings of precariousness and exposure they experience when scaling sheer cliff faces, leaping out of planes, jumping off bridges and buildings and/or free falling. This is captured in Plate 3.3, where an abseiler has slipped during the climb.

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[5] It will be interesting to trace the impact of the terrorist attacks of September 11, 2001; October 12, 2002; the bombings of 2003 and the bombings in Spain on March 12, 2004 on the construction of buildings, especially tall buildings, in the years to come. In Melbourne, for instance, Australian architects Karl Fender and Nonda Katsalidis are building the Eureka Tower on the banks of the Yarra River. When it is completed, it will be the tallest residential tower in the world housing some 1500 people, and reaching 324 metres, the same height as the Eiffel Tower in Paris. Prior to the Bali Bombings, Fender and Katsalidis argued that terrorism has had little impact on the construction of the tower, citing successful sales as evidence of this. They have also asserted that as the Tower will be constructed from reinforced concrete, security will not be an issue for its occupants. It will be interesting to see whether or not security will become a greater concern and how this may impact on building practices.

Plate 3.3 A climber falling while abseiling

Once again, this level of vulnerability would be too threatening for most people. Moreover, individuals suffering from claustrophobia, a morbid fear of confined spaces, or agoraphobia, a morbid fear of people and open spaces, will negatively experience spaces that would make most people feel secure.

## 3.1.1.4 Cultural processes of change

The other factors that impact strongly on cultural orientations to Binding are the processes of change that are evident in all cultures, to varying degrees. To exemplify how such cultural changes manifest themselves, let us look briefly at terrace houses in Sydney. In the late 19th century these were a common choice for domestic dwellings in the inner city suburbs of Sydney and Melbourne. One of the reasons for their popularity was that early settlers transposed to the warmer climates of Australia domestic architecture they were familiar with in the cold climates of the northern hemispheres. This point is captured in the words of Nicholas Brown, Research Fellow in the Urban and Environmental Program, Australian National University:

…European settlement in Australia took place just after the bourgeois ideal of the home, centring on domestic life and comfort, and disaggregated into discrete rooms,

had taken hold across northern Europe, all ready to be transported. There are many striking images in Australian history of such rooms dislocated, disarrayed, latent but unrealised in the search for familiarity in a strange landscape.

(Brown, 2000: 108)

A century later, however, there has been a marked shift in the interpersonal relationship between the terrace and its occupants as current inner city dwellers tend to feel neither comfortable nor secure living in the confinement of the original terrace house. This is evident in the following extract, written by interior designer Babette Hayes, who is also a former design consultant for *Belle* magazine.

Think terrace house and the image that comes to mind is of an upright, two-or-three level building with a long, dark hallway, a steep and narrow staircase and box-like rooms. While attempts to rectify these shortcomings usually involve major surgery, such as gutting the rear half, the front rooms are usually left to battle on with small windows and a limited source of light. That which was appropriate in the 19$^{th}$ century no longer suits our more relaxed and informal 21$^{st}$ century lifestyle which requires, or rather demands, spaces to be flexible, open and light filled.

(Hayes, 2001: 14)

The statement by Hayes clearly exemplifies how orientations to spatial security in a culture can, and do, change over time[6]. Unlike their predecessors, most 21$^{st}$ century Sydneysiders no longer feel comfortable or secure in the small, dark, confined spaces of the past. The original terraces, for instance, had few wall openings. This feature, combined with the long distance between the front and back walls, decreased the penetration of daylight into the terrace and restricted the airflow, making the terrace dark and uncomfortable to live in. The current cultural trend is to refurbish these spaces by transforming them into soaring, open-plan houses bathed in natural light by using features such as sliding glass panels for their rear walls as shown in Plate 3.4.

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[6] A more detailed discussion of what a 'relaxed and informal lifestyle' means will take place in Chapter 5 of the thesis in the discussion on Bonding. In particular, the focus of the discussion will concern how Bernstein's concepts of classification and framing impact on social interaction.
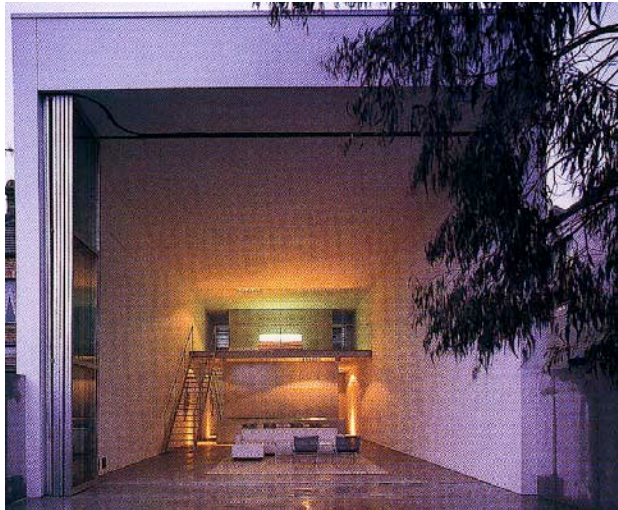
Plate 3.4 A refurbished terrace house, Sydney

The possibility of changing terrace houses in this way comes from technological innovations[7] which are costly, and thus predominantly accessible to particular income groups within the culture. Ironically, there is an unresolved tension in post-modern urban society between opening up the house physically in this way and remaining safe from intruders. Nevertheless the 'major surgery' involved in opening up the spaces inside terrace houses is so substantial that young children growing up in inner city suburbs where refurbished terraces are common will no longer associate these homes with their original condition. Within a given culture, ongoing changes such as these will exert a strong influence on the orientations to space that the members of that culture develop.

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[7] The technological innovations which have made it possible to change buildings such as dark terrace houses include the development of cast iron, which allows for the creation of pre-fabricated structures, and the evolution of glass-making technology from a hand-made rarity to a mass-produced product that is available in larger and larger sheets or plate sizes. It also includes the development of steel, through modern smelting techniques. Steel can be rolled into beams which are welded together to create structural frames. Structural frames, in turn, have replaced the solid masonry walls of the past and are covered in large sheets of glass creating transparent walls commonly referred as window or curtain walls. Cast iron and steel, moreover, enable architects to design larger and larger structures with roofs that span unprecedented distances. The final major innovation includes the technique of strengthening of concrete with reinforcing rods. This enables concrete to be poured into moulds over a grid of reinforcing steel which creates strong but thin shells. Poured concrete, in turn, is able to be fashioned into more irregular and organic shapes.

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## 3.1.1.5 The impact of legal factors on spatial security

In countries like Australia, legal decisions can also exert an enormous impact on the construction of secure spaces. Local councils, in particular, have the power to institutionalise cultural orientations to spatial security. For instance after the Second World War when innovative Australian architect, Sydney Ancher, wished to build the kinds of loosely enclosed spaces that characterise Modernist architecture overseas, the Chairman of the Health and Building Committee of the Warringah Shire Council in Sydney responded in the following way: 'In my position as Councillor I have to represent what I believe to be the opinion of the community and for that reason I say I must object to any startling innovation,' (Boyd, 1952: 208). Such institutionalisation clearly leads to strong conformity in the construction of spaces that are seen to be acceptable within a culture at a particular point in its genesis.

In Australia, however, architects whose proposed building plans are rejected in this way have the right of appeal in courts such as the Land and Valuation Court of NSW (Boyd, 1952: 207). If they are successful, their appeal may be upheld, and their innovation constructed. This precedent may, in turn, be influential in changing the communal baseline for security. This was, in fact, the outcome of the Sydney Ancher case. Ancher won his appeal, and from that point onward, domestic architecture in Australia became much more open. As a consequence, the boundaries separating the division of internal and external spaces were substantially weakened using innovations such a large sliding glass doors and skylights. Such landmark cases demonstrate the substantial impact that legal factors can have on the baselines for security developed by members of a shared culture.

## 3.1.1.6 The impact of economic factors on spatial security

Architecture is the direct reflection of the wealth of a society. The more secure a culture feels, the more it invests in buildings that convey permanence. Nomadic cultures make temporary shelters and take them with them when they move. Settled ones build structures and stay put. Wealthy societies embellish their architecture; they have the resources to divert effort, time and energy away from daily survival, into increasingly

elaborate and complex edifices…Architecture is the first and most fundamental of civilization's luxuries. It is meant to last and impress.

(van der Meer and Sudjic, 1997: Section 5)

The socio-cultural impact of wealth on the construction of built spaces cannot be underestimated as the quote above illustrates. In fact, economic wealth tends to impact on the construction of built spaces in two predominant ways. First, it impacts upon the size of buildings, as evident, for example, in the monumental scale of the funerary complexes built by the ancient Egyptians at Saqqara. Second, it impacts on the choice of building materials. In order to convey opulence, for instance, wealthy societies tend to favour the use of rare, precious and exotic materials rather than local resources. Third, it impacts on the implementation of technological innovations. We have already seen, for example, how the opportunity to renovate domestic architecture is predominantly accessible to certain income groups within a culture. The combined effects of these, in turn, influence the orientations to space that different socio-economic groups develop. In light of this, the construction of two 20$^{th}$ century museums will be briefly discussed in respect of economic considerations: Ravenshoe, a regional museum in Queensland Australia, and the Getty Center in Los Angeles.

The impact of financial resources on the scale of public buildings housing cultural institutions can be enormous. Constrained by a minuscule budget of $A130, 000, for example, the Ravenshoe Museum in Queensland is an extremely small-scale building. It comprises a single column free space designed to evoke an outback shed (Brannigan, 2003). The Getty Center, in contrast, with its budget in excess of a billion dollars has been built as a complex of buildings on the top of a hill in the northern part of Los Angeles. In addition to exhibition spaces, the Getty complex comprises a research institute, an auditorium, a restaurant, a cafe and a central garden. It also has its own private Tram Station with a light rail which transports visitors from the parking area to an Arrival Plaza. In terms of their scale, the contrast between the two museums could not be greater.

The impact of economic factors is further evident in the quality and type of building materials that are used. In pre-industrial societies, the availability of building materials

such as stone, timber and mudbrick was critical in determining the style and scale of a building. Stone tended to be confined to the most important projects such as castles, palaces and religious buildings. In post-modern societies, the availability of a material is closely related to cost. Thus, the further a material needs to be transported, the more expensive it becomes. It is not surprising then, that 11,000 square metres of travertine marble were used in the building of the Getty Center. Furthermore, the marble used was quarried east of Rome in the Bagni di Tivoli, the same quarry that provided stone for St Peters and the Colosseum. Not only was the marble expensive, and layered with intertextual meaning, it was transported long distances to California and hauled to the top of a steep building site, which increased its cost substantially. Clearly such expenses can be afforded only by the wealthiest of cultural institutions. The Ravenshoe Museum, in contrast, was constructed from abundant and naturally occurring resources such as locally milled timbers. Local timbers were used to minimise the strain on its minute budget. Once again, the correlation between choice of material and the financial budget is undisputedly strong.

There is one final and very important dimension to the way economic resources impact on the design of public buildings and that concerns the long-term financial viability of the institution. In essence, the issue concerns whether or not the cultural institution needs to be self-funding after its opening, or receive ongoing financial support for maintenance and operational costs from government bodies and/or private sources. The Getty Center, for instance, is funded by the four million shares that J Paul Getty bequeathed to the Trust on his death. These shares generated an endowment that exceeded $US4 billion in the 1980s and these funds were used to pay for the building. They also provide ongoing revenue to cover the operational expenses incurred by the museum — expenses which include a large workforce, a carpark, a light rail system and a 'state of the art' computer-controlled lighting system.

Small-scale regional museums, on the other hand, often receive an initial building grant on the condition that they can achieve long-term sustainability after their opening (James, 2003). This was the case, for example, with the Qantas Founders Outback Museum in Longreach, Queensland. Born of the community's desire to create a lasting legacy to Qantas, the community received $A9 million for the building and set-up costs. However

the economic imperative of sustainability placed enormous pressure on the design, scale and function of the museum's spaces as it meant that as many commercial opportunities as possible needed to be integrated into the building. This generated a 'battle for turf' such that estimated cashflow figures determined the proportion of space allocated to commercial facilities such as restaurants and retail outlets and correspondingly diminished the size of the exhibition spaces.

Within a given culture, economic considerations such as the three just discussed, will obviously exert a strong influence on the orientations to public as well as domestic spaces that the members of a given culture develop.

# 3.1.2 The cultural domain of the research

From the issues raised in the preceding discussions, it becomes apparent that in considering the choices for organising space, we are dealing with a complex cultural phenomenon. The cultural domain of this thesis will be, broadly speaking, western European cultural orientations. Partial materialisations for the theoretical framework that will be developed in this work will be drawn from the articulated expressions of members of this cultural tradition. A select group will be drawn upon to provide elaborations of the ways interpersonal meanings are constructed in the organisation of space. This group will mainly comprise architects, interior designers, architectural historians, curators, artists, literary writers, travel writers and environmental psychologists.

Drawing on the articulated expressions of such a broad group of people is a deliberate decision as it enables the research to make contact with many different points of view. Brief accounts by adventurers, namely cavers, abseilers and mountaineers, will also be included as such people delight in pushing spatial boundaries, and it is only from accounts of personal experience that extreme situations of spatial insecurity can be investigated. Given the significance of individual variation, it is also acknowledged that there may be some differences in the way readers respond to the quotations included in this thesis. Interpersonal responses to enclosed spaces can and do differ for the reasons already discussed.

Finally, Binding is a truly multi-modal theory that involves other semiotic systems such as tactility, odour and sound. The degree to which an occupant experiences an enclosure as secure, for example, is also linked to the extent that *sounds* produced by the elements — wind, rain and hail — are audible inside a space. This can be exemplified in relation to a hailstorm. During a hailstorm, occupants are likely to feel more secure if they are in a space with a terracotta roof and an insulated ceiling as these materials dampen the sound of the hail falling from above. Occupants inside a space with a tin roof and no insulation, on the other hand, would find the sounds of the hail amplified and may feel more vulnerable and exposed to the elements as a consequence. Although a number of semiotic systems clearly co-articulate with Binding to inscribe security, it is beyond the scope of this work to account for all of these. As a consequence, this thesis will focus solely on *vision* in relation to how built spaces are organised to make occupants feel Bound or Unbound.

# 3.2 Space and the interpersonal dimension

The interpersonal relationships constructed between a space and its users fall within two main categories: security or insecurity. These are represented in Figure 3.1.
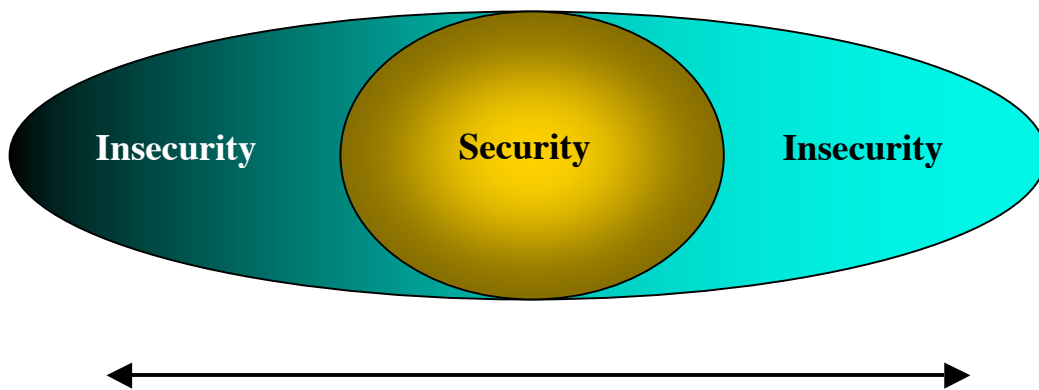


Figure 3.1 In/security and the Binding scale

As shown in Figure 3.1, choices for Binding have been represented on a continuum or scale and not a system network. This is a deliberate decision because Binding is not a set of clearly defined choices. Rather it deals with interpersonal meanings that are gradable. Binding is thus a topological resource and is best represented on a continuum or cline. The choice of a continuum serves another important function as it allows for both individual and cultural variation.

Both types of interpersonal relationship between an occupant and a space, security and insecurity, will now be discussed using a range of examples drawn from the natural and the built environments. Built examples will primarily, but not exclusively, involve museum exhibitions, which are the main field focus of this thesis. In the following section, Section 3.2.1,will begin by looking at the extreme choices, that is, the choices for Binding that

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construct relationships of insecurity with users, so that we can better understand, and appreciate, spatial enclosures that make people feel secure. Choices for security, referred to as the Bound and Unbound dimensions of the Binding scale, will be discussed in Section 3.2.2.

# 3.2.1 Space and insecurity

On the Binding scale, insecurity is located at the end points of the continuum as shown in Figure x below. The end point, Too Bound, refers to a space that is *so restricted* that it creates a smothering, suffocating relationship between itself and the user. The opposite polarity, Too Unbound, also constructs a relationship of insecurity between a space and its user. In fact spaces that are Too Unbound are *so unrestricted* in their enclosure that the relationship they set up with users is one of vulnerability as they make users feel exposed and unsafe. These relationships of insecurity are shown in Figure 3.2.
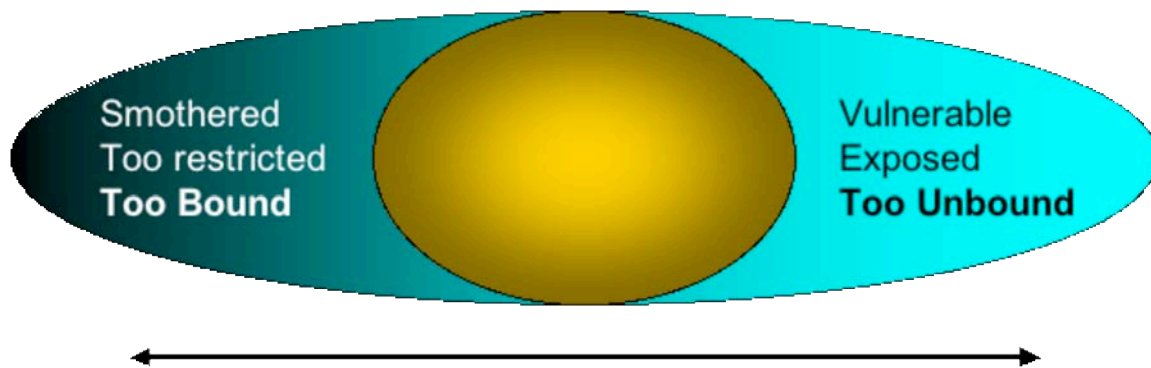


Figure 3.2 Binding scale — choices for insecurity

From here on, both end points of the Binding scale, Too Bound and Too Unbound, will be cited with capital letters to distinguish them from everyday terms.

# 3.2.1.1 Feeling Too Bound

## 3.2.1.1a The natural environment

The first spaces that will be explored are those that construct a relationship of insecurity with users by making them feel Too Bound. If the degree of enclosure within a space is too firm and restricted, it can impact negatively on the user. Spaces that are constructed to make users feel Too Bound also make them feel smothered, in the same way that a hold on a baby which is too strong creates a tightness that may well be experienced as suffocating and uncomfortable because the child looses its freedom of movement.

There are many examples of spaces that can make us feel Too Bound in this way. As noted in Section 3.1.2.2, we may feel Too Bound in the natural environment when we find ourselves inside a dark and unlit cave. Evidence of this is provided by Hughes de Montalembert, a French artist blinded in an acid attack, who discovered caves under the house where he lives. He describes the experience of being inside one of these caves in the following way:

> Seated in its centre, on big boulders catapulted into the cave by storms, I listen. Coming from the depths, I hear a heavy, immobile sound, the sound of the heart of the Earth, slowly pulsating, alive. Submerged in all that rock, that dust of dead stars, I am overcome by a sense of oppression. The fear of dissolving, melting into the rock, gnaws at me.

> (de Montalembert, 2001: 47)

The oppressive fear of being stifled and suffocated by the space that Hughes de Montalembert describes so vividly is at the heart of feeling Too Bound. It is noteworthy that he has such an intensely negative interpersonal reaction to the space despite the fact that he cannot see. Even though this thesis focuses solely on vision in relation to how built spaces are organised to make occupants feel Bound or Unbound, de Montalembert's response strongly suggests that

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the relationship between a person and a space is not solely dependent on vision[8]. Vision clearly co-articulates with other semiotic modes to make people feel safe and secure in a space.

Other spaces in the natural environment that can make people feel Too Bound are tall perpendicular cliff faces and towering gorges. These create walls that close in on the occupant in much the same way that soaring skyscrapers can in the built environment.

## 3.2.1.1b The built environment

Built spaces can also evoke the Too Bound dimension by making people feel smothered. For instance, people often feel insecure when they are required to travel through long deep tunnels engineered through whole mountains, or burrowed under harbours. Similarly, many people find that the small confined spaces of elevators, technological inventions on which access to multi-storey buildings is dependent, can make them feel Too Bound. These feelings tend to be amplified when the elevator is crowded or has a mechanical failure.

Subterranean housing may also evoke the Too Bound dimension for people who are not accustomed to occupying such strongly confined spaces. For instance American travel writer Bill Bryson describes the Dugout Underground Motel in White Cliffs[9], NSW, Australia, in the following way:

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[8] The multi-modal nature of spatial security is further supported by a personal communication with Maki Taguchi, Education Officer, Powerhouse Museum, Sydney (30th November, 2000). Ms Taguchi was asked to develop a guided tour for visually impaired visitors, which she trialed with one such group. One of the suggestions that emerged during the trailing was the request that when the guide stopped the group to talk to them, she avoid large open spaces as the participants felt terribly insecure in such settings. Instead, they asked that the guide stop in small spaces, or in the corners of large rooms, so that they could feel at least one wall behind them. Such enclosures obviously provided them with a feeling of security — one that they could sense rather than see.

[9] White Cliffs is a small opal mining settlement located north west of Broken Hill in NSW. It is named after the white shale outcrops in which the opals are found.

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The attraction of burrowing into the hillside is immediately evident when you step inside — a constant year round temperature of 67 degrees. The rooms were very nice and quite normal except that the walls and ceilings were cave like and windowless. When the lights were off, the darkness and silence were total. I don't know how much money you would have to give me to persuade me to settle in White Cliffs — something in the low zillions I suppose.

(Bryson, 2000: 52–3)

Bryson's message is a clear one about his inability to cope with living in subterranean spaces.

In museums, some exhibition spaces can construct the relationship between the visitor and the space in such a way that the visitor feels Too Bound. For instance at The National Museum of New Zealand, Te Papa Tongarewa (hereafter Te Papa) there is a dark cave in the outdoor area of the museum called 'Bush City', see Plate 3.5. At one point, directly before the glow-worm display, this cave becomes so dark that the space literally closes in on the visitor. At this particular point it is impossible to see anything[10] and people need to hold onto the railing to lead themselves through the cave.

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[10] The comments in this paragraph are based on my own observations of the way people interacted with the space at Te Papa during the week of 10–17 March, 2002.

Plate 3.5 Cave, Bush City, Te Papa Museum, Wellington

In this moment of total darkness, the absence of light significantly impacts on people's feelings of security in the space. According to Gardiner and Molony (2001), the absence of light interferes with the way visitors are able to appreciate and perceive colour, depth, space and volume. This in turn appears to construct a sense of confinement that changes visitors' whole interpersonal sense of space. Consequently, many people respond by feeling insecure and afraid. Gardiner and Molony (2001) point out that such fearful responses have a strong phylogenetic dimension as even in prehistoric times, darkness elicited fear and as a result was associated with evil and supernatural forces in many cultures. Light, on the other hand, tended to be regarded positively. Thus the lengthening of daylight hours in the spring and the rising of the sun at dawn were often times of ceremony and celebration.

Returning briefly to the dark cave in Te Papa, it is not surprising that when many visitors reach the point of total darkness, they feel an overwhelmingly strong sense of insecurity and call out to one another for comfort and reassurance. School children, on the other hand, tend to experience these levels of Binding as exhilarating and exciting. The very different interpersonal responses to the cave at Te Papa raise the issue of whether or not the space is Too Bound and, if so, for whom. The cave in Te Papa is a good example of how display, by

pushing an audience to the extremes of discomfort and insecurity, can polarise them. One can also speculate that perhaps there is a change in feelings of security about different spatial environments as people grow older. Finally, it is noteworthy, in this particular instance, that the experiential need to display worms glowing required a dark setting — one which had unexpected interpersonal consequences. This is a good example of exhibition planning where experiential needs often take precedence over interpersonal ones.

In terms of Binding, the significant thing about the Te Papa cave is that the interval of total darkness is short-lived. Within minutes, the light becomes visible. As a consequence, visitors observed in the space noticeably relaxed as they were reoriented to their prior levels of comfort and security. For many people, like the school children, being pushed to the extremes of comfort is an adrenalin-provoking experience. When that experience is short-lived, takes place in a reasonably 'safe' environment and is followed by a quick return to security, it is can easily be appraised as thrilling and exciting. If it were to continue unabated for extended periods of time, one can postulate that it would be likely to have an extremely negative effect.

In fact this was the present author's response to the experience of being immersed in total darkness for *one hour* in the *Blindekuh* exhibit at the Murten-Morat Arteplage, in Switzerland, as part of Expo 2002. In this exhibit, members of the visually challenged community introduce sighted visitors to the experience of being blind and then lead them inside a completely dark sensory space with black padded walls. In this space occupants suddenly find that they are required to navigate the everyday world, including the experience of stepping into puddles and drinking at a bar, by relying totally on their other senses — smell, touch, taste and hearing. Not surprisingly, some visitors find that this experience, which initially begins as an adrenalin-provoking one, soon becomes stifling and suffocating. The physiological responses to feeling Too Bound in this space include hyperventilation, trembling, perspiration and dizziness. Fortunately, the exhibition organisers made provisions to quickly remove people with such adverse reactions from the space.

It may be useful, at this point, to briefly consider the value inherent in pushing an audience to the extremes of discomfort and insecurity in this way. The organisers of the *Blindekuh* exhibit,

for example, were hoping to create a bridge of empathy between sighted people and those who are visually challenged. This is clearly implied in the catalogue which states that, 'This experience fundamentally changes the way we perceive the world, and it is a lesson that lingers long after the visit is over…Discover a new universe which will open your eyes for good by closing them for an hour,' *The Official Guide to Expo*.02: 131–3[11].

Although the organisers of this exhibit believe that they are re-creating the experience of blindness for sighted people and thereby fostering empathy, they are ignoring the fact that for many people who become blind sight fades over time and during this period patients are taught strategies for dealing with the onset of blindness (personal communication with Dr Donald Rothery, MBBS (Univ. Sydney), FRCS (Ed.), 9 August, 2002). In other words, this acute experience of total immersion in darkness does not accurately re-create the ontogenesis of blindness. Rather, it tends to foreground interpersonal reactions to blindness by evoking the Too Bound dimension in ways that are threatening and frightening for some.

Irrespective of the curatorial theses or key messages that exhibition designers wish to convey, creating a display which may make some people feel smothered and suffocated seems to be a choice that should be both sparingly and judiciously made, if at all. In particular, careful consideration needs to be given to the length of time people are required to remain inside such an intensely Bound space, and, in the interests of visitor safety, clearly signposted choices for exiting the space should always be provided and warnings should be given at the point of entry.

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[11] The underlying desire to foster empathy for the sight impaired was further reinforced by a series of messages the exhibition organisers had printed on postcards. These are issued to visitors as they are leaving the exhibit and include messages like the following '*Celui qui ne voit pas le soleil sent sa chaleur* (S/he who does not see the sun, senses its heat)'; '*La conscience n'est pas une question de lumiere* (The conscience is not a question of light)'; '*Auch das Dunkel hat helle Seiten* (Even the dark has lighter sides to it)'; '*Integration ist nicht gratis, aber günstiger als ausgrenzung* (Integration is not for free but it costs less than exclusion)'.

# 3.2.1.2 Feeling Too Unbound

The Too Unbound dimension, the other point for insecurity on the Binding scale, constructs a relationship of vulnerability between a space and its occupant by making the user feel exposed and unsafe. In discussing spaces that can make people feel insecure in this way, the following section will also draw on examples from the natural and built environments. To develop an even clearer understanding of the relationship between insecurity and the organisation of space, however, finer distinctions will be made when discussing the vulnerability associated with feeling Too Unbound. Drawing on the three planes that construct three-dimensional spaces — the base plane, the wall plane and the overhead plane — the vulnerability that results from enclosure that is too unrestricted will be discussed in relation to each of the three planes, beginning with too little enclosure underfoot.

## 3.2.1.2.1 A lack of security underfoot

**3.2.1.2.1a The natural environment**

The ground or base plane is extremely important to the sense of security a person experiences in a space as it represents their most concrete and physical point of contact with the earth below. One of its functions, therefore, is to 'ground' the occupants of a space. This is perhaps best illustrated with reference to the terror people experience during earthquakes when the ground literally moves below them, or the horror experienced during landslides and avalanches when the earth moves out from under peoples' feet. The following passage describes this feeling. It was written by Stuart Diver, the sole survivor of the July 1997 landslide at Thredbo Village, NSW, Australia:

> I'm fast asleep…from somewhere in my subconscious comes a rumbling sound. It's growing louder…louder. It's roaring.

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My eyes shoot open. Is this one of those thrilling winds that tear down the valley? No this is something far more frightening.

A hailstorm? An explosion? A bomb? The thoughts flashed through my mind.

My body is shaking, uncontrollably shuddering. Sally awakes. Our flat is moving all around us. Everything's rattling, crashing down.

I hear the window being smashed in. I hear the glass shatter, showering us on our bed. Instinctively I lift my head off the pillow to see what's happening. It's dark. Nothing makes sense. The wall behind us comes crashing down on our bed. My head is forced back as the roof caves in on top of us.

I can feel the ceiling about three centimetres in front of my face. I'm choking on dust. I can't breathe. I'm coughing, choking. I can't see a thing.

I've got to get us out…where?

(Diver, as cited in Diver & Bouda, 1999: 1)

As we have just seen, when the ground supporting the base plane of a building moves or slips away, the wall and overhead planes simultaneously collapse as the base plane structurally supports the form and mass of the building. The instability that results when this happens can be destabilising to the extreme. This is amplified considerably if the occupant is *inside* a building, as it clearly has the potential to be life threatening. In fact of the nineteen people entombed under tonnes of mud and debris at Thredbo in 1997, only Stuart Diver survived.

In the natural environment, strong feelings of vulnerability are also often experienced underfoot when standing on the edge of a steep cliff or escarpment. Once again, French artist Hughes de Montalembert, who lives in a remote environment along the Spanish coastline, encapsulates the feeling of insecurity that standing on the edge of a sheer rock precipice, close to his house, can evoke:

…I reach the edge of the cliff. On the borderline between the rock and the void, my repulsion turns into sheer fear. Twenty metres down, I clearly hear the sea, suddenly menacing, ripping, wounding, shredding itself on the rocks. I listen to the backwash, to the explosions of the sea into half-submerged cavities. Screams of sea gulls ricochet off the cliff. In the depth of myself, there is something stronger than fear, which I don't want to analyse.

(de Montalembert, 2001: 45)

The overwhelming feelings of precariousness, fear and insecurity that de Montalembert describes are at the heart of feeling Too Unbound. The lack of security underfoot, moreover, tends to evoke very 'self-oriented' emotions that revolve around a sense of abandonment, a loss of self and a loss of groundedness. In the natural environment such intense feelings of insecurity are also commonly experienced in places where the land shears away in a steep downward plunge, such as cliff faces or on the narrow ledges and narrow pathways carved into mountain sides. It is not incidental, then, that such settings are a common choice for epic narratives such as Tolkien's classic works, *The Hobbit* and *Lord of the Rings*.

The feelings evoked by the Too Unbound dimension also help explain the sense of triumph many viewers feel at the end of Ridley Scott's film, *Thelma and Louise*. The film ends when actors Susan Sarandon and Geena Davis evade capture by police by driving off a cliff at the Grand Canyon in the United States of America. The cinematography ends by freezing the heroines in mid-air. Not only does this convey a sense of flying, it also suggests they have defied the pull of gravity, and in doing so, triumphed over the injustices and insecurities that have 'shackled' their lives. In this way their defiance of gravity is able to evoke powerful feelings of freedom, emancipation and liberation[12].

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[12] The interpretation of Thelma and Louise presented in Section 3.2.1 offers a mainstream reading of the film's ending. From a feminist perspective, the notion of women having to die in order to achieve freedom, would likely be challenged.

### 3.2.1.2.1b The built environment

Constructing built spaces which lack security underfoot is not a common choice for building in most cultures. Nevertheless strong feelings of insecurity underfoot can be evoked in response to the use of glass as flooring on stairwells or high in multi-storeyed spaces. It is also possible to find artists and designers, who are working at the cutting edges of display, pushing the boundaries of insecurity underfoot in both physical and metaphorical ways[13]. This very notion was taken up in the *Hors Sol?* exhibit at the Murten-Morat Arteplage, Swiss Expo, 2002. Two suspended cubes were attached to the walls of the medieval Murten-Morat battlements. Each cube contained fully furnished rooms — one was furnished by Swiss people living abroad, the other by Swiss immigrants. Significantly none of the rooms had a floor as the walls and ceilings had been elevated and suspended above the space, see Plate 3.6.



Plate 3.6 The *Hors Sol?* exhibit at the Murten-Morat Arteplage, Swiss Expo 2002

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[13] Perhaps one of the best-known artistic attempts to push at the boundaries of Binding is Marcel Duchamp's installation at the International Exhibition of Surrealism in New York in 1938. Titled *1,200 bags of coal*, the installation involved the suspension of 1200 bags of coal from the ceiling. By deploying the technique of inversion, Duchamp's installation drew attention to the function of floor and wall planes in constructing secure spaces and raised conscious awareness of the potential that exists for manipulating gallery spaces for aesthetic ends.

Hanging in mid-air, the accompanying catalogue points visitors to the way these spaces function to evoke metaphorical questions about the relationship between roots and identity, the impact of losing contact with one's physical and cultural foundations and the destabilisation some people experience as part of the process of migrating to another country.

## 3.2.1.2.2 A lack of vertical enclosure

### 3.2.1.2.2a The natural environment

In addition to evoking insecurity underfoot, the natural environment can set up a negative relationship of insecurity with its occupants in other ways. For example, it can also make them feel Too Unbound by not providing them with adequate vertical enclosure. Vertical enclosures are important to security as they function as walls, or more technically, wall planes. According to Francis Ching, American architect and professor of architecture at the University of Washington in Seattle, 'Vertical forms have a greater presence in our visual field than horizontal planes and are therefore more instrumental in defining a discrete volume of space and providing a sense of enclosure and privacy for those within it,' (1996: 120). Vertical enclosures in the natural environment tend to be provided by rows of trees, cliff faces, hills and some mountain ranges. Thus vast open plains that are without *any* vertical enclosure**,** like the treeless tundra in Canada, can make people feel extremely insecure.

The importance of vertical enclosure in the natural environment is also evident in places like the Australian outback, particularly the landscapes of the Nullabor Plain and the area surrounding Uluru, as both stretch endlessly and limitlessly to the horizon. Tourists visiting such boundlessly open spaces often experience them as overwhelming. The lack of vertical enclosure, in particular, tends to push people to the extremes of vulnerability associated with the Too Unbound gradation of insecurity. So much so, that some travel guides consciously set time aside to prepare the tourists in their care, especially urban dwellers, for the experience of temporarily occupying such vast and seemingly immeasurable landscapes (personal communication with a tour guide on Kangaroo Island, South Australia, 1998).

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To exemplify the interpersonal impact of such boundless spaces, German photographer, Michael Reutz, offers the following reflections on his journey through outback Australia:

> When I think back now about my trip through the enormous vastness of the red part of Australia, I realise that it seemed quite surreal, almost like a journey through outer space, so far away was everything. As we pushed on and on along endless roads surrounded by endless plains, with unbroken horizons on all sides, I lost my sense of time and space altogether. In fact, it took me as long to prepare for this work as to actually complete it.

> (Reutz, 1987: 13)

Similarly, British travel writer, Brian Johnson, makes the following observations:

> Sometimes the outback was so empty it gave my imagination free reign, and anything could happen: it was a landscape that inspired hallucination. During the day I rested my eyes on the vastness — devoid of any human signs and symbols, exposed beneath the blank and pitiless gaze of the sun — and could both see and feel its grandeur and its hostility in the heat and the silence and the barren rocks.

> (Johnson, 1997: 142)

Like the lack of security underfoot, the lack of vertical enclosure also elicits 'self-oriented' emotions of insecurity. Spaces that are too unrestricted vertically, for example, emphasise the occupants' aloneness, their lack of refuge and the overwhelmingly insecure feeling of desertion.

### 3.2.1.2.2b The built environment

Just as some people feel Too Unbound in the Australian outback because of the lack of vertical enclosure, the lack of solid walls in built spaces — although not a common choice — can evoke similar feelings. This is particularly true for spaces that are elevated high above the

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ground. As already noted in Section 3.1 of this chapter, the upper storeys of a high-rise skyscraper[14], especially those with sheer walls of plate glass, can make some people, especially those prone to vertigo, feel extremely vulnerable and insecure.

Similarly, some people experience the same feeling of vulnerability in a city such as Rio de Janiero, where a cliff of buildings towers over the seafront. In the Rio example, feelings of vulnerability tend to be amplified in spaces that combine the lack of vertical enclosure with the lack of security underfoot. Another noteworthy example of a built space that pushes the limits of insecurity underfoot and vertically in this way is Berman House, Harry Seidler's 2001 Blackett-award winning home in Bowral, NSW, Australia.

Precariously located on the edge of an escarpment, the main aspect of the home's design that pushes it into the Too Unbound gradation for most people, is the 'eagle's nest' balcony which literally hangs over the cliff suspended in mid air. The balcony is secured to the escarpment by several steel pipe columns and a concrete slab. As can be seen in Plates 3.7 and 3.8, it literally juts out into a spatial void.
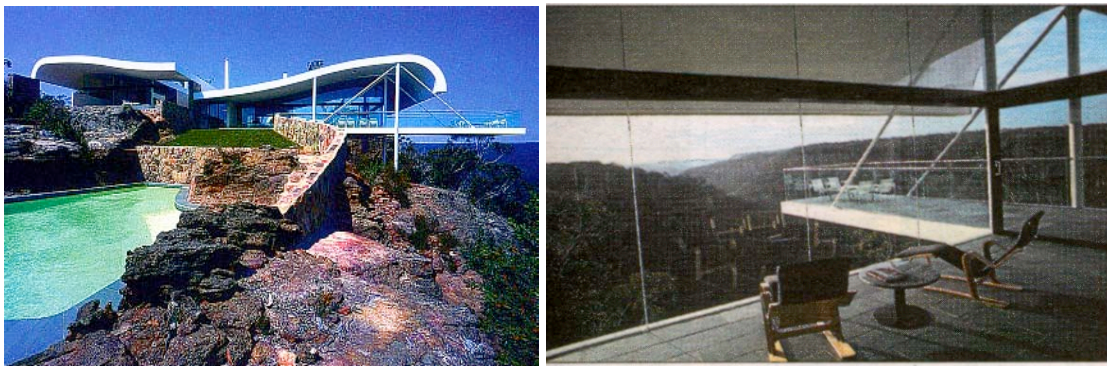


Plates 3.7 and 3.8 Flying high and flying free, Berman house, Bowral

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[14] Architects define a high-rise building as one that is taller than eight floors in height. A low-rise building, in contrast, is one that does not require a lift, which means it is up to three floors high. Buildings from four to eight floors — the height fire fighters can reach comfortably with their ladders — are classified as medium-rise.

This degree of insecurity underfoot — a sheer drop of thousands of metres to the ground below — would make many, if not most people, feel insecure in the space. Although the architect's choice of concrete flooring would help give the balcony some sense of solidity and stability underfoot, the lack of solid wall and overhead enclosures would probably override this for most people. The enclosures provided by walls and ceilings/roofs are important as they mark the limits of a space and provide occupants with physical protection. Such protection is essential to feeling safe and secure, especially when one is inside a space that is literally hovering in 'mid air'. Even the architect, Harry Seidler, expressed concern about the design of the balcony in terms of occupant safety (Greenwood, 2001: 12).

By pushing people to the boundaries of insecurity in these ways, this balcony also functions to illustrate individual variation to Binding. Architectural journalist, Helen Greenwood, who would be accustomed to spaces that push at the cutting edges of architecture, describes the balcony as 'dizzying' (Greenwood: 12). The owners, on the other hand, describe the space positively: 'Sitting here you feel as if you are simultaneously defying the laws of gravity and at one with nature,' (Greenwood: 12).

## 3.2.1.2.3 A lack of overhead enclosure

### 3.2.1.2.3a The natural environment

Overhead enclosure is the final component of spatial security and is supplied by horizontal planes such as roofs and ceilings. An overhead plane is important to spatial security in both natural and built environments as it partially encloses a space between itself and the ground, simultaneously providing that space with some degree of shelter and protection from the natural elements. In the natural environment such enclosures tend to be provided by overhanging cliff faces that have been weathered and eroded, canopies in tropical rainforests, and the suspended umbrella structures that large trees, such as Moreton Bay figs, can create with their branches and their foliage. In the natural environment a lack of overhead enclosure means that the occupant is totally exposed to the sky above and is completely at the mercy of the elements — the sun, the rain, the snow and the wind. Such susceptibility can easily push people to the utmost degree of insecurity, especially if the prevailing climactic conditions are extreme.

Too little overhead enclosure in the natural environment can also be experienced inside vast cavernous spaces. In particular, caves of cathedral-like proportions can evoke the Too Unbound dimension by making occupants feel exposed and unsafe often through the lack of enclosure overhead. Evidence of this is provided by British travel writer, Brian Johnson, who clearly feels Too Unbound at Tunnel Creek in the Kimberley, Australia.

> Tunnel Creek was an eerie place, a great cavern where the river had tunnelled through an entire hillside…The cavern was of immense proportions, tumbled with boulders the size of cottages, with pools of deep black water, silent during the winter, which cast shifting, flickering reflections of dull light on the cavern roof. Deep in the bowels of the earth, Tunnel Creek made me shiver: it was a place of powerful natural forces and violent human history. Outside, around the confines of the rough car-park, the few tourists who made it to this remote corner of Australia rambled among spinifex bushes and paperbarks…mostly silent, as if subdued by the cold menace of the caves.

(Johnson, 1997: 141)

### 3.2.1.2.3b The built environment

In built spaces, a lack of enclosure *overhead* can also make some people feel Too Unbound. In his seminal work, *The Poetics of Space* (1964), French philosopher and phenomenologist, Gaston Bachelard, describes the interpersonal effects of a lack of overhead enclosure in the following way. 'Too much space smothers us much more than if there were not enough,' (1964: 221). Bachelard's observation is particularly relevant to the construction of the overhead plane, especially inside monumental public buildings.

Built spaces that smother us overhead tend to soar high above us. Consequently, they tend to be found in public buildings, particularly museums which are the principal focus of this thesis. Other notable examples are the main concourses of railway stations such as Grand Central Railway Station in New York City built from 1903–13. Not only is this concourse palatial in its proportions, more technically, it is monumental in its scale[15] as evident in Plate 3.9.



Plate 3.9 The Concourse, Grand Central Railway Station, New York

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[15] The construction of spaces that soar in this way appears to have had its genesis in the large temples of ancient Egypt, the public buildings of ancient Rome such as the Pantheon, the imperial baths, and the great basilicas including St Peter's cathedral in Rome.

In the field of architecture, visual scale is a very important concept. Ching defines it in the following way.

> [Visual scale]…refers not to the actual dimension of things but to how small or large something appears to be in relation to its normal size or to the size of other things in its context.

> When we say something is small-scale or miniature, we usually mean that thing appears to be smaller than its usual size. Likewise, something that is large-scale is perceived as being larger than what is normal or expected.

(Ching, 1996: 314)

He then goes on to explain how elements such as windows and doors, which are familiar to us from our experiences of domestic architecture, help us ascertain the scale of a space. In other words, Ching is making the point that visual scale is *a relative concept*, one that we can only establish in relation to other buildings and/or objects. Ching also argues that of the three dimensions that construct a space — height, width and length — height has a much greater effect on the scale of a space.

> While the walls of the room provide enclosure, the height of the ceiling plane overhead determines its qualities of shelter and intimacy. Raising the ceiling height of a 12x16-foot room from 8 to 9 feet will be more noticeable and affect its scale more than if its width were increased to 13 feet or its length to 17 feet. While the 12x16-foot room with a 9 foot ceiling might feel comfortable to most people, a 50x50 foot space with the same ceiling height would begin to feel oppressive.

(Ching, 1996: 317)

Such feelings of oppressiveness do indeed characterise the way one feels in a large space with a low ceiling. As shown in Plate 3.10, which is the entrance passage to the Queensland

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Museum, prior to visitors entering the building they must traverse a space in which the ceiling height closely approximates 9 feet, and the dimensions resemble the proportions of 50x50 foot that Ching describes. Even though the ceiling has been painted white and many down lights have been recessed into it, the overwhelming feeling of the space is one of oppressiveness. In other words, the height of the ceiling makes the entrance passage feel Too Bound.



Plate 3.10 Oppressiveness and low ceiling height, Queensland Museum, Brisbane

Therefore the scale given to the vertical dimension of a space is extremely important as it can have significant interpersonal consequences. Spaces that are vertically over-scaled, that soar above the occupant because their dimensions are overblown, are also often experienced as oppressive by people who are unaccustomed to such proportions. From the point of view of the user, over-scaling can make the space seem daunting, in that the domestic, personal scale that most people have for negotiating security becomes too far removed from the monumental space for them to be able to interact with it. As a consequence, the space towers above the users making them feel diminished, dominated and vulnerable — small, uncomfortable and very much alone[16].

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[16] Kress and van Leeuwen's embryonic work on the textual metafunction and space seems to support this view (1996). In their chapter on the third dimension, for example, they indicate that the vertical dimension functions textually to polarise the Real and Ideal in architecture. For instance they draw attention to the ways Ideal elements such as crosses or clocks give a building its idealised significance while the Real elements (doors and forecourts) represent the functional aspects we use. So, in an over-scaled space such as a cathedral, the Ideal elements such as crosses, may function interpersonally to make people feel diminished in the presence of God because they are also positioned to tower or loom above the occupants.

Kress and van Leeuwen (1996) also account for the impact of such vertical over-scaling. In their account of narrative representation, they explain the meanings associated with visual shapes. Rectangles, for example, are elongated squares. If the choice for elongation is vertical, it increases the distinction between top and bottom — dominant and dominated — accounting for why spaces that tower over their occupants vertically feel Too Unbound.

Overhead planes that have been over-scaled to give a space monumental proportions distinguish many public buildings. Familiar examples include large religious buildings like cathedrals. St Peter's Basilica in Rome, St Paul's in London and the Cathedral of Seville in Spain are three internationally well-known instances of vertical over-scaling. The over-scaling inside the Seville Cathedral can be seen in Plate 3.11.



Plate 3.11 The over-scaling of the vertical plane, Seville Cathedral

Such over-scaling has clearly been designed to evoke a sense of the space soaring to the heavens, an issue that will be discussed in a later section.

Other well-known examples of monumentally scaled vertical overhead planes are the atriums and halls in many museums and galleries. Many such spaces are part of prodigious buildings constructed in the past as 'temples' to the arts and sciences. Examples include The British Museum in London and The Metropolitan Museum of Art, New York, see Plate 3.12.



Plate 3.12 Over-scaling, foyer of the Metropolitan Museum of Art, New York

Perhaps one of the best-known examples of a public exhibition space that was mammoth in scale was the Crystal Palace built in 1850–51. The building was described as having an 'interior [that] seemed to be of almost boundless spaciousness,' Foster (1989: 201). According to Steve Loo, practising architect and lecturer in architecture at the University of South Australia, in these instances it is the mass which overwhelms the occupant (2001: 82).

It would be misleading, however, to think that monumental museum architecture belongs to the past, for there are many contemporary examples of museum spaces that can be

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experienced as Too Unbound on the vertical overhead plane. For instance, Dr Edmund Capon, the Director of the Art Gallery of NSW, a man familiar with the institutional spaces of museums and would consider himself to be 'at home' in them, has publicly described the lofty cavernous hall inside the new Tate Modern Gallery in London[17] as a space that makes him feel both 'daunted' and 'chilled' (2001). Similarly the Solomon R. Guggenheim Museum, New York, with its lofty interior, may evoke insecurity in response to the vast spatial void which the exhibition spaces seamlessly spiral around, especially when viewed from the ground floor where it towers above the visitor,[18] see Plate 3.13.



Plate 3.13 The overhead plane, Fifth Avenue Guggenheim Museum, New York

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[17] The Tate Modern Gallery on the south bank of the Thames in London is a $215 million conversion/ recontextualisation of the derelict 1940s Bankside Power Station designed by Sir Giles Gilbert Scott. It was opened to the public in May 2000. The architects who worked on the conversion were Herzog and de Meuron from Switzerland and it houses Britain's first dedicated public space for modern art. Furthermore, an interesting contrast to Capon's interpersonal response to the Turbine Hall, and a good example of individual variation to spatial security, is encapsulated in a reviewer's response to the same space: 'Walking into the building down the concourse into the immense turbine hall brings about a quite unexpected sense of empowerment. The effect is impressive and yet the space remains surprisingly intimate,' Shannan Lane (2000: 41).

[18] Interestingly, the spatial void at the heart of the Fifth Avenue Guggenheim, known as the Great Rotunda, can also evoke strong feelings of insecurity when viewed from the top floor, the Annex Gallery, as there is a drop of six storeys between the highest part of the spiral and the ground floor. The space was thus designed by Frank Lloyd Wright to evoke two very different dimensions of the Too Unbound gradation.

Museum visitor studies also suggest that people who are unaccustomed to seemingly boundless expansiveness may experience spaces that are vertically over-scaled as oppressive or uncomfortable. For instance Marilyn Hood, an American museum researcher (1995), conducted extensive visitor evaluations and found that people who visit museums *once* or *twice* a year 'value comfortable surroundings in leisure but feel museums provide little psychological or physical comfort' (Hood: 7). It is unfortunate that Hood did not investigate this finding further as her research strongly suggests that the organisation of museum spaces does, indeed, make some visitors feel insecure.

Although more research into the exact nature of this insecurity is needed, the preceding sections of this chapter have shown that constructing spaces which establish relationships of insecurity through the lack of enclosure underfoot, or lack of wall planes, is not a common choice for building in western cultures. The preceding discussion has also shown  that constructing monumentally scaled overhead planes *is* a distinguishing feature of public buildings including museum architecture. It therefore seems likely that one aspect of the insecurity and discomfort some visitors experience in museums are the monumentally scaled overhead planes.

Overhead planes that tower over occupants make them feel insecure by overpowering them. Unlike the 'self-oriented' feelings of insecurity that result from too little enclosure by base and wall planes, the insecurity that comes from a lack of overhead enclosure is 'other oriented'. It is about feeling overpowered and dominated by something that looms directly over the self, after all, 'power has to be seen to be believed,' Matarasso (1993: 8).

From the point of view of the institution, expansive overhead spaces function to elevate the industrial, cultural and/or religious experience. According to architect Louise Kahn, monumental buildings also convey a sense of 'immutability' (cited by Loo, 2001: 82). This is done by 'over' scaling the space to such a degree that it appears aspirational, thereby exalting the power and status of the owners (whether governments or private individuals or the heavens), while at the same time making the occupant feel small in comparison. It is not surprising then that public buildings housing such monumental spaces were, and often still

are, referred to as 'temples' (Hudson, 1987; Tait, 1989; Weil, 1995; Greenberg, 1996) or 'shrines' (Conti, 1977).

One critical dimension of the discomfort experienced by some museum visitors is directly related to the differential power relationships that expansive overhead planes establish between visitors and the public institution. This means that in addition to the variables identified as barriers to museum participation in Chapter 1 — educational attainment, occupational status and class distinction — the construction of space can also be considered an obstacle hampering widespread access to museums. Although it is clearly not the sole barrier, it is one that has hitherto been neglected in the field of museology as American museologist, Reesa Greenberg, points out:

> Most discussions of the meanings of exhibitions of contemporary art minimise the importance of the location and the type of architectural space in which the exhibition is held. It is assumed that listing the venue at the top of an article or review as part of a title or header or referring briefly to location as an aside in initial or closing paragraphs is sufficient to convey the significance of the space and its relation to what is being shown.

> (Greenberg, 1996: 349)

Although Greenberg's statements about the significance of space are important, they are somewhat disappointing as they are much too vague. Perhaps museologists have difficulty bringing to consciousness, in explicit terms, the way space functions to create meaning.

### 3.2.1.2.3c Power and vertical over-scaling in public spaces

Just as several landmark studies have revealed a connection between language use and unequal social power relations (Brice Heath, 1986; Hasan 1986, 1988, 1990; Delpit, 1988; Cloran, 1989; Fairclough, 1989; Hasan and Cloran, 1990), the semiosis of architecture also seems to produce differential relations of power, especially via the overhead plane. Clearly, assumptions about authority, hierarchy and the legitimation of existing social relations are

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embedded in the construction of public spaces. For all spaces are social and are used for the enactment of tenor relations. Thus if museums really desire to become more welcoming and accessible, some attention needs to be given to how their spaces are organised in terms of the power differential they enact between the visitor and the cultural institution. As the focus of this thesis is spatial insecurity, the focus on power will be addressed only in relation to this dimension.

To understand how certain spatial configurations can make some visitors feel oppressed and dominated, that is, insecure, a useful starting point would be to explore how power is enacted in the construction of space in domestic dwellings, where most people have their first interpersonal experience of space, and where the connection between spatial organisation and power has its genesis. Domestic spaces are also of particular phylogenetic relevance to this thesis as they are precursors of the public museum. In other words the dual focus on the way domestic and museum spaces are constructed is also symbolic of the museum's transition from the private 'cabinet of curiosities' used exclusively by the wealthy and privileged to a public institution designed to serve the public good.

### 3.2.1.2.3d Power and vertical over-scaling in domestic spaces

Over-scaled spaces that make their occupants feel Too Unbound by providing insufficient enclosure overhead have a realisation in domestic architecture. These aspects of domestic architecture will now be discussed because there is an important nexus between domestic buildings and the public buildings that house museums.

In Australia during the second half of the 19th century, there was an economic boom stimulated by the gold rushes of the 1850s. Not only did a new middle class emerge during this time but it wanted to display its newly secured fortunes by building grand mansions on large estates of land in Sydney[19] and Melbourne. On entering these mansions, visitors often found themselves inside small tightly Bound lobbies. Once they had passed through these

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[19] Cavvarra at Rose Bay is a well-known Sydney example of a grand 19th century estate. Another well-known example is Tricketts on Glebe Point Road which has been refurbished and operates as a bed-and-breakfast hotel.

secure domestic spaces, they found themselves 'hit' by the loftiness of the over-scaled spaces which lay beyond. The late Robin Boyd, renowned Melbourne architect, historian and critic, captures this well in his description of a Melbourne residence built at this time in the suburb of East Malvern:

> The house sat on a green park, a great grey stucco block, honeycombed on the west side by deeply cut balconies behind a two storey arcade. A visitor approaching from either side was led through *a low confined lobby*. But a few steps further on, the *vast spaces of the hall burst upon him*. It was in fact a roofed internal courtyard, *soaring* fifty feet past *two lofty storeys* to a central fanlight. It was ringed by a wide cantilever balcony giving access to the first floor bedrooms. It was handsomely fitted with a grand staircase, elaborately carved doorways…and what was credited with being the largest parquet floor in the southern hemisphere [my emphasis].

(Boyd, 1952: 55–6; emphasis added)

Boyd's description exemplifies the fact that although these homes unbound their occupants by freeing them from spatial enclosure, achieving *security* by unbinding the internal spaces, was *not* their motivation. These spaces were deliberately constructed to impress their visitors and achieved this in two ways. First, through the magnificence of their scale, and second, through the contrast of juxtaposing internal spaces that were both strongly Bound and Too Unbound.

The same trend was also evident in America, where houses like the residence of Henry Clay Frick on Fifth Avenue, home of one of the most powerful American industrialists of the 19th century, were refurbished to include spacious art galleries built to the proportions of a ballroom, see Plate 3.14.

Plate 3.14 West Gallery, Frick Museum, New York

As previously discussed in Section 2.2.3.2a, domestic spaces of such monumental scale bear a strong intertextual reference to European Renaissance palaces such as the Palazzo Medici, Palazzo Pitti and Palazzo Strozzi in Florence (Munhall, Galassi, Thomas and the Acoustiguide Corporation staff, 1999)[20]. Even more significantly, houses such as these represent a shift towards public buildings, so much so, that the private and public domains are almost indistinguishable inside them.

Significantly, people living inside these spaces do not experience them as Too Unbound. Accustomed to their over-scaling and proportions, the occupants feel secure inside them. It is therefore highly probable that upper middle-class people are likely to feel secure and comfortable inside large public buildings, including those that house museums and galleries. Consequently they are likely to be able to move easily between their private homes and institutional spaces.

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[20] The Guided Tour of the Frick Collection is available in both audio and written form. The audio version, the Artphone Acoustiguide, was recorded in 1998 to be used in situ, while the written version has been designed as a 'stand alone' souvenir of the collection. The texts used for both tours are identical.

This point is clearly illustrated in Winterthur, Switzerland, as the next two photographs will demonstrate. Plate 3.15 shows a gallery inside villa 'Am Romerholz' which once belonged to wealthy Swiss collector, Oscar Reinhart. Reinhart especially commissioned Genevan architect, Maurice Turrettini, to add this gallery space onto his home for the display of his private art collection. The second photograph, Plate 3.16, was taken inside the Kunstmuseum in Winterthur, a public building. Note the similarity in the scale, proportions and loftiness of the two spaces, especially overhead, where abundant natural lighting illuminates each space via rows of clerestory windows.



Plate 3.15 Oscar Reinhart's home, Winterthur  Plate 3.16 Kunsthaus, Winterthur

Significantly, the first space was designed for private use, the second for public use, yet the degree of enclosure within them is almost indistinguishable. Clearly, members of the Reinhard family would be able to move comfortably and securely between the spaces inside their home and those in public institutions.

This brief analysis of domestic architecture indicates that the power differential in the interpersonal relationship established between the museum space and museum visitors has a strong socio-economic motivation. People from middle and lower income groups, on the other hand, tend to live in dwellings built according to a very different scale[21] — a human or domestic scale. Human scale is based on the proportions of the human body. Although these dimensions vary from person to person, a space that is human in scale is one in which we can reach out and touch its walls or reach up and touch its ceiling (Ching, 1996). It is not surprising, then, that people who are primarily accustomed to spaces that are built to human scale, and have very little experience of the monumental scale used in public buildings, find the expansiveness of this institutional scale daunting and overwhelming.

These insights into scale and the construction of space clearly align this aspect of the semiosis of architecture with the barriers to museum access identified in Chapter 1 by the work of Bourdieu and Darbel (1969), Merriman (1989), Bennet (1994) and Saatchi and Saatchi (2000). If museum professionals genuinely desire to increase their audience base, they need to think more carefully about how they move visitors from one scale to another, that is, from the domestic scale to the monumental or institutional scale. They also need to think carefully about the scale of the spaces visitors first encounter, and how the visitor are led into more challenging spaces. The survival and prosperity of museums depends, in part, on this approach to space. For not only is the physical and emotional comfort of visitors integral to visitation figures, it is also integral to the survival of the post-modern museum.

## 3.2.1.3 Summary

To summarise, there are two Binding dimensions involved in constructing a relationship of insecurity between a space and its users. The first establishes a smothering relationship by making the person feel Too Bound in a space. This happens when the degree of enclosure within a space is too firm and restricted, making the occupant feel stifled. The second dimension constructs a relationship of insecurity by making the user feel Too Unbound and

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[21] In architecture, scale refers to the way the occupant in a space perceives or judges the size of something in relation to something else. Scale is therefore dependent on comparing one thing to another.

therefore vulnerable, exposed and unsafe. The feeling of vulnerability that characterises the Too Unbound dimension can be the result of three things: a lack of enclosure underfoot leading to a loss of groundedness and stability, a lack of vertical enclosure emphasising the occupants' aloneness by denying them a place of refuge, and/or a lack of sufficient enclosure overhead making the occupants feel overpowered and dominated by the space. These ideas are encapsulated in Table 3.1 below.

| Plane | Orientation of insecurity | Type of insecurity |
|---|---|---|
| wall | self-oriented | aloneness |
| | | desertion |
| | | abandonment/lack of refuge |
| floor | self-oriented | loss of self |
| | | loss of groundedness |
| | | loss of stability |
| overhead | other-oriented | domination |
| | | over-powered |

Table 3.1 The orientation of insecurity and spatial enclosure

# 3.2.2 Space and security

## 3.2.2.1 Home sweet home: what does feeling 'at home' mean?

> The well being I feel seated in front of my fire while bad weather rages out-of-doors is entirely animal. A rat in its hole, a rabbit in its burrow, cows in the stable, must all feel the same contentment that I feel. Thus well being takes us back to the primitiveness of the refuge. Physically the creature endowed with a sense of refuge, huddles up to itself, takes to cover, lies snug, concealed.

(Bachelard, 1964: 91)

Feeling Bound or 'at home' in a space means feeling safe, secure and protected as illustrated in the quotation above. Linguistically, however, if the clause, 'I feel at home,' were to be analysed, the phrase 'at home' would be coded literally as a circumstance of location: place. In western culture, on the other hand, this phrase encapsulates both the literal meaning and a powerful metaphorical meaning. Peter Webber, emeritus Professor of Architecture at the University of Sydney, explains the metaphorical meaning in the following way, '…there's no doubt that "home" still has that quintessential appeal, fulfilling the need for security' (cited in Barrowclough, 2002: 18). Metaphorically speaking then, 'at home' encapsulates a strong sensation of inner peace and security.

American art critic, Reesa Greenberg, also suggests that being 'at home' refers to much more than a physical location of place (Greenberg, 1996). In her article on the importance of space in art exhibitions she makes the point that in the second half of the 20th century many New York artists wanted their art to reach a wider demographic. They were particularly interested in reaching marginalised viewers such as the working poor and racial/ethnic minority groups. To do so they deliberately relocated their galleries to areas in the 'downtown' region of New

York. Their rationale was simplistic: a physical shift in location would have the corresponding effect of making their art more accessible.

Not surprisingly, according to Greenberg, the move did not lead to an increase in the numbers of marginalised people attending art exhibitions. Nor did marginalised groups suddenly feel 'at home' in art spaces just because galleries shared the same home address as the domestic dwellings of marginalised New Yorkers. As this example illustrates, both the literal and the metaphorical meanings of feeling 'at home' are so deeply ingrained within our culture that people often regard them as a 'Given.' Yet nothing could be further from the truth.

Trying to understand how to help make people from a range of socio-economic backgrounds learn to feel secure in a museum context, is an extremely complex undertaking. It requires the application of Binding and Bonding, both of the theoretical tools that were identified in the opening chapter of this thesis. However, as this chapter is concerned solely with Binding, the issue can only be explored from the point of view of spatial security. We do so, acknowledging that Binding is *not* the sole factor involved in making people from a range of cultures and socio-economic backgrounds *learn* to feel secure in museums. For no matter how secure the design of museum spaces may be, the desire to visit the cultural institution is an obligatory starting point for broadening a visitor base. Making the institution relevant to people and assisting visitors who are new to museums feel part of a community of like-minded people with shared values and interests, are also crucial factors in extending the demographic reach of a museum visitor base. These factors will be briefly explored in the closing chapter, Chapter 5, which sketches the main theoretical dimensions of Bonding.

To shed some light on how Binding can be applied to the challenge of broadening the visitor base of a cultural institution, the sections on security have been organised as follows. First, the two dimensions of the Binding scale that set up optimal relationships of security between occupants and three-dimensional spaces, The Bound and Unbound, will be introduced and exemplified. These will then be justified, in relation to public museums, by examining how cultural processes of change, and the technologies that inform them, have impacted on the organisation of museum spaces in the 20th century. Finally, as most museums are housed in

large public buildings, it is imperative that the interpersonal impact of the monumental scale commonly used in cultural institutions is accounted for. If museums are to become more inclusive and broaden their visitor base, museum professionals need to understand the negative interpersonal consequences of using such monumental scale and develop strategies for counter-balancing this scale in the way they organise their spaces.

## 3.2.2.2 Security: the Bound and Unbound dimensions

Given the extreme feelings of isolation and insecurity that three-dimensional spaces can evoke, it is possible, of course, to construct a relationship of security between a space and its users. There are two dimensions of the Binding scale that can do this: the *Bound* and the *Unbound*. The Bound dimension establishes a relationship of security by clearly delineating the boundaries of a space so that users feel comfortable, safe and protected, as seen in, an exhibition space at the Royal Academy in London.



Plate 3.17 Bound space, *Genius of Venice* exhibition, Royal Academy, London

As Plate 3.17 shows, one of the ways a three-dimensional space constructs a relationship of comfort and security with its user is by using solid enclosures such as walls, and corners, which are created when two wall planes meet. Such enclosures restrict open spaces by

creating boundaries around a space. These boundaries, in turn, enclose the user, making them feel comfortable and secure. Walls are thus very important for constructing a sense of security. They also define the vertical edges of a space.

However, in order to really feel safe and protected in a space, firm enclosure is needed above, on the overhead plane, and below, on the floor plane as discussed in earlier sections. The overhead plane defines the upper limit of a space; while the base plane defines its lower limit. The overhead plane also makes us feel Bound because it shelters us from the elements – the rain, the wind, the sun and so forth. Providing such shelter is a very important element of security. In addition to providing shelter, Bound museum spaces construct quiet, contemplative areas where visitors feel comfortable enough to be able to read text panels, spend time viewing objects and artworks, listening to audio guides, and in the case of aquaria, observing live specimens.

Clearly a person's response to the organisation of space is also influenced by other factors such as light, colour, texture and pattern. These are important as they construct the ambience of a space and can alter the way an occupant perceives the degree of enclosure in a space. The impact of ambience on security, however, will be discussed in Chapter 4 on materialisation. Initially, we will focus on the way three-dimensional spatial enclosures are created when the base, wall and overhead planes intersect.

The other dimension of Binding that constructs a relationship of security between an occupant and a space is the Unbound dimension. In the Unbound dimension, the user experiences security as partial freedom from firm spatial enclosure as shown in Plate 3.18, one of the exhibition spaces in the Kunsthaus, Zurich.

Plate 3.18 Exhibition space, Kunsthaus, Zurich

As Plate 3.18 demonstrates, Unbinding involves loosening the enclosures that construct a space. This can be done in many ways. A common choice involves loosening the wall planes by receding them, and proportionately elevating the overhead plane. The interpersonal effects of these choices are very important as Unbinding enables occupants of a space to feel liberated and unencumbered, as more space opens up around them, while at the same time maintaining their sense of security. The height of the overhead plane in Plate 3.18, for instance, is instrumental in maintaining a sense of security for the occupant because it constructs a space which does not overwhelm its occupants by towering over them in the way the interior of St Peter's Basilica in Rome does. The other important element in Unbinding the space is the abundance of diffused natural light entering the space from overhead. Such abundant light serves an important function in that it makes the space seem larger and more open.

The other common choice for Unbinding a space involves using windows or glass walls to open interior spaces to the landscape outside. One of the unique qualities of glass, for example, is its ability to transmit daylight. The word 'glass' actually comes from the Germanic word 'glesum', meaning transparent or lustrous (Slessor, 2001). The use of sheer glass as walling is a strong choice for Unbinding as it constructs open, light-filled and diaphanous spaces instead of the firmly enclosed opaque spaces which characterise masonry (building with brick or stone). Large sheets of plate glass, for example, function to Unbind the

interior by metaphorically 'dissolving' the vertical wall plane separating the internal from the external spaces. The use of large windows or glass walls is able to Unbind a space by projecting it into the landscape and extending the feeling of space on the horizontal plane to include the outdoors as we can see in, the *Temple of Dendur* exhibition in the Metropolitan Museum of Art, New York.
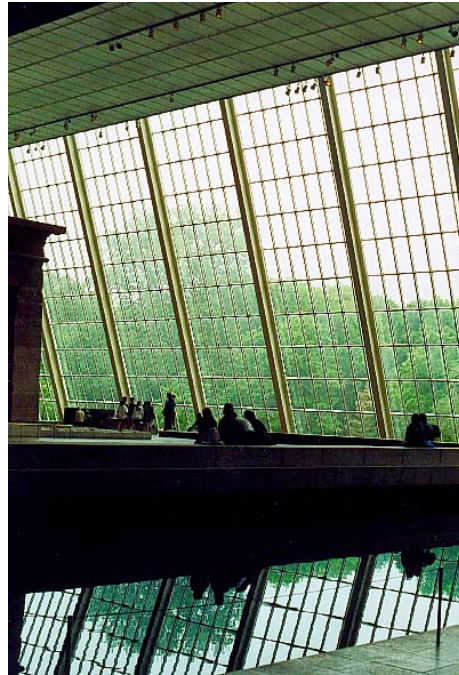


Plate 3.19 Unbinding, *Temple of Dendur*, Metropolitan Museum of Art, New York

Unbinding in these ways brings interior and exterior spaces into a strong interrelationship by allowing the built space to draw the environment indoors. In recent years, Unbound spaces have become a very popular choice in museums and aquaria. In aquaria, they are often the spaces where the 'touch pools' are located, while in museums oriented to family audiences, they tend to be the play areas or the 'hands-on' activity spaces. Plate 3.20 shows the Unbound 'touch pool' area in the Monterey Bay Aquarium in California.

Plate 3.20 Touch pool, Monterey Bay Aquarium, California

In art galleries, on the other hand, Unbound spaces are often found in spaces where plate glass walls overlooking panoramic vistas offer visitors a temporary reprieve from their engagement with the works of art, cultural objects and the text panels on display. Alternately some museums favour the use of sheltered courtyards in which frosted glass ceilings help visitors feel free and Unbound while simultaneously providing shelter and protection from the elements. A well-known example of this can be seen in Plate 3.21, the courtyard inside the Frick Museum, New York.



Plate 3.21 Courtyard, Frick Museum, New York

Unbinding in this way is an important new development for visitors to cultural institutions as such choices give visitors a different set of educational opportunities compared to those that were available in the past, as the final chapter of this thesis will discuss.

Unbinding the interior spaces of museums is not just interpersonally freeing, it also serves a very important physical function. By enabling visitors to shift their gaze to more distant focal points, Unbinding a space has important physical benefits. When looking at close objects such as paintings or text panels, a person's ciliary eye muscles need to contract. If these muscles are required to remain contracted for prolonged periods, eye fatigue, known as asthenopia, can result. To prevent this condition from developing, it is important that people are able to gaze into the distance as this reduces the tension on the ciliary muscles (Hart, 1992). Unbinding thus has important health benefits for museum visitors, which are likely to contribute to their physical comfort.

## 3.2.2.2a Bound versus Unbound spaces: Sealed versus open plan designs

There is one final aspect of constructing Bound and Unbound spaces that needs to be discussed: the degree to which the spaces are sealed off from, or connected to, the spaces that are adjacent to them. For example in terrace houses of early 19th century Australia, rooms were accessed via a long hallway from which doors opened into individual rooms such as the dining room, the parlour and so forth. Generally speaking, most of these rooms were firmly separated from each other. In contrast, by the mid 20th century, open-plan houses were popular in Australia. These comprised a series of spaces that flowed into one another with few clearly defined boundaries. The removal of enclosures or boundaries between rooms meant that the functions of everyday life were no longer readily associated with a particular space. Spaces that are firmly sealed off from one another in strongly enclosed rooms are Bound while spaces that connect, overlap and seamlessly flow into one another are Unbound.[22]

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[22] Bernstein (1977) also discusses the construction of three-dimensional spaces and how choices for organising space can impact on social interaction. For instance he describes strongly sealed spaces as being examples of strongly classification and strong framing; while open plan spaces are examples of weak classification and weak framing. Bernstein also explores the ways these choices impact on social interaction.

In exhibitions, Bound spaces are also constructed as self-contained semiotic entities with a clearly defined function. The *Bats* exhibition held at the Australian Museum in Sydney from September 1999 to February 2000, for example, was designed as a series of sealed, compartmentalised and strongly Bound rooms. Each space, moreover, had its own experiential focus. For instance, one room dealt with the classification of bats, another with habitat issues, another with reproduction and so forth.

Unbound spaces, on the other hand, are often constructed in such a way that experiential meanings are interconnected and flow into one another. The significance of this design is emphasised in the following excerpt from the introductory text panel inside the Aboriginal Gallery in the Ian Potter Centre of the National Gallery of Victoria in Melbourne which opened in 2002: 'The open plan encourages the viewer to make connections across language groups, cultures and art forms after having experienced these specific cultures in depth'. Clearly, spaces that are designed to be open-plan in nature, encourage the exchange of experiential meanings. Patterns of interaction also change in response to Bound or Unbound spaces in that people move differently and are likely to see closer relationships between the meanings of different parts of the exhibition.

To summarise, when considering whether a space is Bound or Unbound, the following factors need to be taken into account. First, consideration needs to be given to how open or closed a space is to the external environment. This includes both the landscape and the natural elements — the sun, wind, rain and light. Spaces that are physically and visually sealed off from the environment are Bound, while spaces that are designed to connect with the environment, on the vertical and/or horizontal planes, are Unbound. Second, consideration needs to be given to how firmly the actual wall, overhead and base planes enclose a given space. Solid and opaque materials such as bricks and stone create very firm degrees of enclosure (Bound), while transparent materials such as glass tend to create a very light sense of enclosure (Unbound). The final factor that needs to be considered is how connected, or separated, internal spaces are from the spaces that are adjacent to them. This involves thinking about whether the spaces are firmly sealed off from one another in strongly enclosed rooms

(Bound) or whether they connect, overlap and seamlessly flow into one another the way open plan spaces do (Unbound).

## 3.2.2.3 Security and the Binding scale

As previously noted, the interpersonal relationships of security or insecurity that are constructed between a space and its occupants have not been organised as a system network in this thesis but as a continuum of gradation. Given that the Bound and Unbound dimensions of security are less extreme than the end points of the continuum, they constitute a 'middle ground' for Binding as represented in Figure 3.3.
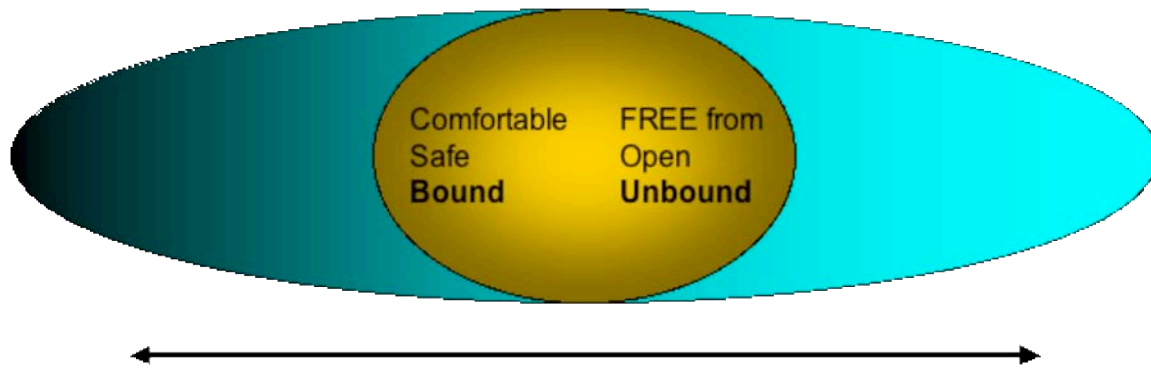


Figure 3.3 Binding — choices for security

Insecurity, in contrast, falls at the two poles of Binding as already discussed. It is therefore not possible to further intensify either dimension of insecurity, the Too Bound or the Too Unbound. This feature of insecurity can be compared to the role of the Finite in the semiotic system of language. In language, however, it is the Finite that contains the semantic property of polarity (Halliday, 1985a).

In both semiotic systems, language and space, there is also a scale in between the two polarities. In language, one example of this kind of scaling is ATTITUDE (graduation: force), where different degrees of intensity are possible: from high through median to low (*somewhat, rather, quite, very, extremely secure*). Similarly when considering the semiosis of space, it is

possible to make finer distinctions for the middle ground of Binding. This is important as it opens up the possibility for further grading the Bound and Unbound dimensions. These can now be represented as either low, median or high. In other words, a space can be minimally, moderately or strongly Bound, or minimally, moderately or strongly Unbound. Plates 3.22, 3.23 and 3.24 below show these finer distinctions for Bound museum spaces.



Plate 3.22 strongly Bound      Plate 3.23 moderately Bound  Plate 3.24 minimally Bound

The strongly Bound space is a small space that is firmly enclosed by three thick and solid wall planes. The moderately Bound space is somewhat larger and more loosely enclosed. Note how two *solid* wall planes and two *partial* wall planes have been used to construct the enclosure. Together with the lack of a ceiling plane, these function to suggest a more moderate degree of enclosure. In the minimally Bound space, on the other hand, the first thing one notices is that the space is larger and wider. The other noteworthy elements in the construction of this space are the use of the glass wall plane at the far end, which is partially blocked to increase the sense of firmness in relation to the enclosure. Nevertheless a reasonable amount of natural light does enter the space and partially Unbind it. This feature, together with its size and the fact that the walls do not extend to the ceiling, combines to evoke a minimal degree of Boundedness in the space.

As has already been mentioned, a person's response to the organisation of space is also influenced by other factors such as light, colour, texture and pattern. These are important as they construct the ambience of a space and can function to alter the way an occupant perceives the degree of enclosure. In all three of the spaces shown, light-coloured walls and floor coverings, together with glossy textures, have been used as they optimise the reflectivity of

the light. This, in turn, increases the level of illumination in the space. The greater the amount of light in a space the less Bound the space feels, because illumination makes the occupant more conscious of the dimensions of a space, including its volume and depth as well as its height and width. Light thus 'opens up' a space, making it feel larger and less enclosed. Optimising lighting levels is thus an important strategy in preventing a space from feeling small, dark and Too Bound. When spaces are not well lit, the user has no opportunity to fully experience the features of three-dimensional space.

Plates 3.25, 3.26 and 3.27 show the finer distinctions that are possible for constructing Unbound museum spaces using glass to dissolve the barrier that separates internal and external spaces.



Plate 3.25 minimally Unbound   Plate 3.26 moderately Unbound Plate 3.27 strongly Unbound

As already discussed, a crucial aspect to Unbinding a space involves using windows, glass walls, skylights and glass ceilings to open the interior to the landscape outside. In the minimally Unbound space in Plate 3.25, a relatively small window was used to connect the interior of the exhibition space with the urban landscape outside. The diffused skylights overhead are used to bring stronger natural light into the gallery. The choice of opaque glass and angled ceiling slats, however, means that the overhead plane does not connect the space to the sky as strongly as transparent glass would.

In the moderately Unbound space, a wall of plate glass functions to connect the interior of the children's section of the Melbourne Museum to the ground level courtyard outside. Although the use of a glass wall is a strong choice for Unbinding, the space feels only moderately Unbound. This is due to the relatively low height of the ceiling plane — an important choice for security in a space that has been designed for children under eight years of age.

The third space, a strongly Unbound space, is also located in the Melbourne Museum. It uses glass doors and large sheets of connected plate glass to create a diaphanous wall plane. This glass wall strongly Unbinds the interior by 'dissolving' the vertical wall plane separating the internal from the external spaces. Such Unbinding extends the feeling of interior space to include the courtyard outdoors. The feeling of freedom in the space is further intensified by the lofty height of the ceiling plane. In all three spaces, moreover, light-coloured ceilings and walls, together with glossy surfaces, are contributing to the ambient feeling of spaciousness.

To accommodate scaling and the different degrees of intensity that are possible in terms of spatial enclosure, the Binding gradation scale can be more accurately represented as:

| Too Bound | Bound | Unbound | Too Unbound |
|---|---|---|---|

$$\longleftrightarrow$$

strongly moderately minimally    minimally moderately strongly
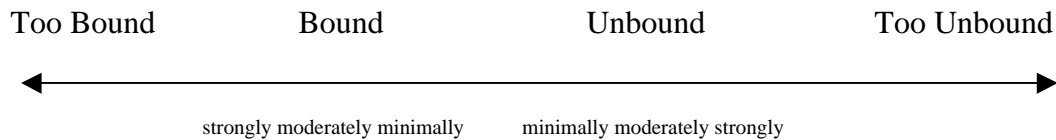
Figure 3.4 Refined Binding scale

Having now introduced the Binding scale in its entirety, the following section of this chapter will explain what the two choices for security, the Bound and Unbound dimensions, were based upon, especially in relation to cultural institutions.

## 3.2.2.4 Factors influencing the articulation of secure spaces in museums

In section 3.1.2 of this chapter the analysis of how spaces are articulated to make people feel in/secure drew heavily on cultural orientations to Binding because people's relationships with spaces are culturally shaped. In addition to influencing the way domestic spaces are articulated, such cultural orientations impact strongly on the construction of public museum spaces. Having established the Bound and Unbound dimensions as crucial for setting up optimal relationships of security with visitors, it would be useful to explain the basis of these judgements. To do this, it is essential to examine the impact that cultural processes of change, and the technological innovations informing them, have had on the construction of secure museum spaces. Given the space constraints on this thesis, this will only be explored in relation to two fairly recent points in the phylogenesis of museums: the first half of the $20^{th}$ century, and its closing decades, the 1980s and 1990s, when the hybrid museum began to emerge (see Section 2.2.3.2a).

### 3.2.2.4a Cultural processes of change

> The National Gallery of Australia was designed when such a building was seen more as a repository of precious objects than as an inviting public facility. The new development represents the changed role of galleries throughout the world: the museum as a 'container' becomes an outreaching centre of education and experience. The proposal reflects this new interactive and dynamic role by engaging more positively with the public — in symbolic as well as functional terms — by replacing a closed architecture with a light-filled 'front door'.

> (Peter Tonkin, cited in Nimmo, 2001: 27)

As the quotation from Sydney-based architect Peter Tonkin indicates, cultural processes of change have had a strong impact on the construction of secure museum spaces. This is

reflected in the phylogenetic shift from the strongly Bound, dark and dusty cabinet of curiosities, to the museum as an Unbound, open, action-oriented and hands-on discovery and learning centre. In the first half of the 20th century, museums were constructed as Bound fortresses as their function was primarily that of repository or storehouse of cultural objects. As Tonkin indicates, towards the end of the century they became increasingly Unbound. In part, this shift can be attributed to the changing social function of the museum. In part it is influenced by global trends in the construction of public spaces; in part it is linked to the impact of technology on the construction of secure spaces and the proliferation of choices this has generated. In fact, there is a close nexus between cultural change and the availability of new technology, so much so that the two are involved in an ongoing dialogue. For the purposes of this work, the two will be separated with technological innovations discussed in depth in Chapter 4, which deals with materialisation. However it is not a neat nor easy distinction to make, so there will be some mention of technology in the following account.

**The museum as a Bound fortress**

In the first half of the 20th century, museums were strongly Bound fortresses. The Australian Museum in Sydney, for example, with its sandstone temple edifice and building extensions constructed predominantly from masonry, was, and still is, a strongly Bound institution. Museum spaces, at the time the building was constructed in the late 19th century, tended to be firmly sealed off from the natural environment, not just from elements but also from the landscape. At that time, display spaces were primarily illuminated by natural lighting, either from overhead and/or through clear glass windows.

From the onset of the 20th century, the introduction of electric lighting increased the potential for sealing internal spaces more strongly, as no connection to the exterior was now needed. As a consequence, not only did the illumination of display spaces by means of natural lighting — skylights, domes or windows — become a thing of the past, but the physical choices for constructing museum spaces became even more strongly Bound. This is most evident in the Australian Museum's largest extension, completed in 1963 and shown in Plate 3.28.

Plate 3.28 The old and 'new' exterior of the Australian Museum, Sydney

The most noteworthy point about this extension is that it represents the ultimate choice for strong Binding: *total enclosure*. Two museum historians, Sansom and Strahan, describe it in the following way: 'Breaking completely with the past, it lacked windows above the basement and sub-basement, presenting a blank sandstone wall to William Street' (1979: 117). With the exception of the rooftop level, the absence of windows or openings to the outside world, and the choice of a sandstone façade, represent the ultimate choices for enclosure. In fact, they resonate with strong overtones of castle wall fortifications and construct the institution as both totally insulated and isolated from the world beyond its walls.

In keeping with the construction of such an optimally enclosed institutional edifice, the Museum designers correspondingly strengthened the degree of Binding inside the museum building. They did this in two ways: by 'blacking out' any existing windows and covering the skylights with a new roof. This ensured that the overhead, wall and floor planes were all optimally Bound. These choices for opacity and impermeability were extremely strong, and although one can only speculate about the effect this would have had, it would not be surprising if such spaces set up a relationship with some visitors that made them feel Too Bound.

There is a strong correlation, moreover, between the construction of such strongly Bound spaces and the social role museums served in the first half of the 20$^{th}$ century. At that time, museums functioned primarily as repositories for collections. Their fundamental obligations

were to assemble, house and conserve objects. 'Sheer quantity, rather than quality, of specimens was the criterion by which the importance and reputation of a museum could be judged' Gregg (1979: 120). It is not surprising that this function was reflected in the display practices museums developed: '…the ideal exhibit was one that displayed every variety of every species in systematic order. The ideal was unattainable but one approached it by stacking specimens into every available space' (Strahan, 1979: 76). These display practices reflected the key scientific goals of classifying, according to scientific criteria, all the natural phenomena of the world.

It is likely that the interpersonal consequences of these object display practices would have been negative for the visitors, intensifying their feelings of insecurity. Filling an *Unbound* space with lots of objects, furnishings or people reduces the feeling of expansiveness and constructs a very firm sense of enclosure on the horizontal plane. This is exemplified in Plates 3.29 and 3.30, photographs of two exhibition galleries in the Australian Museum. Plate 3.29 shows the *Skeletons Gallery* in the early 20th century, while Plate 3.30 is a photograph of the 1957 Anthropology Wing.
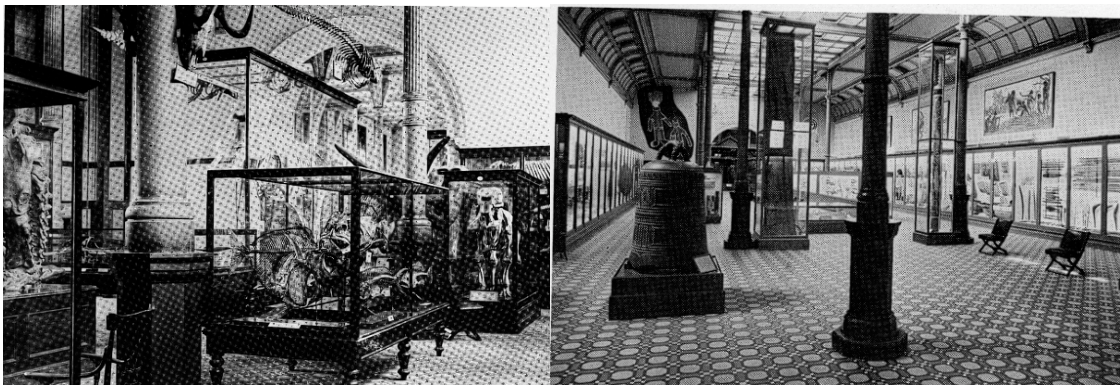


Plate 3.29 Bound museum space                    Plate 3.30 Unbound museum space

Although the degree of Binding in the two spaces is similar, the interpersonal relationship they establish with their users is very different. The main difference centres on the density of objects on display. Spaces that are highly densely packed in relation to the number of objects inside them tend to set up a smothering, suffocating relationship with their users because the

space closes in on the occupant on the horizontal plane. Spaces in which the density of objects is lower, on the other hand, establish a freer, less constricted relationship with their occupants. This observation also holds true for the furnishings and numbers of people fitted into a given space. Falk and Dirking (1992), for example, have surveyed many museum visitors and found that they respond negatively to spaces that are crowded with people. Overcrowded spaces clearly evoke the Too Bound dimension for many museum visitors.

**The art museum as Bound laboratory**

In the first half of the 20th century, art museums were experiencing a similar but not identical trend in the way their spaces were constructed. According to Andrew Andersons, the architect responsible for the 1968–70 extension to the Art Gallery of New South Wales (AGNSW), prior to the establishment of the new wing, the AGNSW was Too Bound. He describes it as 'a sad, debased place' that was 'totally enclosed' (Andersons, 2002). Prior to 1970, Andersons has pointed out that there were only three windows in the public areas of the gallery and designers were involved in the endless task of trying to recreate daylight by mixing fluorescent tubes of lighting.

Influenced by modernism, particularly trends established by the Bauhaus industrial-design school in Weimar, the walls of many art exhibition spaces were painted white (Risebero, 1979). So much so that American installation artist and art critic, Brian O'Doherty, aka Patrick Ireland, coined the term 'white cube' to describe this choice of museum and gallery design. Nothing about these choices, however, was arbitrary. In fact, a strong correlation exists between the construction of such strongly Bound display spaces for art and the social role art museums served in the first half of the 20th century. Art galleries were deliberately constructed to be neutral and abstracted from the contingencies of everyday life. They functioned to isolate artworks and cultural objects and attempted to display them in a 'quasi-sacred' realm. These ideas are best encapsulated in the words of O'Doherty himself.

> We have now reached a point where we see not the art but the space first…the ideal gallery subtracts from the artwork all clues that interfere with the fact that it is 'art'. The work is

isolated from everything that would detract from its own evaluation of itself. This gives the space a presence possessed by other spaces where conventions are preserved through the repetition of a closed system of values. Some of the sanctity of the church, the formality of the courtroom, the mystique of the experimental laboratory joins with chic design to produce a unique chamber of esthetics. So powerful are the perceptual fields of force with this chamber that, once outside it, art can lapse into secular status. Conversely things become art in a space where powerful ideas about art focus on them…

A gallery is constructed along laws as rigorous as those for buildings a medieval church. The outside world must not come in, so windows are usually sealed off. Walls are painted white. The ceiling becomes the source of light. The wooden floor is polished so that you can click along clinically, or carpeted so that you pad soundlessly, resting the feet while the eyes look at the wall. The art is free, as the saying used to go, 'to take on its own life'.

(O'Doherty, 1986: 14–15)

O'Doherty's description points to the function that strongly Bound art spaces served in isolating objects in the first half of the 20th century. The Bound art museum space thus became like an antiseptic laboratory — enclosed, isolated, artificially illuminated and apparently neutral. The function of the space was to provide viewers with the opportunity to study works of art as isolated and decontextualised 'specimens' in the same way that natural history museums did. However, while museums aimed to display the enormity of their collections and show as much of the natural world as possible, the art gallery was attempting to esteem the value of the precious art work and raise its status by selecting only a few, unique examples for display. This fundamental difference illuminates an important dichotomy that existed between science and art museums.

Neither artworks nor natural history specimens, moreover, were accompanied by explanatory text panels at this point in time. The only contextual information they provided visitors with were object labels. At best, these tell visitors the name of the object and the artist who produced it, when it was made, the material it is made from and the date it entered the

institution's collection. In natural history museums, the primary function of the object label is to scientifically classify a specimen using the system developed by Linneas. The Bound museum of the first half of the 20th century is thus closely tied to the contentious debate over text and 'dumbing down' alluded to in Chapter 1 of this thesis. For, at this point in the phylogenesis of museums, objects were seen to 'speak for themselves' and require minimal interpretation for visitors.

**The hybrid museum: the shift to Unbinding in the closing decades of the 20th century**

Since the 1980s and 1990s, the shift towards Unbinding in the hybrid museum of post-modernity has been unprecedented and almost revolutionary in its scope. This is encapsulated in the quotation below from Bonnie Pitman, Deputy Director, Seattle Art Museum and 1983 Recipient of the American Association of Museums Education Committee Award for Excellence in Practice.

> The architecture of museums is being altered to make museums more welcoming to visitors. Two museums that have undergone major physical transformations are the Exploratorium and the Minneapolis Institute of Arts. At the Exploratorium, the cavernous, dark environment, which had a quality like that of Merlin's cave, has been opened up with new skylights and doors that allow natural light to come in…The Minneapolis Institute of Arts' $150 million revitalisation project added thirty-three new galleries, reinstalling the collections and changed the physical design of the entrance to serve as a 'main street,' providing a sense of warmth and liveliness.

(Bonnie Pitman, 1999: 20)

Since the closing decades of the 20th century, museums have thus been opening themselves up to natural light, the environment and people through the construction of spaces that encourage liveliness, activity and interaction. This shift, moreover, appears to be a global one (McClean, 1997) and it has been the result of many complex and divergent factors. Constructing spaces that establish a relationship of security with occupants by freeing them from firm spatial

enclosure and providing them with views of scenic outdoor vistas, for instance, reflects a social and cultural ethos that encourages direct contact with the environment. In essence this involves breaking down the divisions between the built and natural environment. It also appears to be strongly linked to the awareness that the natural environment is not a renewable resource and is therefore one that needs to be valued and cared for. Each of these factors will now be explained more fully.

In domestic and public architecture, the trend to Unbinding by positively valuing nature and establishing a more open relationship with the environment can be traced to events such as the energy crisis of the 1970s. It has also been strongly influenced by the principles of Japanese architecture, namely the valuing of the environment, the integration of the landscape and the blurring of the boundaries that separate indoor and outdoor spaces. Japanese influences thus provided many leading architects, who were developing an acute awareness of the need to balance natural and built systems, with significant models. Japanese architecture has consequently had a strong impact on the work of many leading contemporary architects. These include internationally renowned giants like Frank Lloyd Wright as well as many prominent local Australian architects: Brit Andreson, Rex Addison, Peter Stutchbury and Richard Le Plastrier, to name a few. Furthermore, the use of steel, reinforced concrete and glass walling has enabled the construction of buildings that are unprecedentedly light, open and spacious, for example, Mies van der Rohe's seminal building, the Farnsworth House near Chicago.

The trend to Unbinding also reflects a new social function for museums — the museum as an open, action-oriented, out-reach centre. Long gone are the days of the dark, dusty cabinet. The post-modern emphasis, as discussed in Section 2.2.3.2a, is on entertainment, discovery and hands-on learning. At another level, the trend to Unbind museums reflects an attempt to demystify cultural institutions by enabling visitors to 'see' the 'behind the scenes' workings of the museum as part of their visit. This notion of demystification is, in turn, closely tied to the present climate of accountability governing the workings of the museum. As discussed at length in Chapter 1, museums are increasingly accountable to the taxpayers who fund them. So much so that their survival is closely dependent on whether or not they deliver, or are

perceived to deliver, 'value for money' by the governments which allocate their funding. For instance, in December 2002, Richard Alston, the Australian Minister for the Arts, proposed a model for funding museums and arts institutions that is directly proportional to the institution's visitor numbers. Cultural institutions are clearly under unprecedented pressure to increase their visitor base or perish.

**Unbinding and value for the taxpayer's dollar: a cultural institution at work**

The way in which cultural processes of change have influenced the construction of Unbound museums in the post-modern era will now be exemplified with reference to the Melbourne Museum, which opened on 21 October, 2000, see Plate 3.31. The Melbourne Museum was chosen because of the way the design of the building was a deliberate attempt to demystify the cultural institution and provide 'value' for the taxpayer's dollar. In the initial planning stages, the Victorian government specified two fundamental requirements for the Museum building: that it be non-monumental and that it allow visitors access to the work being carried out behind the scenes of the institution. The architects chosen to design the building — Melbourne's high profile firm Denton, Corker and Marshall — met the brief in two ways. Drawing on innovations that enable building with glass as a primary material, they designed the museum as an Unbound diaphanous shell (see Plate 3.32) which contains a Bound and opaque inner core. The diaphanous glass membrane allows high levels of transparency into and out of the museum, while inner core of strongly Bound spaces is ideally suited to the firmer degrees of enclosure that the display of light sensitive objects requires.
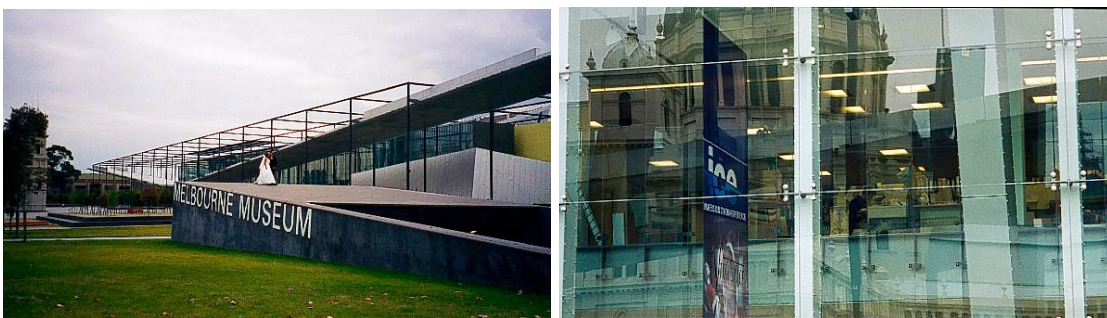


Plate 3.31 Exterior shot, Melbourne Museum Plate 3.32 Façade close-up, Melbourne Museum

Just as the glass is breaking down the barriers between the museum building and the external environment, this diaphanous façade also breaks down the barriers between the museum as institution and other aspects of urban society. The decision to use a transparent enclosure as the edifice of the institution is an important one at many levels. First, it rejects the decorative ornamentation that characterises the museum 'temple' buildings of the past and replaces it with the abstract concept of openness. Openness, realised by a sweeping façade of glass, allows for high levels of transparency both into and out of the building. This means that long before visitors enter the museum, they are able to 'look in on' the spaces and the people using them — both visitors and staff. In particular, Unbinding the façade in this way places museum staff, who are normally hidden from public scrutiny, on display. They now are prime exhibits in the museum.

Unbinding the façade in this way also deliberately foregrounds the workings of the institution and is an important part of the strategy many post-modern museums have adopted in an attempt to make themselves more accessible to a broader demographic. In this instance, the benefits are two-fold. First, the visiting public is able to see evidence of the taxpayers' dollar at work. Secondly, by observing the daily workings of the institution, visitors are able to develop more insight into the diverse kinds of activities museum staff engage in as part of their professional lives. This contextualises the exhibits of the museum within the fields of museum research and administration. This is an invaluable achievement as years of personal experience of interacting with visitors to the Australian Museum in Sydney has indicated to the writer that most members of the general public have little or no idea that researchers work in museums or the type of work they do. These changes thus address the fact that visitors appear to know little about museums beyond the exhibitions they come to view.

An Unbound diaphanous shell like this one, however, is not suited to the display of the Museum's collection, which comprises natural history specimens as well as social and cultural objects. Many of these are fragile and very light sensitive with stringent display requirements. To accommodate this, the architects have contrasted the Unbound spaces used primarily for circulation, orientation, rest and dining, with a strongly Bound hub in which the main exhibition areas are located, see Plates 3.33 and 3.34.

Plate 3.33 Technology exhibition spaces       Plate 3.34 *Phar Lap* gallery, Melbourne Museum

By utilising advances in lighting technology, this Bound spatial core is able to provide the material conditions essential for the display of fragile materials. As Plates 3.33 and 3.34 illustrate, each space is relatively small in scale and firmly enclosed on the base, wall and overhead planes. The use of such solid enclosures is important because it ensures that natural light does not penetrate the interior of the building. Such choices for total enclosure have only become possible through the advent of electric lighting, already discussed, which ensures that both the space and the objects on display inside them are adequately illuminated.

Choices for organising space inside the Melbourne Museum clearly exemplify how cultural orientations to Unbinding, informed by technological innovations, have led to the construction of spaces with different degrees of enclosure. In particular, advances in the technology of lighting, and building with glass, have played a crucial role in enabling museum designers to balance the ethical responsibilities of preserving, caring for and displaying a public asset as valuable as a public collection with the need to create public spaces that establish an optimal relationship of security with visitors. Significantly, both dimensions for organising space, the Bound and Unbound, are strong choices for the middle ground of security.

**Unbinding and pluralism: the valuing of other world views**

The cultural orientation to Unbinding has also enabled museums to reflect different world views in their display practices. Richard West, Founding Director of the Museum of the Native American Indian, for instance, has overseen the design and construction of a new and strongly Unbound museum building which will open in September 2004 as part of the Smithsonian Institute, Washington DC. The aim of the building will be to display the material heritage of the native American Indian peoples. In his 1998 address to the International Council of Museums Conference in Melbourne, West stated it is imperative that the new building be openly integrated with nature to reflect native views of cosmology and the world as they are profoundly different to those of mainstream America. In Binding terms, he is suggesting that the building needs to be Unbound to ensure a physical and symbolic connection between the natural environment, the building and the objects housed and displayed inside the building.

## 3.2.2.4b Scale: the importance of a smooth transition from domestic to public scale

A major focus of this chapter involves identifying what museum designers do, or can do, to make visitors feel secure in their spaces, and visual scale is also a critical dimension of visitor security. The next section will explore how our experiences of domestic scale can be drawn upon in the unfamiliar context of large, institutional spaces to try and keep occupants feeling comfortable and at ease. The first example analysed, however, does not come from museology. It is a drawn from the Commonwealth Law Court building in Melbourne, Australia. It is relevant to this thesis because there is an even greater imperative to make people feel secure inside an institutional building associated with the criminal justice system and one in which the occupant's attendance is obligatory. The Commonwealth Law Court Building is shown in Plate 3.35.

Plate 3.35 The Commonwealth Law Court building, Melbourne

**The Commonwealth Law Court building, Melbourne**

The Commonwealth Law Court building is an exemplary instance of an institutional space that makes people feel Bound, that is, secure and at ease. The aim of the building, moreover, is not to make people feel insecure as it is not a prison. Rather, it represents the architectural embodiment of the cornerstone of the Australian justice system — the fundamental principle that people are considered innocent until proven guilty. It is not surprising then to learn that, in discussing the interpersonal impact of the law court building on its users, Michael Black, Chief Justice, Federal Court has said:

> The judges who work here have told me that they just love working in it. I also understand that members of the public have those feelings about it.

> You obviously can't eliminate the feelings of stress and concern that people have, particularly in the cases that involve them very deeply at a personal level, but I think architecture can help them enormously.

> (In the Mind of the Architect, Episode 1, 2000)

Unlike public buildings of the past which evoked insecurity through the deliberate use of over-scaled spaces, the architect, Paul Katsieris, deliberately set out to create a sense comfort and ease inside the building for its users (Katsieris, 2000). In fact, a short transcript of Katsieris discussing the design of the entrance spaces to the Melbourne Law Court has been reproduced in Table x below. The transcript shows how Katsieris uses different choices from the Binding scale to construct a relationship of security between the building and the user in each of the spaces he describes. Column one gives the spatial location of the architect's commentary in terms of the building while Column two presents the actual transcript of the commentary. It is unfortunate, however, that permission to photograph the spaces inside the building was denied.

This commentary also takes into account another important aspect of Binding — logogenesis. Binding also involves accounting for the way a series of interconnected spaces unfold in a temporal sequence. Up to this point in this thesis, space has been analysed as a fixed, static and frozen entity because of the need to introduce and exemplify the way built and natural spaces evoke different dimensions of security and insecurity. (For a logogenetic account of Binding see Martin and Stenglin (in press), which analyses the unfolding of an exhibition in New Zealand's National Museum, Te Papa Tongarewa).

| Location | Commentary by the architect |
| --- | --- |
| **1. Outside the building in the exterior forecourt.** | We're about to do something very important here: we're about to walk from the city into the law court itself. We wanted to amplify the threshold and make something happen at this very important point. We've made this massive pivoting door which in the mornings is ceremoniously almost pivoted open like some sort of clock. We're using colour to amplify this important threshold. |
| 2a. Inside the building in a small entry pavilion.<br>2b. Further inside the second part of the small entry pavilion. | We come into a very low space and we've done that on purpose. We come into this entry pavilion and a tall person can almost touch the ceiling. And the space is changing around us.<br><br>Now we're starting to contract again — the walls are getting closer together but the ceiling is slightly higher. Just very slightly higher at this point.<br><br>We're about to cross another important threshold: from a small entry pavilion into the larger space. |
| 3. Inside the first foyer of the building. | And we do that.<br><br>So here we are in the first foyer part of the building. We've moved from a much smaller, almost intimate and domestic space, into a slightly higher space.  And the building at this point, with the ceiling and its play of light is starting to announce itself. |
| 4. Inside the central foyer of the building. | And then we move into the next space.<br><br>And now here the building opens up. This is the spatial experience of the interior. It's all revealed. We're received into the building. |

Table 3.2 Unbinding in the Melbourne Law Court

The above transcript shows that Katsieris has an implicit sense of how and why he has enclosed different spaces. However, he can only articulate the choices he has made in a fairly limited way. Using the Binding scale, in contrast, it is possible to analyse his commentary more intricately and systematically. In fact, a Binding analysis of the Melbourne Law Court

reveals that Katsieris made different choices for security from the middle ground of Binding — the Bound and Unbound dimensions — as will now be seen.[23]

To counter feelings of insecurity commonly associated with institutional spaces, Katsieris has consciously designed the entry pavilion, location 2a in the commentary, to make people feel Bound in the same way they would be likely to feel inside their domestically scaled spaces at home. Having established a strong relationship of security between the building and its users as his point of departure, Katsieris then slowly and incrementally moves the visitor towards the Unbound gradation by increasing the scale of the spaces. The next part of the entry pavilion, location 2b, is only moderately Bound so that visitors still feel comfortable and protected as the ceilings are raised slightly to counter the feeling of the narrowing walls.

Visitors then move further inside the building to the foyer, location 3, where they are minimally Unbound as the ceiling height rises further and the walls recede. However, as these changes are slight, the space does not overwhelm the occupant, rather, it enables them to maintain a relationship of security with the building. It is only when visitors reach location 4, the centre of the building, that spatial restrictions such as walls and ceiling height are loosened and the visitor is made to feel free and secure in an institution which otherwise might make them feel fearful. In this central space, which is monumentally scaled, security is experienced as freedom from restrictive spatial enclosures. In the transcript, Katsieris strongly implies that it is because of this gradual transition that people feel welcomed into the building.

By constructing the relationship of security as an incremental continuum from the comfort and protection one feels in domestically scaled spaces at one end, to feeling free inside a monumentally scaled public building at the other, the initial feeling of comfort and ease is maintained throughout the visitor's experience of the entire building. But the way it is achieved varies *slightly* from one space to another until the user reaches the *optimal* choice for Unbinding in the law court. The word optimal, in this instance, has two meanings. First, the

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[23] Unfortunately, it not possible to support this transcript with visual images of the spaces being described. The building's managing authorities were contacted in December 2002 for permission to photograph the interior spaces that Katsieris describes, but, in accordance with the building's high security regulations, permission was denied.

space is optimally Unbound or expansive; second, the visitor reaches optimal freedom from spatial enclosure in terms of feeling secure. Furthermore, slight logogenetic variation appears to be *crucial* to maintaining the feeling of security for the visitor. If the changes from one space to the next are too extreme, or too abrupt, then the user is likely to feel Too Unbound by them and that would make maintaining the initial feeling of security that has been established too difficult.

Environment psychologist, Anita Rui Olds, also discusses the interpersonal effects that small shifts in the construction of spaces can have. She refers to such shifts in the organisation of space as 'rhythmic patterns of predictable sameness combined with moderate diversity' (Rui Olds, 1990:77). Rui Olds argues that we need small shifts to enable our senses to 'maintain optimal levels of responsivity and make us feel "comfortable"' (1990: 77). She goes on to say that 'moderate variations…prevent boredom or withdrawal by introducing a change that catches the attention and reawakens the nervous system' (1990: 77).

In terms of museum practice, careful variations in Binding are not only crucial in making visitors feel comfortable and secure in museum spaces, they also play an important role in helping counter museum fatigue. Museum fatigue is a phenomenon first identified in 1916 by Benjamin Culman and referred to by museologists Hein and Alexander (1998). It refers to the fatigue that many visitors experience approximately half an hour after exhibition viewing begins. Such fatigue is a major problem for exhibition designers, because once visitors are tired, they are no longer comfortable or able to concentrate on exhibitions and the displays inside them. Yet many exhibitions are designed in such a way that spatial enclosures vary little from one space to the next. Such mono-Binding, or mono-levels of Binding, do not take visitor comfort into account - they simply function to enhance museum fatigue.[24]

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[24] Another related aspect of museum fatigue seems to be the field of the exhibition and the visitor's level of interest in that field, together with their negative/positive valuations of it. For example, if the visitor find the topic of the exhibition absorbing, stimulating and interesting, it is more likely they will bring a positive valuation to the experience, and the combined effects of this are likely to counter the onset of museum fatigue. If the visitor finds the topic boring and irrelevant, on the other hand, it is likely that museum fatigue will set in earlier. The challenge for museums and exhibition teams/curators is to find ways of making the field relevant to the visitor, stimulating their curiosity and in doing so, getting them to engage with the exhibition. These challenges are at the heart of the theoretical concerns of Bonding and Macken-Horarick's domains of knowledge (1996) and provide an invaluable tool for projects teams to use because they enable museum staff to address these concerns in principled ways. These issues will be taken up again in the final chapter of this thesis.

**Personal baselines for security: using human scale as the bridge into the public realm**

> The house we are born in is physically inscribed in us.
>
> (Bachelard, 1964: 14)

An important concept relevant to the museum context is the notion of personal baselines for comfort and security which were introduced in Section 3.1. Not only do people have their own first personal experience of spatial security in the home but, as Gaston-Bachelard suggests in the quotation above, they grow to feel secure in particular configurations of spatial enclosure. Australian writer, David Malouf, expresses similar views:

> First houses are the grounds of our first experiences. Crawling about at floor level, room by room, we discover laws that we apply later to the world at large. And who is to say if our notions of space and dimension are not determined for all time by what we encounter there, in the particular relationship of living rooms to attic and cellar (or, in my case, under-the-house), of inner rooms to the verandahs that are open boundaries.
>
> Each house has its own topography, its own lore: negotiable borders, spaces open or closed…
>
> (Malouf, 1985: 8–9)

Implicit in Malouf's writing is the notion that marked variations from this baseline can destabilise us and make us feel insecure. In section 3.2.1.2.3c of this thesis, Power and vertical over-scaling in public spaces, it was noted that middle-class people accustomed to living in over-scaled domestic homes were likely to move easily between their private homes and institutional spaces because they were able to feel secure and comfortable inside large public buildings, including museums and galleries. The challenge for museums, then, is to consider how their public spaces can be designed so that they construct a positive relationship of security with as many visitors as possible. If museums genuinely wish to become more democratic in their reach, one dimension they need to consider is how to construct spaces that evoke the Bound and Unbound dimensions of the Binding scale for visitors from a range of

different socio-economic backgrounds. The Commonwealth Law Court building in Melbourne, just examined, is an exemplary instance; one which uses personal baselines from domestic architecture, in particular the architectural concept of human scale, as the bridge leading people into the public realm.

In recent years, many museum designers have also made similar choices when designing their spaces. The Melbourne Museum, the Queensland Art Gallery and Te Papa in Wellington, for instance, begin with domestically scaled and moderately Bound spaces, as do the new wing of the Boston Museum of Fine Art, the entry to the Fifth Avenue Guggenheim and the entrance to the Canadian Museum of Civilisation. Plates 3.36 and 3.37 exemplify the construction of some of these spaces.



Plate 3.36 Entrance, Te Papa, Wellington    Plate 3.37 Entrance, Melbourne Museum

Similar to the Melbourne Law Court, these initial spaces gradually increase in their scale as the building unfolds. The challenge for museum design, however, lies in applying this principle to the design of museum spaces in large buildings that were never designed to function as museums. For example, the Powerhouse Museum in Sydney which opened in 1988.

**The Powerhouse Museum, Sydney**

The Powerhouse Museum in Sydney is a recontextualised electrical powerhouse, the Ultimo Power Station, which was built in stages from 1899 onwards. The building initially functioned

to provide the power for Sydney's tramway system, now no longer operational. Since then it has been recontextualised as a museum with more than 20, 000 square metres of display space. Much of this space is massive as it was constructed to an industrial scale. The monumentality of its spaces has meant that galleries such as the Boiler Gallery can accommodate objects as large as aeroplanes. Other monumentally scaled galleries accommodate the Bouton and Watts Steam engine as well as the first passenger train in Sydney. Yet, in spite of this, the Powerhouse is immensely popular with visitors. This suggests that the vast cavernousness of some of its spaces does not make visitors feel Too Unbound raising the obvious question, why not? One important dimension appears to lie in the skilled way the display spaces inside the Museum have been constructed.

Most commonly, in built spaces, enclosures are articulated in solid materials like bricks, plaster or stones. However there are other choices too — beams or columns can also be used to *suggest* the edges of a spatial enclosure. This is an extremely important tool for exhibition design given that the wall, ceiling and floor planes in museum buildings are generally fixed and unable to be altered. However in exhibition spaces, designers can *suggest* enclosure by introducing beams, columns, partial arches and false ceilings to make visitors feel more firmly enclosed by the space. Perhaps the most famous and impressive example of suggested enclosure was Albert Speer's *Cathedral of Light* at the 1934 Nuremburg Rally in which 130 beams of light placed at 40 foot (or ~12.2 metre) intervals created a sense of enclosure that was so strong that observers felt as though they were actually standing inside a cathedral (Risebero, 1997: 253).

The skilled use of suggested enclosures to create secure exhibition spaces characterises the design of space in the Powerhouse Museum. To demonstrate this, the design of the Powerhouse exhibition, *Visions of a Republic: The Work of Lucien Henry* (2001) will be analysed. The exhibition was divided into two distinct halves. Plate 3.38 shows the first section of the exhibition. Of particular note is the cavernous size of the space housing the exhibition and the enormous volume of space towering over the visitor on the overhead plane. To make visitors feel secure, rather than oppressed or daunted in this challenging space, the designers skilfully reduced this volume to less than half by using two suggested enclosures.

The first was an incomplete archway, which provided the visitor with partial horizontal and vertical enclosure. The second suggested enclosure consisted of two partial walls which gave the exhibition space both a horizontal and vertical boundary as seen at the rear of the space in Plate 3.38.

The second half of the exhibition was divided into a series of 'themed' rooms opening off both sides of a central corridor as shown in Plate 3.39. The decision to organise an exhibition around a central corridor is an important one in terms of security because it evokes a layout that was common in domestic Australian housing, especially during the 19th century. This model of housing, in turn, had its genesis in Georgian buildings. Houses built according to Georgian plans had a central passage running through them. This passage divided the home into two roughly equal rooms on either side, just as the exhibition layout does. In a four-room Georgian house, moreover, the first room on the left was typically the parlour. Visitors were received and entertained here, so it was the showpiece of the home where the best furniture and family heirlooms were displayed. This layout, then, is a particularly fitting choice for the display of Lucien Henry's objects as many of them are domestic instances of applied art.
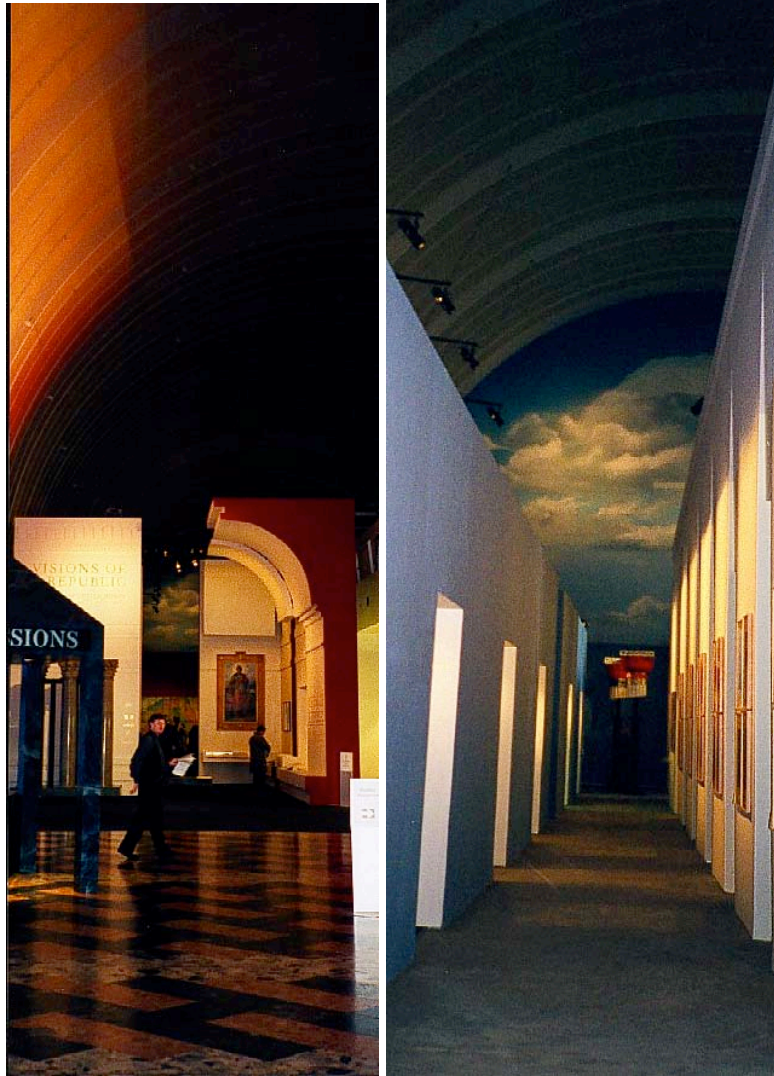
Plate 3.38 First half of *Visions of a Republic*    Plate 3.39 Second half of *Visions of a Republic*

The decision to display objects such as tables, ornate chairs as well as watercolours and smaller, more intimate items in such strongly Bound and domestically scaled spaces is fitting in other ways too. To display them in large and Unbound spaces be inappropriate because large spatial volumes tend to overpower and diminish the impact of intimately scaled works. Consequently, Unbound spaces tend to suit the display of large-scale works such as Aboriginal Pukamani poles, Henry Moore's large sculptures, paintings from Monet's

Waterlily series, steam engines and so forth. Bound spaces, on the other hand, suit the display of more intimately scaled pieces.[25]

The exhibition rooms on both sides of the central corridor were designed to be instrumental in making visitors feel Bound in the same way they might feel inside their own homes. First, they were scaled to the size of domestic rooms in terms of both their height, width, and proportions. Second, a thick material was used to construct each of the wall planes in the rooms. This, in turn, evoked a strong sense of solidity and a firmness of enclosure. Finally, each room was designed with a makeshift ceiling plane, which also functioned to reinforce a strong sense of enclosure and security. One room, for instance, had a plasterboard ceiling, another had a stretched canvas ceiling, while in yet others a solid cube with recessed down-lighting was suspended overhead. The use of *suggested enclosures* such as these gives museum designers a powerful tool. It means that even if they are designing an exhibition to fit into an permanent space, with fixed dimensions, they can still organise the exhibition in ways that make people who are ill at ease in large institutional spaces feel secure.

Bound spaces such as these can also create calm, meditative places of respite from the pressured demands of daily living, not only through the organisation of space, but also through the choice of colours, textures and domestic furnishings. The choice of soft colours for the walls in the rooms, together with the textures of the patterned wallpapers and the presence of domestic furnishings such as chairs, dressers, tables and stools, function to personalise a space. Together with the scale of the rooms, such personalisation helps visitors feel 'at home' as the colours, textures and furnishings that surround them in the space are ones that many people can relate to on the basis of their own personal experience of domestic architecture. Consequently, the rooms provide a quiet, relaxed, 'homely' environment where

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[25] One of the most extraordinary examples of the important relationship between space and objects, concerns the location of an exhibition about crime and its aftermath in Sydney. The exhibition, *Anita and Beyond*, explores the implications of the rape and murder of Anita Cobby in 1986 in Blacktown, an outer suburb of Sydney. Even though the exhibition was curated 'in-house' by staff at the Casula Powerhouse Arts Centre, and their intention was to display it inside the walls of their museum, the venue has subsequently changed. It was shown at the Penrith Regional Gallery and Lewers Bequest. The reasons for this change in location have been explained as follows: 'With its house museum, modernist galleries and established gardens, the Penrith venue is more intimately scaled and lyric than the industrial Casula,' *SMH*, Spectrum Magazine, 9–10 November, 2002: 6. Decisions such as these point strongly to the significance of the relationship between the scale of an exhibition space and the size of the objects to be displayed inside it. The exhibition was held in March, 2003.

the visitor feels free to spend as much time as they like contemplating objects, reflecting on them, reading labels and listening to the audio guide. Clearly, these spaces are not designed to be the cold white clinical cubes of Doherty's art galleries.

**Summary**

Section 3.2 identified two dimensions of the Binding scale that establish optimal relationships of security between visitors and three-dimensional spaces: the Bound and the Unbound. The Bound dimension establishes a relationship of security by clearly delineating the boundaries of a space so that users feel comfortable, safe and protected. To do this, solid enclosures such as walls and ceilings are used to restrict open spaces and create boundaries around a user. In Museums, Bound spaces thus tend to be quiet, contemplative spaces for reading, viewing objects and listening to audio guides. Bound spaces also tend to be firmly separated from adjoining spaces.

The Unbound dimension, on the other hand, establishes security as freedom from firm spatial enclosure. This reduces the feeling of encumbrance by giving the occupants more room in which to move, view objects, discuss issues with others and explore their environment. This feeling can be created by loosening the spatial enclosures. There are two ways of doing this: either receding the walls and proportionately raising the ceiling or using glass to project the space out into the landscape. Unbound spaces tend to be designed in such a way that adjacent spaces merge by seamlessly flowing into one another.

The concluding section of this chapter will explore the overlap in interpersonal meanings between the semiotic systems of space and language and the semantic resonance between them.

# 3.3 Introduction to APPRAISAL: The nexus bridging language and architecture

In this section of the chapter, the interpersonal focus shifts from the semiosis of space to the semiosis of language as there is some overlap between interpersonal meanings in three-dimensional spaces and those in language. Whenever we use language to interact we are establishing a relationship between the speaker and listener or writer and reader. The study of language has often privileged the ideational metafunction of language over the interpersonal, perhaps because ideational meanings are easier to bring to consciousness (Poynton, 1985, 1990). This privileging also has a cultural dimension, as western societies tend to foreground the role of what is called 'thinking' in meaning-making about experience (Halliday and Matthiessen, 1999). This focus also tends to be linked to the influence of cognitive psychology on language study, especially in the United States of America, where this tradition has been reflected in the work of generative linguists such as Noam Chomsky (1968), who saw language as falling within the domain of theoretical psychology. The interpersonal relationships realised in language are just as crucial to meaning-making. For instance they operate at the level of register and discourse semantics, aspects of the SFL model of language introduced in Chapter 2 of this thesis.

At the level of register, Martin (1992) sees interpersonal relationships as being influenced by the status and contact between participants. At the level of discourse semantics, Martin sees them as being is construed by negotiation (speech function and exchange structure); involvement (naming, technicality, anti-language, swearing) and APPRAISAL (White, 1997; 1998; Martin, 1997; 2000; Martin and White in press; <http://www.grammatics.com/appraisal>). Martin has therefore moved SFL theory beyond its traditional concerns with speech functions and exchange structure to a more lexically oriented point of departure for interpersonal meaning. This means that linguists now have a new set of resources for dealing with the rich texture of interpersonal meaning.

A representation of interpersonal discourse semantics is outlined in Figure 3.5 below. Looking upwards to context, APPRAISAL, NEGOTIATION and INVOLVEMENT construe tenor relations — including both status and contact.
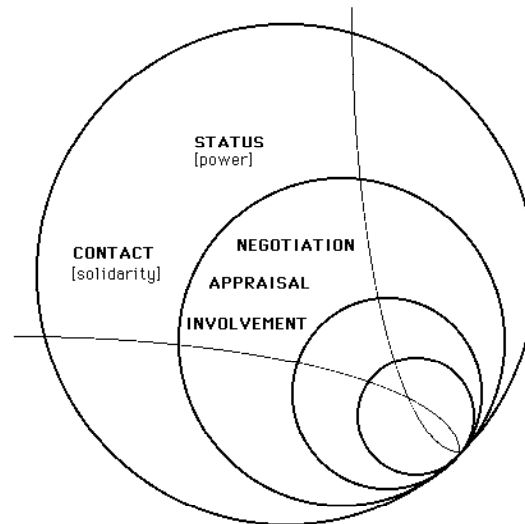


Figure 3.5 Interpersonal discourse semantics in relation to tenor (Martin, in press b)

# 3.3.1 A Brief overview of APPRAISAL

The analysis of media texts by Martin and the Write it Right research team in the 1990s (Iedema, White and Feez, 1994) led to the development of systems for identifying evaluative meaning which they collectively called APPRAISAL. This work was foreshadowed by Rothery's work on interpersonal meanings in story types (1990). APPRAISAL offers systems that describe the semantics of evaluation. In particular, how participants are feeling, the judgements they make and the value they place on the various phenomena of their experience. APPRAISAL includes three systems for constructing evaluative meaning: ATTITUDE, ENGAGEMENT AND GRADUATION (Martin, 2000). Of these systems, the most relevant to the semiosis of space is ATTITUDE which will now be briefly introduced. As both the systems of ENGAGEMENT and GRADUATION are not directly relevant to the work on Binding, they will not be discussed in this thesis.

# 3.3.1.1 ATTITUDE

ATTITUDE involves a set of gradable resources that fall within three regions of interpersonal meaning: AFFECT (emotion), JUDGEMENT (ethics) and APPRECIATION (aesthetics). Each of these is concerned with feelings. AFFECT deals with resources for constructing emotional reactions such as mental processes and attitudinal Describers. JUDGEMENT is concerned with resources for assessing behaviour according to various norms, and APPRECIATION involves resources for construing the value of things such as buildings.

This thesis brings together two semiotic systems: language and three-dimensional space. Both are concerned with interpersonal meanings, which means it is likely they will be dealing in comparable semantic regions. By exploring the resonance that exists between them, this thesis will focus on their commonalities rather than their differences. The work of some social semioticians, however, has focused strongly on the fact that meanings cannot be exactly replicated across modes. One example of this is Iedema's work on resemiotization (2000, 2001 and 2003). Resemiotization refers to translations in meaning across semiotic modes, for example, from language to visual images to three-dimensional space. By exploring the resemiotization involved in building an extension to a mental hospital, Iedema has demonstrated that meanings cannot be exactly replicated across modes as each semiotic clearly has its own 'affordances' and 'constraints'. This is obviously a productive area of research to pursue but it will not be taken up in this thesis.

The following section of the chapter thus aims to explore the commonality between the semiotics of language and the organisation of space, in particular, the semantic resonance that exists between APPRAISAL and Binding. Within ATTITUDE, for example, the sub-system that resonates most strongly with the semiosis of space is Affect: in/security. So it is the lexis from this region of meaning that is most relevant to Binding and will thus be briefly introduced and explained. The focus will then shift to a consideration of the semantic overlap between Affect: in/security and Binding.

Choices from the sub-systems of APPRECIATION and JUDGEMENT are also relevant to Binding, although perhaps not to the same extent. It would be wrong to assume, for

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example, that the *only* interpersonal concern for architects in designing and organising built spaces are choices from Affect: in/security. When speaking and writing about architecture, for instance, architects frequently draw upon the full range of resources from ATTITUDE. For example, they choose language resources to discuss the aesthetic effects of buildings (APPRECIATION) as well as judging the propriety, capacity and tenacity of the professionals involved in constructing buildings such as architects, interior designers, builders and even developers (JUDGEMENT). A brief discussion of the ways choices for APPRECIATION and JUDGEMENT tend to be made within the field of architecture can be found in Appendix A.

AFFECT

Affect is the sub-system of ATTITUDE that is concerned with positive and negative emotions: are we feeling happy or sad, safe or vulnerable, interested or bored? In the following text, a quotation from a couple who commissioned an architect to build them a new home in Sydney, the feelings construed are happy ones. This is an example of texts that occur frequently in writing about post-modern architecture and will be discussed in more detail later.

> …it has a **lovely warm feeling**. We'd always been 'go-outers' but since we've been in the house we're quite **happy** to stay at home.

> (Architectural clients, cited in Allenby, 2003: 13; emphasis added)

AFFECT is classified into three major groups of feeling and organised into systems of opposition. They are un/happiness, in/security and dis/satisfaction. Each sub-system is further divided according to whether it is an emotion that is felt by the participant or an emotion that is directed at someone. Both the surge of behaviour directed at someone and the predisposition felt by a participant are graded as having low, medium or high value.

The system network for AFFECT is presented in Figure 3.6:

Affect $\Rightarrow$
- un/happiness
- in/security
- dis/satisfaction
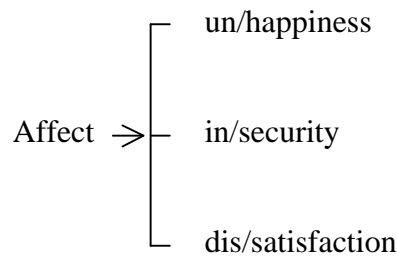
Figure 3.6 AFFECT system network

The un/happiness dimension of AFFECT is concerned with sadness, anger, happiness and love. As the short quotation above illustrates, happiness can be felt in response to a building such as a house. Thus the owners describe their home as generating positive emotions, that is, 'a lovely warm feeling'. In this particular instance, the house was custom-designed to meet the owners' specifications and the finished product has exceeded the owners' expectations so much so that the pleasure and delight they feel in the house outweighs the joy that their outgoing lifestyle used to bring. Thus they are 'happy' to stay home; the way their space has been organised for them has significantly contributed to the quality of their life. In fact, the feelings they describe are so powerful that every time they enter their home it is likely they feel a strong and positive affectual surge in response to their new domestic environment.

The in/security variable of AFFECT covers emotions that are concerned with our 'eco-social' well-being: anxiety, fear, confidence and safety (Martin and White, in press). In the following text, a personal exchange with a shopper at Collins Superstore in Broadway, Sydney, the feelings construed relate to comfort, safety and security.

I just love this place. I feel so **at home** here.

(Personal communication with Dr Shane Thomas, 29th August, 1999; emphasis added)

As discussed also in Chapter 3, section 3.2.2.1, security in built spaces is often encapsulated in the expression, 'I feel at home'. Feeling at home, in western culture,

encapsulates both the literal meaning of the home, which *ideally* provides safety and protection, and a powerful metaphorical meaning of inner peace and security in relation to our environment and the people we share it with. After all, a home is a familial setting, a place of intimate social interactions, where children develop their first sense of belonging to a social group and deep attachments are often formed between family members.

Another example of a writer's affectual response to architecture in terms of un/happiness and in/security has been interpolated into the quotation below. In this excerpt the writer, a distinguished Melbourne architect, evaluates the houses built by Walter Burley Griffin on the Castlecrag estate in Sydney during the 1920s. Griffin was an internationally renowned Chicago-born architect who won the Federal Capital Competition in 1912 to design Canberra.

> People who had been **shocked** [negative Affect: insecurity] on first sight lived on to **love** [positive Affect: happiness] his oddly contorted buildings, to know their faults and **love** [positive Affect: happiness] them still.
>
> (Boyd, 1952: 188; emphasis added)

This text illustrates that our initial affectual responses to a building can change over time as we grow accustomed to living inside it. Thus the time we spend in a space, and the memories and associations we develop with it, can influence the way we feel about it. Implied in this text is the premise that buildings that construct a positive relationship of security with their occupants can, as a consequence, elicit strong and positive affectual responses of happiness. It would be equally true then that buildings that make their users feel insecure would probably elicit negative responses of unhappiness.

The third variable of AFFECT, dis/satifaction, is concerned with the pursuit of goals — ennui, displeasure, curiosity and respect. Within the field of architecture, choices for satisfaction often include lexical items such as 'proud' or 'houseproud' as well as 'satisfied' and 'happy with'. They are illustrated in the following two excerpts. The first comes from a feature article on the housing of affluent middle-to-higher-income families living in the outer western metropolitan areas of Sydney (Hawley, 2003). This group favours living in large project homes built by property developers such as Mirvac, rather

than custom-built and architect-designed housing. These project homes, moreover, tend to be extremely large, double storey, with lofty entrance halls and highly ornamented facades. Bob Hamilton, Managing Director of Mirvac, encapsulates this demographic's attitude to housing in the following way:

It's all about **pride**, **personal pride** — to say they have arrived.

(Hamilton, cited in Hawley, 2003: 25; emphasis added)

Hamilton's choice of lexical items such as 'pride' and 'personal pride' in relation to what housing means to this group is a clear statement about the satisfaction this group derives from houses which display their social mobility and economic prosperity. Hamilton's appraisal, moreover, concurs with the evaluations made in the same article by sociologist Gabrielle Gwyther. It thus seems that housing satisfaction is not only about domestic comfort for this group — more importantly, it is about impressing family, friends and visitors with the magnificence of scale. In Australia, this trend has a strong historical precedent, as discussed in Section 3.2.1.2.3d in relation to the new middle class that emerged during the 1850s gold rushes.

The following quotation also exemplifies the sub-system of satisfaction, but it does so through the lexis related to feeling 'happy with' the results of building. In this extract, two clients who engaged an architect to renovate their 1880s inner-city Victorian terrace discuss the results of the process.

We were really **happy with** all the finishes. We **love** the bathroom and having a shower with the skylight above it. The kitchen as well; the way it all opens up.

(Architectural clients, cited in Burton Taylor, 2003: 15; emphasis added)

In this extract, the first phrase 'happy with' is used to express the owners' satisfaction with their home renovation. This phrase indicates that the owners are happy with the results. It is noteworthy that in discussing feelings of *satisfaction* in relation to their goal of home renovation, lexical items from happiness, the first region of affectual meaning discussed,

are used. This choice of lexis, furthermore, is not only marked — it is also representative of owners' responses to renovations, as published weekly in Sydney's *SMH* Domain Magazine over a period of two years.

In fact, not only do the owners use the phrase 'happy with' to describe how the finishes make them feel, they also choose 'love' which comes from the higher positive end of happiness. These choices are typical of the lexis home-owners' use to describe how they feel about architectural changes and innovations to their domestic spaces. One explanation is that the results of these renovations clearly exceed satisfaction. In other words, the feelings people experience after a successful renovation can be so high that they spill over into happiness, making them feel joyful, high-spirited and delighted.

In conclusion, this brief exploration of the links between AFFECT and architecture has identified the enormous potential that architecture has for improving, and impacting on, the quality of peoples' lives.

## APPRAISAL and Binding: exploring the semantic resonance

The discussion will now shift from APPRAISAL to a short exploration of the semantic overlap between AFFECT: in/security and Binding. Binding, as discussed, concerns the way people's emotions can be affected by the organisation of three-dimensional space, both natural and built. In terms of its semantic focus, it is therefore most closely aligned with Affect: in/security is concerned with emotions related to our 'eco-social' well being.

The mapping of the semantic resonance between the two semiotics is presented in Table 3.3 below. Column 1 identifies the relevant sub-system from AFFECT, column 2 identifies the corresponding Binding dimension and column 3 explores the semantic resonance between the two semiotics: language and space.

| AFFECT system | Binding choice | Interaction of APPRAISAL and Binding |
|:---:|:---:|:---:|
| Security | Bound | comfort, safety and protection |
| Security | Unbound | freedom |
| Insecurity | Too Bound | smothering, oppression |
| Insecurity | Too Unbound | vulnerability, fear |

Table 3.3 Semantic resonance: APPRAISAL and Binding

The semantic resonance that occurs between AFFECT: in/security and Binding is of particular important to multi-modal discourse analysis. For where different semiotic systems co-articulate, such resonance has the potential to multiply meanings. Thus Lemke suggests:

In multimedia genres, meanings made with each functional resource in each semiotic modality can modulate meanings of each kind in each other semiotic modality; thus *multiplying* the set of possible meanings that can be made (and so the specificity of any particular meanings made against the background of this larger set of possibilities).

(Lemke, 1998b: 92; emphasis in original)

Martin (in press for 2004) refers to such a multiplication of meaning as the creation of 'semiotic synergy'; while Royce proposes notion of 'intersemiotic complementarity' (1998; 2002). In essence, all three terms encapsulate the notion that the sum of co-articulation, in terms of the meanings that are created, is far greater than the parts.

# 3.4 Summary

In summary, Binding is a theory of the way people's emotions can be affected by the organisation of three-dimensional space, both natural and built. In particular, it focuses on how a space can be organised to make an occupant feel secure or insecure. By enclosing a person firmly, for instance, a space can make that person feel comfortable, safe and protected. By loosening these enclosures, the space can make the person feel free and unencumbered because more room has opened up around them.

Just as SFL posits a relationship between culture and language use, Binding acknowledges that people's relationships with spaces in respect of security and insecurity are culturally shaped and influenced by a range of factors: environmental, social, legal and economic. Moreover as Binding deals with interpersonal meanings, which are gradable, it is a topological resource and has therefore been represented on a continuum or scale. Located at the end points of the Binding scale are the two dimensions which represent insecurity: the Too Bound and the Too Unbound. Located in the middle of the scale are the two dimensions that establish optimal relationships of security between visitors and three-dimensional spaces, the Bound and the Unbound. It is also possible to make finer distinctions for the Bound and Unbound dimensions as they can have  a low, median or high value. In other words, a space can be minimally, moderately or strongly Bound, or minimally, moderately or strongly Unbound.

Finally, Binding has a strong logogenetic component. Using the low, medium and high distinctions for the Bound and Unbound dimensions, for instance, it is possible to see how slight changes to Binding in an institutional space need not overwhelm occupants. Rather, incremental shifts in Binding can be instrumental in enabling the occupants to maintain a relationship of security with the building. The construction of such a gradual transition seems to play a pivotal role in making people feel welcome and 'at ease' in over-scaled, institutional buildings such as museums.

The next chapter, Chapter 4, will examine how choices for Binding are materialised. In addition to exploring choices for constructing wall, floor and the overhead enclosures,

Chapter 4 will examine how people's responses to space are influenced by other variables such as colour, light, texture and pattern.

# CHAPTER 4

# The Materialisation of Binding

## 4.1 Introduction

The goal of this chapter is to identify the material elements constructing Binding. To do this, the chapter will focus on the expression plane. In respect of spatial semiosis, the expression plane is concerned with two principal systems of choice: permeability and ambience. The permeability dimension is concerned with the fixed, structural elements that create a three-dimensional space; namely the walls, the overhead plane and the base plane. Ambience, on the other hand, is concerned with the changeable elements used to organise a space, such as colour, light, texture and pattern.

Permeability and ambience can be further sub-divided and described along vocational lines. Permeability, for example, is the realm of the architect who is trained in the design of all aspects of buildings including structural elements, such as the design of load-bearing walls; designing the wall, base and overhead planes; siting the building; deciding the location and size of openings, and so forth. Due to space constraints, the permeability section of this chapter, however, will not be able to address all of these aspects of architectural design. Consequently, the focus will be on describing the materialisation choices for the construction of overhead, base and wall planes, including openings such as windows and doors.

Ambience, on the hand, is the domain of interior designers; the professionals involved in designing and redesigning interior spaces. This involves working with non-structural and variable elements such as lighting, colour and finishes. Interior designers decide on the textures and patterns of fabrics to be used in a space; the choice of flooring; wall

coverings; window treatments such as blinds or drapes; the scale of furnishings, as well as the inclusion of accessories. Accessories are small, movable objects that personalise a space, such as paintings, sculptures and vases. Given the breadth of elements that interior design involves, it will not be possible to explore all of these in the materialisation section of Ambience. Ambience will thus be confined to the most important elements — colour and light, which can work together to change the size of a space; texture which affects colour and light distribution; and vertical and diagonal patterns which can appear to alter the dimensions of an enclosed space.

Although permeability and ambience draw on different types of professional expertise, it is possible for architects to cross over and work in both.[1] For instance, Australian architect, Ken Woolley was responsible for designing both the permeability and ambience of the homes he constructed in the 1960s. This was a deliberate choice, as it enabled him to ensure a visual and aesthetic continuity between the interior and the exterior of the domestic spaces he designed. In contrast, Richard Meier was employed to design the permeability of the Getty Center in Los Angeles, while Thierry Despont, an interior designer from New York, was employed to design the ambience of all the galleries and exhibition spaces. Brawne comments on the results of this division of labour in the following way: 'the indoor spaces most seen by the public are by a hand regrettably out of sympathy with Meier's creation. How this jarring dichotomy could have been allowed to arise, is difficult to imagine,' (1998: 34). Clearly, in order to create a cohesive whole, choices for permeability and ambience, which construct both the exterior and interior of a building, need to be integrated.

The central concern of this chapter involves explaining the organisation of space through the concretisation of meanings. This is complex to do for the following reasons. First, the way a space has been constructed to close in on or open up around an occupant is the result

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[1] Exhibition designers fall somewhere in between the two occupations of architecture and interior design for they organise exhibitions that are housed in buildings constructed by architects. Thus, many of the walls are fixed and unable to be changed, especially exterior walls and load bearing or structural walls. However, exhibition designers do have many choices for organising internal spaces. They can manipulate the wall plane, for example, by inserting moveable walls known as partition walls. They can also manipulate the overhead plane by inserting false ceilings, and they can change the floor plane by raising sections of the floor through the construction of ramps and stages. In the process of designing display spaces, moreover, exhibition designers are simultaneously involved in making choices to do with colour, light, texture and pattern. In this way they move between both professions.

of the *interaction* between the many different elements of permeability *and* ambience introduced earlier in this section. While all of these elements are perceived by the occupants of that space, some elements may be more foregrounded than others while others may be hard to notice, even to experienced users and analysts of a space. At this point, it is impossible to elucidate why this is the case. We can speculate about the reasons for this, such as lack of experience in observing a space, but there is no evidence as yet to explain this phenomena.

Furthermore, some choices for constructing a space may dominate, while others may play a more secondary role. This phenomenon is comparable to the notions of reading position and social subjectivity foregrounded in cultural studies, where the social subjectivity of a participant is seen to be affected by the experiences they bring to a text (Cranny-Francis, 1992; 1994; 1995). Cranny-Francis et al. (2003) explain the experiences that shape our social subjectivity in the following way: 'We are each born into a particular historical moment, a particular social class and a culturally specific place with its own systems of meaning, coherence and values,' (2003: 42). The impact of such historical, culturally specific and class-based experiences is so far-reaching that it can impact on more than the way people interpret and respond to literary texts (Kress, 1985; Cranny-Francis, 1992). These experiences may also impact on the meanings that the occupants of a space can make. Thus the materialisation statements discussed in this chapter have been written as pointers to the analysis of Binding.

Moreover, in order to examine the materialisation of Binding, it is essential to separately discuss the fixed and the variable elements that construct Binding. Clearly this approach is less than ideal for, as previously noted, the construction of every space not only incorporates choices from permeability and ambience, but the *interaction* between them is central to Binding. Even though this chapter is concerned with the expression plane, it is assumed that a Binding analysis of a building, or a series of connected spaces, will also account for the cultural orientations to space discussed in Section 3.1.2; in particular how people's relationships with spaces in respect of security and insecurity are culturally shaped and influenced by a range of environmental, social, legal and economic factors. To undertake an analysis solely at the level of the expression plane would be failing to

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understand the full significance of the choices that have been made to construct materialisation.

Having acknowledged the complexities involved in discussing the expression plane of the semiosis of space, this chapter will begin by exploring permeability. It will ground the work on materialisation in the fundamental architectural concept of *form*, or the way three-dimensional spaces are created. It will also attempt to identify terms that can be used consistently to discuss the materialisation of Binding. It will then examine *how* each of the three planes comprising a three-dimensional space — the overhead, base, wall planes — can be constructed.

The second part of chapter will explore choices for ambience, that is, the way colour, lighting, texture and patterning also work to create spaces that feel diaphanous or occluded. Choices for ambience can either complement choices for permeability or mitigate against them. So if a space is constructed to feel Bound in terms of its permeability, choices for ambience can enhance such occlusion through dark colours, dim lighting and non-reflective textures. Alternately, they can mitigate against it by opening the space up, making it feel larger, brighter and less enclosed through choices of light colours, strong up-lighting, reflective textures and directional patterns. In essence, the relationship between permeability and ambience can be either complementary or oppositional.

Finally, this chapter will focus exclusively on choices for materialisation that tend to make most people feel secure, that is, choices that construct Bound or Unbound spaces. This is an important choice. For there is a set of elements for horizontal and vertical enclosure that co-articulate the Bound or the Unbound dimensions. If a person constructing a space takes up a certain number of these, they will construct a space that feels secure. However if they use *too many* of these elements, they will construct a space that feels insecure, that is, either Too Bound or Too Unbound.

For instance, in a space that feels Too Bound, such as a dungeon, the selections for permeability tend to come *solely* from one dimension of the Binding scale — the Bound dimension. Thus, all the enclosing planes tend to be strongly Bound — a stone floor, a low

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flat stone ceiling, thick and impermeable stone walls, no window openings and a thick solid door. These choices are further supplemented by corresponding selections from ambience such as low lighting, dark colours and non-reflective textures which absorb light. The result of so many untempered choices for Boundedness would be a space in which most people would feel smothered and insecure. In other words, it is the cumulative effect of *untempered* choices for Boundedness that constructs spaces that feel Too Bound. The same can be said of spaces that feel Too Unbound.

Choices for spatial security need to be *counter-balanced* by selections from *both* dimensions of the middle ground for security — the Bound *and* the Unbound. It is for these reasons that this chapter will focus exclusively on choices for materialisation that construct spaces that feel Bound or Unbound.

# 4.2 Permeability

The structural materialisation of Binding is concerned with the permeability of a space. To permeate means to pass through the substance or mass of something, in this instance, a three-dimensional spatial enclosure. Thus, the permeability of a space refers to the degree to which a space can be penetrated by the elements, especially natural light and air. There are two choices for permeability: diaphany and occlusion.

Diaphany is a choice for Unbinding as it involves opening a space up to the elements, the environment and nearby spaces, while maintaining a feeling of security. Australian architect Glenn Murcutt describes it in the following way: 'For you to be free within the walls — to be a free spirit within the walls — yet secure,' (Murcutt, cited in Drew, 1999: 78). A diaphanous space is one in which the occupants can see out of the space and observers are often able to see inside. It is also a space that often physically interacts with the external environment — it 'breathes' in that it allows air to move through it, it modulates the degree of sunshine that enters it and it allows natural light to filter into the interior.

Occlusion, on the other hand, is a choice for the Bound dimension of security, for it involves containment, sealing a space off from both the external environment and other neighbouring spaces. Closed spaces are, to a large extent, both physically and visually sealed from the environment.

In order to identify the material elements constructing the differing levels of permeability described above, we need to first understand how the walls, the overhead plane and the base plane combine to create a spatial enclosure. The point of departure for developing this understanding will be architectural theory, in particular, the primary elements of form and how they combine to create a three-dimensional volume of space. The following section will begin with a brief overview of form, the principal cornerstone of architectural design.

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# 4.2.1 The primary elements of form

There are four primary elements of form. They are the point, the line, the plane and volume. Each element has the following characteristics. The point generates form and announces a position in space, see Figure 4.1 below.

Figure 4.1 A point in space

An extended point becomes a line. A line is one-dimensional and it has the following properties: length and direction, see Figure 4.2.
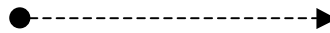
Figure 4.2 A line or extended point

An extended line becomes a plane. A plane is two-dimensional. It has the following properties: length and width, but no conceptual depth. It has shape, which gives it its primary identifying characteristic, as well as surface properties (colour and texture) and orientation, see Figure 4.3:
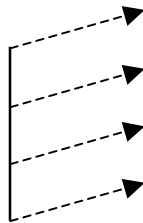
Figure 4.3 A plane or extended line (amended from Ching, 1996: 3)

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An extended plane becomes a space or volume. It has the properties of length, width and depth; form; surface and orientation, see Figure 4.4:
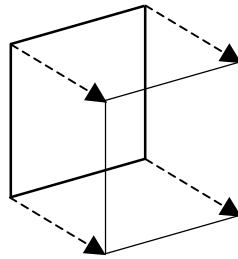


Figure 4.4 Volume: the extension of the plane (Ching, 1996: 3)

The way these four elements combine to create space is best summarised below, see Figure 4.5, and in the accompanying explanation by artist Paul Klee:
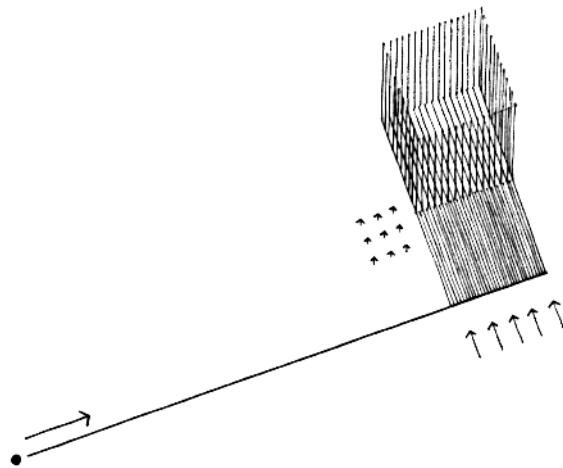


Figure 4.5 Point — Line — Plane — Volume (Ching, 1996: 2)

All pictorial form begins with the point that sets itself in motion…The point moves…and the line comes into being — the first dimension. If the line shifts to form a plane, we obtain a two dimensional element. In the movement from plane to spaces, the clash of planes gives rise to body (three-dimensional)…

(As cited in Ching, 1996: 1)

As planes define the limits or boundaries of a space, they are critical to understanding Binding, the way a space closes in or opens up around a person to make them feel secure or insecure. Figure 4.6 below shows that there are three planes that are crucial in determining how Bound or Unbound users feel inside a space. They are the overhead plane, the wall plane and the base plane.



Overhead plane                Wall plane
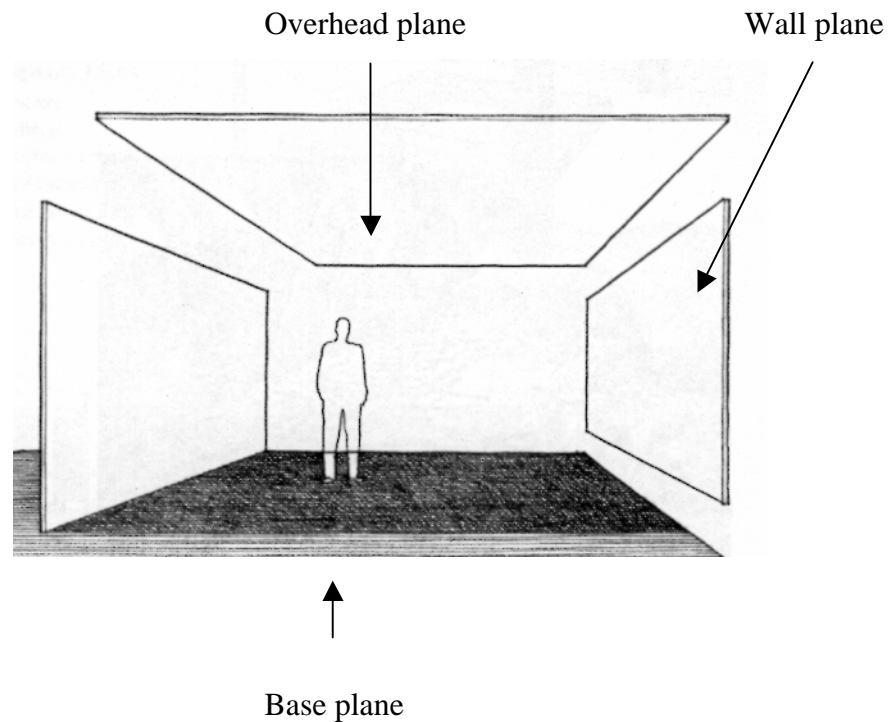
Base plane

Figure 4.6 Three enclosing planes (Ching, 1996: 19)

The choices for constructing each of these planes will now be explored. The following exploration will be concerned with the meaning potential architects are trained to select, and combine, in the design of a building. It will begin by examining the overhead plane. This will be followed by a discussion of the base plane and will conclude with an investigation of the wall plane.

# 4.2.2 The overhead plane: roofs and ceilings

A horizontal plane located overhead defines a volume in space between itself and the ground plane.

(Ching, 1996: 99)
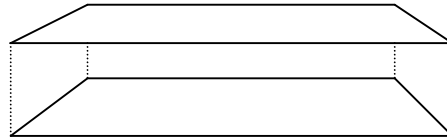


Figure 4.7 The overhead plane

As Ching states in the quotation above, the function of the overhead plane is to define the upper limits of a volume of space. The overhead plane is made up of two horizontal elements: the roof plane and the ceiling plane. To make occupants feel safe and secure, the roof plane provides the main protection against the forces of the sky, commonly referred to as the elements. The importance of the sheltering role performed by the roof plane is particularly evident in times of natural disaster as shown in Plate 4.1 below when gale force winds aerodynamically removed the roof from the house.



Plate 4.1 House damaged by storms

As Plate 4.1 clearly demonstrates, roofs are clearly the 'front line' of defence against environmental forces (Wickersham, 1987). In particular, they make people feel secure because they weatherproof the internal spaces. In this way they protect occupants from the sun, rain, hail, wind and snow. In areas with hot climates, roofs are often designed to extend outwards, well beyond the support wall, forming an eave-overhang that shields the door and window openings from the sun and the rain.

The function of the ceiling is a complementary one. Ceilings provide an additional layer of enclosure to make internal spaces even more secure from the elements.[2] This second layer of enclosure seals the internal space further by preventing the intrusion of drafts and dust into living areas. Ceilings may also constitute the underside of an overhead floor plane in buildings spanning several storeys in height, see Plate 4.2 below.



Plate 4.2 Fusion between a ceiling and floor plane, Queensland Art Museum, Brisbane

However, not all buildings have both planes, and this impacts on the Binding analysis of a space. Some buildings, especially those located in the tropics, only have a roof plane. A Binding analysis of such a building must focus exclusively on the roof. Most buildings,

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[2] In terms of their shape, ceiling planes may or may not follow the shape of a roof. In religious buildings such as churches and cathedrals, for example, the shape tends to be the same. The reasons for this were discussed in Section 3.2.1 — together with height and scale, the shape enables the overhead plane in the space to feel as though it were soaring to the heavens.

however, have both planes, but the roof is not visible from *inside* the building, see Plate 4.3. In buildings that are doubly sealed from the exterior in this way, the Binding analysis *only* needs to focus on the ceiling plane. This variation means that in the following section, some analyses of the overhead plane will focus on the way roofs are constructed, while others will focus on the construction of the ceiling plane.



Plate 4.3 The ceiling plane, Canadian Museum of Civilisation, Ottawa

Finally, there is a space between the roof and ceiling planes which can play a crucial role in achieving thermal comfort for occupants. Most commonly, this space is used for insulation. Thus thermal blankets, fibrous batts, straw boards and/or loose-fill granules are laid over the ceiling. Their function is to reduce the loss of heat from the space below and prevent the sun's heat from entering from above in hot weather. In this way they achieve thermal comfort, especially during the winter and summer months. In addition to insulation, this space is also commonly used for lighting, electrical wiring and the storage of large items such as water tanks and air conditioning systems.

Before considering the materialisation of the overhead plane, it would be useful to briefly reiterate the point made at the close of Section 4.1. The research in this chapter focuses

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exclusively on choices for materialisation that make people feel secure, that is, choices that construct Bound or Unbound spaces. The reason for this is that spatial security requires selections from *both* dimensions of the middle ground for Binding. However, if exclusive selections are made for one dimension only, the Bound, or the Unbound, the result will be a space that is likely to make the occupants feel insecure. Bearing this in mind, Section 4.2.2.1 begins the exploration of security and the overhead plane.

## 4.2.2.1 The overhead plane and security

There are two dimensions of the Binding scale for making people feel secure via the overhead plane of a built space — the first option makes the occupants feel Bound; the other makes them feel Unbound.[3] The Bound choice seals off the interior from the sky above, both physically and visually, see in Plate 4.4. It is therefore analogous to the feeling of comfort and security experienced by animals living in burrows that are closed off from the outside world. Implicit in a Bound choice for security is an evaluation of the external environment, including the elements, as something that needs to be shut out in order for people to feel comfortable and secure.

[3] Although the height and shape of a roof can have great cultural significance, the discussion of the roof plane in this chapter focuses solely on how the roof can be constructed to close in on, or open up around, a user in order to make them feel either secure or insecure. The other cultural aspects, although related, are not seen as integral to the materialisation of security and have therefore not been dealt with.

Plate 4.4 Bound overhead plane        Plate 4.5 Unbound overhead plane

The Unbound choice, on the other hand, is also a choice for security, but the materialisation is very different. As we can see in Plate 4.5, the Unbound overhead plane *physically seals* the interior from the elements, but *visually opens* the internal spaces up to the sky overhead. Implicit in the Unbound choice, therefore, is a strong valuing of the environment as an integral aspect of everyday living; perhaps even an important resource for sustaining life. The Unbound overhead plane enables the occupant to feel protected from the elements while at the same time being connected to, and able to see, the weather conditions outside and the sky above.

## 4.2.2.3 Permeability and the overhead plane

The following section now discusses each of the materialisations for permeability in more depth. In essence, there are four main factors determining the permeability of overhead enclosures. They are:

a) the number of enclosing planes

b) the materials used and their depth

c) the shape and height of the overhead plane

d) the insulation qualities of the materials that are used.

As the first of these has already been discussed in Section 4.2.2, the remaining three will now be explored in detail.

## 4.2.2.2b Materials and their depth: how they seal spaces from the outdoors

Choices for how Bound or Unbound spaces are on the overhead plane are strongly determined by the permeability of the material used for the roof covering, that is, the degree to which it can be penetrated by air, heat and light. Bound overhead planes tend to be constructed from solid and opaque materials such as concrete, stone, earth, sheeting (steel, aluminium and corrugated iron), interlocking tiles (terracotta, slate, shingles or cement) and even woven materials such as thatch and bamboo. These materials make a space feel Bound because they are impenetrable to the elements. In fact, not only do they shelter and protect the spaces below, but they simultaneously obscure natural light from entering the interior and visually seal off views of the sky. They thus set up a 'closed' relationship between the interior and the exterior as seen in Plates 4.6 and 4.7.[4]

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[4] In this example, the height of the space is playing a crucial role in countering the firmness of the enclosure and preventing the thick concrete overhead plane from feeling too confining.

Plate 4.6 A thick, solid roof plane          Plate 4.7 A thinner roof plane

Even though the thick concrete roof in Plate 4.6 encloses the space much more firmly and solidly than the thin bamboo roof in Plate 4.7, both are choices for comfort and security. Climate is one of the factors determining the type of material required to provide the occupants with a roof plane that makes them feel comfortable. In the tropics, for example, the priorities for comfort through overhead enclosure are deep shade, rain protection and cross-ventilation. These demands are best met through the use of a lightweight but protective material for overhead enclosure such as thatch. The demands that different climactic conditions place on Binding in relation to the overhead plane will be discussed in more detail later in this section.

**Bound roofing materials: going underground**

People frequently associate roofing materials with tiles, slate and corrugated iron, but the focus here will be on one of the oldest roofing materials available, the soil of the earth. Earthen roofs are a strong choice for comfort and security because of the temperature-moderating qualities of the earth.[5] Built spaces with earth roofs, for example, experience

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[5] It should also be noted that not all people would feel comfortable inside spaces that are built under the ground. As discussed in the introduction to this chapter, for some people, such earth bound spaces would fall within the Too Bound gradation of the Binding scale and evoke an oppressive sense of smothering. In war times, however, especially during public air raids, underground bunkers are a common choice for security.

stable temperatures all year round as a result of a phenomenon commonly referred to as the 'thermal flywheel effect'. This is best explained in the words of architect David Pearson:

> The soil, depending on its depth and thermal properties, slows the passage of heat gained or lost to such an extent that the heat gained in the summer will reach the house in early winter, and the cooling effects on the soil in the winter will not flow through to the house until early summer.

> (Pearson, 1998: 90)

Earthen roofs also protect dwellings from wind, storms and fire.[6]

The interpersonal effects that a roof made from a material such as the earth may have on its occupants is strongly dependent on the depth of the roof plane. For many people, the ultimate instantiation of a strongly Bound roof plane would be experienced inside a built space such as a dugout or an underground railway station, see Plate 4.8.
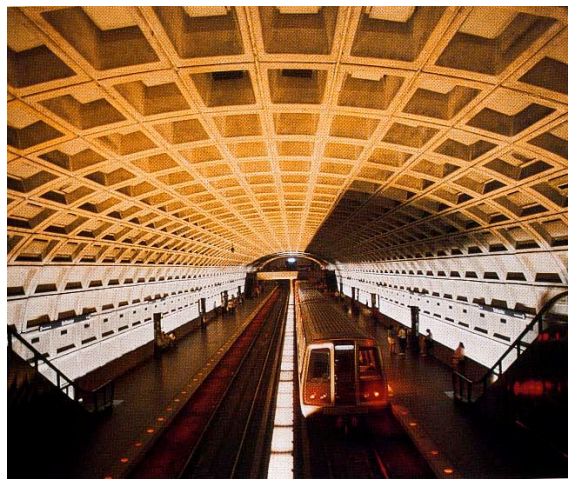


Plate 4.8 A strongly Bound roof plane, Metro station, Washington DC

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[6] In order for occupants to be truly safe and secure, roofs made of earth require stronger construction than roofs made from other materials, and the attention given to insulation, especially waterproofing through the use of membranes, needs to be extremely thorough (Wilkie and Arden, 2001).

Subterranean spaces such as the one above have been dug deep into the ground. The roof plane associated with such spaces tends to be strongly Bound as it is often made up of a very solid quantity of compressed earth sitting above a series of connected interior spaces. The choice of earth as the roofing material, combined with its substantial depth, clearly plays a pivotal role in making the roof plane feel strongly Bound.

A less Binding option would involve reducing the depth of the earthen roof by constructing the space closer to the earth's surface or covering the roof partially with a thin layer of turf. This reduces the mass of the roof plane and, as a consequence, makes the internal spaces feel less enclosed. Plates 4.9 and 4.10 exemplify how different degrees of Binding via the roof plane can be achieved by varying the depth of the earth.



Plate 4.9 Underground house, Tunisia        Plate 4.10 Farmhouse, Scandinavia

The house in Plate 4.9 was dug into vertical mound. However, the mass overhead is not nearly as substantial as it would be in a tunnelled space. It therefore feels more moderately Bound. The old Scandinavian house in Plate 4.10, on the other hand, has a roof that has been covered with a shallow layer of turf. Even though the house is built on land, the earth still functions to moderate the effects of temperature variation on the home. The shallowness of its depth, however, makes it a minimally Bound materialisation of an earthen roof plane.

Earthen roofs are not confined to domestic architecture. An example of a public building with a turf roof is one of Australia's architectural icons, New Parliament House in Canberra, see Plate 4.11. Built in 1988, and designed by Italian architect Romaldo Giurgola, New Parliament House is a huge underground complex which has been designed to blend organically into the landscape of Capital Hill. The fact that the building which houses the national Parliament of the Commonwealth of Australia has been built into the earth, instead of soaring high into the heavens, makes it a most unusual choice, especially given past trends towards elevating public buildings. The other unusual feature of the building is that visitors can, and do, climb the hill and picnic on the building's turf roof. Not only does this provide an unusual and democratic form of access to the building, but it also provides spectacular views of the national capital.



Plate 4.11 New Parliament House, Canberra

**Materials that unbind the roof plane: reach for the sky**

The Unbound roof seals the interior from the elements by creating a physical barrier that encloses a building. As a consequence, the people inside it feel safe and protected. The main difference between a Bound and Unbound roof plane is determined by the type of relationship they set up between the internal spaces of a building and the environment outside. As we have already discussed, Bound roof planes set up a 'closed' relationship between the two by sealing them off from one another. Unbound roof planes, on the other hand, establish an 'open'

relationship by connecting them, visually, so there is some degree of continuity between them, see Plate 4.12.



Plate 4.12 Unbound roof, Sculpture Court, Metropolitan Museum of Art, New York

Unbound roofs are predominantly constructed from glass. As shown in Plate 4.12, a plate glass roof not only provides shelter but allows the internal space to connect with the exterior, as there are no visual barriers between them. Thus 'the occupant "knows what it's like outside" and has direct experience of the "drama of nature" from a protected shelter' (Radford, 2000: 12).

Glass roofs are a strong choice for Unbinding because they dematerialise the boundaries, dividing the interior from the exterior, further enhancing the freedom occupants of light-filled spaces may feel, as well as bringing them into more intimate relationships with the environment outside the building. Continuity between the interior and exterior on the overhead plane means that the sky overhead becomes part of the architecture. However, as untreated glass is fragile and breaks easily, and is a poor thermal and noise insulator, the use of glass as a material for roofing would not be a option without substantial advances in glass-making technology (McBride, 2002).

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Technological advances in the last century have resulted in a vast array of choices for the materialisation of Binding, particularly in relation to roofs. They have also constituted a near revolution in changing the relationship between internal and external spaces. Innovations in glass technology include the advent of safety glass, which can now also be made bullet proof and strong enough to resist stones, snowstorms and even bombs (Cannell, 1995). The advent of glazing technology also offers benefits such as UV protection, as well as very refined and delicate choices for the thickness of glass. Other innovations include the option of 'low-e' glass, which reflects heat while admitting light. Given the word constraints on this thesis, only some of the glazing innovations will now be discussed.

Glass, like most materials, has disadvantages, particularly in relation to the effect of heat on objects and furnishings as well as the negative impact of heat gain on the occupants of a space. Glazing techniques thus constitute an important innovation as they enable glass roofs to control against thermal gain.[7] Without the advent of such technology, the use of glass would not be a choice for comfort because glass roofs allow solar radiation, that is, both natural light and heat to penetrate into the space below. When high levels of solar radiation are transmitted in this way, wall and floor planes are accordingly heated. This is referred to as heat gain. In addition to the detrimental effect heat gain has on the material structure of the objects and furnishings inside a space, it also has negative interpersonal consequences as it makes the enclosed spaces feel bright, hot and uncomfortable for users.[8] As previously discussed in Section 3.1.2.1, temperature is an important factor in determining spatial comfort.

Despite the technological advances in glassmaking, economic and climactic conditions still create boundaries or limits for the use of new technology. For example, when Unbinding the roof plane, the use of treated glass is extremely costly. Such economic limitations, combined with challenging climactic conditions such as high winds, often confine the degree to which a

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[7] Heat gain also explains why clear, untreated glass is a common choice for 'greenhouses' designed to house tropical plants.

[8] This was also one of the criticisms made of Elizabeth Farnsworth house, glass house built near Chicago in America in the 1940s: 'you burn up in summer and freeze in the winter' (Friedman, 1998: 141).

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roof plane can be Unbound and the extent to which glass can be the main choice of cladding for a roof. However, when economic and climactic conditions are both favourable, see Plate 4.13, large plates of treated glass can be inserted into lightweight steel or aluminium frames[9] and a strongly Unbound roof can be constructed.



Plate 4.13 Glass roof, American Wing Courtyard, Metropolitan Museum of Art, New York

Skylights are an older, more affordable and more moderate choice for Unbinding the overhead plane. They utilise smaller-sized pieces of glass and are inserted into a solid and opaque roofing material. The use of skylights is a choice for Unbinding as they allow light wells to penetrate into the spaces below and offer views of the sky overhead. As seen in Plate 4.14, many museums have installed skylights into the roof plane to create light wells in the spaces below, especially if those spaces are used for non object-display purposes such as the staging of cultural performances, as this frees them from conservation restraints. This can be seen in Plate 4.14, a photograph of the *Kalaya* space in the Melbourne Museum, which is dedicated to performances of Indigenous song, dance and storytelling.

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[9] It should be noted that this is made possible not only by glazing technology but also by complementary advances in lightweight steel frame construction as glass needs to be able to slide into a steel frame in order for it to be used as a building material. Lightweight steel frames, in turn, mean glass can be used on a larger, more ambitious scale than ever before.

Plate 4.14 Fixed skylight, *Kalaya* Cultural Activity Space, Melbourne Museum

Moreover, the degree of Unbinding realised by skylights is dependent on the type of skylight, its size, and the number of skylights installed. In essence, there are two different types of skylights: fixed and venting. Fixed skylights do not open. They bring light into a space but not air, see Plate 4.14. This means that they function to *visually* Unbind a space. In terms of permeability, their inability to *physically* Unbind a space to the elements means that they tend to make spaces feel minimally Unbound. However, the size of the skylight is also an important consideration. If a large fixed skylight or a cluster of fixed skylights is used, it has the potential to make a space feel moderately Unbound, see Plate 4.15, where a fixed skylight is installed into a large proportion of the ceiling above the central courtyard of the Robert Lehman Collection, Metropolitan Museum of Art, New York.

Plate 4.15 Large fixed skylight, Lehman Courtyard, Metropolitan Museum of Art, New York

Venting skylights, on the other hand, are a much more diaphanous choice as they bring both *light* and *air* into a space. In fact, there are three different types of venting skylights: top-hinged, tilt-turn and roof-door. Top-hinged and tilt-turn have limited permeability as they open like an awning window. Tilt-turn also have the capacity to tilt and rotate. The fact that they do not open completely, however, reduces their level of diaphany, making them a moderately Unbound choice. The roof-door skylight, on the other hand, is hinged making its opening completely unobstructed. As a result of the strong levels of visual *and* physical diaphany it facilitates, the roof-door tends to be a choice for strong Unbinding.[10]

Glass also has the potential to construct minimally Bound spaces. Frosted or opaque glass tiles, for example, although significantly less Binding than roofs constructed from earth or concrete, still function to *bind* the overhead plane. In fact, their translucent property obscures clear and undifferentiated views of the sky overhead. In this way translucent materials create a greater sense of privacy and seclusion for occupants, see Plate 4.16. This characteristic is an

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[10] There are several other considerations that need to be taken into account in relation to the use of skylights for Unbinding. The first being that to prevent excessive solar gain, skylights should be no more than 5–15% of the floor area in a space. Second, the higher the skylight, the more illumination and ventilation it provides. If the venting is lower, however, it is easier to operate the skylight by hand or by using a pole. It is also possible to install motor-driven operating systems that are controlled by wall-mounted switches or rain sensors. Finally, if a skylight is to be installed into an existing roof, the neighbouring rafters must be doubled in order to support the additional load.

important one as increased visual privacy, especially in domestic spaces, can make many people feel more secure.

Another advantage of opaque glass tiles is that they allow soft and diffused natural light to flood into the interior. This increase in lighting is significant as it makes the space feel less enclosed, as the discussion on ambience in Section 4.3 will further elaborate. The filtering potential of diffused natural light, moreover, substantially reduces the negative effects of light energy. This is why minimally Bound ceilings are a choice for many mezzanine museum and gallery spaces, especially those dedicated to the display of paintings, see Plate 4.16.

Plate 4.16 Glass tile ceiling, Mezzanine Gallery, Metropolitan Museum of Art, New York

Finally, illusions of Unbound overhead planes can be created on opaque surfaces such as plasterboard ceilings. This involves 'suggesting' a sky plane and 'implying' an open relationship between the internal spaces and the environment outside. To achieve this, the interior and exterior need to be connected. Rather than using glass, which is the common choice, this can be achieved by a visual representation of the sky using a painting technique such as fresco. Although the physical and actual degree of continuity is at once removed, the

implied connection is still there, and the painting functions to Unbind a space by creating the illusion of a sky. This technique was extremely popular during the Renaissance. It has continued into the 20<sup>th</sup> century, see Plate 4.17, which shows the painted ceiling in a shopping arcade in the eastern suburbs of Sydney.



Plate 4.17 Painted ceiling, East Point Shopping Centre, Edgecliff, Sydney

**Layering and depth**

As discussed, depth is a critical element in constructing Bound roof planes. However, as Unbound roofs are primarily constructed from glass, which varies in depth from 3/32 to 1/8 of an inch (or ~ 2.38 to 3.18 millimetres), depth is not a major variable in the materialisation of a diaphanous roof. Nevertheless, depth can be realised in other ways. One such choice involves the layering of materials. A glass skylight or roof, for example, may be lined with a layer of non-transparent material, such as an adjustable and opaque louvre system. This would enhance its ability to protect the occupants from the elements as the louvres can be adjusted to modulate the effects of climactic conditions on the space below.

Architect Nik Randall recently demonstrated the potential of such layering in his refurbishment of a central London warehouse. This warehouse, like most, comprises a single volume of space. To create a bedroom, Randall installed a mezzanine sleeping area into the warehouse. Directly above it, he then installed a 4m x 5.5m curved and double-glazed roof-light which can be vertically opened up to the exterior on hydraulic rams, see Plate 4.18.



Plate 4.18 A roof-door — the ultimate in Unbound skylights, London

This choice represents the ultimate in terms of comfort and security as it allows the bedroom space to be either strongly sealed from (Bound) or totally open to (Unbound) the exterior depending on the weather conditions overhead. The Unbound option means the occupant(s) can open out the roof and sleep below the night sky when the weather is suitable, knowing that the curved roof-light will still provide some degree of protection. Skylights which totally open up vertically in this way not only make the vista accessible, they make the sky, complete with changing weather conditions, accessible too.

Furthermore, as can be seen in Plate 4.18, the architect has also lined the skylight with a series of adjustable aluminium louvres which can be closed to provide shade from the sun or to minimise glare. They can also be partially or fully opened to allow sunlight to filter into the space. By optimising insulation, and regulating the levels of light filtering into the space in

this way, louvres such as these are playing a pivotal role in realising degrees of spatial enclosure that can make the occupant feel secure in response to a range of changing weather conditions.

## 4.2.2.2c The shape and height of the overhead plane

The second variable that affects the permeability of the overhead plane is the shape and the height of the overhead plane. In terms of shape, there are four common choices for overhead enclosures. They are curved (barrel roof), raked, pitched and flat (cantilever) as shown in Figure a. In terms of Binding, a low flat roof is the most Binding choice as it suggests the firmest sense of overhead enclosure. The other roof types, depending on their height, the material they are constructed from, and the climate, tend to be choices for Unbinding.

In fact, the raked roof has the potential for being the most Unbinding choice as its highest point can considerably increase the feeling of spaciousness in a well-proportioned room. The raked roof can also dramatically open an enclosed space to the environment outside, especially if the highest point of the ceiling meets a wall plane that is made of a full height, floor to ceiling, clear plate glass window.
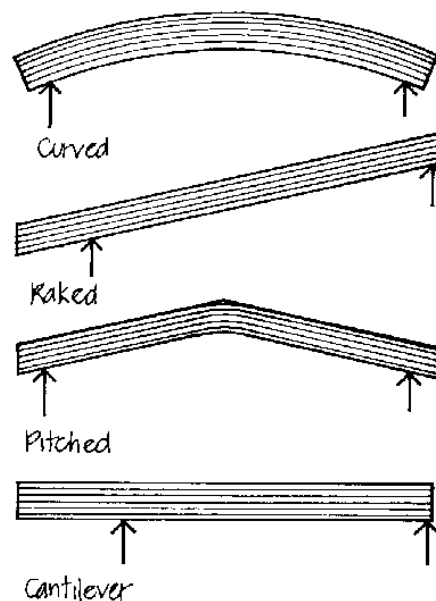


Figure 4.8 Choice of roof shapes (Wilkie and Arden, 2001: 44)

There is also a fifth choice for roof shape: the compound roof which is a combination of the above shapes as shown in Plate 4.19.

Plate 4.19 Butterfly roof

The compound roof above resembles a 'butterfly' shape. It is an interesting choice as it simultaneously allows for Bound and Unbound enclosure on the overhead plane within a single uniform volume of space. It does this by creating a 'trough-like' space along central spine of the volume. This trough represents the most Bound area in relation to the overhead roof plane. Interestingly, it is along this Bound trough that the activities of daily living take place — eating, cooking, communing etc. Thus, although the space is open to the landscape on both outer perimeters, where the roof is most Unbound, the occupants are deliberately made to feel safe, secure and partially enclosed in the spaces that have been designed for living, recreation and communing through the construction of the overhead plane.

The final choice of roof shape is the dome or cupola. A dome is a vaulted overhead plane of even curvature. Domes, like other roofs, serve a protective function. Unlike other roof shapes, however, they also symbolise the vault of the heavens and the cosmos. Phylogenetically, this has given them a strong religious and regal significance. Hence they are commonly found in public buildings with civic or sacred functions. Famous examples of domed roofs thus include temples (the Roman Pantheon), Byzantine churches and mosques (St Mark's in Venice and Hagia Sophia in Constantinople), Renaissance churches and cathedrals (Santa Maria del Fiore in Florence, St Peters in Rome, St Pauls in London), government buildings (the United States Capitol, Washington DC, Plate 4.20) and the nineteenth century 'temple' museums dedicated to the arts such as the Metropolitan

Museum of Art, New York and the Art Gallery of NSW as well as more contemporary museums such as the Canadian Museum of Civilisation see Plate 4.21.



Plate 4.20 The Capitol dome, Washington, DC  Plate 4.21 Dome, Canadian Museum of Civilisation, Ottawa

Domes are a predominant choice of overhead plane in institutional buildings for a number of reasons. First, the construction of domes foregrounds extraordinary architectural and engineering skill. According to Mario Salvadori, Professor Emeritus of Architecture at Columbia University, 'the dome is the greatest architectural and structural achievement of mankind in over 2,000 years of spiritual and technological development' (Salvadori, 1980: 226). One reason for this is that domes represent the triumph of technology, engineering and design over gravity.

Another reason is that they embody 'the most perfect examples of spatial geometry…the most perfect of all shapes' (Salvadori, 1980: 225). Their spherical shape is not only organic, but it also evokes half of a celestial sphere. Thus, cosmic symbolism in the form of stellar patterns and astrological figures have embellished the interior of many domes. Religious domes, on the other hand, especially in Byzantine churches, tend to be lined with images of Christ, the Pancreator, while domes inside mosques are often decorated with mosaic tiles. Domes, furthermore, construct high overhead planes that diminish human

beings with their scale. The interpersonal impact of ceiling height on spaces will be discussed further in the next section.

**Height**

Height is another important dimension of the overhead plane. In this section of the chapter it will be discussed solely in relation to ceilings as the height of ceiling planes is less permanent than the height of the roof plane. As already pointed out in Section 3.2.1.2.3b and exemplified in relation to the Queensland Museum, the height of the overhead plane has a tremendous impact on the scale of a space and the interpersonal relationship with the occupant. Given that height, width and depth all affect the feeling of enclosure in a space, we will now identify some general pointers between ceiling height and Binding.

Media comments made by distinguished Australian architects, including the NSW Government architect, Chris Johnson, indicate agreement about the effect of ceiling height on space (Burton Taylor, 2001: 4A). Ceiling that are between 2.5 to 3 metres in height, for instance, tend to create Bound and secure spaces. Ceilings that are lower than 2.5 metres, however, tend to create spaces that feel Too Bound. A familiar example of this would the feeling of claustrophobia evoked by the low ceiling height in the film *Being John Malkovich*. Ceilings that are between 3.5 to 5 metres high, on the other hand, tend to create Unbound spaces as they increase the feeling of expansiveness by opening up room overhead. It is not surprising, then, that they are often referred to by architects as being 'generous'.

Ceilings above 5 metres, however, tend to evoke the Too Unbound dimension as they do not enclose occupants securely enough. Rather, they tend to tower over people. This explains why institutional spaces often feel Too Unbound to visitors who are unfamiliar with them. The atrium space inside Frank Gehry's Guggenheim Museum in Bilbao, for example, is 55 metres high (van Bruggen, 1997). If we assume that the height of an average domestic ceiling is 3 metres, then Gehry's atrium is more than 18 times this height. It is not surprising, then, that such scale is regarded as being monumental, see Plate 4.22 below. Moreover, as it increases the distinction between dominant and dominated as materialised by the vertical plane (Kress and van Leeuwen, 1996), it is likely it would

make visitors who are unfamiliar with museums, feel overwhelmed, dominated and oppressed by it.



Plate 4.22 The Atrium, Guggenheim Museum, Bilbao

Gehry, however, maintains that he designed the atrium to be a 'welcoming' space for visitors. This may well have been his intention, however, personal observations of the way visitors interacted with the space over a two-day period (12–13 June, 2003) showed that most people seemed to feel uncomfortable standing in the middle of the atrium. They did stop in the space, but tended to gravitate to its peripheral zones where some overhead enclosure was to be found. It is interesting, moreover, that the inspiration for Gehry's atrium was the Gothic cathedral and that his goal was to create an uplifting space — one that refreshes the visitors' spirit before engaging them with the art inside the galleries (Bruggen, 1997). While this would be true for those visitors who are accustomed to vertical over-scaling in religious and cultural spaces, for others it would have the opposite effect as discussed at length in Section 3.2.1 on insecurity and vertical over-scaling.

**Implied ceilings: the use of illusion**

The height of ceilings can be relatively easily altered to change the levels of Binding in a space. Bound spaces, for example, are frequently constructed by dropping the height of the ceiling plane. One of the ways this can be achieved involves the insertion of a false ceiling into a space. A false ceiling may be inserted into a space as Plate 4.23 demonstrates. It makes the space feel much more strongly Bound by bringing the overhead enclosure closer to the occupant. This in turn changes the scale of the space making it feel much more human and domestic.



Plate 4.23 Lowered ceiling plane, Neighbour's TV set, Melbourne Museum

The construction of a false ceiling was a choice for Binding that the Melbourne Museum made for their permanent exhibition, *Phar Lap*. This exhibition is housed inside a long space with a high ceiling. In designing the exhibition, wall partitions have been used to sub-divide the area into two spaces: a rectangle and a semi-circle. The semi-circle is the focal point of the exhibition as it houses the actual body of Phar Lap. As visitors approach this area, one of the first changes to the way the space is organised is a drop in ceiling height of several metres, see Plate 4.24. This is achieved by suspending a round disc from the permanent ceiling. Interpersonally, the drop in ceiling height has a huge impact on the space as it makes it feel much more strongly Bound and much more human in its scale.

Plate 4.24 Lowered ceiling in the *Phar Lap* exhibition, Melbourne Museum

Another way of dropping ceiling height to create firmer enclosure on the overhead plane involves the use of a suggested ceiling. This can be done in many ways. Section 3.2.2.4b, for example, discussed one such strategy which was used by the designers at the Powerhouse museum, namely, the introduction of a partial archway. Another choice would be the use of horizontal beams overhead as these imply enclosure as shown in Plate 4.25.



Plate 4.25 Lowering ceiling height via suggested enclosures, Hingham, MA

Plate 4.25 shows how the two white horizontal steel beams in this living area function to visually suggest a firmer degree of spatial enclosure. Vertically dividing the space into two

zones in this way reduces the scale of the room and prevents it from towering over the occupants in ways that may be experienced interpersonally as feeling oppressive.

Increasing the actual height of a ceiling plane, on the other hand, is much more difficult to do. One way in which it can be done is through the construction of a recessed ceiling as shown in Plate 4.26. This involves staggering the height of two or more sections of a ceiling. Such choices for organising the overhead plane can considerably enhance the feeling of expansiveness, especially if supplemented with strong up-lighting.



Plate 4.26 Recessed ceiling plane, Atrium, Ian Potter Centre: NGV, Melbourne

Another way of manipulating ceiling height is to insert a movable false ceiling that can be either lowered or raised. The canvas ceiling in Plate 4.27 is one example of this. Such ceilings provide optimal flexibility to the organisers of a space as they can easily adjust the height of the ceiling plane to make the space feel Bound or Unbound, in accordance with their needs.

Plate 4.27 Adjustable ceiling, performance space, *Australia* gallery, Melbourne Museum

## 4.2.2.2d The insulation qualities of materials used for overhead planes

In deciding whether the overhead plane is Bound or Unbound, the broader context in which the space is located also needs to be considered, in particular, the climate. In addition to providing a covering that is impenetrable to the elements, the material chosen for the overhead roof plane needs to have insulation qualities that suit the climate. Thus the material must also be able to retain warmth in the winter in cold climates and keep out the heat during the summer in warm climates. If this does not occur, the space is experienced as either Too Bound (smothering) or Too Unbound (too exposing) on the overhead plane.

For instance, if the occupants of a house in the tropics are to feel secure the roof needs to be able to keep out the heat in the summer. However if the covering cannot provide deep shade, adequate insulation and ventilation, occupants will experience the building as being Too Bound, that is, smothering and suffocating. This was the experience of many Australians living in the tropical parts of Queensland in the early 19th century, especially those living in dwellings with corrugated iron roofs.

Roof planes in the tropical parts of 19th century Queensland established a smothering relationship with their occupants because builders used an inappropriate roofing material for the climate — one that was neither insulated nor ventilated. Queensland roofs were made of corrugated galvanised iron because it was light and could be transported long distances at low costs. However metal in the tropics is not a choice for comfort in Binding

terms as it is a poor insulator and a good heat conductor. As a consequence roofs heated up quickly, in turn heating everything below them, including the people, as temperatures inside these houses soared to almost double the temperatures outside. Such soaring heat made living conditions uncomfortable and intolerable. This choice of material therefore quickly pushed these homes into the Too Bound gradation by setting up a negative relationship of smothering between the house and its occupants.

Currently, however, sheet-roofing products such as treated galvanised iron are undergoing a revival period of popularity as roofing materials throughout Australia, including its tropical regions. They have been used in recent years by a number of leading Australian architects such as Glen Murcutt in some of his award winning houses (Wilkie and Arden, 2001). The changed acceptability of galvanised iron as a roofing material is largely due to technological improvements in the thermal performance of the material, especially in the summer months when the solar load is intense. Improvements include the development of reflective sarking foils which optimise thermal comfort by reflecting a significant proportion of the solar load falling on the roof.

Innovations in the design of roofs can also counter the material properties of roofs made from corrugated iron. For example, floating roofs, which literally hover above the walls as they are raised above them and held in place by steel brackets, create a space that allows cooling tropical breezes to ventilate the space below. In this way the vagaries of climate can be countered by technological advances, and thermal comfort, which is crucial to the comfort and security of the occupants, can be achieved.



Plate 4.28 Floating roof in Australian tropics

# 4.2.2.3 Summary of overhead plane materialisation

Table 4.1 summarises the key materialisations for each of the four factors which are instrumental in constructing the permeability of a roof/ceiling. The table presents the choices for occlusion and diaphany, that is, Bound and Unbound spaces. They include the number of enclosing planes, the materials used and their depth, the shape of the overhead plane and the insulation qualities of the materials that are used.

| Vertical plane | **Permeability** | |
| --- | --- | --- |
| **Overhead Plane** | **Occlusion (Bound)** | **Diaphany (Unbound)** |
| | *Number of planes*: | *Number of planes*: |
| | Two — roof plane plus ceiling plane (Bound). | One (roof only), eg plate-glass roof treated with glazes for UV protection (strongly Unbound). |
| | | If two, ie roof and ceiling, some element of the roof plane is Unbound, eg skylight inserted into tiled roof (moderately to minimally Unbound). |
| | *Material*: | *Material*: |
| | Opaque. | Transparent/semi-transparent. |
| | Roof (eg concrete, stone, earth, sheeting, interlocking tiles, woven thatch or woven bamboo). | Roof: transparent (eg sheer plate glass, perspex, transparent acrylic sheeting eg PVC). |
| | Ceiling (eg timber, plasterboard, concrete). | Semi-transparent (eg horizontal beams that suggest enclosure but allow the elements filter through, eg pergolas). |
| | Roof/ceiling (eg frosted and opaque glass tiles). | Skylights: a) fixed (minimally Unbound) |

b) venting:

- top hinged (moderately Unbound)

- tilt-turn (moderately Unbound)

- roof-door (strongly Unbound).

Opaque with implied transparency (eg white plasterboard ceiling painted with a fresco of the sky creating an illusion of the sky plane).

| | |
|---|---|
| *Depth of material*: | *Depth of material*: |
| Thin, eg shallow layer of turf laid over a roof or a thin thatched roof or thick glass tiles which are hollow-centred and thus double-glazed (minimally Bound). | Thin, eg sheets of plate glass roofing (Strongly Unbound). |
| Thick, eg subterranean spaces dug into the ground with a solid quantity of compressed earth above the space (strongly Bound). | Thick, eg layers of enclosure: glass sheeting plus adjustable louvres or double-glazed skylights. |
| *Shape*: | *Shape*: |
| Cantilever/flat (Bound). | Pitched (minimally Unbound). |
| | Curved (moderately Unbound). |
| | Raked (strongly Unbound). |
| | Compound (both Bound and strongly Unbound). |
| *Height*: | *Height*: |
| 2.5 to 3metre high (Bound). | 3.5 to 5metre high (Unbound). |
| Without incurring any structural expenses, in a large space the ceiling plane could be lowered by the insertion of a false ceiling or bulkhead (more strongly Bound). | Without incurring any structural expenses, if there is adequate space, a recessed ceiling could be created (and up-lit) or a light blue sky scene could be painted on a |

plaster ceiling (minimally Unbound).

Horizontal beams could be installed at a lower height than the ceiling in the space. These suggest a lower, more enclosing overhead plane (more strongly Bound).

A floating roof could be visually suggested by a continuous row of windows at the top of the wall plane (moderately Unbound).

In the tropics, floating roofs are often raised above the walls and secured by steel brackets. The gap between the walls and roof is crucial for maximising ventilation (strongly Unbound).

*Insulation*:

*Insulation*:

Reflective sarking foils used under the roof to reflect a significant proportion of the thermal/solar load especially in warm climates (Bound).

To achieve thermal comfort, glazing technology is applied to glass roofs/skylights but the choices depend on the climate and the orientation of the roof to the sun:

To achieve thermal comfort, fibrous insulation batts, thermal blankets, straw boards or loose-fill granules installed above the ceiling. These prevent heat from escaping via the overhead plane in winter (more Bound).

— Solar protecting glazes: limit heat gain in summer and heat loss in winter and reduce UV.

— High insulating glazes: protect from cold winds.

— Laminated glass: reduces external noise.

Table 4.1 Summary of permeability materialisations for the overhead plane

In short, a space that is Bound on the overhead plane is physically protected from the elements and visually sealed from the exterior; while an Unbound space is also physically protected but visually open to the exterior. Thus if the shelter and protection provided by the roof plane encloses the spaces below in such a way that it physically and visually seals them off from the sky overhead, it creates a closed relationship between the enclosed space and the climate or elements (Bound). If the roof plane shelters the space physically but not

visually, it creates an open relationship with the climate and elements outside (Unbound). Finally, the space can only be Bound or Unbound on the overhead plane if the climactic and geographic location suit the insulation qualities of the roofing material. Thus the material must be able to retain warmth in the winter in cold climates and keep out the heat during the summer in warm climates. If this does not occur, the space is experienced as either Too Bound (smothering) or Too Unbound (too exposing).

# 4.2.3 The Base plane

The base plane is the second horizontal plane involved in constructing a three-dimensional space. It is the plane of gravity that functions to anchor buildings to the earth. It can be contrasted with the anti-gravitational experience of floating on water, flying through the air and the weightlessness of floating in space. In its broadest sense, the term base plane refers to a defined area of ground, including both natural and built environments. The base plane can therefore be a clearing, a football field, a cricket pitch or even a stage. Plates 4.29 and 4.30 depict two base planes, drawn from both the natural and built environments. In a built space, the base plane extends from the earth level foundations of a building to the top of the floor.



Plate 4.29 A clearing, Hingham, MA          Plate 4.30 Performance stage, Brisbane
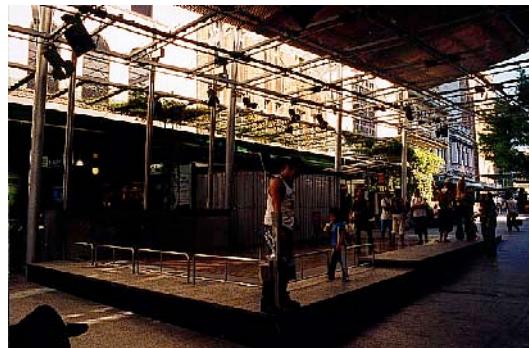
As the two plates above illustrate, the edges of a base plane serve a particularly important function for they define the physical parameters of a space, and in doing so, demarcate one place from another. By way of illustration, even though some houses in the tropics such as the Samoan fale are built without walls, it is the base plane which delineates their physical boundaries.

Like the overhead plane, the base plane is made up of two layers: the ground plane and the floor plane. Each of these will now be explored.

## 4.2.3.1 The ground plane, permeability and security

The ground plane touches and rests on the earth or the pre-existing site. Its primary function is to physically support the mass of a building. In the past, the geological conditions of the earth on which a ground plane rested played an extremely important role in determining the weight and height of a building that could be supported. The rock base of New York city, for example, made soaring skyscrapers a feasible proposition in the 20th century. A single skyscraper such as the Empire State Building actually places 365, 000 tons of weight on the ground and the foundations supporting it (van der Meer and Sudjic, 1997). In contrast, a building not well supported by a solid ground plane is the Leaning Tower of Pisa. The Tower leans to one side because of the uneven settlement of the soil, reinforcing the importance of a solid ground plane.

Creativity, ingenuity and technological advances have made extraordinary things possible in relation to the construction of ground planes in buildings. Contemporary building technology, moreover, has advanced to the point that it can, to a large extent, over-ride the geological characteristics of a site. If the earth is soft, unstable and incapable of supporting a building, for instance, piles of concrete can now be sunk through the top layers of the earth until bedrock is reached. A solid concrete slab is then laid over the supporting piles and in this way a stable ground plane is constructed — one which is capable of supporting a building (van der Meer and Sudjic, 1997). Similar techniques are also used to recontour sites, that is, convert sites with a steep slope into stable, horizontal and level planes.[11]

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[11] The stabilisation of ground planes is not a new concept. The islands of Venice, for example, were stabilised over a period of 800 years from the 6th to the 14th centuries (Crouzet-Pavan, 2003). Initially they comprised fragile, marshy ground planes covered by silt, reeds and mud flats that were frequently subject to flooding (Crouzet-Pavan, 2003). The inhabitants nevertheless managed to consolidate the ground by draining the land and compacting the earth with dirt, rubbish and soil from canal dredging. They also used palisades, long thinly spaced pinewood stakes, which could reach the harder layers of the earth, to support heavy buildings. These were driven 7.5 metres vertically into the ground where they rest on solid caranto (a compressed clay layer at the bottom of the lagoon). They provide support for the foundations (Crouzet-Pavan, 2003).

## 4.2.3.1a The ground plane and permeability

The ground plane has a dual function: to support a building and to support a floor plane. The way the ground plane supports the form and mass of a building is through its footings. Footings are the lowest part of the ground plane. They not only make contact with the earth, but distribute the load of the building onto it (Wilkie and Arden, 2001). They can either be isolated, continuous or integrated. Isolated footings are separated from one another and create a series of 'support points' for a building (Wilkie and Arden, 2001). They commonly take the form of reinforced concrete pads or piers which are bored into the foundation strata of the earth. It is absolutely essential that they are stable, for if they move in response to the settlement of the soil, they can cause walls to crack or a building to collapse. Isolated footings are also connected by steel brackets, bolts and pins to brick peers, concrete or wooden stumps, poles, steel or reinforced concrete columns, see plate 4.31. The latter are often referred to as isolated support systems because they in turn provide direct support for the floor plane (Wilkie and Arden, 2001).

Continuous footings, on the other hand, provide continuous support for a building rather than simply supporting it at a few points. They tend to be used under masonry walls and are designed to support a building when the foundation strata is unstable. They generally consist of strips or continuous beams of continuous reinforced concrete. They also function to provide support for floors and do this by supporting wall-like base structures referred to as continuous support systems. Continuous support systems are most commonly made from brickwork but may also be constructed from natural stone or concrete blocks, see Plate 4.32. They extend from the ground level to the underside of the floor plane, commonly a timber frame. In these ways continuous footings provide the support for both the floor plane and the building.

Plate 4.31 Isolated supports    Plate 4.32 Continuous supports

The third choice of footings are integrated footings, which, as their name suggests, integrate the footings and the floor plane. They are made of reinforced concrete and when the concrete is poured, the footings become part of the structure of the floor slab. Integrated footings suit well-drained and stable foundations.

## 4.2.3.1b The ground plane and security

The type of contact that a ground plane has with the earth can be either heavy or light. *Heavy contact* is made with the earth through the construction of thick, solid and heavy ground planes. A well-known example of this would be the Egyptian pyramids which rest heavily on a polygonal ground plane made of large rectangular sandstone blocks. Such a visually and physically heavily weighted ground plane has been a pivotal factor in enabling the pyramids to signify stability and permanence for thousands of years[12] (Ching, 1996).

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[12] Other factors have also impacted on the signification of stability and permanence by the pyramids, namely the durability of the sandstone as this has ensured the survival of the material legacy of ancient Egyptian cultural heritage. The second important factor is the enormity of the scale used by the ancient Egyptians.

Heavy contact with the earth can be materialised in other ways too. These include the use of heavy sandstone bases supported by continuous footings, the placement of large granite blocks around the edges of a building or the construction of wide steps at the foot of a building to make it appear even more heavily weighted. The use of a heavy base and wide steps characterises the construction of the ground planes of temple buildings in Antiquity such as the Parthenon in Greece and the neoclassical architecture of public buildings such as museums in the major cities of the western world such London, Berlin, Rome, New York and Sydney.

Another choice for the materialisation of heavy contact with the earth involves the placement of columns near the edges of a building, especially if the columns are much thicker at the base than they need to be structurally. Australian architect Glenn Murcutt describes the effect that columns have in the following way:

> I moved the columns in from the building's edge…and by moving them, it gives the building [the Ball and Eastaway house] a more floating quality than if the columns were on the outside. Columns on the outside produce a form that is really quite static. They hold it down. Transfix it to its site.

(Murcutt, cited in Drew 1999: 90–1)

In essence, what Murcutt is saying is that heavy ground planes, materialised by columns, function to anchor the building to the earth. Another way of describing this effect is to say that heavy columns achieve a sense of 'gravitas',[13] that is, they anchor a building. In fact, any of the choices for materialisation discussed so far — sandstone bases, heavily weighted steps or the placement of large stone blocks around the edges of a building — can have the effect of transfixing or gravitising a building to a site, see Plates 4.33 and 4.34 for examples. By

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[13] The term 'gravitas' was introduced by Elizabeth Farrelly, a Councillor from the City of Sydney, who was interviewed for The Mind of the Architect Series, Episode 2, 2000. O'Toole (1994) refers to this phenomenon as chthonicity, from the Greek word 'khthon.' Although the original Greek word means earth, the adjective 'chthonic' means associated with or belonging to the underworld. This association with the mythical abode of the dead and/or the world of organised crime does not, however, adequately capture the sense of groundedness that is implied in the term 'gravitas'.

stabilising a building, these choices for materialisation produce strong visual reassurance of 'rock-solid' foundations such as in major public buildings. The interpersonal consequences of such gravitisation involve creating an impression of solidity, endurance, permanence and stability. Not only is this impression crucial to feeling secure in the built environment, but it can also function as a metaphor for the strength and significance of the institution housed by the building.



Plate 4.33 Public building, Washington, DC     Plate 4.34 The Metropolitan Museum of Art

Ground planes do not, however, need to sit heavily on the earth. As Plate 4.31, a photograph of a pole house, has shown, it is possible for a base plane to touch the earth and rest upon it lightly. Light contact is achieved through the elevation of the ground plane and the building above the site through isolated footings and support systems. Pole houses which are elevated on post-and-beam footings are another example of this as are houses built on timber stumps, see Plate 4.35. Public buildings which achieve such lightness of contact are the Eiffel Tower in Paris, which touches the earth at only four points, and the Hirshorn Gallery in Washington DC, see Plate 4.36. Buildings that touch the earth lightly in this way often appear to hover above the ground or perch on it lightly. Such lightness of contact, can, in turn, be interpreted

as suggesting temporality and transience (Radford, 2000). However the durability of the Eiffel Tower, built in 1889, contradicts this impression.



Plate 4.35 Stump house, Queensland        Plate 4.36 Hirshorn Museum, Washington, DC

In essence, not only does the organisation of the ground plane provide the physical support for the building and the floor plane, it can also suggest important meanings about permanence or temporality. Since the ground plane tends to be seen from the exterior of a building, it has the potential to create an impression of solidity/stability or transience/temporality long before an occupant actually enters the building. It is not surprising then that the ground planes of museums or galleries built in the 19$^{th}$ and 20$^{th}$ centuries are often materialised through optimal choices for heavy contact. Local examples include the Art Gallery of NSW in Sydney, British examples include the British Museum, the National Gallery, the Tate Gallery and the Victoria and Albert Museum, while American examples include the Metropolitan Museum of Art in New York, the Museum of Fine Arts in Boston.

The function and materialisation of the second layer of the base plane, the floor, will now be explored.

## 4.2.3.2 The floor plane, security and permeability

The floor plane represents the upper surface of a ground plane. One of its primary functions is to create the level platform on which a building is constructed. It is made up of two layers, the floor and the covering, and there are some crucial distinctions between them.

A floor is a part of the physical structure of a three-dimensional space, and as we have just seen, it is supported by the ground plane. The two most common choices of material for constructing floors are timber and reinforced concrete. A reinforced concrete floor can be made in one of two ways. It can either rest on the earth or be suspended above it. A reinforced concrete floor that rests on the earth is made as a raft slab. This means it is poured on the earth over an aggregate of sand and a moisture proof membrane.[14] Suspended slabs, on the other hand, are constructed within the perimeter of a continuous support system, such as a masonry base wall. Their load is transmitted to the footings and foundations through the walls. Suspended slabs construct the floor planes in multi-storey buildings. This gives them a dual function in that the underside constructs the ceiling of the space below, see Plate 4.37.



Plate 4.37 A suspended slab, Queensland Art Gallery

Flooring, in contrast, refers to the *covering* that is laid over the floor — tiles, rubber, carpet and so forth. In some instances the floor plane and the flooring may be one as in the case of wooden floorboards. In most instances, however, flooring or a covering is laid *over* a structural floor plane (Wilhide, 1997).

To summarise, Figure 4.9 represents the part-whole relationships between the base plane, the ground plane and the floor plane.

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[14] Raft slabs are supported by integrated footings, reinforced concrete footings that are poured at the same time as the reinforced concrete floor. This means that the ground plane and the floor plane merge in this instance.

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                                                    isolated
                                    footings    →
                                                    continuous

            ground plane →
                                                    isolated
                                    support system→
                                                    continuous

  →

                                                    floor
            floor plane    →
                                                    covering
```
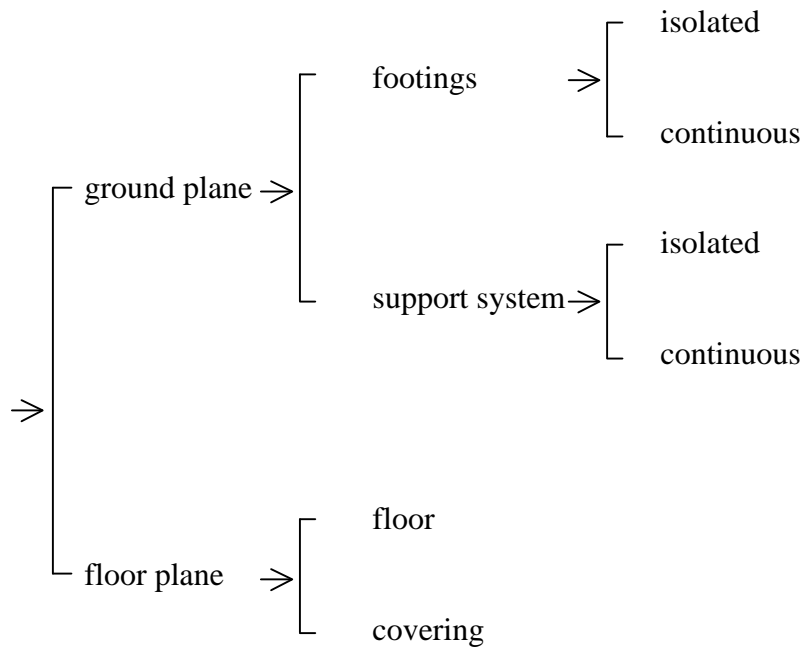
Figure 4.9 The base plane

The following section will continue exploring the floor plane. It begins by examining choices for constructing a floor, in terms of both security and materialisation, and then investigate the choices for selecting coverings, also in respect of security and materialisation.

## 4.2.3.2a The floor and security

As with ceilings, the floor in a built space has two dimensions of the Binding scale for making people feel secure, that is, either Bound or Unbound. Section 3.2.1.2.1a of Chapter 3, for instance, discussed how solidity and stability underfoot is essential to making a user feel secure in a space. This was highlighted by the intense insecurity experienced during avalanches and landslides when the earth literally moves from under a person's feet. As the floor represents a person's most concrete and physical point of contact with the earth below them, to feel secure in any space, it is *imperative* that the floor is stable and that it rests on a solid foundation or ground plane. In the built environment, people desire permanence, stability and groundedness, which helps explain why choices for heavy contact with a base plane are so

important as they can function to establish feelings of security for some people long before they even enter a building.

The floor is the one spatial plane that human bodies are in more or less constant physical contact with — the most direct contact being bare feet. Most often contact is mediated by footwear. Walking on a floor in bare feet, in contrast, is a very different experience to walking on a floor in shoes, socks, or shoes and socks. Footwear thus functions to filter the physical contact that the occupant of a space has with the floor plane and its covering. It also provides the occupant of the space with varying degrees of traction with which to negotiate their contact with, and movement across, a floor. Contact with and movement across a floor plane raise some important concerns regarding security, namely occupant safety, which may impact on the choice of flooring.[15] To counter the slipperiness of a glass floor, for instance, friction

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[15] Movement across a floor plane is the domain of meaning-making that the semiosis of action is concerned with. In light of this, the way people move across a floor plane clearly involves co-articulation between action and Binding. So the following observations provide a starting point for thinking about this resonance in meaning-making.

The type of contact an occupant can have with a floor plane can be subdivided into the following categories: glide, slip/slide/fall, sink/stick or grip. In the natural environment, for example, the floor plane with the greatest potential for gliding is frozen ice. Providing that the appropriate footwear is worn, the ease, speed and smoothness with which one can glide across a slippery and glassy ice plane means it has great potential for Unbinding. People who are able to glide across such slippery surfaces often find that such freedom of movement evokes strong feelings of exhilaration. Snow also has the potential for gliding. However movement across snow requires both the appropriate footwear, namely skis, to filter the contact, and wax to provide the degree of traction that best suits prevailing conditions. If the snow is dry, for example, high grip wax can be used to increase traction and slow movement; if the snow is wet, on the other hand, low traction wax can be used to facilitate smooth movement and increase speed.

Without the appropriate footwear, however, it is likely that the person moving across a frozen body of ice or down a mountain covered in snow will find themselves slipping, sliding and perhaps even falling. The reason is that the permeability of the snow is so great that people tend to sink into it, especially if the depth is great enough. Moreover, the lack of traction that facilitates the ability to glide/slide can have a negative dimension in that it is easy to lose one's foothold and slip or fall. In this instance, the floor plane would feel Too Unbound. Wading in deep snow or walking in soft sand thus provides the opposite degree of traction to that of frozen ice, in that people sink into these surfaces. The most extreme example of a permeable floor plane would be quicksand. Clearly, a floor plane that a user can sink into to the extent that movement becomes difficult, if not impossible, would evoke feelings of insecurity making many people feel Too Bound.

Finally, there is one other dimension drawn from the middle ground for security: 'the grip'. The grip provides enough traction in a person's physical contact with the floor for them to be able to move comfortably across it. The grip thus ensures that the occupant of a space is securely and comfortably 'grounded' as they negotiate their physical contact with and bodily movement across a floor.

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bars are sandblasted across the glass surface at set intervals (Wilhide, 1997). These prevent people from slipping and by doing so make them feel much more secure in the space.

As a result of the almost constant nature of our contact with the floor, *textural* changes to a floor are the ones people are most sensitive to. Such sensitivity to the construction of a floor plane means a floor can be utilised in very powerful ways in organising spaces, especially inside three-dimensional museum installations. In the Museum of Tolerance in Los Angeles, for example, when visitors enter a replica of a concentration camp the flooring immediately changes. Instead of the soft, padded carpet that is used in the first half of the exhibition space, visitors entering the concentration camp step onto a hard, rough concrete surface. Although textural changes such as these are felt underfoot by our bodies, they are not always *consciously perceived* by the person moving through the space. This degree of imperceptibility enables the textural change in flooring to impact in subtle ways on the interpersonal impact the replica has on the museum visitor. It seems to do this by evoking a faint sense of insecurity — one that most people would probably struggle to articulate.

In contrast, most people do have an *acute and conscious* awareness of changes to height underfoot as abrupt shifts are often experienced as extremely destabilising. Height changes tend to evoke strong surges of insecurity. This means that alterations to the floor plane in a built space need to be very carefully considered. For instance, if a user of a space loses his or her footing because there is a drop or rise in the level of the flooring, they may simultaneously lose their balance, causing them to trip or fall. As van Leeuwen indicates:

> Finding one's balance in unbalanced situations is another basic bodily experience, a basic given of our position in space as biped creatures, and the sense of balance we derive from this experience informs all of our semiotic acts which involve space.

(van Leeuwen, 1998: 14)

In the interests of occupant safety, significant shifts in flooring such as the elevation or depression of part of a space need to be strongly emphasised. The easiest way to do this is to

use the elements constructing Ambience (colour, light, texture and pattern) to *visually* foreground any changes to the floor plane long before they are *physically* felt by users (see Section 4.3 for more detail on Ambience). For example, in the *Dead Sea Scrolls* exhibition at the AGNSW (2000) there was one alteration to the flooring height: the 'temple-like' section housing the actual scrolls was substantially elevated from the other spaces via a gently inclined ramp. This elevation was clearly signalled by a change in the colour of the flooring: from dark grey in the exhibition areas to shiny cream along the ramp and inside the temple recreation. The threshold between the two areas was further amplified by the use of a strong 'ring' of down-lighting. The visual foregrounding of height changes to the floor plane in this way is essential to ensuring visitor security and visitor safety.

## 4.2.3.2b The floor and its permeability

In this section, the materialisation of a floor will be discussed. Two factors are instrumental in constructing the permeability of a floor. They are the height of the floor and the material(s) used to articulate its surface. The latter will be discussed in the section on flooring. The reason for this decision is that the two most common materials used for building floors are concrete and wood. When either of these materials is used, however, the floor and the flooring merge. However, as it is important to compare their potential for constructing occluded and diaphanous spaces, they, and other types of covering material, will be discussed in Sections 4.2.3.2c and 4.2.3.2d on floor coverings.

**Height: elevation, submergence or a level playing ground**

In a three-dimensional space, choices for how occluding or diaphanous a floor feels are strongly determined by the height of the floor. Interestingly, both elevations *and* depressions to the floor make a space feel Bound. They do so by impacting on the scale of the space and altering the interpersonal relationship between the occupant and the enclosure. Elevating or depressing a section of a floor, moreover, serves an important function as it defines and

separates a space from its surroundings.[16] It thus enables a space to be delineated without the use of vertical enclosures such as walls. This is particularly useful in open-plan areas as it enables the physical differentiation of individual spaces without interrupting the seamless flow of an open-plan enclosure. In Plate 4.38, a gallery space inside the Queensland Art Gallery, a small elevation in the floor not only separates one section of the floor from another, it also signals a different function for the elevated section — that of display plinth for a series of baskets woven by women from Maningrida.



Plate 4.38 Elevated floor plane functioning as a display plinth, Queensland Art Gallery

Furthermore, if the degree to which the floor has been elevated is significant, and the overhead plane remains constant in its height, it is likely that the raised area will feel more Bound. The reason for this is that the scale of the space has diminished, bringing the occupant physically closer to the enclosing plane overhead. Such changes tend to make the occupant feel more firmly Bound. As demonstrated in Plate 4.39 below, the extent to which the elevated space feels Bound is strongly dependent on the extent to which it has been elevated. In Plate 4.39, for example, the man standing on the highest step is much more strongly Bound than the man sitting on the lower steps. This also helps to explain why construction of a mezzanine level is

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[16] Elevations to the floor plane also have important textual meanings. In Kress and van Leeuwen's terms (1996), they shift the space from the Real into the Ideal realm. It is not surprising, then, that sacred, holy or consecrated places such as altars are often located on elevated base planes. Highly esteemed public figures also often deliver public addresses from raised platforms and podium's, while sacred buildings such as temples, shrines, cathedrals and even many museums and art galleries are venerated by being elevated on raised ground planes which enable them to literally 'rise above' their surroundings. Similarly, depressed or submerged floor and ground planes shift spaces into the hyper-Real realm.

a choice for creating a Bound space. By dividing a large, double or triple volume space into two, the insertion of a floor at mezzanine level functions to humanise the scale of both spaces.



Plate 4.39 Bound floors – increasing the depth of elevation

Mezzanine levels are a common choice for museum buildings. They often have the additional advantage of allowing the occupant of a space to look down on the area directly below them. One of the most interesting uses of a mezzanine floor can be seen in the Canadian Museum of Civilisation in Ottawa, see Plate 4.40. Level 3 of the museum presents a historical recount of white settlement in Canada, while Level 4, the mezzanine level, is dedicated to thematic displays of the collections. The exhibition designers, however, have deliberately designed the spaces in such a way that there is a macro–micro level relationship linking them. For example, on Level 4, there is a display of woodworking tools from the collection (micro-level display). Directly below it, on Level 3, there is a lumber yard (macro-level display). The idea is that visitors on the mezzanine level are able to view the woodworking tools and at the same time look down to Level 3, which presents the 'big picture' or the context of how the tools were used.

Plate 4.40 Mezzanine level and below, Canada Hall, Canadian Museum of Civilisation

Furthermore, the depth to which a floor plane has been lowered is critical in determining how Bound a submerged space will feel. If the depth is minimal, that is, the equivalent of a small step, the change will be almost imperceptible. Increasing the depth of the depression, however, occludes the permeability of the space and increases its feeling of Boundedness. The reason for this being that once the depth increases substantially, the edges of the floor plane no longer function to simply define the parameters of the space, they actually begin to form its vertical boundaries or walls. Amongst the most iconic examples of this would be the Greek and some of the Roman amphitheatres of Antiquity. Two of the amphitheatres in Pompeii are shown in Plates 4.41 and 4.42 below.



Plate 4.41 Amphitheatre wall plane          Plate 4.42 Depressed floor, Pompeii amphitheatre

If the depth of the depression is such that the level of the original floor plane is above the eye level of the occupant, the space becomes very strongly Bound as shown in Figure 4.10.
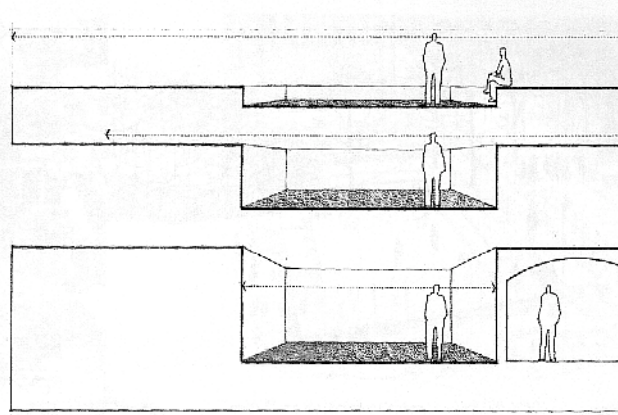


Figure 4.10 Increasing the depth of the floor plane (Ching, 1996: 109)

Fusion or the blurring of boundaries between floors and walls is clearly evident in the way that increasing the depth of the floor plane can result in the construction of walls. Such fusion is also evident in the natural world, especially during periods of heavy snowfall as shown in Plate 4.43 below. This indicates that there is nothing 'natural' or 'given' about the way three-dimensional spaces are constructed. Like other cultural artefacts, they too are 'constructs'. In this particular instance, the use of three distinct planes has its genesis in the post-and-lintel principle of ancient Greek architecture, also known as trabeated construction. Such rectilinear construction carries with it cultural assumptions about stability, order and equilibrium (Jodidio, 1997). Post-modern architecture, in contrast, is largely concerned with the subversion of these principles and cultural assumptions as will be discussed in the later section on stability and equilibrium.

Plate 4.43 Fusion of the base plane and the wall plane, Hingham, MA

The Unbound choice, in terms of floor height, is the 'level playing field', a level tract of floor with an even surface. If the floor is also generously proportioned, this represents the optimal choice for Unbinding as it evokes a sense of the openness experienced outdoors in large Unbound spaces such as parks and ovals. Uniformity in the height of the floor plane also means that no section is higher or lower than any other. This not only signals equity but if the floor is large enough, it evokes the potential for freedom in terms of movement.

Freedom of movement inside a building such as a museum mirrors the freedom of movement outdoors. Large, open, museum spaces, moreover, allow visitors to move freely through the building, see Plate 4.44. The openness of such spaces also opens up the potential for visitors to choose where *they* wish to go - which court or exhibit *they* would like to visit. In other words, rather than funnelling the museum visitor into one area, an open tract of space gives each visitor the time and space to decide what *they* would like to see and do. This openness has the potential to facilitate a smooth and easy transition not only through the building, but also into the field of the institution — art, science, history and so forth.

Plate 4.44 Atrium, Art Gallery of New South Wales, Sydney

## 4.2.3.2c Floor coverings and security

Once a solid floor plane has been constructed, choices of covering may be optional as in the case of timber boards, polished concrete or sandstone floors. Nevertheless floor coverings do open up the possibility of making further selections for evoking security. In very general terms, Bound choices for security tend to be linked to the softness and resilience of the flooring. Soft flooring materials such as thick pile woollen carpets make a person feel Bound by cushioning their feet and enabling the body to 'sink into' their padded softness. By evoking a sense of comfort, luxuriousness, warmth and indulgence, such softness strongly encourages direct contact with the flooring. In the natural environment, soft grasses can have a similar effect.

Unbound choices for flooring, on the other hand, also encourage direct contact between an occupant and a floor but do so in a very different manner. Rooms with expansive and shiny floors, such as floors made of hard polished wood, polished concrete or glossy tiles, encourage contact by evoking a sense of freedom rather than warmth and indulgence. Their highly reflective sheen suggests the potential for gliding over their surface — moving over it effortlessly, freely and smoothly, especially if wearing low traction footwear such as socks. Plate 4.44 of a space inside Te Papa Museum in Wellington, New Zealand, captures this potential.

Plate 4.44 Cafeteria 1, Te Papa Museum, Wellington

The effects of these choices can be seen more clearly in the juxtaposition of choices for floor coverings on the ground floor and first floor of Te Papa Museum in New Zealand, see Plate 4.45. The ground floor is covered in shiny, highly reflective granite tiles. This space is one of the main circulation arteries in the museum and people move through the area constantly on their way to the exhibitions. The space is thus uncluttered, except for directional signage. As this is a main thoroughfare, it is important that visitors can move through it easily and without interruption — so a glossy floor which evokes a sense of effortless, free and smooth movement complements the orientational, way-finding function of the space. The use of tiles in areas that are as heavily traversed as this one is also a functional and economic choice from the point of view of durability as tiles are hard-wearing, highly resistant and enduring, while other types of floor covering, especially carpet, tend to wear out much more easily and are more susceptible to damage. In July 2002, for example, the circulation areas in many of the display spaces inside the Kunsthaus in Zurich were threadbare as abrasion caused by visitors' footwear had worn the carpet out. Costs associated with replacing flooring exert significant financial pressures on cultural institutions.[17]

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[17] There is great variation in the type of floor coverings chosen by cultural institutions. At the Australian Museum in Sydney, for example, approximately 95% of the public areas are covered in carpet, either a plush deep green carpet or a thin pink and grey striped carpet; only 5% of the public spaces are covered in reflective flooring that is lower in resilience such as tiles, parquetry or terrazzo. These are found inside the wet lab area of the Biodiversity exhibition, inside the Kids Island exhibition, both cafeterias and the Chapman Mineral Collection display, which is hired for functions in the evenings. In contrast, the flooring used inside the Art Gallery of NSW is almost exclusively either travertine marble or parquetry and there is only one small, carpeted area inside the main cafeteria.

The first floor space in Plate 4.45, on the other hand, is the second of Te Papa's cafeterias. It is located in the heart of the museum and has been designed as a place where visitors can stop, rest and recharge on their journey through the national history of New Zealand. One of the enticing design features of the space is the soft, padded flooring. Thick woollen carpets cushion the visitors' feet as they make their way to the padded lounge chairs. Both the flooring and the seating evoke a sense of comfort, luxuriousness and indulgence by enabling tired bodies to 'sink into' their padded softness. Once again, the choice of floor covering complements the function of the space — to provide a Bound space for relaxation, quietude and repose — as it provides a lull in their path through the museum.



Plate 4.45 Floor coverings and security, Cafeteria 2, Te Papa Museum, Wellington

One final point related to floor coverings is relevant here and it concerns monumentality. Tiles such as the ones we can see on the ground floor in Plate 4.45 are often used in the foyers and atriums of public buildings such as museums. Their use appears to be related to the monumental aspect of museum buildings, as tiles evoke a sense of opulence, especially tiles made from expensive, rare and high quality materials such as polished marble or travertine. Intertextually, marble flooring also evokes associations with Renaissance palaces (Berman,

1997), which were the phylogenetic predecessors of museums. In most museums, moreover, the use of tiles tends to be confined to key spaces such as entrance foyers, where first impressions are made. Tiles do not often extend to exhibition areas except in museums with enormous financial budgets.

## 4.2.3.2d Floor coverings and permeability

In the following section, the materialisation of floor coverings will be discussed. Several aspects of the flooring can make it seem occluding or diaphanous. They are the resilience of the material or how much 'give' it has; the degree of uniformity or diversity in the choice of floor covering(s) as this impacts on the separation or integration of indoor and outdoor spaces, and finally, the insulation qualities of flooring as these impact strongly on thermal comfort. It is interesting to note that floor coverings also impact significantly on the acoustics of a space (see O'Toole, 1994), which can impact on an occupant's feelings of security or insecurity in a space. However, such concerns are beyond the scope of this thesis.

**Floor covering(s) and their resilience: sink or glide**

The physical properties of the material chosen to cover the floor plane are extremely important in determining whether a floor feels Bound or Unbound. Of particular importance is the resilience of the covering. Resilience refers to the extent to which the covering feels 'springy' underfoot. In essence, the greater the resilience, the more Bound the covering feels; the lower the resistance, the greater the gliding potential of the flooring, and the more Unbound it feels.

Bound floor planes tend to be covered in soft, plush, resilient materials that cushion one's feet and provide safety from falls and breakages. Soft coverings include cork, rubber, linoleum, vinyl, leather tiles and carpet. Of these, the softest and most Bound covering would be a dense

and highly resilient plush woollen carpet.[18] Plush woollen carpets are a strong choice for comfort because they provide warm, soft cushioned surfaces that feet can sink into and which do not dent easily. The feelings of comfort and luxuriousness they evoke can be further amplified by use of a good underlay as this provides an additional layer of padding for the feet.

Unbound floor planes tend to be covered in hard materials with little or no resilience. Hard coverings include brick, stone, tiles, terrazzo, concrete, metal, glass[19] and wood. Of these, the Unbound choices, that is, the choices for gliding, would probably be limited to smooth and highly reflective surfaces such as wood, glass and polished concrete as these have the silky smooth texture needed for sliding.[20] However, hard floor coverings are low in resilience. This means that even though they may evoke a sense of freedom, the reality is that they have little 'give' making them very tiring to stand on for long periods of time.

**Floor covering(s): diversity or uniformity**

The uniformity or diversity of the covering(s) chosen for a floor plane is extremely important in determining whether a space feels Bound or Unbound because it affects the scale and proportions of the space. Contrasts in flooring, for example, can serve an important function in

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[18] The resilience of carpets varies according to how closely its fibres are packed together. To assess the resilience of a carpet, press it down with a thumb to see how quickly it springs back into shape. If it recovers almost immediately, it is highly resilient and will make the floor feel soft and strongly Bound.

[19] Despite its shiny and reflective material properties, glass as a choice of flooring is not always experienced as an Unbound choice for security. In the Powerhouse Museum's *Bayagul* exhibition, for example, an adolescent schoolgirl was observed stepping onto a section of glass flooring with great reluctance. Her fear of the glass floor breaking was obvious in the way she gingerly placed her weight on to the surface. She finally called out to her teacher and said, 'Miss can we tread on this or not?' One explanation for this is that technological developments that have led to the use of glass as a flooring are very recent and many people may not yet have encountered this choice of covering. Hence, they experience feelings of apprehension and insecurity when their bodies come into direct contact with a glass floor.

[20] Although Unbound floor planes tend to be covered in hard materials with shiny and reflective surfaces, a very different choice of an Unbound flooring would be a shallow pond or a pool of water. Not only is the surface of a shallow pool often smooth in texture but it is also a highly reflective — reflecting both natural light and the surroundings such as nearby trees, buildings and the sky above. These characteristics enable it to function in comparable ways to a skylight. However, the anomaly concerns the permeability of the surface of the waterpool which is a totally permeable plane.

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humanising a large, open-plan space and making it feel more Bound. This can best be explained using the concept of figure–ground adopted by both Schafer (1977) and van Leeuwen (1999) to discuss the layering of sounds. The term figure refers to a foreground, a focus of interest; while ground refers to the background or setting. In keeping with this concept, floor coverings such as rugs are able to break the scale of a large floor surface by introducing a 'figure' onto a uniform floor plane or 'ground' as illustrated in Plate 4.46 below.



Plate 4.46 A space within a space, Queensland Art Gallery

Furthermore, using coverings such as rugs in this way also makes a large, open space feel more Bound by humanising its scale. It does this by *visually* suggesting a spatial enclosure within a larger single volume of space. At the beginning of this section it was noted that the edges of a base plane have a particularly important function in defining a space for they visually suggest where the walls of a space may be constructed. In this way, the use of rugs *implies* a sense of enclosure and enables contrasts in flooring to visually define different areas within the one room.[21] As Plate 4.46 also illustrates, the furnishings chosen to accompany the

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[21] It is also important to select the right size rug for the scale of the room. Small rugs in a large space, for example, tend to look lost and diminished.

rug play a pivotal role in determining the actual function of the space, for example, dining space, sitting space, reading space and so on.[22]

Finally, rugs are portable choices of flooring because they can easily be moved. This is an important consideration, especially in relation to the construction of museum spaces, as it enables large, open-plan areas to be easily, cheaply and relatively simply reconfigured. Rugs, especially Eastern rugs, evoke a strong intertextual link with nomadic peoples, as portable flooring is necessitated by an itinerant lifestyle (Berman, 1997). The portability of rugs thus contrasts markedly with the fixed nature of most floors and floor coverings.

In order to make a series of small and connected spaces feel more Unbound, on the other hand, choices for floor coverings need to be uniform. Uniform flooring stretching throughout a series of small spaces creates a strong sense of spatial unity. Fitted uniform floorings, moreover, counterbalance the lack of scale to create the perception of increased spaciousness. They do this by drawing the eye to the corner of each space thereby increasing the impression of spaciousness (Scattergood, 1997). This does not mean, however, that each space must have an identical floor covering. The key to uniformity lies with Ambience, in particular, the choice of colour, which should remain within the same tonal range and which will be taken up in more detail in a later section of this chapter.

**Floor covering(s): boundary maintenance or dissolution**

The uniformity or diversity of the coverings chosen for the floor plane, moreover, affects more than just the scale and proportions of a space. It also impacts strongly on the degree to which the indoors are separated from, or integrated with, the outdoors. To explain this, it is necessary to quickly revisit how choices for separation/integration were realised on the *overhead* plane. One of the fundamental distinctions made between Bound and Unbound *overhead* planes, for example, was the visual connection to the outdoors. Bound overhead

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[22] Contrasts in flooring can serve other functions too. For instance, a straight black line across a floor can function as a barrier, for example, at airport check-in terminals, in banks, in art galleries so forth. These lines, moreover, are institutional markers which depend on social rule systems for their interpretation.

planes *sealed* the interior from the sky both physically and visually; while Unbound overhead planes visually, and often physically, *connected* the internal spaces to the sky overhead.

Given that views of the earth below are dark and therefore hardly Unbinding, it is uncommon for base planes to visually connect a built space to the outdoors through a vista. However floor planes do stretch horizontally and have an intrinsic logogenetic component. These characteristics, in turn, enable floors to play an important role in connecting a built space to or sealing it off from the external environment. The way they do this is determined by the diversity or uniformity in the choice of flooring. Contrasts in internal and external coverings, for example, maintain a strong division between indoor and outdoor spaces, see Plate 4.47. This separation makes the internal space feel more enclosed and hence more Bound as it *visually* partitions it off from the outdoors.
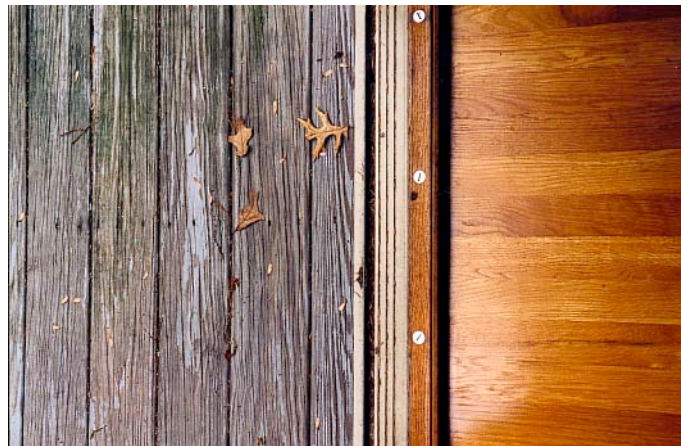


Plate 4.47 Contrasts in flooring between the exterior and interior, Hingham, MA

Uniformity in flooring, on the other hand, suggests continuity and integration. Such continuity may be materialised either through the same choice of flooring, or it may be visually suggested using different materials from the same tonal range of colours. Plate 4.48 is an example of such continuity. It is a photograph of the flooring in the Guggenheim Museum in Bilbao. The architect of this museum, Frank Gehry, deliberately used the same flooring material, a local Spanish limestone, to link the interior and exterior of the museum. Such visual continuity helps the enclosed space appear more Unbound because it suggests a

seamlessness in the transition between the internal and external environments. This, in turn, suggests that there is no division between the two — the two spaces simply flow into one another.



Plate 4.48 Continuity in exterior and interior flooring, Guggenheim Museum, Bilbao

**Floor covering(s): insulation and climate**

In determining the extent to which a floor plane is Bound or Unbound, the final dimension of permeability that needs to be considered is the insulatory capacity of the flooring. As with the overhead plane, the covering needs to have insulation qualities that suit the climate. In cold climates, continuous flooring insulates against heat loss (Wilhide, 1997). This means that soft coverings such as sheet linoleum or carpet would be strong choices for Binding. Moreover, soft materials such as carpet and cork warm up more quickly which increases thermal comfort in cold areas.

Warm climates, on the other hand, favour hard materials with cool surfaces such as stone, terrazzo, concrete and bricks (Wilhide and Copestick, 1999). In these coverings the floor plane and the flooring merge. The properties of each material are advantageous to thermal comfort as their coolness provides a welcome respite from the heat. The coolness of the flooring also makes a valuable contribution to cooling an interior. During the winter months, moreover, their temperature can be mitigated against through the introduction of technological

innovations such as underfloor heating. Another choice for thermal comfort in the tropics are Chinese silk carpets and rugs as they are much cooler than wool and thus provide a cool yet cushioned surface for feet to sink into. To achieve thermal comfort, flooring should ideally provide warmth in the winter and coolness in the summer.

## 4.2.3.3 Summary of base plane materialisation

The factors materialising both the ground and floor planes have summarised in Table 4.2. In respect of the ground plane, they include how heavily or lightly the ground touches the earth. In relation to the floor plane they include the height of the plane and the material(s) used to articulate the surface of the plane. Several aspects of the choice of material covering for the floor can make it more or less permeable. They are the resilience of the material or how much 'give' it has, the uniformity or diversity in the choice of covering(s) for the floor and the way this can impact on the separation or integration of indoor and outdoor spaces. The final aspect concerns the insulation qualities of flooring materials as these are most important to thermal comfort.

| Horizontal plane | **Permeability** | |
|---|---|---|
| Base plane | **Occlusion** | **Diaphany** |
| Ground plane | *Heavy contact with the earth.* | *Light contact with the earth.* |
| | Gravitising the building via: | Lifting the building up on elevated support systems: |
| | — a heavy stone base | — timber/concrete stumps |
| | — wide steps | — timber/concrete/brick piers |
| | — placing solid stone blocks along the outer walls of the building | — posts. |

— the use of columns at the edges especially if they are thicker at the base than is structurally needed.

| | | |
|---|---|---|
| a) Floor plane | Height | Height |
| | *Elevated* — this changes the scale of the space making it more Bound because it brings the occupant closer to the enclosure of the overhead plane. | *Level/even/flat* tract of floor. |
| | *Submerged/sunk low* — this also tends to be a Bound choice especially if the depth is great as the boundaries of the floor plane will begin to form walls that enclose the space. | |
| b) Flooring | Material | Material |
| | *High resilience (lots or some 'give'): to stand.* | *Low resilience (little or no 'give'): to move.* |
| | Soft padded surfaces that one can sink into and are 'springy' underfoot — eg low-pile carpet, rubber, thick foam, cushioned vinyl, cork — are choices for greater comfort as they are less tiring to stand on. | Hard surfaces with no give that can be 'glided' on: polished wooden floorboards, parquetry, polished concrete, glass, terrazzo, metal — harder to stand on but their sheen suggests 'freedom' as it is possible to glide on them especially in socks. |
| | *Diversity in covering(s)* | *Uniformity in covering(s)* |
| | Contrasts in flooring are important in a large space as they break up the monotony of a large surface and humanise the scale | Uniform flooring throughout a series of small-scale spaces creates unity and this counter-balances the lack of scale to create a feeling |

of the space by visually 'suggesting' more enclosures, eg warehouse conversions where rugs often define dining spaces, sitting areas and so on.

of increased spaciousness. On a large floor surface, however, increased spaciousness can have a negative effect by making the space seem too amorphous and Too Unbound.

*Diversity and boundary maintenance.*

*Uniformity and boundary dissolution.*

Contrasts in flooring between the interior and exterior maintain a strong division between indoor spaces and the outdoors.

Uniformity in flooring suggests continuity between indoors and out. Continuity may be suggested using the same materials or different materials from the same tonal colour range.

*Insulation and climate.*

*Insulation and climate.*

In cold climates continuous flooring insulates against heat loss, eg sheet linoleum or carpet.

In warm climates, hard materials such as stone, terrazzo, concrete and bricks are an advantage to thermal comfort as their cool surface provides a welcome respite from the heat. Silk carpets are another choice for cool flooring.

Soft materials such as wool carpets and cork warm up more quickly, which increases thermal comfort in cold areas.

Table 4.2 Summary of permeability materialisations for the base plane

# 4.2.4 Verticality: the wall plane

Wall planes define the vertical boundaries of a three-dimensional space and are the final planes involved in constructing a spatial enclosure. Verticality is the main feature distinguishing wall planes from the other two planes discussed so far, the overhead and base planes, which both stretch horizontally. The vertical presence of walls contributes to the construction of spatial enclosures in three important ways. First, walls provide the structural support for the roof plane. This means they transfer the load of the roof to the base plane. In addition, they provide the support for penetrations such as windows and doors. Finally, they provide vertical shelter and protection from climactic elements.

There are two main types of walls: external and internal. External walls divide interior from exterior spaces, while internal walls divide interior spaces from one another. Internal walls may either be independent of external walls, or they may constitute the inner face of the exterior wall, in which case they are often lined with an additional building material. The most common linings for internal walls are: plasterboard, plywood, timber boards (which can be used horizontally, vertically or obliquely) and fibre cement (which makes a good base for tiled walls). Bricks, concrete blocks and natural stone do not require interior lining so they can be left exposed. Alternately, it is possible to render them.

There are also two different ways of constructing walls: either by using structural frames or by masonry. Structural frames are made from timber or metal[23] and provide the support for a wall. Once they are in place, they are covered by a solid 'skin' or cladding. Materials used to clad structural frames include glass, aluminium, timber boards, zinc plates and, more recently, titanium. Masonry construction, on the other hand, creates walls by piling heavy blocks of stone or bricks onto one another. This technique creates solid and self-supporting walls which stand upright independently of structural frames.

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[23] Metal frames are primarily clad with glass.

# 4.2.4.1 The wall plane and interpersonal meanings

Interpersonally, wall planes are instrumental in constructing the firmness of enclosure that occupants feel in a space. As discussed in Section 3.2.1.2.2a, Ching clearly indicates the important role played by vertical forms in constructing a sense of spatial enclosure. In fact, he states that given their greater presence in our visual field than horizontal planes, vertical forms are more instrumental in defining a space and providing a sense of enclosure and privacy for occupants (1996: 120). The prominence of wall planes in constructing feelings of 'enclosure' and 'privacy' thus suggests that walls are instrumental in constructing the interpersonal relationship between an occupant and a space. The following section will therefore attempt to articulate the role played by walls in constructing interpersonal meanings. Given the significance of wall planes to the semiosis of space, the wall planes will be discussed in more depth than the overhead and base planes.

Wall planes impact on the interpersonal relationship between a user and a space in four fundamental ways. First, they establish vertical boundaries around an occupant and the space they are occupying. This tends to make people feel secure as it creates a physical enclosure that vertically envelops them. Second, walls have the potential to render a space penetrable or impenetrable. Impenetrable spaces tend to evoke strong feelings of insecurity such as oppression. Third, walls separate spaces from one another, and in doing so, provide occupants with visual privacy, which is crucial to security in domestic spaces. Finally, walls regulate thermal comfort. Each of these functions will now be discussed.

Wall planes impact on the interpersonal relationship between a user and a space by establishing vertical boundaries around the space and the occupant of the space. These boundaries are instrumental in constructing discrete individual enclosures. They do so by enveloping an occupant and encircling them in much the same way that a carer's arms around a baby can cradle a child, making it feel safe, secure and sheltered (see Plate 4.49). By constructing contained and sheltered spaces in this way, walls play a pivotal role in making people feel comfortable, protected and secure.
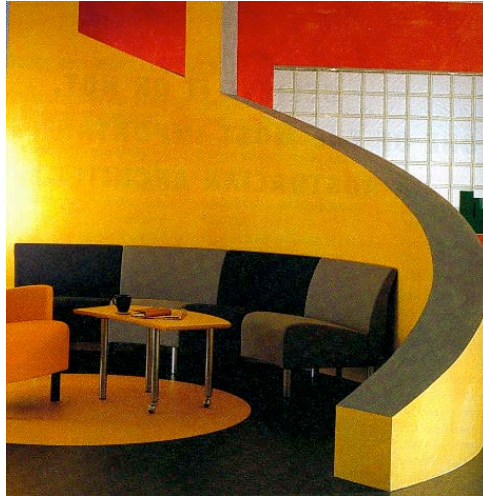
Plate 4.49 An encircling, enveloping wall plane

In addition to enveloping around a space and its occupants, the vertical boundaries established by walls simultaneously function to disconnect adjoining spaces from one another. Thus walls can either divide an internal space from an external one or they can divide internal spaces into discrete entities as shown in Plate 4.50.



Plate 4.50 Wall planes delineating exhibition spaces, Te Papa Museum, Wellington

In disconnecting spaces, walls also have the potential to either render the enclosed space penetrable or impenetrable. The degree to which a wall can create an impenetrable space, that is, one that is sealed and isolated, is dependent on a number of related factors: the height and depth of the wall plane, together with the strength of the materials used for its construction. The number and size of wall openings must also be restricted. This aspect of vertical enclosure is perhaps best exemplified with reference to a well-known example such as the Berlin Wall.[24]

Built in 1961, the Berlin Wall, together with the surveillance of the Border Troops, effectively sealed East Berlin from the rest of the world for more than twenty-eight years. Nevertheless it took several years for the authorities to construct a wall that was optimally impermeable. Initially, the Berlin Wall was constructed from barbed wire. Barbed wire, however, was an inappropriate choice of material as it is *so permeable* it rendered the Wall ineffectual. Thus people were able to cut it, creep under it and climb or jump over it, see Plate 4.51.



Plate 4.51 A permeable wall plane, the Berlin Wall

Not surprisingly, the authorities substantially fortified the Wall after only two months, replacing it with a 3.6 metre high, hollow-brick construction. They further strengthened the impermeability of the Wall by lining its exterior with a layer of concrete slabs. As their

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[24] Another well-known historical example of an impermeable wall the Great Wall of China.

primary objective was to isolate East Berlin from the rest of the world, the authorities substantially increased the depth of the Wall through choices of layering. Layering meant that the Wall was constructed in such a way that it ranged in depth from 40 metres to 1.5 kilometres at different points, and consisted of several staggered walls known collectively as the Border Zone. Furthermore, the openings or crossing points were few — the most famous being Checkpoint Charlie, which was controlled by armed guards, vehicle barriers, observation towers and guard dogs.

Impenetrable spaces, however, tend to be experienced very negatively from an interpersonal point of view as they evoke the Too Bound dimension. The interpersonal impact of such extreme choices for impermeability was that it made many of the people living in East Berlin feel too restricted and too confined. In fact, feelings of oppression were so strong that East Berliners had to develop coping strategies, including denial, to ensure their emotional survival: 'In order to live locked up, we had to live as if the barrier didn't exist,' (Gunter de Grunyn, quoted in Flemming, 2000: 178).

Wall planes also serve a third important interpersonal function in that they provide visual privacy for the occupants of a space, a factor which is very important for security, especially in domestic dwellings. This was clearly illustrated in the mid-20[th] century on two different continents, North America and Australia, after the construction of two iconic *glass* houses: the Elizabeth Farnsworth House and the Rose Seidler House. Influenced by the European Bauhaus movement with its focus on light and openness, Mies van der Rohe built the Elizabeth Farnsworth house, west of Chicago, see Plate 4.53, and Harry Seidler built Rose Seidler House for his mother on Sydney's North Shore, see Plate 4.54).

Both architects extensively used glass as walling. As a consequence, the houses they built pushed the physical and interpersonal boundaries of domestic privacy in their respective cultures (Friedman, 1998; Andersons, 2002). The Farnsworth house, in particular, was the ultimate materialisation of diaphany as it consisted entirely of a vertical glass 'skin' with three openings (the front door and two small windows). It enabled such openness between the indoors and outdoors that personal privacy was compromised to a degree that was

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unprecedented in American culture (Friedman, 1998: 140). The transparency of Rose Seidler House had a similar impact on Australian society (Andersons, 2002).[25] Consequently, both dwellings provoked enormous controversy after they were built and attracted large numbers of voyeurs, especially on weekends.

One of the major factors contributing to the controversy surrounding the Farnsworth House was the fact that even the *bedroom* was enclosed in glass. This degree of physical exposure was confronting for most people. Not only did it resemble living in 'a fishbowl' but it sparked a large-scale debate about domesticity, sexuality and the politics of architecture (Friedman, 1998). Such extreme cases are important as they illuminate the importance that interpersonal concerns such as visual privacy exert on spatial security, especially in domestic architecture. They also illustrate some of the ways in which cultural baselines for security are manifested and maintained in a society. They also demonstrate the important role played by wall planes in providing both visual privacy and security.



Plate 4.52 Farnsworth House          Plate 4.53 Rose Seidler House

Finally, wall planes modulate the flow of light, heat and air into a space, see Plate 4.5. This impacts on how Bound or Unbound an occupant feels in a space by affecting their levels of

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[25] The curtains visible in Plate 4.54 have been drawn by the present custodians of Rose Seidler house, the Historic Houses Trust of New South Wales, in order to protect its contents and interior. When the house is open to the public, however, the curtains are drawn so that visitors can experience its Unbound openness and transparency .

thermal comfort. As mentioned in relation to both the overhead and base planes, thermal comfort is a crucial aspect of spatial security. By modulating heat transfer and airflow, wall planes impact strongly on thermal comfort. The heat gain that would result from the use of floor to ceiling glass walls such as the one shown in Plate 4.54, for example, would not constitute a choice for comfort in all climactic zones. It would be particularly inappropriate for buildings constructed in the tropics where deep shade and cross ventilation are the overriding priorities for thermal comfort.



Plate 4.54 A wall of glass modulates light and heat flow, Museum of Melbourne

At the Getty Center in Los Angeles, for example, where the strong sunlight of southern California represents a major challenge to the design of all buildings, architect Richard Meier selectively used either stone or glass as walling in accordance with the orientation of the building to the sun (Brawne, 1998). Solid travertine walls were used to reduce solar gain and optimise visitor comfort by preventing the heat of the sun from penetrating into the interior. Glass, meanwhile, was used only for walls with minimal exposure to the sun. The choice of cladding for a wall, in particular the physical properties of the material for modulating heat gain and air flow, can thus have a major impact on the feelings of comfort and security that people experience in a space.

## 4.2.4.1a Security: the Bound wall plane

In keeping with descriptions of the overhead and base planes, there are two dimensions of the Binding scale for making people feel secure in terms of vertical enclosure: the Bound and Unbound. Bound spaces tend to be enclosed by walls designed to 'block out' the elements; while Unbound spaces have walls that tend to allow the elements to penetrate the interior to varying degrees. Each will now be further discussed.

Walls constructing Bound spaces *seal* the interior off from the external environment both visually and physically. The visual sealing of the wall planes provide the occupants with privacy; while the physical sealing of the wall planes provides occupants with protection and shelter from the elements. Implicit in a Bound choice for security, as mentioned in Section 4.2.2 on the overhead plane, is an evaluation of the elements and external environment as something that needs to be excluded in order for people to feel comfortable and secure. This is evident in Plate 4.55, a Bound children's space in the Melbourne Museum which is both visually and physically sealed from the exterior.
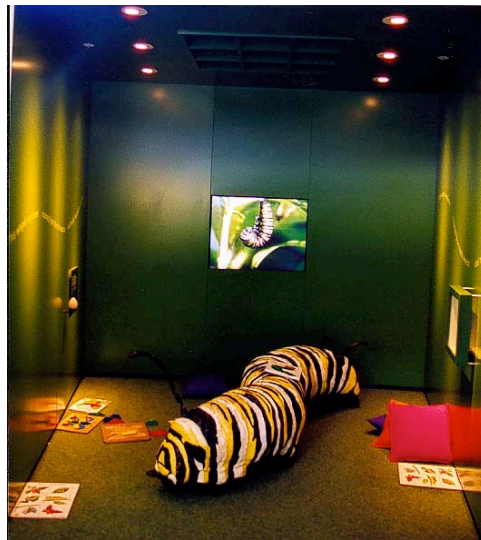


Plate 4.55 Bound museum space, Children's Museum, Museum of Melbourne

In museums, the need for Bound display spaces is almost exclusively determined by the conservation requirements of the collections (Gilroy & Godfrey, 1998). Bound spaces ensure the survival of material objects by limiting the environmental threats to the collection posed by light, temperature, air pollution, relative humidity, dust and biological pests (1998). Preventing the deterioration of objects held in public trust is an important priority to museum display, so much so that it overrides the other factors influencing spatial security, namely, cultural baselines, cultural processes of change and legal and economic factors (as discussed in Section 3.1).

By way of illustration, the fragility of the works exhibited in the *Seasons: the Beauty of Transience in Japanese Art* exhibition, AGNSW (2003), was so acute that the Gallery had to physically remove and replace the objects on display halfway through the display period. Of particular concern was the sensitivity of the paintings, silk screens and porcelains to light; not only were many of these objects frail, but they were also up to four hundred years old. This is why two consecutive exhibitions were held: the first featuring objects associated with spring and summer, the second, autumn and winter. Bound museum spaces are thus strongly tied to the conservation requirements of the objects.

This does not, however, imply that *all* museum spaces are Bound. The trend towards Unbinding in museums has been steadily increasing, especially in the closing decades of the 20[th] century, as discussed in section 3.2.2.4a. To reconcile these conflicting demands, most contemporary museums contain both Bound and Unbound spaces. This means that if fragile objects are to be put on public display, they are exhibited inside sealed and Bound spaces, while objects which are not light sensitive are displayed in Unbound spaces that are open and more permeable to the elements. Skilled exhibition designers, moreover, can manipulate the elements constructing a space in such a way that they create the illusion that a Bound space, displaying frail and light sensitive materials, can be made to feel open, expansive and Unbound.

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## 4.2.4.1b Security: the Unbound wall plane

As with the overhead plane, there are two choices for Unbinding a wall. They are *visual* Unbinding or *visual and physical* Unbinding. Visual Unbinding physically seals the interior from the elements except natural light and *visually opens* the internal spaces to views of the environment outside, see Plate 4.56. Visual Unbinding thus allows at least two levels of connection between internal and external environments: a visual connection to a vista and a material connection to the elements through the exchange of light.

Visual and physical Unbinding, in contrast, allows *more than two* levels of connection between internal and external environments. The first is a viewable or visual connection; the second is the material connection involving the exchange of light. The third involves further material connection with the elements through *the exchange of air*, including wind, and/or *heat* (especially if the walls are made from untreated glass). There is also the possibility of exchange with other elements during inclement weather such as rain and hail. The penetration of rain and hail into a space, however, would for the most part be likely to push a space into the Too Unbound dimension making the occupants feel vulnerable and unprotected. A more detailed description of visual and/or physical Unbinding follows.

**The visually Unbound wall plane: windows of opportunity**

Visual Unbinding enables a space to be oriented to vistas and views of the outdoors but sheltered and protected from the vagaries of climate. In the words of one home-owner living in a house which is visually Unbound to vistas of the eastern seaboard of Australia: 'It's like living outdoors but you're cocooned' Rose (cited in Harris, 2001: 115).

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Plate 4.56 Visual Unbinding, Sydney from level 33 of Renzo Piano's Aurora Place

Extending a space outwards visually to encompass a vista, while simultaneously sheltering the space, provides an invaluable window of opportunity with regard to permeability, especially for buildings constructed in areas where the weather is often inclement. Visual Unbinding opens up a plethora of choices for constructing spaces. These choices would not be possible without the technology of plate glass as walling, especially if the glass has been treated with glazes that provide UV protection and reduce heat gain (choices of glazing technology were discussed in Section 4.2.2.3).

In the context of museum display, a *visually* Unbound space is semi-protected, in that the threat from air pollution, dust and insects is greatly reduced. Nevertheless, the conservation threats from light, temperature and/or relative humidity remain and must be mitigated against. As a consequence, visually Unbound museum spaces tend to be transitional spaces (the corridors and walkways that visitors traverse as they move from one Bound exhibition space to another as shown in Plate 4.57). They are also often the spaces where hands-on 'Activity Stations' and 'Touch tables' are located.

Plate 4.57 Walkway through the Indigenous exhibition space, Museum of Melbourne

If objects are displayed in such spaces, they tend to be sculptural works made from light-insensitive materials such as bronze, plaster or wood or rock carvings. An example of this can be seen below in the strongly Unbound Grand Hall, inside the Canadian Museum of Civilisation, Ottawa.





Plate 4.58 Grand Hall
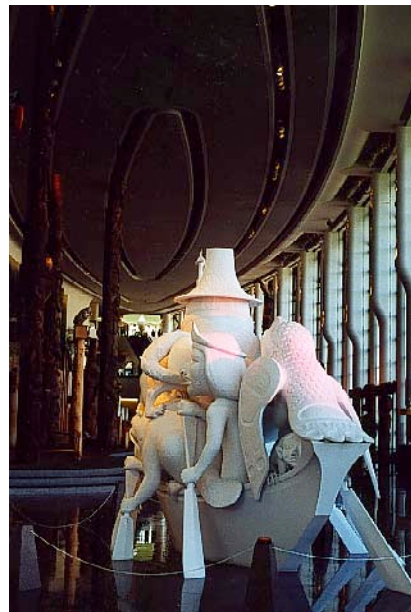
Plate 4.59 Bill Reid's *Spirit of Haida Gwaii* on display in the Grand Hall, Canadian Museum of Civilisation

Museum cafes and restaurants are frequently located in visually Unbound spaces because orienting visitors to the outside world, especially scenic views and daylight, provides them with respite from their engagement with the artworks and objects on display in the galleries, see Plate 4.60.



Plate 4.60 Cuiseum cafe, National Museum of Australia, Canberra

The respite that such visually Unbound areas provide creates a window of opportunity for the design of museum spaces. This opportunity is strongly linked to the challenge of countering the phenomenon of museum fatigue discussed in Section 3.2.2.4b. Museum fatigue sets in for many visitors approximately half an hour after exhibition viewing begins and constitutes a major problem for curators and exhibition designers because once visitors become tired, they are no longer comfortable in a museum space or able to concentrate on the displays. Hence, by providing variation in ways museum spaces are constructed and by exposing visitors to daylight, visually Unbound spaces have the potential to play an important role in countering such fatigue.

**The visually and physically Unbound space: insides out and outsides in**

Spaces that are both *physically and visually* Unbound, on the other hand, allow a viewable as well as a tangible, material connection with the outdoors. This enables the exchange of light, air/wind and heat/cold. It also often facilitates the physical movement of occupants between internal and external environments. It therefore represents the optimal choice for permeability.

Similar to the overhead plane, permeability in the physically and visually Unbound space is materialised through strong choices for diaphany such as glass walling and large physical openings in the vertical planes of a space. These are typically provided by windows and doors. In a space that is *visually and physically* Unbound, large folding or sliding glass doors may be opened to allow the elements to fully permeate the space, see Plate 4.61, a photograph of the Entrance Hall to the Getty Museum, Los Angeles.



Plate 4.61 Entrance Hall, Getty Museum, Los Angeles

The Entrance Hall to the Getty Museum is able to be *visually and physically* Unbound throughout the year in this way for two main reasons. The first reason is the warm Mediterranean climate of California, which provides thermal comfort for the occupants of the space. The second is the fact that the Entrance Hall is *not* a display space but a visitor orientation area. It houses a wood-panelled information desk, an orientation theatre, a stand

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for audio guides, a cloaking room, a bookstore and a staircase that leads to the exhibition areas. The open doorway, moreover, guides visitors towards the heart of the museum complex — the linear fountain and central courtyard which are enclosed by four Bound exhibition pavilions.

Furthermore, there is only *one* object from the collection on display inside the Entrance Hall — a marble bust of the Museum's founder, the philanthropist J Paul Getty. This bust is not classified as fragile from the point of view of conservation because it is made from marble — a light insensitive material. Hence, it can be safely displayed in such a strongly permeable space without the risk of irreparable damage. In most museums, however, the conservation threat to the collections of such strong permeability would prohibit the display of many objects in such open spaces.

Although *visually and physically* Unbound spaces are not a common choice for cultural institutions, the Entrance Hall to the Getty Museum indicates that they clearly do exist. In fact, there has been in increase in the number of such strongly permeable spaces, especially in museums commissioned and built towards the end of the 20th century. The Getty Center, which opened in 1997, is an exemplar of this trend. It has been constructed so that it is Unbound to several very different landscapes. On the southern side is a Cactus Garden that is reminiscent of the city's pre-urban landscape. This is a most significant choice for it is making an historical statement about the natural environment as well as referencing the genesis of the land on which the museum is situated.

There is also the central Museum Courtyard, which each exhibition space has been designed to open onto, complete with a 120-foot linear fountain and a row of Mexican cypress trees, see Plate 4.62 below. However, the main landscape feature is the Central Garden. Created by landscape architect Laurie Olin, and featuring a maze and sound sculpture, the Central Garden strongly evokes the garden traditions of the ancient Mediterranean, see Plate 4.63. Moreover the Getty Center's hilltop location, strongly reminiscent of the Acropolis in Athens, means that the complex is oriented to panoramic views on all sides: Santa Monica and the Los Angeles basin on the southern side and the Pacific Ocean to the west.

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Plate 4.62 Museum Courtyard, Getty Center  Plate 4.63 Central Garden, Getty Center

Such Unbinding creates a deliberate contrast between the natural world and the creative world on display inside the exhibition spaces. Obviously, the two blend in urban settings such as this one, but the Unbinding that is evident at the Getty Center, particularly to the cypress trees and ancient Mediterranean garden traditions, enables more than just the connection between internal and external spaces. It also symbolically connects the museum to the genesis of the landscape and the influences of other places and traditions. This, in turn, simultaneously creates an open-air museum as well as an art gallery.

Given the interpersonal potential that such spaces can have, it is not surprising that permeable spaces in symbolic locations are becoming a feature of contemporary museum architecture. In addition to the Getty Center (Los Angeles), this is evident in Monterey Bay Aquarium (California), the Melbourne Museum (Victoria), the National Museum of Australia (Canberra) and Te Papa Tongarewa (Wellington, New Zealand). In short, this potential seems to be taken up wherever external temperatures are moderate enough to allow strong degrees of physical exposure to the elements.

**Phylogenetic forces shaping Unbinding: extroversion versus introversion**

To this point in this thesis, there has been an *extroverted* orientation to the descriptions of Unbinding. In other words, discussions of Unbinding have concentrated on opening up spaces

to *external* panoramas or vistas — either visually or both visually and physically. The extroversion implicit in this makes the visual connection with the outer landscape the strong focal point of the space. As discussed in Chapter 3, the reasons for this include the positive valuation of the environment in contemporary architectural trends, both urban and rural, and the fact that the technology currently exists to achieve this.

In the past, dating from Antiquity onwards, it was also common for buildings to be Unbound. However, instead of being Unbound to an external vista, buildings of the past tended to be Unbound to an *internal* space: the courtyard. This *introverted* model of Unbinding has its genesis in the domestic Mediterranean architecture of Antiquity and can still be seen in places like Pompeii where many fine examples of the *domus*, the family home organised around several internal courtyards, have survived since 4BC–1AD.[26] Technologically, the builders of Antiquity did not have the means to unbind internal spaces through vertical enclosures made from glass. Consequently they created openings in the overhead plane to allow the physical exchange of the elements — light, air, heat and rain. Internal spaces were then designed in such a way that they opened onto courtyards via doorways and deeply recessed walkways, which sheltered them from the elements.

Many museum buildings also follow such introverted models of Unbinding via a courtyard. Museums designed with courtyards include the Uffizi in Florence, the National Gallery in Washington DC, the Frick Museum in New York, the Fifth Avenue Guggenheim Museum in

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[26] A *domus* had several Unbound spaces to which Bound domestic interior spaces were linked - an *atrium* and at least one *peristylium*. The *atrium* was a minimally Unbound space. It was actually a courtyard with a pool, known as an *impluvium* in its centre, and a *compluvium*, an opening in the roof, directly above it. The *compluvium* Unbound the overhead plane so that light, air and rain could enter the *atrium* while the *impluvium* (pool) caught the rain water. Rain water, in turn, was used for cooling the house. Each domus also had a *peristylium*, which was a totally Unbound and open outdoor garden area with fountains and statues displayed inside it. Many houses also had a second *peristylium* featuring pergolas, canals, jets of sprouting water and statues of the gods.

The atrium and peristylium thus provided both light, air and rainwater for the house and its occupants and domestic rooms were commonly linked to these spaces via covered colonnades. The roof covering over the colonnade was most important for security as it provided shelter and protection from the weather and enabled the physical openings to the interior of the building, namely doors, to be deeply recessed and consequently protected from the elements. As internal glass windows were a technological impossibility at that point in time, rows of vertical columns created the openings that people physically penetrated to enter the courtyard. The design of physically Unbound internal courtyards as the nucleus of domestic housing, moreover, was made possible by the sunny Mediterranean climate with its hot summers and warm, rainy winters.

New York, the Isabella Stewart Gardner Museum in Boston, the National Museum of Australia in Canberra and the Melbourne Museum. The Getty Center in Los Angeles, on the other hand, is most unusual in that it has both an introverted orientation to Unbinding through its Central Museum Courtyard and an extroverted focus to Unbinding in the way that many of its spaces open up to external panoramas and vistas. Of all the museums with courtyards, moreover, it is primarily the museums located in areas with Mediterranean climates that have courtyards that are physically permeable to the elements, which has already been discussed in relation to the Getty Center.

Museums located in more temperate climactic zones, especially in areas that experience cold winters with lots of snowfall, have tended to visually Unbind their courtyards. This provides the courtyard with physical protection and seals it off from all of the elements except light. Perhaps one of the best examples of such visual diaphany can be seen in the Isabella Stewart Gardner Museum, the former house of a wealthy private Bostonian collector and arts patron. During her travels through Italy in the late 19[th] century, Gardner collected the facades of Venetian palazzos, exported them to Boston and had them turned inward to create the courtyard of her then home, Fenway Court, as seen in Plate 4.64.
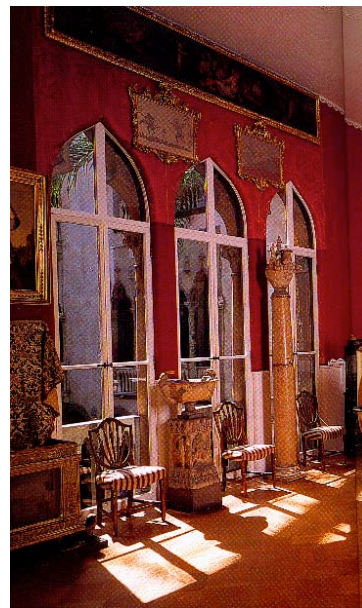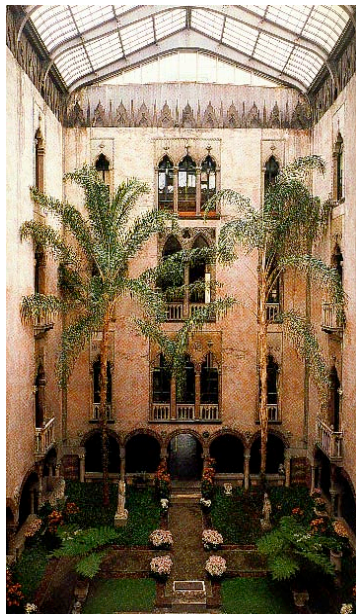


Plate 4.64 The Stewart-Gardner courtyard     Plate 4.65 The Red Room

This courtyard is protected from the elements by the glass roof which ensures natural light floods into the building but the courtyard is secure from the elements all year round. Light enables plants to grow, so Gardiner filled the courtyard with palms and flowers as well as fountains and statues. The vertical planes of eight of the rooms in the home museum were then designed in such a way so as to contain balconies opening to the protected courtyard via glass doors, see Plate 4.65.

To summarise, vertical wall planes have an extremely important interpersonal role in determining how secure or insecure an occupant feels in a space. They do this by separating spaces from one another, delineating the outer limits of a space and physically enveloping the occupants of the space. They also have the potential to render a space visually and or physically impenetrable and can determine the degree of visual privacy an occupant has in a space. Bound wall planes visually, and to a large degree physically, *seal* a space from its surroundings, while Unbound wall planes, visually and/or physically *open* the space to its surroundings. The vertical planes in an Unbound space, moreover, can be either extroverted or introverted in their orientation. The actual choices for materialising the vertical planes will now be discussed.

## 4.2.4.2 Permeability and the wall plane: an overview of materialisation

In the discussion that follows, the ways in which permeability can be materialised has been divided into two groups. The first group consists of elements that cluster together in the meanings they materialise about *the degree of firmness* in the way the vertical planes of a space have been organised. The second group comprises elements that construct meanings about *balance* and *equilibrium* in a space.

Meanings related to the first group, the firmness of the vertical enclosure, are concerned with *how firmly* the walls in a space have been constructed to close in on or open up around an occupant. The firmness of a spatial enclosure is in turn determined by the co-articulation between the following three factors:

- the visual weight of the walls
- the type of spatial envelope the walls construct
- the degree to which the walls filter the elements.

Each of these factors is in turn materialised by at least three variables. These will be explored in more depth in the next section.

The second group of meanings is concerned with feelings of equilibrium/disequilibrium as well as stability/instability that the vertical planes can evoke. Walls that are perpendicular to the ground plane, for example, tend to make occupants feel balanced and centred in a space. Angled walls, on the other hand, or walls that slope either inward or outward, backward or forward, have the potential to be disorienting as they can create the illusion that the vertical plane(s) may totter.

Although meanings about *balance* and *equilibrium* are crucial to spatial security, word constraints on this thesis preclude a detailed exploration of this area of meaning making. As a consequence, a separate study into balance and equilibrium could be conducted. Section

4.2.4.2b of this chapter will attempt to identify the issues with which such a study might be concerned.

In relation to the permeability of wall planes, the discussion that follows will be primarily concerned with the first group of meanings; the firmness of the vertical enclosure.

## 4.2.4.2a Firmness of the enclosure: close in on me or set me free

The discussion of the degree of firmness in the way the vertical planes of a space have been organised will begin with the visual weight of the walls.

**Firmness of the vertical enclosure: the visual weight of the walls**

The visual weight of the vertical plane refers to how heavy or light the walls make the spatial enclosure feel. Walls that are visually heavy, for example, tend to make the space feel more firmly enclosed than walls that are visually light. This is because the materials are impermeable to the elements and the walls are fixed in one place. Spaces that are visually heavy thus tend to correlate with feelings of Boundedness or occlusion, while spaces that feel visually light tend to correlate with Unboundedness or diaphany.

The visual lightness or heaviness of a wall plane, moreover, is determined by two inter-related factors:

    i) the materials: their opacity/transparency and their depth

    ii) the permanence/temporariness of the wall.

The choices for materialising each of these variables will now be discussed.

*i) The materials*

**Opacity and depth: close in on me**

Raw materials are the building blocks of all architecture. Visually heavy walls tend to be made from impermeable materials that both look and feel weighted, heavy, laden. This applies to both external and internal walls. There are two dimensions to the qualities of materials that construct firmly enclosed and Bound spaces: opacity and depth.

*External* walls that create spaces that feel Bound are primarily constructed from opaque materials. Opaque and impermeable building materials tend to look and feel weighted. They thus construct solid wall enclosures that shelter and protect interior spaces by 'blocking out' the elements. In the process, they also visually seal off views of the outdoors. Opaque building materials thus set up a 'closed' relationship between the internal and external environments as seen in Plate 4.67 below. They include materials such as stone, bricks, concrete blocks, compressed straw, mud bricks and rammed earth.
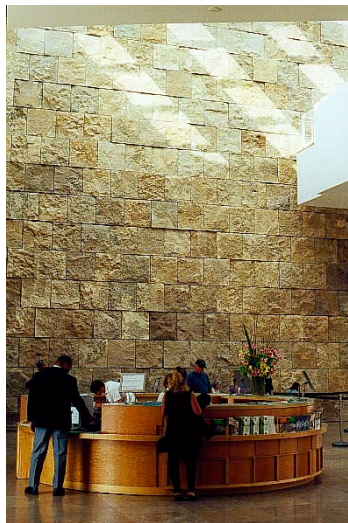


Plate 4.67 A closed relationship between internal — external spaces, Getty Center

Similarly, *internal* walls that feel visually heavy and Bound tend to be constructed from opaque and impermeable materials. These include rendered/unrendered[27] masonry, fibrous cement, plasterboard and walls lined with, or constructed from, timber. It also includes padded and upholstered walls. Like external walls, interior walls also function to occlude a space by 'blocking out' the elements and enclosing the space firmly. However, they do not only set up a closed relationship between internal and the external environments, they also establish a closed relationship between adjacent internal spaces. They do this by separating them from one another and segmenting them into discrete entities as shown in Plate 4.68 below.



Plate 4.68 Wigmore Galleries, Metropolitan Museum of Art, New York

In addition to opacity, the depth of the material used to construct the wall plane can be instrumental in making a space feel visually heavy or visually light. There are two dimensions to the materialisation of depth in relation to wall planes. The first concerns the actual thickness or mass of the building material; the second concerns the layering of elements constructing the vertical enclosure. Each will now be discussed.

In a Bound or occluded space, the visual weight of a wall can be intensified by increasing the thickness or depth of the wall plane through the choice of material. The effect that thick building materials such as sandstone can have in intensifying the firmness of enclosure in a space can be seen in Plate 4.69, a display from the Egyptian Section of the Metropolitan

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[27] Render is a technical term referring to the layer of plaster or stucco that is frequently applied to an exterior wall and often painted (Fleming, et al., 1991: 474).

Museum of Art, New York in 2000. The thickness of the stone clearly evokes a strong sense of permanence and stability as it implies both solidity and endurance. It is not surprising then, that for many centuries stone has been used to construct buildings associated with the worship of gods, kings and myths (Foster, 1989). Thus, thick materials that construct visually heavy wall planes in these ways can evoke many different types of meaning ranging from permanence and endurance to impenetrability.[28]
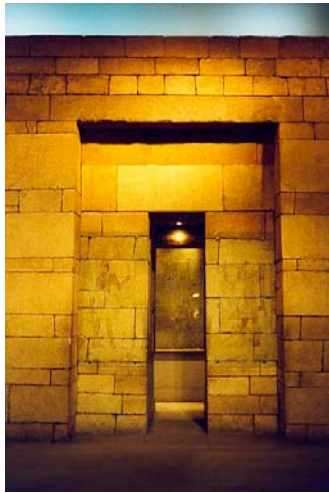


Plate 4.69 Egyptian Gallery, Metropolitan Museum Plate 4.70 a deep wall cut-out

Plate 4.70, on the other hand, shows a deep wall cut-out or slot. The feeling of depth such cut-outs convey can also function as a powerfully evocative visual metaphor in exhibitions, especially those displaying fragile archaeological objects. One obvious example is the Dead Sea Scrolls which are now mere fragments of paper that have survived in desert caves for over twenty centuries.[29] Enveloping the material fragility of such objects with visually heavy wall planes evokes a sense of their endurance and is a powerful way of signalling their historical significance.

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[28] In exhibition spaces, personal observations have shown great variation in the depth of wall planes, which can vary from several centimetres to up to 1.8 metres.
[29] Thick walls (60cm thick or more) impact on security in other ways too for they ensure thermal comfort all year round in most climactic zones.

The second dimension to depth concerns the layering of elements constructing the vertical enclosure. Layers of walling made from thick and impermeable materials, such as concrete or sandstone, tend to create strongly fortified spaces such as castles. Perhaps one of the most extreme examples of a layered vertical plane was the Berlin Wall discussed in Section 4.2.4.1. The Berlin Wall, as already noted, consisted of many layers: an inner layer known as the 'back-up' wall, which East Berliners saw; an outer layer, which was the actual wall dividing East Berlin from West Berlin; and several layers of walling between them. Clearly, it was the layering of vertical planes combined with the thickness of the materials used to construct the Wall (bricks lined with an outer layer of concrete slabs) that deliberately created a space that felt Too Bound.

It is noteworthy, then, that some architects working at the cutting edges of their field are currently pushing the boundaries of materialising depth via layering. In order to create walls that make a space feel Bound, they are using *visually light* materials, such as glass and metal, instead of impermeable and opaque materials such as concrete. Lining a glass skin wall with a fractured steel grid can, for example, create a Bound vertical enclosure. This can be seen in the Ian Potter Centre — NGV: Australian Art at Federation Square in Melbourne (2002) shown in Plates 4.71 and 4.72 below. Plate 4.71 demonstrates this from the exterior of the building, while Plate 4.72, a shot of the atrium taken from an exhibition space, shows how depth can be materialised by layering from inside the building.
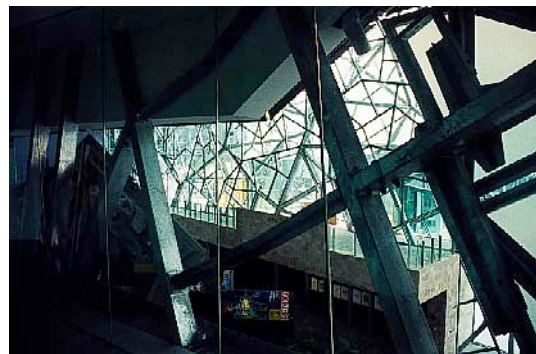


Plate 4.71 Exterior, Ian Potter Centre: NGV Plate 4.72 Atrium, Ian Potter Centre: NGV

In the Ian Potter Centre, the architects, Lab + Bates Smart, have lined the entire external glass wall with an expansive and detached steel grid that twists and rises along the vertical planes of the building. This grid creates a firm enclosure by simultaneously 'thickening' the wall plane and reducing the diaphany of the glass skin by obstructing views of the outdoors. In doing so, the architects have opened up new possibilities for occluding a space via layering the elements constructing the vertical plane. Instead of using solid materials with mass and depth, like sandstone, which when layered construct such firm enclosures that they set up a smothering relationship with the occupants of the space, Lab + Bates Smart have layered visually light materials and constructed a Bound space that feels secure.

**Transparent and light materials: set me free**

In contrast, choices for constructing a visually light wall plane tend to be largely determined by the degree to which the materials used to construct the mass of the wall are diaphanous (transparent and/or lightweight with little mass or depth). Visually light and diaphanous choices for cladding *external* walls thus tend to involve permeable materials that are either transparent or semi-transparent. The most visually diaphanous choice of cladding, for example, is the floor-to-ceiling glass wall shown in Plate 4.73 below. Glass erodes the feeling of vertical enclosure by replacing it with a vista. This vista can be either extroverted (for example, a panorama) or introverted (for example, a courtyard as the one shown in Plate 4.73).



Plate 4.73 An introverted vista, Pelican Court, Queensland Art Gallery, Brisbane

As discussed in relation to overhead planes, by allowing the eye to travel out through the glass to the freedom of the outdoors, glass enables the vista to become a *visual* part of the architecture. Thus the occupants of visually Unbound spaces are able to connect with and feel part of the world around them, see Plate 4.74. In this way the firmness of the enclosure is lessened. Diaphanous cladding materials therefore enable *visual* continuity between the internal and external environments and establish an 'open relationship' between them. Glass also increases the degree of natural illumination in a space. This will be discussed in Sub-cluster 3 on filtering.

Not all visually light choices of cladding material involve glass. Semi-transparent choices also exist. These involve glass combined with materials that lower the degree of diaphany such as the perforated metal screens seen in Plate 4.75 below. By reducing the levels of diaphany in a space, such perforated metal screens marginally increase the firmness of the enclosure by making the space feel less expansive. Perforated metal screens also impact on the degree to which the wall plane can filter the elements. In particular, they shield the quality of light in the space by reducing glare, lower levels of UV penetration and reduce heat gain. In these ways, they can impact positively on visitors' comfort.



Plate 4.74 Glass cladding          Plate 4.75 Glass cladding plus metal screen

In a similar way, lattice is a semi-transparent choice of material. While it screens out intensely glaring light and reduces the amount of solar radiation entering the space, it also allows for strong levels of permeability by its capacity for ventilation and air circulation. In addition, it provides visual privacy by screening the occupants from the outside world even though they are able to see into their surroundings, see Plates 4.76 and 4.77.



Plate 4.76 Lattice enclosure

Plate 4.77 Lattice — visual diaphany

Another choice for constructing visually light and Unbound *external* walls is through the use of implied enclosures. Implied vertical planes, for example, characterise the construction of Unbound external spaces such as verandahs. Verandahs are open spaces with roofs that are held up by vertical posts. The vertical supports and the horizontal plane they support thus 'hint' at or imply vertical enclosure. They are thus often thought of as architecture without substance and form without completion (Drew, 1992).



Plate 4.78 Verandahs — architecture without substance, Ballarat

*Internal* walls may also be constructed from *visually* light materials that make interior spaces feel Unbound. There are four main choices for constructing such walls: clear glass, etched or frosted glass, the use of *implied* enclosures or the use of screens made from lightweight but opaque materials such as rice paper, canvas and light-weight wood or lattice. These choices will now be elaborated on.

Clear glass internal walls are a strong choice for Unbinding. They physically mark the limits of an internal space. They also minimally screen adjoining spaces from one another while maintaining strong degrees of *visual connection* between them. This visual connectivity allows the eye to travel from one space to another, and in doing so, lessens the firmness of the enclosure. The use of clear glass as a transparent walling for vertical partitions is shown in Plate 4.79 below. It is an interesting choice for enclosure in an art gallery as it means that the paintings do not simply 'hang off' the walls, they actually become the walls.



Plate 4.79 Transparent interior walls, Duveen Wing, National Portrait Gallery, London

However, some internal spaces such as meeting and function rooms, do require some degree of visual privacy. To achieve this, and maintain a relaxed or loose feeling of vertical enclosure, floor-to-ceiling glass walls may be used and patterns etched onto them at eye-level height and lower. This can be seen in Plate 4.80 where rows of chains have been horizontally

etched onto the glass in order to provide the occupants of the space with some degree of visual privacy.
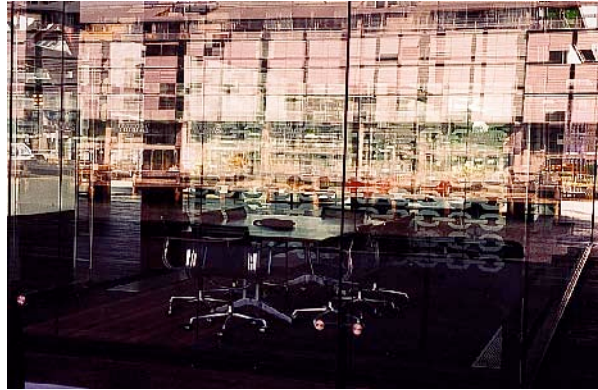


Plate 4.80 Etching and visual privacy, Pier 8/9 Walsh Bay, Sydney

Not all visually light internal walls are made from glass panels that stretch from floor-to-ceiling height. Another common choice for materialising visually light internal walls involves the use of smaller panes of glass inserted into small wall openings. These openings are commonly referred to as interior windows. While external windows allow the passage of air and light into a space, interior windows function in a textual capacity to link internal spaces to one another.

Interior windows can serve other functions too. In Section 3.2.2.4a, for instance, discussed the way the façade of the Melbourne Museum, a diaphanous shell, materialises openness by placing the institution's staff on display long before visitors enter the building. With the use of internal windows, the institution's aim of achieving openness can pervade the design of the interior. The use of thin horizontal bands of interior glass, for example, enable visitors to continue viewing the staff and the institution at work inside several of the office spaces as shown in Plate 4.81. Interior windows thus have the potential to open the institution to continued public scrutiny.

Plate 4.81 Visual diaphany and the Unbound institution, Museum of Melbourne

Visually light internal enclosures are not only materialised by transparent walling. They can be achieved in other ways too. Diaphanous choices for internal walls include the use of visually *implied* vertical planes. The simplest way of implying a vertical enclosure is through the use of columns and overhead beams. The coffee shop inside the old General Post Office in Martin Place, Sydney is one example of a space in which implied vertical enclosure has been materialised in this way, see Plate 4.82 Moreover, to strengthen the firmness of the implied enclosure that can be seen below, the number of columns needs to be increased as do the width and depth of each column. Reverse choices will clearly have the opposite effect.



Plate 4.82 Implied enclosure, refurbished GPO interior, Martin Place, Sydney

The depth of visually light wall planes also needs to be considered. As discussed earlier, depth has two dimensions: the actual thickness or mass of the material and layering. Visually light materials, however, tend to be thin. This means they have little mass or depth. As a consequence, they imply lightness, temporariness and transience. They thus have the potential to unbind a space by creating a feeling of visual lightness and can imply varying degrees of freedom from strong vertical enclosure, depending on the material used to construct them.
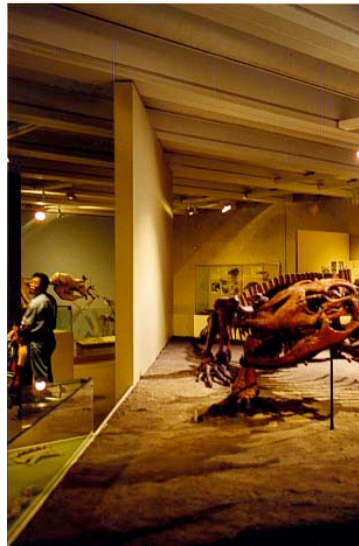


Plate 4.83 Thin walls and loose enclosure, Queensland Museum, Brisbane

Even though visually light walls are thin, they can still be layered to create spaces that feel open and diaphanous. Such layering was one of the notable design features of a temporary exhibition of Henry Moore's sculptures which was held at Te Papa Museum in March, 2002. Titled *Journey Through Form*, the nucleus of the exhibition was a small space designed as a white studio cube. It contained a recontextualisation of Moore's art studio complete with maquettes (small models), black and white photographs of the artist at work as well as biographical information. The studio cube, moreover, was located in the centre of a moderately Unbound temporary exhibition space, which was bordered by seven large windows. These windows *visually* Unbound the external walls of the space to views of Wellington city and its harbour. The curatorial experimentation with the potential for layered diaphany is captured in Plate 4.84 below.

Plate 4.84 Layered diaphany, *Journey through For*m, Te Papa Museum

The photograph is taken from inside the white studio cube. It shows an enclosed glass cabinet of Moore's maquettes. Looking through the glass display case, however, the visitor's gaze falls on one of Moore's reclining sculptures who is, in turn, 'looking out' through one of the large windows onto a working container terminal outdoors. The layering that such diaphany materialised was humorously encapsulated in the words of one exhibition reviewer as '*Multiple visugasms*!' (Macnamara, 2002: 4).

Troppo architects, one of Australia's awarded architectural practices, have also developed a 'depth' oriented approach to diaphany, especially in relation to domestic architecture in the tropics where their practice is located. Rather than creating a diaphanous space by using transparent materials, they use two complementary layers of permeable walling. The inner layer often consists of flyscreens or louvres, which the elements can penetrate, while the outer layer is comprised of a vertical plane of vegetation.

The function of the inner layer is to regulate airflow to the interior spaces, while the vegetation constructs the outermost 'walls' of the house. Troppo refer to these external walls as the 'skin' of the building because they function as both a permeable and impermeable membrane. Their impermeability relates to the way they perform as a windbreak, preventing the full force of the wind from impacting on the dwelling. Their permeability, on the other

hand, is concerned with the way they filter the light, air and heat entering the house. The outer walls of vegetation also provide shade, which is most important for cooling a house, especially in the tropics where solar gain is a major challenge. These choices for layering the depth of wall planes are most significant for creating diaphany because they construct visually light walls, yet do not use transparent materials such as glass. Although the house in Plate 4.85 below was designed by Simon Scally, and not Troppo architects, it is based on exactly the same principles and is located in the Northern Territory of Australia.



Plate 4.85 Visual and physical diaphany

*ii) The permanence of the wall enclosure*

The choice of building materials and their layering can therefore make the walls enclosing a space feel either heavy, solid, occluded and Bound or light, open, diaphanous and Unbound. The visual weight of the vertical plane is also affected by the permanence of the wall(s), that is, the degree to which they are fixed versus able to be moved and reconfigured. This dimension relates primarily to internal walls as exterior walls generally, with the exception of large sliding doors, bi-folding doors and multi-folding doors, tend to be firmly in place.

Internal walls can be either *permanent* or *temporary*. Permanent walls are fixed and have the potential for strong Binding as they form solid, fixed, non-movable enclosures that remain firmly in place. This enables them to construct firm enclosures that divide adjoining spaces from one another. Some permanent walls, moreover, are structural which means that, in addition to delineating spaces, they have the important function of physically supporting the

building by transferring the load of the roof to the base plane. The degree to which the spaces they construct feel Bound, however, is not only dependent on the permanence of the wall. It is also dependent on the visual weight and depth of the material used to construct the walling.

*Temporary* internal walls, in contrast, such as sliding screens and movable partitions, are much more mutable in that they can be endlessly positioned and repositioned. Such mutability means that the spaces they construct can be continually reconfigured, especially if the walls are mounted on castors. This means that an interior can be easily amalgamated into one large space or sub-divided into many smaller spaces.

As temporary walls are designed to be movable, they tend to be constructed from materials that are more lightweight than permanent walls. A common example are Japanese rice paper screens. Other popular choices are sliding screens made from plywood or canvas, see Plate 4.86, folding wooden screens or open shelving, see Plate 4.87.
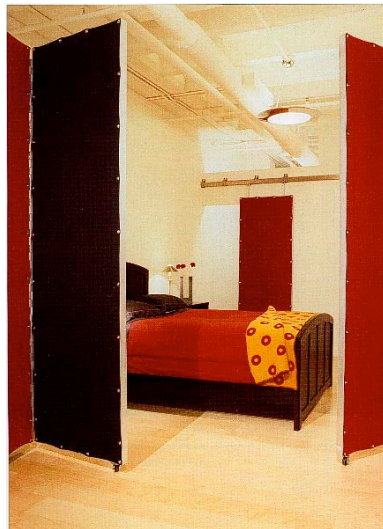


Plate 4.86 Folding screens               Plate 4.87 Open shelves mounted on castors

The main advantage of temporary walls is the way they optimise the fluidity of a space. One of the best examples of a fluid museum interior is provided by the Centre Pompidou in Paris, which was deliberately designed to contain a *minimal* number of fixed internal walls. This

means that the interior is fluid as a multitude of ever-changing spaces can be easily organised by rearranging temporary wall partitions. Such flexibility allows the display of the optimal number of objects from the collection as it caters for both intimately scaled and large-scale works. Intimately scaled works tend to require small and Bound spaces, while large-scale works favour open and expansive spaces. Being able to accommodate both facilitates the constant rotation of the collections. Ontogenetically, it also constructs a dynamic sense of turnover and change for gallery visitors.

This example also shows that it is the co-articulation between the different elements constructing Binding that is crucial. Temporary wall partitions, for example, tend *primarily* to construct spaces that feel light and diaphanous. However, as just discussed, if they are used to construct spaces that are small in size it is likely that the space will feel Bound and firmly enclosed. Moreover, the flexibility afforded by temporary walls allows a varied and changing array of relations and relationships to be constructed between the spaces, the objects and the furnishings they house.

In summary, the visual weight of the vertical plane or how heavy or light the walls make the enclosed space feel is determined by two factors. These are the choice of materials used for constructing the wall and the permanence of the wall enclosure. Thick, opaque and solid materials such as sandstone tend to make enclosed spaces look and feel visually heavy, while lightweight materials, such as glass, tend to create spaces that feel expansive and visually light. The mass and sheer weight of some materials such as stone also tends to construct walls that look and feel heavily weighted, while walls constructed from diaphanous materials such as glass and sheer fabrics tend to be lightweight choices for enclosure. Deep wall planes such as those made from thick blocks of concrete can also make spaces feel visually heavy. Thin walls, in contrast, have the opposite effect by suggesting lightness, transience and temporariness. The depth of a wall plane can be materialised by the layering of vertical planes and these can construct both heavy and light spaces. The lightness or heaviness that results from the co-articulation of these variables impacts strongly on how firmly a space closes in on an occupant or opens up around them. These choices are summarised in Table 4.3

| Vertical plane | Permeability | |
|---|---|---|
| 1. Firmness of the enclosure. | **Occlusion** | **Diaphany** |
| a. <u>The visual weight of the space.</u> | *Visually Heavy Materials.* | *Visually Light Materials.* |
| | Opaque. | Transparent or Semi-transparent. |
| | External walls: brick, concrete, stone such as sand stone, straw bale, mud brick, rammed earth. | External walls: Floor-to-ceiling glass walls, glass louvres, lattice and implied enclosures, eg verandahs, glass walling and perforated metal screens. |
| | Internal walls: concrete, timber, plywood, plasterboard, rendered masonry, padding and upholstery. | Internal walls: clear glass, frosted or etched glass, implied walls (post and lintel), lightweight walling (rice paper, canvas, lattice). |
| | *Depth.* | *Depth.* |
| | Thick materials with mass. | Thin materials with little mass. |
| | Several layers of impermeable walling (Bound/Too Bound). | Several layers of transparent walling or layers of permeable walling: louvres + vegetation; flyscreen + vegetation. |
| | *Permanent walls.* | *Temporary walls.* |
| | Fixed, permanent internal walls. | Temporary internal walls such as sliding screens which can be endlessly reconfigured. |

Table 4.3 Summary of materialisations for the firmness of the wall enclosure

The next section will explore the second sub-cluster of meanings impacting on the firmness of a vertical enclosure, the nature of the spatial envelope constructed by the walls.

**Firmness of the vertical enclosure: the spatial envelope**

The second variable that impacts on how firmly a vertical plane encloses a space is the nature of the spatial envelope. An envelope is an object that literally covers, wraps around, or surrounds, something. The term spatial envelope thus refers to the way walls are constructed to literally 'envelop' a space. Spatial envelopes can either enclose a space firmly or loosely. Firm envelopes tend to construct closed or Bound spaces, while looser envelopes tend to construct more open or Unbound spaces. Closed envelopes thus tend to correlate with occlusion, while open envelopes tend to correlate with diaphany.

The degree of openness or 'closedness' of a spatial envelope is dependent on several inter-related factors:

- the number of walls used to create the enclosure
- the height of the walls
- the extent of the wall span.

Before discussing how these variables materialise the vertical envelope enclosing a space, one important point needs to be established. The following discussion assumes *strong co-articulation* between the materialisation of the spatial envelope and the *visual weight of the materials*. For example, it will be taken as given that *closed* spatial envelopes are constructed from visually heavy and impermeable materials like bricks, concrete or stone, while *open* spatial envelopes are constructed from visually light materials such as glass.

To explain why, the reader should imagine joining four wall planes to create a square-shaped space. The envelope that has been created has the potential to create a firm enclosure — a potential that will only be taken up if the materials used to construct the walls are visually heavy and occluding, such as brick or stone. If the four walls are constructed from a diaphanous material like glass, the firmness of the enclosure will be diminished and the spatial envelope will feel open. As discussed previously, diaphanous walls tend to construct open envelopes that blend into their surroundings because the boundaries between spaces become

obscure and tenuous. The openness of spatial envelopes is also determined by other factors, which will be discussed in the following sections.

*i) The number of wall(s) enclosing the space*

**Closed spatial envelopes: organic or angular shapes**

The strongest choice for firm enclosure involves the construction of a spatial envelope that completely 'wraps around' the occupant of a space. There are essentially two ways of doing this: either using a single wall plane or using three or more walls that are joined together. A single wall constructs an organically shaped envelope, while three or more walls construct an angular envelope. Organic and angular shapes, in turn, create different meanings. According to Kress and van Leeuwen (1996), angularity is aligned with the mechanical, technological world, while curved forms tend to be associated with nature and organic shapes.

The angular or organic shape of the envelope constructed by vertical planes is very important for security. If a space is square in shape, for example, it will have a static feel, that is, it will feel like a space to 'be' in. According to Ching (1996: 43), the reason for this is that cubes form static spaces because of the equality of their dimensions — they are bounded by six planes that are equal and this gives them stability and equilibrium.

Rectangles, on the other hand, are elongated squares. This elongation gives them a strongly directional quality and makes them spaces to move through. Spaces that are elongated horizontally encourage movement because their longer sides form a vector, especially if the far end of the rectangle is open and strongly lit.[30] Light at the end of a long space carries a

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[30] Kress and van Leeuwen (1996) suggest that horizontal elongation also impacts on textual meanings to do with Given and New in a rectangle. Shapes that lean to the left, for example, lean to the Given, the familiar, while shapes that lean to the right lean to the New. This has particular relevance to the work of post-modern architects such as Frank Gehry who experiments with the notion of movement in relation to buildings through literal animation, for instance, cladding a building in titanium panels that are designed to flutter in the wind. Gehry also explores the notion of material movement, buildings that feel as though they are moving in the way that fish move. According to Gehry once architecture begins to move, 'it begs the question of directionality' (1999: 36).

strong sense of telos in that people feel compelled to move towards it in much the same way that moths are drawn to a flame.[31]

Circles, on the other hand, are closed curves. All points of the curve are the same distance from the centre. This equidistance makes a circular space feel centralised, self-centring and stable (Ching, 1996: 39). It also means that the space provides a continuous and uninterrupted sense of enclosure that is not only complete but feels 'womb-like' in nature (Kress and van Leeuwen, 1996). Having briefly discussed the impact of shapes on feelings of security in a space, let us now move on to consider how the *number* of wall planes can construct spatial envelopes that are organically or angularly shaped.

Spatial envelopes that surround a space completely with *a single vertical plane* can construct a variety of organic shapes. Frank Lloyd Wright's spherical design for the Solomon R Guggenheim Museum in Fifth Avenue, New York, for example, broke from conventional museum design. Instead of designing the museum as a complex of rectilinear spaces that unfold horizontally, Wright used a single wall plane to create an organic and unbroken spiral which vertically and seamlessly surrounds a ground-level courtyard, see Plate 4.88.

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[31] The impact of light on the ways people move through space was discussed at a *Museums: place, space and design* seminar by Haylee Galic, Project Director, Bergent Marketing Intelligence (2003). Bergent have conducted observational studies of how people move through stores over a period of several years and found that strong lighting is a powerful way of drawing people of all ages, genders and backgrounds into different parts of a store, especially the rear sections. This indicates that light also has the potential to create strong textual meanings. In relation to the semiosis of space, it appears to have strong potential for foregrounding a space. This would align its meaning-making potential with the compositional system of salience in Kress and van Leeuwen's Grammar of Visual Design (1996).
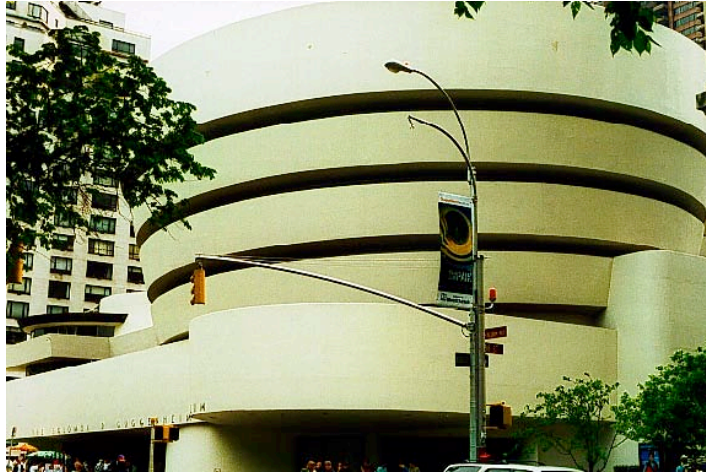
Plate 4.88 A spherical enclosure, Fifth Avenue Guggenheim Museum, New York

The construction of a closed spatial envelope with a single vertical plane could also enclose other organic shapes such an ovals or ellipses. These shapes are a common choice for large sporting stadiums, see Plate 4.89, and their predecessors, the amphitheatres of Antiquity. The Colosseum, for example, built in 70 AD, is shaped as an ellipse and enclosed by a single three-tier wall of columns.
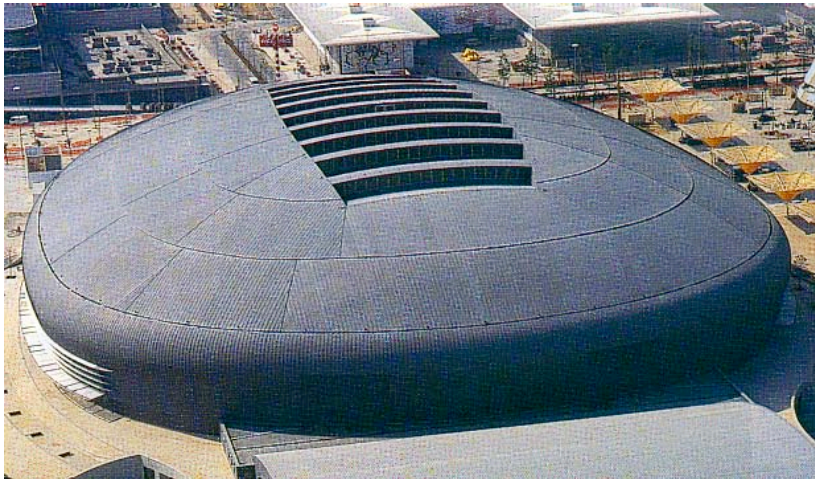


Plate 4.89 An oval sporting stadium

The construction of organically shaped spaces using a single vertical plane was made possible by the Roman invention of concrete.[32] Without such a malleable and 'plastic' building material, the construction of the Colosseum would not have been possible. The same can be said of Frank Lloyd Wright's Solomon R Guggenheim Museum. The relationship between the material(s) used to construct a wall plane and the firmness of enclosure felt inside a space is thus an extremely important one. Built spaces that are organically shaped require pliable materials such as mud bricks, metal and reinforced concrete. Pliable materials are malleable — supple, flexible and easily bent. These qualities enable them to be shaped to construct curved walls. Their malleability thus frees built spaces from the constraints of rectilinear 'block' building and opens up a new potential for constructing three-dimensional spatial envelopes.

Other examples of closed spatial envelopes formed by a single and totally enclosing vertical plane can also be found. These include cylindrically shaped spaces such as silos, or conically shaped spaces, such as the Conical Tower in Great Zimbabwe built somewhere in the period between the 11[th] and16[th] centuries, see Plate 4.90.

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[32] Concrete is a mortar mixed with small stones to produce a hard mass (Collins, 1959). It was first developed by the Ancient Romans, but Roman concrete was different to the concrete used presently as it had to be laid in courses because it dried out quickly. It was also weak, or more technically, strong in compression but weak in tension. In the 19[th] century, moreover, the quality of concrete substantially improved when steel mesh or rods began to be inserted. These substantially reinforced the strength of the concrete, hence the name, 'reinforced concrete'. Such reinforced strength combined with qualities of fire resistance and malleability made reinforced concrete a popular choice of material for constructing many buildings including skyscrapers.

Plate 4.90 The Conical Tower, Great Zimbabwe

In the examples discussed so far, not only has a single vertical plane been used to construct the spatial envelope, but each space, with the exception of the sporting stadium, also has a distinct wall and roof. Not all spaces, however, are constructed from discrete horizontal and vertical planes. In some organically shaped spaces, both built and natural, the two planes fuse and the enclosure provided by such fusion is, for the most part, complete. This can be seen inside caves and tunnels, see Plate 4.91, the igloos of Greenland and northern Canada, Native American tee pees or wigwams, Bedouin tents and circular Mongolian yurts or gers. In western architecture, moreover, built spaces characterised by vertical and horizontal fusion have their genesis in two Roman architectural innovations: the semi-circular arch and the barrel vault (van der Meer and Sudjic, 1997). A barrel vault is an arched overhead plane.



Plate 4.91 Pedestrian tunnel, New York

Closed spatial envelopes that create firm enclosures can also be formed by the junction of *three, four or five* vertical wall planes. However, the shapes of the spaces they construct are generally characterised by angularity. Four vertical planes with triangular faces, for instance, can be joined to a polygonal base to create a pyramid. Depending on the choice of material used to articulate the wall planes of a pyramid, spatial envelopes such as these tend to construct occluded spaces that feel Bound, perhaps even Too Bound, for some people. The most notable example of such spaces are the Pyramids of Cheops at Giza, Egypt[33].

Closed spatial envelopes are also formed when *four* opaque wall planes, with square or rectangular faces, are joined. The shape of the envelope in this instance is that of a square or rectangle, respectively. As it is almost impossible to photograph all four of the wall planes constructing such a Bound space, especially if the space is made from impermeable materials and an occluded ceiling, the strength of such enclosure will be demonstrated using the illustration in Figure 4.11.
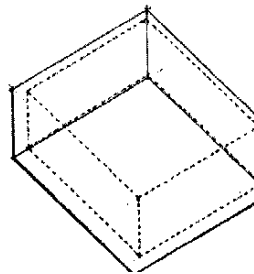


Figure 4.11 Bound space with four totally enclosing walls (Ching, 1996: 157)

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[33] Once again, it is possible to use the spatial envelope that materialises a pyramid to construct a freer sense of enclosure, if the material used to articulate the wall plane is diaphanous and visually light such as glass. An example of an Unbound spatial envelope of this type would be the 70-foot (or 21.34 metre) Glass Pyramid at the centre of the Cour Napoleon at the Louvre in Paris. Designed by the world renowned architect IM Pei and constructed from an aluminium frame clad with transparent glass walling, it has given the Louvre an Unbound and light-filled entrance space. The importance that the choice of building material plays in constructing such an open and diaphanous envelope is further highlighted by the fact that both the shape of the spatial envelope and its proportions were based on the pyramids of Giza. The choice of glass as a building material is thus instrumental in materialising the openness of the Glass Pyramid, in stark contrast with the permanence and stability evoked by the use of stone as the primary building material for the ancient Egyptian pyramids.

Similarly*, three* impermeable wall planes with rectangular or square faces can construct a rectilinear or square spatial envelope that feels closed, albeit partially. Three wall planes actually combine to form a 'U' shaped envelope as illustrated in Plate 4.92. This space has one closed end which houses an installation. This end also contains two corners. The opposite end of the space, in contrast, is open. This openness is important as it mitigates against the firmness of the spatial enclosure felt at the far end of the space.



Plate 4.92 A 'U'-shaped space, Kunsthaus, Zurich

Depending on the other choices for materialisation, the open end of the 'U' shaped envelope has the potential to allow the space to feel moderately Bound while at the same time allowing some degree of physical connection with the spaces adjoining it[34]. From a Textual point of view, the open end of the space allows visitors to move freely into and out of the enclosure and dispenses with the need for doors, an important consideration for designing museum spaces as the ease of visitor flow is of paramount importance to the way spaces are organised.

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[34] As discussed in section 4.2.3 on the base plane, the visual continuity between an internal space and the spaces adjoining it can be visually emphasised through the use of the same flooring material. Although this choice for co-articulation falls within the textual metafunction, there is clearly inter-functional overlap here for as we have already seen, such visual cohesion makes the space feel more Unbound. Furthermore, in relation to this particular space, the rear plane, that is, the closed end of the spatial envelope, also creates textual meanings. In Kress and van Leeuwen's terms (1996), it is the salient plane or the focal point of the space.

**Open spatial envelopes**

The focus of the discussion will now shift to consider how more open, more fluid and less firmly enclosed spatial envelopes can be created. With respect of external walls, the construction of an open spatial envelope is dependent on the choice of diaphanous materials, as indicated in Section 4.2.4.2a (sub-section (i) The materials). Internal walls, on the other hand, can be combined to construct an open spatial envelope if only one or two impermeable wall planes are used[35].

Open spatial envelopes can be formed by combining *two* vertical linear planes. These form an 'L'-shaped envelope. 'L'-shaped spaces are *most strongly enclosed* at the *corner* where the two wall planes meet. The firmness of the enclosure tends to dissipate towards the outer edges of both walls, see Plate 4.93. To strengthen the enclosure and make it feel firmer, the two planes which are missing from the 'L'-shape can be *implied*, either by the use of vertical beams or a strongly defined overhead plane such as a dropped ceiling. In Plate 4.93 from the Children's section of the Melbourne Museum, we can see another option for suggesting vertical enclosure: the use of a strongly defined base plane. As discussed in Section 4.2.3, a change of flooring — in this instance from hard, polished grey concrete to a plush and resilient deep purple rug — has the potential to imply enclosure.

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[35] The materialisation of an internal space with an open envelope is made complex because such spaces are frequently referred to as 'open plan,' meaning they are open, fluid and unenclosed areas that seamlessly flow into one another. As discussed in Section 4.2.3, often the visual organisation of the areas in an open-plan space is defined by the furnishings and changes to the flooring rather than vertical wall enclosures.
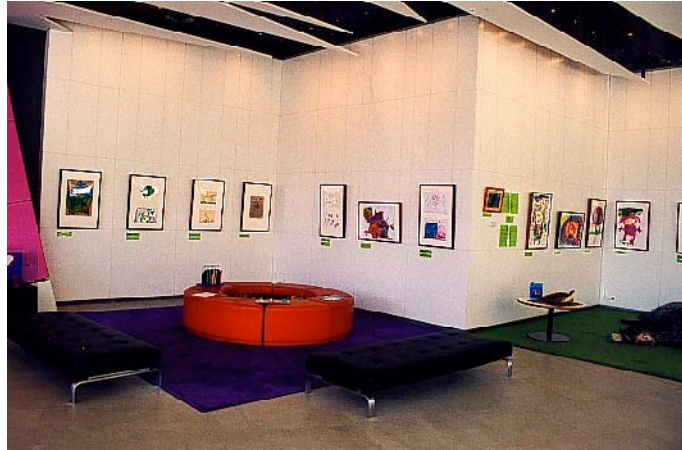
Plate 4.93 An 'L'-shaped enclosure, Children's Museum, Museum of Melbourne

We have just seen how the use of two enclosing planes offers the potential for constructing a spatial envelope that can be made to feel open to varying degrees. Exhibition designers utilise this concept often, especially in large galleries. In Plate 4.94 below, for example, we can see how the partial wall plane on the right functions to create two adjoining 'L'-shaped spaces, each with a protected corner — a safe, minimally Unbound zone within a larger gallery space from which the works on display can be viewed safely and without too much distraction.



Plate 4.94 Exhibition space, Kunsthaus, Zurich

Single wall planes with square or rectangular faces are the optimal choice for creating an open and loosely enclosed envelope. The use of a single wall tends to create an Unbound space because it can only delineate one vertical edge of an enclosure. Thus, a single linear wall or a

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curved arc, do not have the capacity to 'wrap' around a space. This inability to physically envelop a space gives it the potential to create an optimally open and loose enclosure. If the single vertical plane is freestanding, that is, unattached to a wall or ceiling, it will divide a volume of space into two separate but related zones. In this way it is able to partially segment an open plan area into distinct spaces but cannot form a complete enclosure. Consequently, areas constructed by single wall planes tend to remain merged to some extent with one another as can be seen in Plate 4.95.
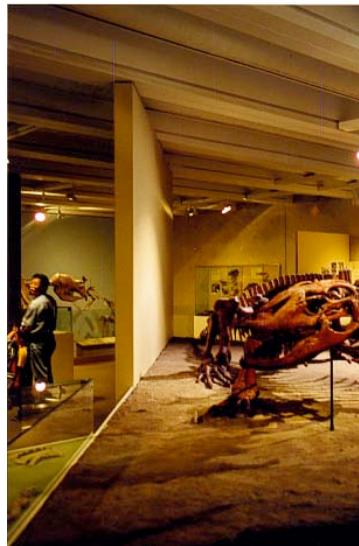


Plate 4.95 Single wall planes and open envelopes, Queensland Museum

Furthermore, if the single wall is linear, it will tend to divide the space into angular shapes. If it is a curved arc, on the other hand, it will create a space that feels organic in shape.

**Spatial envelopes: corners and angles**

In relation to the firmness of enclosure experienced in the angular versus the curved spatial envelope, there is a marked difference in terms of corners. Angular shapes construct clearly defined corners, while the arc of a rounded wall smoothens them out. Corners are created at the junction where two vertical planes meet. They have important implications for comfort

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and security in angular spaces, for as already discussed in relation to 'L'-shaped spatial envelopes, they are instrumental in providing enclosure. In fact, corners restrict open spaces by physically and visually enveloping around occupants and in this way function to provide them with a sense of protection, see Plate 4.96.



Plate 4.96 The protection of a corner, Queensland Art Gallery

Environmental psychologist Anita Rui Olds (1990) highlights the importance of the protection afforded by corners for making people feel secure:

Most spaces have a zone (usually a corner) that is recognisably more protected than all other points in the room. It is there that you will find the teacher's or doctor's desk, dad's favourite chair, and storage for precious items. People instinctively gravitate to a protected zone and like to stay there. Activities requiring a willingness to sit still and concentrate work best when placed in this location.

(Rui Olds, 1990: 79)

The other dimension of corners strongly related to both security and the firmness of enclosure in a spatial envelope concerns their angle. In Euclidean geometry, an angle is a figure formed

by two rays with the same end point. The size of the angle that is formed is measured in degrees. There are three main types of angles: right angles, acute angles and obtuse angles. A right angle is formed when the rays create a square corner with an angle of 90 degrees, and for most people, right-angled corners are the unmarked choice for security and firm enclosure.

An acute angle measures less than 90 degrees, while an obtuse angle measures between 90 and 180 degrees. In terms of enclosure, acute angles tend to be more Binding as corners measuring less than 90 degrees create more closed and compressed spatial envelopes, see Plate 4.97. Conversely, as shown in Plate 4.98, corners that create obtuse angles have the potential to be Unbinding as the spatial envelope they form is considerably more open and expansive (bearing in the mind that the reverse side of an obtusely angled space will be a space with an acute angle).



Plate 4.97 Acute-angled corner      Plate 4.98 Obtuse-angled corner

Thus, in considering the shape and number of wall planes that construct a spatial envelope, the examples discussed have shown how they can vary from one to more than four and that the envelopes they construct can be either angular or organic in shape, depending on the pliability of the materials from which they have been constructed. The discussion has also considered how angular spaces have corners, which tend to provide a firm sense of enclosure, while the curved plane in organic spaces provides a continuous and uninterrupted sense of enclosure.

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Finally, the angle of a corner also impacts on the firmness of the enclosure. The unmarked choice is the perpendicular angle, the most enclosing choice is the acute angle and the least enclosing is the obtuse angle.

*ii) Height of the walls*

Another important element in constructing a spatial envelope is the height of the walls. Most walls, especially external, permanent and structural walls, stretch from the floor to the overhead plane. Internal walls, however, can vary in their height. According to Ching (1996: 131), 'the height of a vertical plane relative to our body height and eye level is the critical factor that affects the ability of the plane to visually describe a space'. This means that walls that stretch to the ceiling plane tend to construct firmer spatial envelopes and a firmer sense of Binding because they occlude visual and spatial continuity between spaces. In doing so, they have the potential to create stronger feelings of enclosure, see Plate 4.99.



Plate 4.99 Floor-to-ceiling height walls, Queensland Art Gallery, Brisbane

To emphasise the strength of the spatial envelope, cornices may be used at the junction between the wall and ceiling planes. They function to further visually and physically reinforce the firmness of the envelope.

The firmness of the spatial envelope, however, may be diminished if there is a gap between the wall and the ceiling plane. Walls can be suspended from the ceiling with wire, for example, in ways that makes them appear to hover just below the overhead plane. Such suspension also allows light to spill over the top of the wall into the adjoining space and in this way diminishes the strength of the occlusion. As a result, walls with height which has been reduced in this way tend to create moderately rather than strongly Bound spatial envelopes as demonstrated in Plate 4.100.



Plate 4.100 Reduced height wall planes, Children's Discovery Area, Boston Museum of Science, Boston

Walls that approach eye-level further reduce the firmness of enclosure created by the spatial envelope, see Plate 4.101. If they are constructed from impermeable materials, they may still be able to occlude a space but the firmness of the spatial envelope they construct has been considerably loosened. Even though they are still able, albeit to a lesser extent, to physically and visually separate the space they enclose from adjoining spaces, their reduction in height means they tend to create less firmly enclosed spatial envelopes that feel moderately to minimally Bound.

Plate 4.101 Eye-level wall planes, *Forest* gallery, Museum of Melbourne

To create even looser spatial envelopes that have the potential to feel Unbound, the height of the vertical plane needs to be further reduced. Walls that create more open envelopes thus stretch to a height that enables visual, and to some extent physical, continuity between adjoining spaces. Waist-high walls, for instance, provide a moderate physical sense of separation while maintaining visual continuity with adjoining spaces, see Plate 4.102. This makes them a potentially Unbinding choice, especially if they are made from a transparent walling material.



Plate 4.102 Waist-high walls, City Exhibition Space, Customs House, Sydney

Decreasing the height of the wall plane further constructs a spatial envelope that is even more open. Walls that are about two feet high, for example, tend to be strongly Unbinding as they define the edge of a space but provide little physical or visual sense of enclosure, see Plate 4.103. This makes them more akin to implied planes.



Plate 4.103 Low-level walls, *Forest* gallery, Museum of Melbourne

From the point of view of interpersonal meanings, the height of the wall plane affects more than just the strength of the materialisation of a spatial envelope — it also impacts on the types of social interaction that are possible in a space. Walls that are more than six feet in height, for example, create visual privacy by exclusion. This creates strongly enclosed spaces and diminishes the potential for social interaction except by personal invitation into the space. Walls that stretch between five to six feet tend to create more 'neighbourly' enclosures as many adults can 'peep' over such heights if they wish. Waist-high walls, on the other hand, create sociable and communal spaces where it is difficult not to engage in social interaction given the high degree of visual and physical connection between people in adjacent spaces. Similarly, even though they function as boundary markers, low walls that people can jump over, such as the fences in many people's front yards, have the potential to facilitate strong interaction between neighbouring spaces and their occupants. In a similar but less direct way, *implied* boundaries can be suggested by lines drawn onto floor planes. In institutional spaces, examples are provided by the lines drawn on the floor in front of artworks in a gallery or the check-in counters at airports.

*iii) Horizontal span of the wall(s)*

The third and final variable constructing a spatial envelope is the horizontal span of the wall plane(s). A wall that spans from one end to the other separates adjoining spaces into discrete entities and tends to construct a closed envelope as shown in Plate 4.104. By stretching from one vertical plane to another, the far wall in Plate 4.104 is able to join the adjacent vertical planes. The resulting junction leads to the creation of firm corners and a closed spatial envelope with a strong sense of enclosure.



Plate 4.104 A wall plane spanning from one end to the other, Queensland Art Gallery

Freestanding walls that do not span the entire width of a space tend to construct more open spatial envelopes. This is perhaps best illustrated in relation to the width of the two walls shown in Plate 4.105. The span of the wall in the top space, for example, is instrumental in creating a much firmer envelope than the span of the wall in the lower space.

Plate 4.105 The impact of different wall spans, Queensland Art Gallery

Thus, freestanding walls, depending on the width of their span, can also create either a firm or loose envelope.

In summary, the degree of openness or enclosure felt inside a spatial envelope is dependent on several factors: the shape and number walls used to create an enclosure, the height of these walls and their span. Walls that do not stretch from the floor to the ceiling plane diminish the feeling of enclosure in a space, especially if they do not approach eye level. Conversely vertical planes that stretch from one wall to another and join to create firm corners tend to construct a strong feeling of spatial enclosure. The choices for materialising a spatial envelope are summarised in Table 4.4 below.

| Vertical plane | | Permeability |
|---|---|---|
| 1. Firmness of the enclosure continued. | **Occlusion** | **Diaphany** |
| b. The spatial envelope. | *A Closed envelope.* | *An Open envelope.* |
| | One solid and opaque wall face creates a Bound enclosure, eg | One, two, three + transparent faces. |
| | | Three or four transparent wall faces (eg green house). |
| | — round | |
| | | Two opaque wall faces and two transparent wall faces (eg glass corner wall). |
| | — oval shaped (sporting stadium or amphitheatre) | |
| | | Three solid, opaque wall faces and one transparent wall looking out to a vista (eg picture wall). |
| | — cylindrical (silo)/conical | |
| | — fused wall/overhead plane (tunnel). | Two internal wall planes creates an 'L'-shaped enclosure. |
| | Three, Four, Five + faces: | One opaque internal wall divides a single volume into two. |
| | Four opaque and solid wall planes: creates a Bound pyramid/cube/rectangle. | Suggested enclosures. |
| | | Four vertical columns define the perpendicular edges of an Unbound space. |
| | Three opaque and solid wall planes creates a Bound pyramid or an 'U'-shaped enclosure. | Four vertical elements with horizontal beams suggest an overhead plane. |
| | | Four vertical elements with a solid overhead plane. |
| | *Height of the wall plane.* | *Height of the wall plane.* |

| | |
|---|---|
| Floor-to-ceiling: the three planes meet and form corners (Bound). | Waist-high: facilitates strong physical and visual continuity between adjoining spaces (moderately Unbound). |
| To emphasise the strength of the junction cornices may be used (strongly Bound). | Low walls: define the edge of a space but provide little physical or visual enclosure (minimally Unbound). |
| Floor-to-below-ceiling: an opening below the ceiling plane allows light to spill over into the space and diminishes the firmness of the enclosure (min-mod Bound). | |
| Floor-to-eye level: still able to physically and visually separate a space (minimally Bound). | |
| *Span.* | *Span.* |
| Complete: Wall-to-wall — the wall planes meet at the corners and the junction is strong or a single vertical plane can create one uninterrupted surface (Bound). | Partial: there may be a space at one or both sides diminishing the firmness of the enclosure (Unbound). |

Table 4.4 Summary of choices for materialising a spatial envelope

**Firmness of the vertical enclosure: filtering**

The third and final sub-cluster of meanings materialising the firmness of vertical enclosures concerns the degree to which the walls filter the penetration of the elements via openings such as windows and doors. Windows function as apertures allowing the passage of air and light into a space, while doors allow people to pass from one space to another. Openings that construct firm vertical enclosures tend to screen out air and light, while those that construct looser, more open enclosures allow the elements to penetrate a space. Thus, walls designed to strongly filter out the elements tend to evoke the Bound dimension of the Binding scale, whereas walls designed to weakly filter the elements by encouraging air and light exchange tend to correlate with feelings of Unboundedness.

*i) Strong filtering: screening air and light*

Walls that are designed to screen or prevent air and light from penetrating through them contain openings that function as strong filters. Strong filters construct Bound spaces by 'blocking out' the elements and this diminishes the amount of light and fresh air that can enter a space. Strong filtration is thus the result of several material choices: the use of impermeable walling or cladding materials, small windows, solid doors and the addition of supplementary layers of filtering in the form of blinds, curtains and/or shutters.

The choice of material for constructing a wall also has a strong impact on filtration. In the earlier section of this chapter on the way the choice of building materials constructs spaces that feel either visually heavy or light, there was a discussion about how walls that feel heavy tend to be constructed from opaque and impermeable materials such as stone, bricks, concrete blocks, timber, compressed straw or mud bricks. Impermeable materials like these function as strong filters as it is difficult, if not impossible, for air or light to penetrate them.

It is highly unlikely, however, that an enclosed space made from impermeable walling will be hermetically sealed. Very few spaces, even firmly enclosed spaces, are comprised of totally

sealed vertical planes, with the exception, perhaps, of cells constructed for solitary confinement. Almost all spaces have openings such as windows[36] which allow air, light and even solar radiation to penetrate in order to ventilate them and provide some degree of natural illumination. Depending on the orientation of a space to the sun, window openings can be designed to allow the sun's rays to pass through them and warm the interior.

In walls designed to filter out the elements, window openings tend to be small and few in number. This is particularly common in cold climates for it minimises heat loss. Heat loss is further buffered by the installation of additional layers of permeability over the windows via shutters, blinds and heavily lined curtains. These act as an additional defence against the harshness of climactic conditions and also provide the occupants of a space with visual privacy.

In strongly filtered spaces, doors too, tend to be made from heavy, thick, solid and impermeable materials. Despite the existence of some openings, choices for visual and physical impermeability in such spaces are strong. The screening out of air and light also means that such strongly Bound spaces tend to rely heavily on artificial means for illumination, heating and cooling.[37]

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[36] Early windows were little more than incisions in a wall plane. As glass was not available, hinged shutters, made of woven twigs or wood, were used to cover these openings. Most windows today, however, are made of glass which is held in place by wood or metal frames. There are many different types of windows, the most common being: casement, sash, double-sash, French and sliding windows. Casement windows open inwards or outwards. Sash windows slide up and down and first became available in the sixteenth century when they were held in place by pegs. Double-sash windows developed later when cords and counter balancing weights replaced pegs, while French windows first appeared in the 1680s in Versailles. French windows are essentially casement windows that extend down to the floor plane and open like doors. As a result of the overlap in their function, the terms 'French windows' and 'French doors' tend to be used synonymously. Metal windows, on the other hand, are designed to slide and increasingly tend to be double-glazed for thermal comfort.

[37] The main method of cooling a space by artificial means is air conditioning. However, this can place an enormous strain on the supply of electricity. In NSW, for example, a report by the Electricity Market Management company, released on 31 July, 2003, predicts widespread power blackouts in the summer of 2005 because the generation of state electricity cannot meet the surging demand created by the widespread use of appliances, especially air conditioners, during hot Australian summers. According to the report, this situation has generated a ten billion dollar problem for the State government. The alternative would be to design houses in such a way that they optimise the filtering of air by cross-ventilation, the provision of shade from the sun and the use of other design options for natural cooling.

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*ii) Weak filtering: allowing a space to 'breathe'*

Walls can also be designed as weak filters that allow light, air, heat and the other elements to pass through them. There are essentially two choices for weak filtration: walls can be designed to allow only the penetration of *light* or they can allow the penetration of *light* in combination with *air* or *heat,* or *both.* As discussed in Section 4.2.4.1b on security, the penetration of *light only* constructs a *visually* Unbound space that is connected to a vista but feels cocooned because it excludes all of the elements except light. The penetration of *light, air and/or heat,* on the other hand, enables a space to be both *visually and physically* Unbound. This means it creates a strongly diaphanous space with a loose sense of enclosure because it enables more than two material levels of connection with the external environment: a visual connection as well as a physical one established through the exchange of air and/or heat. The extent to which walls, and wall openings, can function as weak filters is determined by the following: the material used to construct the walls and window/door openings, the size of these openings and whether or not they can be opened.

**Window openings**

Windows that function as weak filters can create *visually diaphanous* spaces by allowing light exchange only and filtering out air, wind and rain. Visual diaphany is achieved by the installation of windows made from panes of glass that do not open because they are *fixed*. There are many different types of fixed windows: window walls, clerestory windows (windows located at the very top of a wall) or slot windows. The degree to which fixed windows are able to lessen the firmness of a vertical enclosure by optimising natural illumination is largely dependent on their size.

The most Unbinding choice in terms of *visual* diaphany is the 'window wall' also known as the picture wall or curtain wall, see Plate 4.106. Window walls first became a choice for wall

openings towards the end of the nineteenth century.[38] At that time, glass and steel-making advanced to the point that it was possible to make panes of glass large enough to be able to dissolve whole walls with their size. Such glass curtain walls became extremely popular choices for buildings such as skyscrapers.[39] However, as fixed window walls do not allow for natural air exchange, they tend to construct sealed buildings which rely on artificial heating and air conditioning systems for air circulation and thermal comfort. This means that over time stale air is both trapped inside such buildings and continuously recycled. The consequences of this for health can be serious, with some architects referring to it as 'sick building' syndrome (Pearson, 1998). Given the health implications of this syndrome, innovative architects are now designing skyscrapers with walls that allow air to be continually refreshed.



Plate 4.106 *Visual* diaphany and the window wall, Temple of Dendur, New York

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[38] During the 1830s, glass-making technology limited the size of windows to up to 1m x 1.3m, or 3 x 4 feet (Slessor, 2001).

[39] The strong levels of visual diaphany facilitated by the use of window walls not only increases the permeability of a space in relation to light — it also allows the space to connect to outdoor views. The benefits of this are that people in the space can look out onto vistas. The drawback, however, especially for ground-floor urban spaces, is that people passing by can look into the space. This degree of exposure makes some occupants feel vulnerable. To provide them with a sense of visual privacy, architects are using glass panels with patterns etched onto them, especially at eye level. These partially screen the space and yet preserve its strong visual diaphany.

Clerestory windows are another choice for weak filtering and *visual* diaphany. They are fixed glass openings located at the top of a wall and directly below the ceiling. They are less Unbinding than window walls because they are smaller in size and located high in a space. They nevertheless function to give diaphany to a space by allowing shafts of natural light to enter the interior at different times of the day, see Plate 4.107. This dappled sunlight creates pools of light on the floor in much the same way that tree branches allow the same on the ground. In some spaces, the light is able to spread to the corners, reducing shadows and increasing the visual lightness of the enclosure. The lightness of clerestory windows also diminishes the weight of a structural overhead plane. As a consequence, ceiling planes in spaces enclosed by clerestory windows often appear to 'float'. Clerestory windows also enable the space to connect to the outdoors by providing glimpses of the sky and the upper branches of tall trees.[40] The height of clerestory windows means it is difficult to design them to open.



Plate 4.107 Clerestory windows, Metropolitan Museum of Art, New York

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[40] There is another important interpersonal benefit from the height of the clerestory window in that it ensures the visual privacy of occupants. This is an important concern especially for domestic dwellings located in densely populated urban areas.

Clusters of multiple openings such as the narrow glass slots in Plate 4.108 below are another choice for fixed glass openings. They allow shafts or scattered beams of natural light to enter a space. The strength of their filtering and the level of natural illumination they facilitate, however, depends on the size, number and location of these windows.



Plate 4.108 Slot windows, Federation Square, Melbourne

Fixed slot glass windows are becoming a popular choice in contemporary museum architecture as evident in Daniel Libeskind's Jewish Museum in Berlin and Federation Square in Melbourne. They break new ground in window design in that they are neither horizontally nor vertically oriented.[41]

Most window openings, however, are designed to allow both *visual and physical* diaphany, that is, the exchange of both light and air. This is achieved by using movable windows, which open either inwards or outwards (casement windows), upwards or downwards (double-hung sash windows) or from side to side (sliding windows). These choices are important as they allow adjustable filtering. Thus, both fresh air and natural light can penetrate an enclosed space when they are open (weak filtering). However, when they are closed, they shield and protect a space (strong filtering). As discussed in relation to fixed windows, the extent to

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[41] In terms of breaking new ground in window design, Daniel Libeskind's slot windows in the Jewish Museum in Berlin subvert the notion of window openings further by not following floor levels. Thus, one slot window can function to illuminate two adjacent vertical spaces: the space below and the space directly above it.

which movable windows lessen the firmness of vertical enclosure when they are open is strongly dependent on their size.

In addition to being able to be opened and closed, window openings that function as weak filters tend to be characterised by the absence of shutters, blinds and heavily lined curtains. The reason is that shutters, blinds and curtains reduce permeability and diaphany and obstruct views of valued panoramas. The climate and orientation of the space to the sun, however, may require the use of sun shading devices in order to ensure thermal comfort. Thus, windows may be deeply recessed into thick walls or deep shade may be provided by roof overhangs, eaves and verandahs which protect the windows when the sun is high. If the overhead plane is designed well, when the winter sun is lower in the sky it may still be possible for sunlight to enter the living areas and warm the spaces naturally. Whatever the choices for designing window openings, thermal comfort cannot be overlooked.

**Morphing: dissolving the boundary between windows and doors**

The first substantial shift towards increasing the *visual and physical* diaphany of a space in western architecture occurred when the boundary separating windows and doors was morphed or dissolved. This occurred with the advent of the French window. French windows are inward/outward opening windows that extend down to the floor. The length of the opening is crucial as it allows the window to function as a door. French windows first appeared in Versailles in the 1680s and are a strong choice for Unbinding. When French windows are open, for example, they erode the firmness of a vertical enclosure to the point that internal and external spaces merge.[42] This enables the window to simultaneously facilitate light and air exchange as well as allowing people to pass easily from the interior to the exterior.

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[42] James Broadbent (2001), an eminent Australian architectural historian, has noted that French doors were first introduced to Australia in 1816 by government architect Francis Greenway, but were rarely used. During the 1830s, however, their popularity in Great Britain increased and this influenced Australian architectural trends to the extent that they became popular in Australia too, especially in NSW. In NSW they enabled rooms to open onto large verandahs, which often swept around the entire house. This also meant that French windows functioned together with verandahs to construct an intermediary space — one that bridged between the indoors and the outdoors. Significantly, this represented a major step towards Unbinding in the phylogenesis of domestic Australian architecture in the south of the continent. Prior to this, the function of the verandah was that of a barrier separating the interior spaces of a house from the environment outside. The potential of French windows for Unbinding has thus been immense in some parts of the Australian continent.

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Significantly, French windows are the precursors of many current techniques to Unbind walls by increasing the penetration of light and air into a space.

Doors are filters that function to allow people to pass from one space to another. When they are open, they allow for the movement of people and air exchange; when they are closed, they prevent both. As with movable windows, the ability to open and close gives them the capacity to protect a space when the weather is inclement and expose it to natural light and the sun when the weather is fine. Visual diaphany, in relation to doors, means that the door must be made from a transparent material such as glass. Opaque materials such as wood, in contrast, are a strong choice for occlusion as they filter out both light and views. Blocking views in this way not only constructs a firmer sense of spatial enclosure, it also prevents people from looking into/out of a space and in this way enhances visual privacy. In many contemporary homes, it is not uncommon for living areas to have large glass sliding doors while the Bound private areas such as bedrooms often have opaque doors.

The potential to create walls that function as weak filters was considerably enhanced by the introduction of glass sliding doors. These were first introduced to Australia in the 1950s by Modernist architects such as Harry Seidler, Ken Woolley and Sydney Ancher. Seidler, for example, extended the boundaries of *visual and physical* diaphany by using glass sliding doors that stretched from floor to ceiling. Designed to slide on ball bearings, the significance of these doors was that they actually morphed or dissolved entire wall planes. In other words, the door became the wall, and when the door was open, the elements were able to penetrate the interior to such a degree that indoor–outdoor living spaces merged for the first time in Australian domestic architecture (Andersons, 2002).

In fact, dissolving the permeability of a wall by constructing a vertical plane that is *physically* as well as *visually* diaphanous was one of the major innovations of Modernism. Contemporary choices for constructing visually and physically diaphanous door/wall openings include bi-folding and multi-folding glass doors and a more recent innovation — walls that have been designed to flip upwards and lie flat against the ceiling, see Plate 4.109. All these choices

strongly dissolve the boundary between interior and exterior as they open the entire space to the elements to such an extent that the interior and exterior meld into one.



Plate 4.109 *Visual and physical* diaphany — a lift-up wall panel

Such optimal choices for Unbinding mean that *visually and physically* diaphanous walls become so weak as filters that they can allow all of the elements to penetrate the interior — light, air, sun, wind, and even rain and hail. Some contemporary architects have therefore focused on ways of allowing the occupants of the space more *control* over the filtering of the elements.

> Planning buildings, locating them, letting the sun in, excluding the sun, letting the wind in, excluding the rain, enjoying the weather, knowing if it's a fine day, a windy day, a wet day, a cold day, while you are being protected against the elements. I enjoy the building breathing and letting the cool air pass through the house, and over me, as though the house were a filter between myself and the outside.

> (Murcutt cited in Drew, 1999: 78)

Control over filtering enables the occupant to focus on which elements to include, and which to exclude, at different times of the day and different seasons of the year. In the quotation above, Glenn Murcutt uses the metaphor of 'breathing' to describe the physical permeability

of weak filtration. To increase control over filtration, walls can be designed to function as gills through the use of louvres and wall panels that open outwards.

The greatest *control* over the physical permeability of a space comes from use of louvres which filter the flow of light, heat and air. During inclement weather louvres can be closed to seal the space from the penetration of the elements.[43] Louvres can be either visually diaphanous (glass) or they can be occluding (wood or metal), see Plate 4.110.



Plate 4.110 Wooden louvres, inner city apartment block, Sydney

Glass louvres can also be a strong choice for visual diaphany, see in Plate 4.111. These particular louvres are known as the 'Winter Gardens' in Renzo Piano's skyscraper, Aurora Place, in Sydney. Each storey of Aurora Place has two of these 'gardens' located on the north-west and south-east sides of the building. Challenging the notion that skyscrapers must be

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[43] Louvres come in a range of materials, the most common being timber, metal and glass. In recent years the technology for making louvres has improved to the extent that they can actually snap shut tightly and block out the wind. In the past their ability to seal a space from the elements was not as sophisticated, so current innovations have substantially improved the degree to which they can render a space permeable or impermeable to the elements, especially rain and wind.

hermetically sealed buildings, the Winter Gardens allow each level to be permeated by Sydney's temperate weather. They thus give the occupants of each floor the ability to refresh the air on their level by cross-ventilating it rather than continuously recycling it through air conditioning systems. Such strong levels of diaphany are not just Unbinding, they have important health benefits for occupants.



Plate 4.111 Filtering the elements, Renzo Piano's 'Winter Garden', Aurora Place, Sydney

In addition to horizontal louvres, physical diaphany can also be materialised through the use of large vertical wall panels designed to tilt or pivot outward. The capacity of such openings for modulating airflow is a powerful one, especially in terms of cross-ventilating a space. When such panels are combined with horizontal louvres, they can function as powerful ventilation 'gills', see Plate 4.112. They can be angled to modulate and direct airflow or they can be closed to seal the space from the elements.[44]

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[44] Unbound houses that are physically permeable and able to be penetrated by the elements should be built only in areas with a tropical climate. 'One should not build such houses in most environments because of the need for insulation and/or thermal mass — the only way to do so is to incur enormous energy costs to keep their interiors warm or cool' (Radford, 2000: 22). Once again climate and thermal comfort exert a powerful influence on the organisation of spaces that make people feel comfortable and secure.

Plate 4.112 Vertical and horizontal ventilation gills

In summary, the variables materialising the degree to which the elements can filter into a space are encapsulated in Table 4.5 below.

| Vertical plane | Permeability | |
|---|---|---|
| Wall plane | **Occlusion** | **Diaphany** |
| Filtering the penetration of the elements. | *Strong filter: shielded from the outdoors.* | *Weak filter: exposed to the outdoors.* |
| | Openings in the external walls minimally open the space to the outdoors: the light, air and views. | Openings in the external walls construct either visually diaphanous or visually and physically diaphanous spaces. |
| | Spaces are shielded from penetration by the elements by: | Visual diaphany:<br>— window walls<br>— clerestory windows<br>— slot windows. |
| | — small window sizes<br>— small door openings<br>— impermeable doors. | Visual and physical diaphany:<br>— French windows<br>— sliding glass doors<br>— glass wall panels that can be fully lifted up. |
| | An additional layer of protection:<br>— shutters<br>— blinds<br>— curtains. | Filters for physical diaphany:<br>— glass louvres<br>— wood louvres<br>— vertical wall panels: open/shut. |

Table 4.5 Summary of choices for filtering the elements

**Summary of firmness of enclosure**

To summarise, the discussion of the elements materialising firm and loose enclosures has involved the following three sub-clusters of meaning:

- the visual weight of the walls
- the type of spatial envelope the walls construct
- the degree to which the walls filter the elements.

Vertical planes that construct firmly enclosed spaces tend to be characterised by heavy visual weight, strong spatial envelopes and the strong blocking out of the elements. Heavy visual weight results from the use of thick and impermeable building materials such as stone, which is also a strong choice for constructing permanent and enduring enclosures and deep wall planes. Firmly enclosed spatial envelopes can either be organic or angular in shape. If organic, they tend to be formed by a single wall plane; if angular, they require three or more walls joined together. Furthermore, the height and span of the walls impacts on the firmness of enclosure felt inside the spatial envelope. The strongest choices for occlusion are walls that stretch from the floor to the ceiling and horizontally span from one end of a space to another. Finally, the firmness of the enclosure is affected by the strength of the filtration. Strong choices for filtration include small window and door openings buffered by blinds, shutters and curtains.

Loose vertical enclosures, on the other hand, are the result of visually light spaces, weak spatial envelopes and the strong penetration of the elements. Visually light spaces tend to be constructed from expansive and lightweight materials with little depth or mass such as glass. Their spatial envelopes tend to be loose. They are most commonly formed by a single linear wall plane or two walls joined to form an 'L' shape. They tend to facilitate very strong penetration of the elements. They can either be *visually* Unbound or *visually and physically* Unbound. *Visually* Unbound spaces allow views and light to enter, while *visually and physically* Unbound spaces allow views, light, air and/or heat to penetrate a space. The following section, Section 4.2.4.3, will discuss the importance of balance, equilibrium and steadiness on spatial security.

## 4.2.4.3 Balance and steadiness

In the introduction to the materialisation of wall planes, the elements constructing vertical enclosures were divided into two categories: the firmness of the enclosure, which we have just finished discussing, and equilibrium. *Equilibrium* comes from the Latin word *aequilibrium* meaning equal (*aequa*) and balance (*librium*). In the design of built spaces, equilibrium is a technical term concerned with guaranteeing the stability of a building and the spaces comprising its parts (Salvadori, 1980: 73). According to Salvadori (Salvadori: 1980), the materialisation of spatial equilibrium is primarily the domain of structural engineering.

To ensure that a building is at equilibrium, structural engineers are involved in calculating four different types of equilibrium (Salvadori, 1980.). These include vertical equilibrium (countering the pull of gravity), horizontal equilibrium (countering horizontal forces), translational equilibrium (countering both horizontal *and* vertical movement) and rotational equilibrium (concerning levers being equal in weight and distance from a central pivot). They are also involved in the application of Newton's three laws of motion. Their work is further concerned with determining the qualities and dimensions of building materials — their tension, compression, elasticity and plasticity — as well as calculating ways of channelling loads to the ground plane and ensuring the load bearing capacity of the span of horizontal distances. A detailed analysis of the ways these elements materialise spaces to make visitors feel balanced and steady are beyond the scope of this thesis. They require a separate study, preferably conducted with the guidance of a qualified expert from within the field of structural engineering.

Nevertheless, occupants of spaces are able to perceive the steadiness or precariousness of a spatial enclosure. Such visual perceptions are based on our past experiences of three-dimensional spaces. They also appear to be firmly anchored in our observations of the way natural spaces are organised. This is best explained by Mario Salvadori, Professor Emeritus of Architecture and Civil Engineering at Columbia University. In the extract below, he identifies some of the ways that the distribution of weight and loads in natural spaces has influenced the way we construct built spaces that feel stable, steady and firmly fixed.

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The shape of a tree trunk introduces us to the requirements of gravity loads in tall buildings, accumulating from top to bottom. Because of these primordial experiences we feel an instinctive puzzlement at the sight of Cretan columns…larger at the top than at the bottom, but we accept naturally the shape of a Greek Doric column.

Similar reactions of shock occur whenever we are confronted with, say, a large mass in the shape of an inverted pyramid. Mountains, due to the action of gravity, are shaped as right-side-up pyramids. The Egyptian pyramids have a shape, geometrically idealised, but basically identical to that of all the mountains we have ever seen. But a modern building in the shape of an inverted pyramid…does not 'say' to the layman how and why it stands up: it tells him that some 'trick' has been used to achieve an unnatural result. This unnaturalness elicits in us a sense of uneasy surprise rather than the feeling of balance related to 'honest' structural behaviour.

Natural arches have taught us that when stone is used to span a gap, a downward curvature is needed to achieve the goal. Stone is strong enough in compression to support the entire mountains, and downward curvature needs compression…We need only refer to natural caves, where curved inner surfaces give us a feeling for arch action in space.

(Salvadori, 1980: 293)

The translation of natural forms into the built environment thus gives us some degree of predictability about structural and visual stability in built spaces. As Salvadori also points out, when these assumptions are subverted through inversion, which he exemplifies with a pyramid standing on one of its vertices, feelings of disequilibrium and insecurity are evoked. The reason for this is that our experiences of the natural and built environment lead us to expect the weight of the load of a pyramid to be the bottom not the top of the building. When our expectations of familiarity have been challenged in this way, we feel some sense of visual disequilibrium, and this, in turn, tends to evoke some degree of insecurity. Over time, however, and through repeated exposure to and experience of the visual disequilibrium inherent in buildings such as inverted pyramids, this sense of insecurity may diminish.

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American architect Frank O Gehry, internationally renowned for pushing boundaries of architectural enclosure, also simulates instability in his work. He achieves this by deliberately fragmenting the principles of Euclidean geometry. He thus creates spaces that are 'distorted away from the familiar but not so far as to cease affinity' (1999: 29). This ability to maintain affinity with 'the familiar' appears to lie at the heart of making people feel secure in unconventionally designed and constructed spaces.

Visual perception informed by our observations of the natural and built world thus appears to be pivotal in influencing our feelings of stability in a space. The aim of this section is to identify the elements which can make visitors feel balanced and steady inside three-dimensional spaces. Visual perceptions of spatial equilibrium appear to be evoked in response to one or all of the following three factors:

- the slope of the walls (perpendicular and/or inclined vs. fragmented and skewed)
- the articulation of the planes (trabeated vs. dissolved)
- the orientation of a space to the pull of gravity (anchored vs. thrusting).

## Equilibrium: perpendicular and sloping walls

The slope or incline of the walls is pivotal in making us feel stable and balanced in a space. Feelings of vertical stability are most commonly achieved through the use of perpendicular walls that stand upright. Perpendicular walls represent the most common choice for balance and stability in western architecture and have their genesis in the trabeated constructions of Antiquity. Trabeated construction is based on the use of perpendicular, vertical columns and horizontal beams.

Inclined walls also have the potential to evoke feelings of equilibrium. Walls that slope inward or outward, backward or forward, can be either Binding or Unbinding depending on the direction of their slope as shown in Plates 4.113 and 4.114 respectively.

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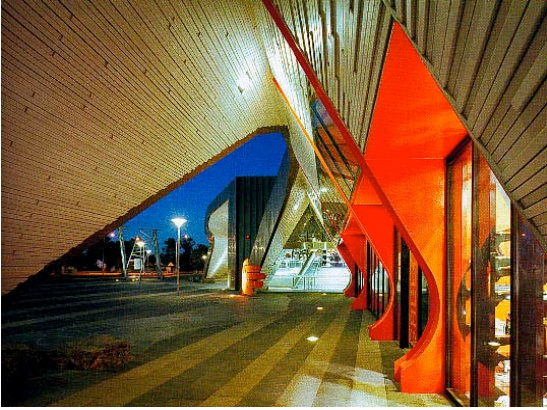
Plate 4.113 Inward sloping walls                    Plate 4.114 Outward and forward sloping wall

The inward sloping wall shown in Plate 4.113 is a Bound choice because the acute angle created at the point where the two vertical planes meet increases the degree and firmness of the enclosure. The two inward sloping walls furthermore join to create a triangular enclosure. Triangular spaces resting on their base are extremely stable figures as already discussed in relation to the pyramids of Egypt.

The outward and forward sloping wall in Plate 4.114, in contrast, is an Unbound choice because the obtuse angle it creates decreases the firmness of the enclosure and makes the occupant feel as though the space is opening out in front of them.

## Disequilibrium: skewed walls that invert conventional geometry

Angled walls may also be disorienting and destabilising as they have the potential for creating the illusion that the vertical planes may totter. For instance, Daniel Libeskind, architect of the Jewish Museum Berlin, has deliberately pushed the boundaries of equilibrium to unsettle and challenge visitors to his museum building. To achieve strong feelings of disequilibrium he embedded oblique lines in a variety of intersecting, zig-zagging forms into the concrete walls and overhead planes of the museum's internal spaces as seen in Plate 4.115. The same principles underlie Libeskind's design of the museum's zinc-clad façade and external gardens as shown in Plate 4.116.

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Plate 4.115 Interior, Jewish Museum, Berlin Plate 4.116 Exterior, Jewish Museum, Berlin

As we can also see in Plate 4.115, Libeskind intensified the disorientation created by his manipulation of the vertical planes of the museum by inserting long, narrow and angled window slits into the walls. These window slits are either parallel or intersecting, do not follow floor levels and are neither horizontally nor vertically oriented. The combined effect of these choices is the creation of optical illusions in which enclosing vertical planes are perceived as sloping inwards and forwards, while the enclosing horizontal planes, the floors and ceilings, appear slanted.

Interpersonally, as intended by the architect, these choices disturb, disorient and destabilise visitors:

> The intersection of oblique, parallel lines of the seams between the zinc sheets with the horizontal roof edge and the verticals of the exposed sheet edges makes the horizontal cornice appear to slope. From several vantage points one begins to doubt whether the exterior wall is truly perpendicular to the ground, or whether it might in fact incline forward or inward.
>
> (Schneider, 1999: 45)

> The columns which are perpendicular to the sloping paving do induce a feeling of dizziness, and make the surrounding buildings appear to totter. What will remain standing

and what will fall seems uncertain, and there is no common level with the surroundings that could provide orientation and security.

<div align="right">(Schneider, 1999: 50)</div>

The feelings of disequilibrium that Schneider describes in the two passages above are in keeping with the overall message of the new museum which explores the disorienting void that was created in German and European social, cultural, historical and political life as a result of the Holocaust. Similarly, a sense of the chaos, imbalance, fear and helplessness that existed during the time of the Holocaust was created by James Ingo Freed, architect of the United States Holocaust Memorial Museum in Washington DC, by skewing many of the glass and steel planes inside the museum (Weinberg and Elieli, 1995: 25).

The sense of spatial disorientation that is evoked by Libeskind's angled windows is particularly strong. The reason is that when a person is inside a space that has been constructed from angled and oblique planes, that occupant is strongly reliant on familiar points of reference, such as windows and doors, to assist them in judging spatial dimensions (Ching, 1996: 314). Without such reference, the spatial dimensions are distorted and feelings of imbalance and disequilibrium are accordingly amplified.

By way of contrast, the main exhibition space of the Children's Museum in Melbourne, the giant multi-coloured cube shown in Plate 4.117, has been constructed in such a way that it appears to be precariously standing on one of its corners rather than one of its sides. The destabilisation one feels when looking at the cube is further echoed and reinforced by the slope of the grey and cream walls surrounding the cube. However, the visitor is able to regain their sense of equilibrium from the steel geometric grid which is laid over the entire Museum complex. This grid and the nearby trees thus provide familiar points of reference, and in doing so, assist the viewer in restoring spatial balance.

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Plate 4.117 Big Box Gallery, Museum of Melbourne

## Articulation of the planes: stability, order and equilibrium

The construction of spaces with *distinct* horizontal and vertical planes carries with it cultural assumptions about stability, order and equilibrium (Jodidio, 1997). During Antiquity when the cornerstones of western architecture were developed, the ancient Greeks enclosed spaces by articulating three distinct and flat planes: the base plane, the wall plane and the overhead plane. Their vertical planes, moreover, were perpendicular and most of the spaces they constructed were rectilinear in shape. The Romans later extended these principles using primitive concrete and engineering skills to create spaces that were more plastic, that is, curved, such as the Pantheon. Nevertheless, three distinctly articulated planes continued to be used to create spaces that were visually perceived as stable and secure as shown in Plate 4.118.

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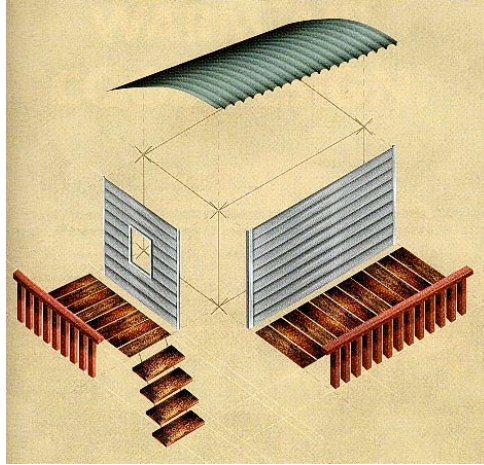
Plate 4.118 Three distinctly articulated planes

The work of cutting-edge contemporary architects, in contrast, is characterised by subverting the boundaries between the three traditionally enclosing planes. In particular it is distinguished by the subversion of the rectilinear box, which also became the symbol of Modernism, an avant-garde movement of the twentieth century focused on functionalism and cubic shapes. The move towards subverting the rectilinearity of architecture was first theorised in Charles Jencks' canonical work, *The Language of Post-modern Architecture* (1977). Since then, architects have increasingly foregrounded intertextual references in their work, layered many of their buildings with metaphors, allusions and tongue-in-cheek irony, and challenged the distinction between high and low culture, especially in public buildings such as museums (Riserbo, 1997: 287).

Architects have also increasingly collapsed western architectural cornerstones of trabeated construction. Jorn Utzon's Opera House in Sydney, for example, with its sail-like concrete roofs, 'breaks down' the conventions of western architecture with overhead planes that dissolve into wall planes and walls that dissolve into ceilings and roofs, see Plate 4.119.

Plate 4.119 Opera House, Sydney

Such fusion has already been discussed in relation to base planes and wall planes. In Section 4.2.3 it was noted that in the natural world during heavy periods of snowfall pathways are dug through the snow. These depress the base plane and in doing so dissolve the distinction between the ground and the wall plane. This dissolution also indicates that there is nothing 'natural' or 'given' about the way three-dimensional spaces are constructed. Like other cultural artefacts, built spaces are also 'constructs'. The same principle applies to the distinction between wall and overhead planes. Section 4.2.2 on the shape of spatial envelopes, for instance, showed that not all spaces are constructed from discrete horizontal and vertical planes. In organically shaped spaces, such as tunnels, caves, igloos and hangars, the two planes fuse.

Post-modern and contemporary architecture is concerned with pushing the boundaries of enclosure. Drawing on the new possibilities generated by computer-aided design, architects such as Frank O Gehry are redefining the shapes of buildings and developing new forms for the built environment as demonstrated in Plate 4.120.

Plate 4.120 Guggenheim Museum, Bilbao

Old geometric shapes and traditional ideas are thus being fragmented to produce rounded, twisted, sculptural forms that distort and destabilise because they are removed from the ordinary, everyday experience of architecture. Inspired by the movement of fish, Frank Gehry, in particular, is interested in creating buildings that capture a sense of motion even though his buildings are physiologically fixed and anchored to the earth (Friedman, Sorkin and Gehry, 2003).

The impact on museum architecture of subverting the boundaries between enclosing planes is also apparent in the National Museum of Australia in Canberra, see Plate 4.121. Previously introduced in Section 4.2.4.3, it was designed by the Melbourne-based firm Ashton, Raggart, McDougall (ARM), renowned for their irreverence, questioning of norms and values, and designs inspired by digital technologies as well as photocopiers. The building is thus a low-rise structure which forms a circular rim around Acton Peninsula on which it is located.



Plate 4.121 National Museum of Australia, Canberra

Largely asymmetrical in its design, it foregrounds shape and bright, bold colours. It is thus characterised by irregular shapes, slanting wall planes, rounded volumes and many bent and intersecting lines. These elements all flow into one disparate but interconnected whole. In fact there is only one building in this complex which is not angled or skewed — the white cube in the central Garden of Dreams courtyard, which can be seen on the far right hand side of the image. Ironically, this rectilinear and symmetrical cube represents the clichéd Australian dream — the suburban home on the quarter acre block of land.

The interior of the National Museum is also characterised by spaces that fuse horizontal and vertical planes. This is particularly evident inside the large atrium space shown in Plate 4.122 below. As Salvadori pointed out earlier, the fusion we can see evokes feelings of equilibrium because it reminds us of caves with natural arches, which have the downward curvature needed to support entire mountains. Interestingly, even though the shape of this space is unfamiliar, its intertextual reference to caves in the natural world means it is still able to make visitors feel cocooned, that is, both Bound and secure. This is important as it means that new shapes and new architectural forms of enclosure do not automatically evoke feelings of insecurity and disequilibrium.
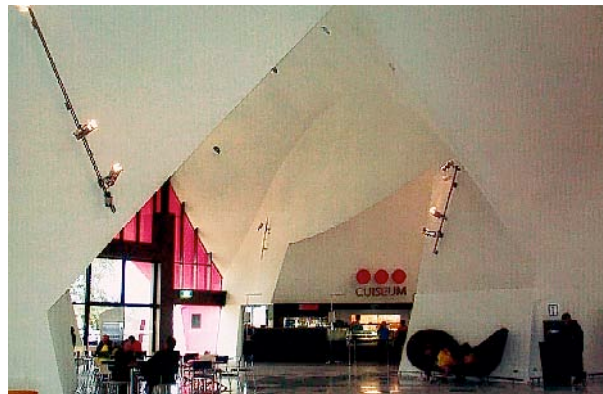


Plate 4.122 Interior, National Museum of Australia, Canberra

## Orientation of the space to the pull of gravity

The final category of visual perception with regard to balance and equilibrium concerns the orientation of a space to downward forces of gravity. The gravitational pull of the earth, as discussed in Section 4.2.3 on base planes, is pivotal to constructing secure spaces. For a space to feel secure, gravity needs to be countered by an equal and opposing force. This force is usually provided by the ground plane. Built ground planes, moreover, are most often anchored securely to the earth by footings which can be visually reinforced through the use of columns with thick bases, wide steps and/or the placement of stone slabs along the sides of a building.

Buildings that defy the forces of gravity, and as a consequence appear visually improbable and disorienting, are most commonly the result of cantilevering techniques. Cantilevering refers to spaces that are projected outward such as balconies and porches. They are supported at a single point or along a single line by a wall or column (Fleming et al., 1991: 95). The most iconic example of a building with thrusting planes that seemingly defy the downward force of gravity is Frank Lloyd Wright's Falling Water, which was built for Edgar Kaufman in Bear Run, Pennsylvania (1936). In this home several balconies are horizontally cantilevered and suspended over a waterfall. Although they create the optical illusion of free floating slabs, they have been anchored into a vertical wall of solid rock. Other gravity defying instances of cantilevering can be seen in Plate 4.123 'The Flying Wing' lecture theatre, Victoria University of Technology, Australia (Werribee Campus), and Plate 4.124, IM Pei's Rock and Roll Hall of Fame, Cleveland, Ohio.
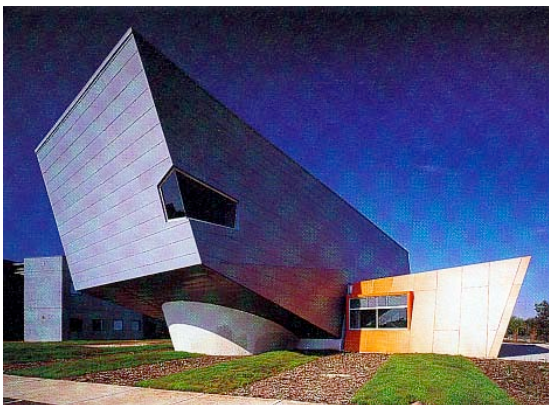


Plate 4.123 University of Technology, Victoria
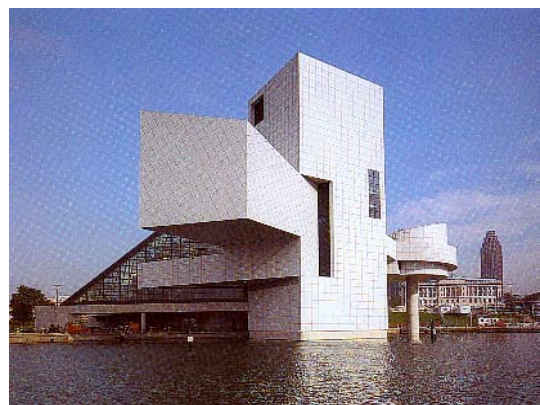


Plate 4.124 Rock and Roll Hall of Fame

A most unusual example of destabilisation resulting from the visual manipulation of gravitational pull can be seen in the image of a shed that appears to have toppled and fallen onto its side, see Plate 4.125. This building seems to have fallen in response to pressure applied by natural forces such as gale force winds. It thus evokes a strong sense of disequilibrium. Two possible explanations for its fall come quickly to mind: it either did not have sufficient weight to counteract the force of the wind, or it was not anchored securely and deeply enough into the ground.

The visual incongruity that is perhaps most disturbing about this building is the fact that a perfectly well-proportioned and functional doorway has been cut into its roof. The placement of this doorway contrasts markedly to the positioning of the main door, windows and stairs, which delineate the façade and are clearly just decorative elements. The combined effect of all these choices is a building that feels visually disorienting. It is almost impossible, for example, to imagine how the interior spaces look because it calls on a construction of space that is far removed from the ordinary, everyday experience of architecture.



Plate 4.125 Disorientation and the pull of gravity

In summary, visual perceptions of equilibrium in a space are determined by one or all of the following elements: the slope of the walls (perpendicular and/or angled versus skewed and fragmented, seemingly tottering planes), the articulation of the planes enclosing a space (trabeated versus organic, twisted, fragmented) and the orientation of a space to the pull of gravity (anchored versus thrusting). These are summarised in Table 4.6.

| Permeability | | |
|---|---|---|
| Balance and steadiness. | **Equilibrium** | **Disequilibrium** |
| | *Slope.* | *Slope.* |
| | Upright, perpendicular walls. | Walls sloping outward towards the exterior. |
| | Walls sloping inwards and leaning on a perpendicular wall (lean to). | Skewed walls that create the illusion that they may topple. |
| | Inclined walls that join to create a triangular space. | |
| | *Articulation of the planes.* | *Articulation of the planes.* |
| | Distinct planes. | Fused planes: — walls merge into ceilings—walls merge into floors |
| | Trabeated construction. | |
| | *Orientation to the pull of gravity.* | *Orientation to the pull of gravity.* Thrusting, anti-gravity via cantilevers. |
| | Anchored. | |

Table 4.6 Summary of materialisations of dis/equilibrium

# 4.2.4.4 Summary of the materialisation of the wall plane

Before moving on to explore the materialisation of Ambience, that is, how colour, light, texture and pattern can be used to organise three-dimensional spaces, it would be useful to conclude this section on the wall plane by drawing together the many disparate elements involved in its materialisation. To this end, the elements materialising the vertical planes have been distilled into Table 4.7 below.

| Wall plane | Permeability | |
|---|---|---|
| 1. Firmness of the enclosure. | **Occlusion** | **Diaphany** |
| a. Visual weight of the space. | **Visually heavy** | **Visually light** |
| | *Materials.* | *Materials.* |
| | Opaque walls. | Semi/transparent walls. |
| | *Depth.* | *Depth.* |
| | Thick. | Thin. |
| | 1+ thick and opaque layers. | 1+ transparent layers. |
| | *Permanence* | *Permanence* |
| | Fixed, anchored walls. | Movable, temporary walls. |
| b. The spatial envelope. | **Closed envelope** | **Open envelope** |
| | *Number of planes.* | *Number of planes.* |
| | 1 (rounded space), 3, 4, 5 +. | 1 (single linear wall). |
| | | 2 ('L'-shaped wall). |

|  |  |  |
|---|---|---|
|  | *Height.* | *Height.* |
|  | Floor –to-ceiling (exclusion). | Waist high (social, communal). |
|  | Floor-to-below ceiling (exclusion). | Knee high (social/boundary marker). |
|  | Floor-to-eye level (neighbourly peep). | Line on floor (boundary marker). |
|  | *Horizontal span.* | *Horizontal span.* |
|  | Complete (wall to wall). | Partial. |
| c. Filtering. | **Weak** | **Strong** |
|  | *Number of openings.* | *Number of openings.* |
|  | Minimal: 1 or 0. | Optimal: 1+. |
|  | *Size of openings.* | *Size of openings.* |
|  | Small. | Large (windows that morph into doors and/or walls). |
|  | *Filters shield the space.* | *Filters/ventilation gills allow elements into the space.* |
|  | Shutters. | |
|  | Curtains. | Louvres. |
|  | Blinds. | Vertical wall panels. |
| 2. Balance and steadiness. | **Equilibrium** | **Disequilibrium** |
|  | *Slope.* | *Slope.* |
|  | Perpendicular walls. | Sloping walls (asymmetrical). |
|  | Inclined walls (symmetrical). | |
|  | *Articulation of planes.* | *Articulation of planes.* |

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| | |
|---|---|
| Distinct planes. | Fused planes: walls &/or ceilings &/or floors merge. |
| Trabeated construction. | |
| *Orientation to pull of gravity.* | *Orientation to pull of gravity.* |
| Anchored. | Thrusting. |

Table 4.7 Distillation of the materialisation of permeability

In Section 4.3 the discussion of materialisation will shift to a focus on Ambience. As indicated in the opening comments of Chapter 4 (Section 4.1), the expression plane with respect of Binding is concerned with two systems of choice: permeability and ambience. The permeability dimension is concerned with the fixed, structural elements that create a three-dimensional space – the walls, overhead plane and base plane, which have now been discussed in some detail. Ambience, on the other hand, is concerned with the changeable elements used to organise a space, such as colour, light, texture and pattern.

# 4.3 Ambience

The focus of this chapter will now shift to ambience, the second system of choices involved in materialising three-dimensional spaces. Ambience is the vocational domain of the interior designer. It is concerned with the variable elements that are used to organise spaces, especially internal spaces. The range of elements interior designers work with, however, is so broad that it is not possible to consider all of them in this thesis. They include form, accessories, scale, fittings, soft furnishings, furniture, colour, light, pattern, textures and style (Georgian, Victorian, Neo Classical and so forth). Of these, the following variables will be considered in this section:

- colour
- light
- texture
- pattern.

These four variables have been chosen because they can be used specifically to modify perceptions of how *firmly* a three-dimensional space is enclosed. In particular, they can create optical illusions of size, nearness or distance. This enables them to shorten or lengthen our visual perception of a space. Their relevance to the design of internal spaces is therefore extremely important.

Before discussing the materialisation of ambience, it is essential to acknowledge that all of these elements are inter-related, especially colour and light. All colour is sourced through light, and without light, there is no colour. One cannot exist without the other. Even as early as the 15[th] century, Leon Battista Alberti's acclaimed treatise on painting draws attention to the dialectic between the two:

> It seems obvious to me that colours take their variations from light, because all colours put
> in the shade appear different from what they are in the light. Shade makes colour dark;

light, where it strikes, makes colours bright. The philosophers say that nothing can be seen which is not illuminated and coloured.

(Alberti, 1966: 49)

Similarly, pattern and texture are closely related. Patterns in some fabrics, for instance, can create the illusion of textural variation, while some textures, such as grained wood, create definite patterns. Choices for texture and pattern can also exert a strong effect on the construction of three-dimensional spaces. Texture strongly impacts on light distribution, whereas horizontal and vertical patterns can change the perception of a space by making it appear longer or wider.

Essentially, the relationship between the four elements of ambience is a strongly dialectical one. However, for clarity in this discussion, each will first be considered separately. The ways they co-articulate to materialise spatial security will then be examined in Section 4.3.5.

# 4.3.1 Colour

Colour is a powerful semiotic resource. Kress and van Leeuwen's analysis of colour (2002) showed that it is able to fulfil all three metafunctions simultaneously.[45] Experientially, colour is able to symbolise people, places, things as well as classes of people and ideas. Textually, colour can either differentiate features within multi-modal texts or create coherence. Interpersonally, Kress and van Leeuwen primarily focus on the meanings associated with the following colour scales: light to dark, saturated to desaturated, pure to hybridised, fully modulated to flat, and monochrome to maximally differentiated. These, in turn, appear to correlate strongly with Martin and White's APPRAISAL system, especially the evaluative

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[45] Despite the metafunctional meanings colour can make, Kress and van Leeuwen indicate that colour cannot exist alone. In other words, it is not an independent mode for meaning-making. They therefore conclude that colour 'can survive only in a multimodal environment' (2003: 351).

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meanings in ATTITUDE which were briefly introduced in Chapter 3 (see Section 3.3 and Appendix A).

Drawing on Kandinsky's work (1977), Kress and van Leeuwen identify two further areas of interpersonal meaning that colour has the potential to realize: the *associative values* of colour — and the *direct value* of colour. The associative values of colour essentially refer to the cultural and historical provenance of different hues. These are, in turn, laden with meaning. In many western cultures, for example, white is associated with purity and thus worn by brides on their wedding day, while in some of the northern areas of Portugal, *black* represents purity and is worn by brides. To account for these dichotomies, Kress and van Leeuwen suggest that these meanings are dependent on associations made between specific colours and different semiotic carriers. These associations can differ between cultures as well as between different time periods within the same culture.

The third area of interpersonal meaning that relates to colour concerns what Kandinsky terms the *direct value* of colour. The direct value of colour refers to the physical effect colours can have on the viewer: whether they 'move towards us' or 'away from us'. Kress and van Leeuwen acknowledge the importance of this area of meaning-making but do not elaborate on it as it falls beyond the scope of their work. In relation to Binding, however, in particular the organisation of three-dimensional spaces, it is the ability that colour has to move forward or backward that is central to enhancing or mitigating our perceptions of spatial enclosure. Colours that move forward, such as red, for example, foreshorten a space, making it feel more Bound, whereas colours that move backward such as light blue can make a space appear to recede. By receding in this way, the use of light blue helps to create an Unbound feeling of greater expansiveness in a space. In order to explain how colour can change our perceptions of three-dimensional space in these ways, it is essential to engage with some aspects of colour theory.

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## 4.3.1.1 Colour theory

According to Holtzschue (2002: 7), one of the widely used frameworks for studying colour in design schools and art colleges today was developed by American portrait painter, Albert H Munsell (1858–1918).[46] Known as the Munsell system, it describes colour in terms of three distinct qualities: hue, value and saturation. Hue refers to the name of the colour: red, orange, yellow, green, blue or violet. Value refers to the relative lightness or darkness of a hue.[47] Saturation, referred to more technically as chroma, refers to the intensity or brilliance of a colour. The strength of the Munsell system lies in its attempt to reduce the complexity of colour to three simple variables. Each of these variables, in turn, impacts in very powerful ways on the ambience of a space. The following section will therefore explore how choices for hue, value and saturation/chroma can impact on the organisation of three-dimensional spaces.

## 4.3.1.1a Hue

Hue refers to the name of a colour. In the Munsell system it is represented on a colour wheel also known as the artists' spectrum. The artists' spectrum is a construct developed and refined over many centuries. It presents a visual synopsis of the main hues that are available (Holtzschue, 2002). The basic spectrum includes six hues (red, orange, yellow, green, blue and violet) represented as a continuous circle. With the exception of purple, this choice of

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[46] The Munsell system, moreover, was not the first attempt to make the study of colour more systematic. The Munsell system actually has a long genesis which began at least in the early 18th century when LeBon first distinguished between the hue and value of different colours. During the early 19th century the work of the German theorist, Goethe (1971 [1810]), together with scientific research into colour conducted by French chemist Chevreul (1967 [1839]), further distilled colour theory, especially the distinction between flat and modulated colour.

Among the most noteworthy 20th century contributions to colour theory were made by German colourist, Hoelzel and his Swiss student Johannes Itten who refined the laws of colour complementarity (1970). Also influential was Vasily Kandinsky's long essay, 'Concerning the spiritual in art' (1977 [1914]), which highlighted the associative and direct values of colour. For a more comprehensive account of these developments see Kress and van Leeuwen (2002: 351–5) and/or Whitford (1984: 94–115).

[47] Value, the relative lightness or darkness of a colour, is also referred to as tonal gradation by colourists such as Johannes Itten (1970).

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hues is based on the bands of colour that are formed when light is refracted through a glass prism.[48] The artists' spectrum, moreover, is not limited to six colours. It is possible, for instance, to expand the spectrum to include twelve, twenty-four, forty-eight, ninety-six or more hues. A twelve-colour spectrum can be seen in Figure 4.12.



Figure 4.12 A twelve-colour artists' spectrum

The hues represented on the artists' spectrum are classified according to two criteria: firstly, whether they are primary or secondary colours; secondly, whether they are warm or cool. Primary colours are those that cannot be broken down into other colours or further reduced into component parts. Thus they are the most different to one another because they do not have any elements in common. They include red, blue and yellow. All the *other* colours on the artists' spectrum are mixed from the primaries and are hence referred to as secondary colours.

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[48] The formation of colour by refracting light through a prism had its genesis in Isaac Newton's discovery of 1676. However, the colour spectrum used by artists and scientists differs. The six-hue spectrum used by artists has its genesis in Goethe's theorisation of colour (1971), while Newton' seven-hue model remains the physical spectrum used by scientists, especially physicists.

In addition, it is possible to have achromatic colours, that is, colours that have no discernible hue. Achromatic colours include black, white and grey.

The colours on the artists' spectrum can also be sub-divided in accordance with their 'colour temperature'. Colour experiments on animals and people have shown, for example, that there can be a 5–7 degree difference in the subjective feeling of temperature experienced in rooms painted blue–green versus red–orange (Itten, 1970: 45). Given the importance of temperature on feelings of comfort that people experience in a space, the capacity to evoke different temperature sensations appears to have important implications for the ways spaces are organised in relation to security.

The distinction between warm and cool colours is made by dividing them along the axis of the artists' spectrum. The warm schemes are centred on the colour orange; while the cool schemes are centred round the colour blue. These two colours lie opposite one another on the colour wheel. The two dividing colours, however, yellow–green and red–violet, are both warm and cool. They are therefore regarded as having a 'neutral' temperature. Colour temperature, furthermore, is a relative quality. According to Holtzschue (2002), the same colour can appear warm or cold, depending on its hue and the colours surrounding it. Any colour, even a warm colour such as red, for example, can be cool if it is closer to violet on the spectrum (red–violet).

Finally, colour temperature can exert an enormous impact on the firmness of a spatial enclosure an occupant experiences. Warm colours, for example, appear to advance, while cool colours appear to recede. Thus, warm colours have the potential to create Bound spaces, while cool colours tend to construct Unbound spaces. This means that choices for colour temperature can either *complement* choices for permeability or *mitigate against* them. If a space is constructed to feel Bound in terms of its permeability, for instance, the choice of warm colours would enhance the feeling of occlusion, see Plate 4.126. Warm colours, 'make you feel that the room is being wrapped around you, hence the room appears visually smaller,' (Green, 1998: 58).

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Plate 4.126 Warm colours — a Binding choice, cave exhibit, Melbourne Museum

The use of cool colours, on the other hand, mitigates against the feeling of occlusion by opening the space up, making it feel larger, brighter and less enclosed, see Figure 4.13. Cool colours 'create a feeling of infinity and distance. These schemes feel light and airy and not as confining as their opposites,' (Green, 1998: 58). The choice of colour temperature is thus an important affordance which can be either enhanced or counter-balanced by choices for the two other qualities of colour: value and saturation.
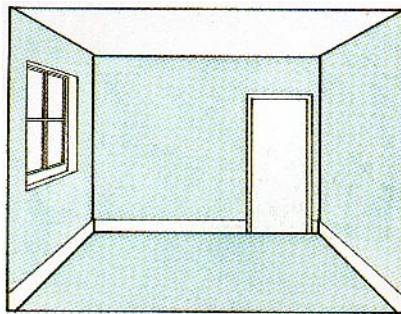


Figure 4.13 Cool colours — an Unbound choice (Scattergood, 1997: 34)

## 4.3.1.1b Value

Value is the second dimension of colour in the Munsell system. It refers to the relative lightness or darkness of a colour and functions irrespectively of whether hue is present as in the use of grey, as illustrated in Figure 4.14. It is represented on a linear and progressive scale of even intervals ranging from black to white. Black represents the lowest possible value on the scale, white represents the highest possible value, while grey is represented in the many shades between the two.[49]
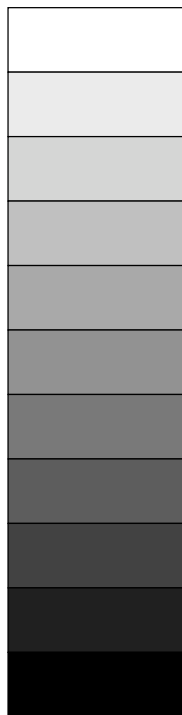
Figure 4.14 The value scale

Value is strongly associated with the idea of luminosity, that is, the lightness or darkness of a colour. Luminosity, technically, means emitting light without heat (Holtzschue, 2002: 26). A colour that is luminous reflects a lot of light, appears to be light, and is high in value. In

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[49] One of the most famous painters to foreground value in his work was Leonardo da Vinci. His compositions are strongly based on variations in value or tonal gradations and contrasts in light and shade. This is perhaps best exemplified in his painting 'Virgin of the Grotto'.

contrast, a colour that is non-luminous absorbs light, is dark and is low in value. Luminosity is determined by the amount of white or black tint mixed with a colour. This in turn is related to the amount of light a colour reflects. Black has the lowest value because it reflects the least amount of light, whereas white has the highest value because it reflects the highest amount of light. To lower the value of a colour, more black tints are added. To increase the value of a colour, more white tints are added.

In spatial terms, colours with low values have the potential to create spaces that feel Bound because they absorb more light and this makes the space feel more strongly enclosed. Black, for example, absorbs all wavelengths of light. This in turn reduces light-reflectance and can make a space feel more firmly enclosed than it really is because black appears to advance. Black thus creates the illusion that the walls are closer to the centre of the space than they really are.

Colours with a low value are thus a strong choice for making a space feel more Bound and should be carefully used to ensure that they do not make the enclosed space feel Too Bound. Alternately colours with a low value could be selectively applied. For instance, if a low value colour was applied to *only* one wall within a space, such as the end wall of a long and narrow corridor, it would make that wall appear to advance and have the effect of visually shortening the corridor. Non-luminous colours, or colours with a low value, thus have a similar effect on our visual perception as warm colours.

Colours with high values, on the other hand, seem to move away. This makes the enclosing planes feel as though they have receded and tends to create spaces that feel more expansive and Unbound. They thus have the same effect as cool colours. In addition, painting one wall a colour with a higher value than the other three walls will add greater depth to the room by receding one wall plane. This is a useful strategy for lengthening perceptions of a short, narrow corridor or passageway. Colours with high values can also be used to enhance the width of long, narrow spaces. Applying a colour with a light value to the side walls, for instance, will widen a space. Value thus extends the range of available options for constructing Bound and Unbound spaces.

One final point concerns value, especially the contrast between dark and light values, and how it impacts on whether colours appear to move forward or move backward. As Holtzschue (2002) explains:

> …when dark and light samples are laid against the same ground, the colour with the greatest contrast with the ground will advance, and the colour closest to the ground will recede. Dark colours advance relative to light colours on a light ground; light colours advance relative to darks on a dark ground.

(Holtzschue, 2002: 74)

These observations highlight both the importance of the background colour and the relativity of colour effects on the construction of spaces that feel Bound and Unbound.

## 4.3.1.1c Saturation

The third dimension of colour in the Munsell system is its saturation. Saturation refers to the intensity of the hue, that is, its purity or dilution. Like value, saturation is a comparative term. A saturated colour is at its fullest and 'purest' expression of a hue. When saturation is reduced, a colour retains its hue but is less vivid and becomes pale or pastel. Saturated hues, moreover, appear to advance or move forward relative to more muted hues. So, instead of using a warm or low value colour to make a space feel more Bound, a colour with strong saturation could be used. Similarly to make a space feel more Unbound, a diluted and diffused pastel colour could be selected.

Although the Munsell system enables us to predict how colour choices can help modify our perceptions of three-dimensional spaces, these predictions can only ever be approximations for two main reasons. First, even though each choice of colour simultaneously comprises all three of Munsell's dimensions — colour temperature, value and saturation — it is the *dominant* variable amongst these factors that will determine whether the colour moves forward or back in a three-dimensional space (Holtzschue, 2002: 75). Thus the way these

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three qualities co-articulate cannot be ignored. Second, all colour, including the colour of the enclosing planes in a space, is a function of the different wavelengths of light reflected by a particular object or surface. This means it is highly dependent of the quality and intensity of the light, as will be illustrated in the next section.

# 4.3.2 Light

Light is an important modifier of the way people perceive colour. Too little light makes it hard to see colours. Excessive and uncontrolled light can also impact negatively on the way colour is perceived, especially if glare, an extreme and temporarily blinding light, is produced. Light is visible energy emitted by a light source. There are predominantly two forms of light: natural light and artificial light.

Natural light is emitted by the sun during the day and reflected from the sun to the earth during the night as moonlight. The moon reflects light but does not emit heat or generate its own energy. Artificial light, on the other hand, is primarily emitted by electricity. Artificial light first became commercially available in 1879 when the incandescent lamp was both developed and mass-produced (Conran and Bond, 1999). Prior to incandescent lamps, candles and oil lamps were used. There are main types of artificial light sources: fluorescent, incandescent and tungsten lamps.

## 4.3.2.1 Light and the rendering of colour

Light influences spatial security in several important ways. Firstly, it impacts on the colour of all objects including wall, ceiling and floor planes. When light strikes a coloured object, the surface of that object absorbs parts of the colour spectrum and reflects the rest. A red object, for example, absorbs all wavelengths of light except red, a blue object absorbs all wavelengths except blue, and so forth. A white object, on the other hand, reflects *all* the wavelengths of light, while a black one *absorbs* all wavelengths. This helps explain why dark coloured walls, or walls painted in colours with a low value, make a space seem more Bound. Low value

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colours tend to absorb most of the light falling on them, and this, in turn, creates dimly lit spaces that feel dark and Bound. It also means that the same intensity of light will appear brighter in a room with pale-coloured walls because pale colours have a higher value and reflect more light making the space feel more Unbound. There are three qualities of light, both natural and artificial, that contribute to the rendering of light: the tone or colour of the light, its intensity and its directionality.

## 4.3.2.1a Spectral reflectance: the colour(s) of light

The ability of natural light to absorb and/or reflect colours of the spectrum means it is not neutral in colour. As mentioned earlier, it comprises a mixture of colours which Newton demonstrated by passing light through a glass prism in 1676. The blue end of the spectrum contains ultraviolet light, while the red end of the spectrum contains infrared light. This means that both light and colour have a colour spectrum. The colour qualities of light, however, are referred to as the spectral reflectance or spectral distribution of light.

There is great variation in the spectral reflectance of light, both natural and artificial. Sunlight, for example, contains all the colours of the spectrum but its spectral reflectance tends to fluctuate in accordance with the time of day, the weather and the seasons. Afternoon sunlight, for example, often has a reddish tinge. Bright light at noon, on the other hand, tends to have a blue cast. In fact, the changing colours of natural light is one of the central concerns in the work of the Impressionist painters, especially Monet, who captured the ways light changed throughout the day in his Rouen Cathedral paintings.

There is also great variation in the spectral reflectance of artificial light. Generally speaking, tungsten-filament lamps tend to be warm yellow and tungsten-halogen lamps tend to be cool blue. Fluorescent tubes, in contrast, are available in both temperatures: extra-warm white, warm white, white and cool white. The actual colour of fluorescent light is determined by the quality of the phosphor coating. Finally, incandescent lamps tend to shed a warm yellow light. This is because incandescent lamps produce light by burning just as the sun does. Other sources that generate light as a by-product of heat are firelight and candlelight.

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In addition, there are some significant differences between the colour spectrum as discussed in the section on hue and the spectral reflectance of light. Although both have primary and secondary colours, *the primary colours of light* are red, green and blue. Furthermore, mixing two primary wavelengths of colour produces a newly coloured light. Blue and green wavelengths, for example, produce cyan; red and blue wavelengths produce magenta; and green and red wavelengths produce yellow. Cyan, magenta and yellow are the secondary colours of light. When designing a space, however, careful thought must be given to the interaction between the colours of the artists' spectrum and the spectral reflectance of light.

The ability to discriminate colours is, in fact, a complex interaction between lamp colour, colourants and human perception. An object can change colour under a variety of light sources because of the spectral reflectance of each light source. A set of colour choices made under one set of conditions such as natural lighting could be too cool or too warm for another set of conditions such as night lighting via artificial lamps. If colours chosen by daylight are too warm or too cool for night lighting, they can be adjusted by the spectral reflectance of a lamp. Red–orange schemes, for example, can be muted by using lamps that have a weaker warm-colour range. Blue or green, on the other hand, can be muted by using lamps with strong red–orange–yellow wavelengths. Lamps can also be chosen to enhance colours.

Furthermore, the relationship between light and colour can be changed by the use of filters or coloured gels for artificial light or coloured panes of glass for daylight. The light inside the mausoleum of Galla Placidia in Ravenna, Italy, for instance, is grey because of the inter-relationship between the blue colour of the mosaic wall tiles and the orange colour of the natural light entering the space via tinted windows. Itten analyses the relationship between the two in the following way:

> The mausoleum of Galla Placidia, now at Ravenna, Italy, is dominated by a remarkable colored atmosphere of gray light. This effect is produced by bathing the blue mosaic walls of the interior in an orange light, filtered through narrow windows of orange-tinted alabaster. Orange and blue are complementary colours, the mixing of which yields grey. As the visitor moves about the shrine, he receives different quantities of light, which is

alternately accented blue and orange, the walls reflecting these colours at ever changing

angles. This interplay gives an impression of suffusion with color.


(Itten, 1970: 9)


## 4.3.2.1b Light intensity


Another factor that impacts on the ability to discriminate colours is the intensity of light.

Intensity refers to the amount of light emitted by a light source. Light intensity tends to be

measured in lumens or lux. In museum spaces, the amount of lux that can be used in an

exhibition is determined by the conservation needs of the objects. Strict levels of illumination

are thus specified for each object category. Moderately sensitive objects are considered to

require a 200-lux level of illumination, while very light-sensitive objects are limited to a lux

level that does not exceed 50 (Turner, 1998: 44). Fittings which diffuse the intensity of natural

and artificial light are also widely available. In particular, lamps with low UV emission which

reduce ultraviolet light have been developed, as have UV filters that can be used over light

sources or inside display cabinets.

The ability to discriminate colours is also affected by light intensity. Colours can change, for

example, when an object is moved from darker to lighter surroundings. They can also vary

when the quality of natural light changes at different times in the day. In addition, the spectral

reflectance and intensity of natural light is influenced by the latitude in which a space is

located. In the southern hemisphere, for instance, the north-easterly aspect receives the most

sunlight. Strong sunlight means that the natural light illuminating a space will tend to be

warm, bright and intense. In terms of Binding, it means that the space will be brighter and

high levels of illumination are likely to make the enclosed space feel more Unbound as light

enhances our ability to perceive colour, texture, pattern, depth, space or volume (Gardiner and

Molony, 2001). It also means that any strength of colour can be used on the enclosing planes

as bright light will not wash out the saturation of the colour. South-facing spaces, in contrast,

are cooler and less bright. To make these spaces feel secure, warm colours from the artists'

spectrum should be used as their colour temperature will make the space feel more comfortable and more Bound.

In the northern hemisphere, the converse is true. South-facing spaces receive more sunlight, thus cool colours are a stronger choice for security. North-facing spaces receive less light and are much cooler, thus the warm colours of the artists' spectrum are a Binding choice for north-facing spaces as they counter the effects of cold light with warm colour temperature, which tends to make the space feel more cosy and Bound. There is also the possibility of enhancing feelings of warmth in the space by choosing warm spectral reflectance for the lamps.

## 4.3.2.1c Light directionality

The directionality of artificial lighting can impact on the construction of Bound and Unbound spaces in other ways too. For example, up-lighting, or using fittings that direct beams of light up towards the walls or ceiling, can make a space feel considerably more spacious and Unbound. It does this by appearing 'to lift the ceiling height by making the ceiling appear lighter and therefore further away,' (Conran and Bond, 1999: 30). Plate 4.127 shows an example of up-lighting which was used in the Queensland Museum to increase the feeling of spaciousness inside a temporary exhibition space with very low ceilings.



Plate 4.127 Up-lighting — a choice for Unbinding, *Pentimento*, Queensland Art Museum

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Conversely, to make a space feel more Bound, down-lighting, or using lights that are either recessed into a ceiling or ceiling mounted can make the perceived size, proportions and feeling of enclosure in a space seem much firmer. According to Conran and Bond, 'the most noticeable effect of down-lighting is to drop the height of a ceiling. The ceiling is cloaked in shadow and therefore appears to come closer to the viewer,' (1999: 28). The effects of down-lighting in terms of Binding a space are shown in Plate 4.128 below. Although it is difficult to judge accurately, the down-lighting in this particular instance created the illusion of lowering the ceiling by approximately two metres.



Plate 4.128 Down-lighting — a choice for creating Bound spaces, Melbourne Museum

One final point concerns the inter-relationship between colour and light in three-dimensional spaces. Colour selected from a small sample often changes its appearance when it is applied to a large area such as a wall or a ceiling. This is closely related to the lighting conditions in the space, in particular, the colour quality or spectral reflectance of the lamp, the intensity of light in the space (both natural and artificial) and the direction of the light. Moreover, changing the size of an area on which a colour is applied from a small square to a large wall surface means the colour is likely to undergo a shift in value. The general principle with which interior designers work is that floors and walls will appear lighter, while ceilings will appear to be darker (Holtzschue, 2002: 76). This means that if a ceiling is to be painted a light green, a shade that is two or three intervals lighter in value must be chosen to achieve the desired colour.

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# 4.3.3 Texture

Texture plays a crucial role in creating visual perceptions of how Bound or Unbound an enclosed space feels. Texture refers to the feel, appearance or consistency of the surface of an enclosing wall, ceiling or floor plane. The texture of a surface is generally described as being either rough, smooth or in-between. There is a distinction in meaning, moreover, between use of the term 'texture' as a variable of Ambience and the technical use of the term by Halliday and Hasan in respect of semantic configurations of register and cohesion (1976: 26). In the context of Ambience, texture is a category within the expression plane of the semiosis of space.

## 4.3.3.1 Smooth surfaces

Texture impacts very strongly on the way light is reflected in a space. Smooth surfaces, for example, reflect light directly so that much of the light that falls on the surface is reflected back to the eye. The way smooth surfaces function to reflect light is represented in Figure 4.15.
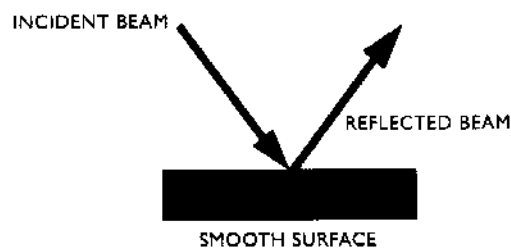


Figure 4.15 Smooth textures (Holtzschue, 2002: 22)

## 4.3.3.2 Rough surfaces

Rough surfaces, on the other hand, reflect light in more fragmented ways. They tend to scatter the light in many directions which means that less light reaches the eye. Such fragmentation

also makes rough or heavily textured surfaces seem irregular in their appearance. This, in turn, impacts on the colour of the surface, which is characterised by contrasts in value, that is, tiny patches of dark and light. The darker patches recede; while the light patches advance. This variation renders the overall value of the colour lower than that of a smoothly textured surface. The way rough textures reflect light is visually encapsulated in Figure 4.16 below.
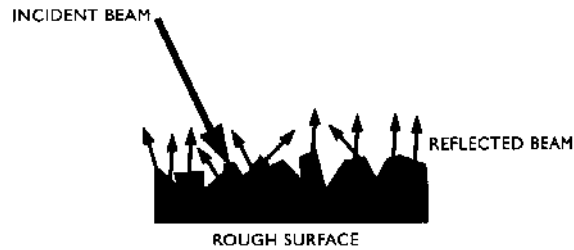


Figure 4.16 Rough textures (Holtzschue, 2002: 22)

## 4.3.3.3 Reflectance and Binding

The physical quality of an object's surface — including the surface of wall, floor and overhead planes — determines the proportion of light it absorbs or reflects. This quality is termed the reflectance of the object/plane. Unbinding choices for texture tend to surfaces with be high reflectance. These include shiny finishes such as glossy paint or polished cork tiles. Such surfaces increase the feeling of Unbinding in a space because they reflect light thereby augmenting the overall level of illumination in a space. In fact, very smooth textures can reflect so much light that they create a mirror-like effect, which can be so intense, it becomes dazzling to the eye.

Soft coverings, on the other hand, are choices for making the space feel more occluded and Bound. The reason for this is their rough texture which absorbs, rather than reflects, light, meaning that a heavily textured surface appears darker than the same material with a smoother finish. As a consequence, a deeply textured white carpet will appear darker than a smooth and shiny white ceiling or wall. Even though white is typically a choice for 'opening up' and unbinding a space, the impact of texture exerts a very powerful influence on colour rendition.

# 4.3.4 Pattern

Pattern refers to a repeated decorative design. There are many different types of patterns — floral, herringbone, checks and so forth. In order to illustrate how patterns can impact on the degree of firmness with which a space is enclosed, the following discussion will be restricted to two specific patterns: vertical stripes and horizontal stripes.

## 4.3.4.1 Vertical and horizontal patterns

Vertical stripes are a powerful choice for Unbinding a space, in particular making a low ceiling appear higher. To make a ceiling feel more Unbound, vertical stripes are used on the walls. They unbind a space by taking the eye upward — visually creating the illusion that the walls are taller than they really are. By implication, vertical stripes suggest that the ceiling is higher too. An example of vertical patterning can be seen in Figure 4.17.
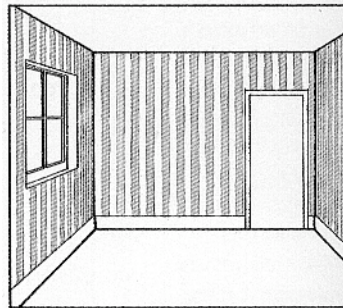


Figure 4.17 Unbinding a ceiling through vertical patterning (Scattergood, 1997: 34)

In the same way, vertical door openings that stretch from floor to ceiling are also able to visually heighten a space. They do so by lengthening the space so that it appears taller and more Unbound. Jack Russell, Australian architect and recipient of the 1957 Sulman Award, acknowledges the importance of such choices for opening up small spaces. In relation to his own home, which he designed and built in accordance with postwar restrictions, he had to make careful choices to mitigate against feelings of claustrophobia. One of these choices

involved ensuring that all openings, especially door openings, stretched from the floor to the ceiling. He describes this strategy in the following way: 'To make individual spaces within the house feel larger, all the openings are floor to ceiling,' (Russell, quoted in Burton Taylor, 2003: 15).



Plate 4.129 Verticality and Unbinding — doors in an inner city apartment, Sydney

Horizontal stripes are another powerful choice for Unbinding a space. They can be used on the wall planes or the floor plane in order to make a space seem wider and therefore more expansive and Unbound, see Figure 4.18.
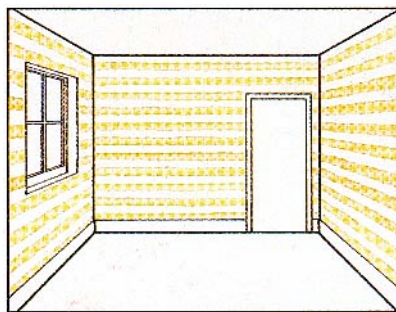


Figure 4.18 Unbinding a space through horizontal patterning (Scattergood, 1997: 34)

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# 4.3.5 Ambience: co-articulation and spatial effects

The following section aims to illuminate how the four variables of ambience co-articulate to construct Bound and Unbound spaces. Although the relationship between ambience and permeability can be either complementary or oppositional, the following section will focus on an oppositional relationship. Let us assume, for example, that the choices for permeability have constructed a space that feels Too Bound. As structural changes are not always an option, selections for ambience can be made to mitigate against feelings of claustrophobia and smothering. First, the quality of light in the space, both natural and artificial, needs to be analysed. If the space is located in the southern hemisphere and faces south, it receives cool natural light that is not very bright in its intensity. Thus careful selections for artificial light need to be made. The use of lamps with a warm spectral reflectance should be considered, and if possible, serious consideration should also be given to the use of up-lighting as this would create the illusion of a higher overhead plane.

Cold light, moreover, should be counterbalanced by warm colours. The problem with warm colours is that they have the effect of advancing, which would not be desirable in this particular instance. Nevertheless, a warm hue such as red–orange should still be chosen, especially as its colour temperature will be enhanced by the warmth of the lamp colour. However, to counterbalance the advancing effects of the warm colour, careful selections for the *value* and *saturation* of the colour would need to be made. A muted hue such as a pastel red (pink), which has a high value, may be appropriate as it would reflect lots of light and this in turn would create a feeling of increased expansiveness while maintaining the warmth of the space.

Furthermore, the ceiling should be painted white or a colour with a considerably lighter value than the pastel red–orange wall. This will make the ceiling appear to recede. By receding, colours with a high white value appear to push the ceiling plane back, creating the optical

illusion of greater spaciousness. This illusion is pivotal to making the space feel less Bound. If the ceiling height is extremely low, the feeling of oppressiveness it creates could be further countered by extending the ceiling colour down to picture rail height on the wall plane. This would optimise the visual illusion of a higher ceiling. A floor covering with a light-colour value would further contribute to unbinding the space.

In addition, the use of shiny and smooth surfaces would also increase light reflectance in the space. Thus polished wooden floorboards or sealed cork tiles and high gloss paints would assist greatly in making the space feel less confined. Another option would be the use of vertical or horizontal stripes depending on which of the enclosing planes is exerting the strongest influence in making the space feel Too Bound. If the walls are making the space feel Too Bound, horizontal stripes could be used to mitigate against the oppressiveness of the enclosure. On the other hand, if the space is Too Bound because the ceiling height is too low, vertical stripes would be a choice for Unbinding.

# 4.3.6 Summary

The way the four variables of ambience impact on the firmness of spatial enclosure is summarised in Table 4.8 below.

| Occlusion (Bound choices) | Diaphany (Unbound choices) |
|---|---|
| Colour | Colour |
| Warm colours centred on orange and red. | Cool colours centred on blue and violet. |
| Low value colours eg black or colours with lots of black tints. | High value colours with lots of white tints. |
| Saturated hues | Muted hues (pastels). |
| Warm, dark, saturated hues appear to advance creating the visual illusion of the walls being closer to the centre of a space and thus more Bound. | Cool, high value and muted colours appear to recede creating the visual illusion of the walls seeming more distant or expansive and thus more Unbound. |
| Artificial Light | Artificial Light |
| Tone: warm spectral reflectance. | Tone: cool spectral reflectance. |
| Intensity: low levels of artificial illumination. | Intensity: high levels of artificial illumination. |
| Filters: optional choice for enhancing or muting the colour rendition in a space. | Filters: optional choice for enhancing or muting the colour rendition in a space. |
| Directionality: down-lighting creates the illusion of bringing the ceiling plane down. | Directionality: up-lighting creates the illusion of elevating the ceiling plane. |
| Natural light[50] | Natural light |
| Orientation to the sun and latitude. | Orientation to the sun and latitude. |

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[50] Daylight/moonlight enters a space via openings so their size and orientation determines the quality of light a space receives. This in turn can impact on Binding by changing the perceived proportions of a space.

a) Southern hemisphere.

South facing spaces are cooler and less bright.

Colour: to make these spaces feel more Bound, warm colours should be used.

b) Northern hemisphere.

North facing spaces are cool.

Colour: warm colours tend to increase the temperature and make the space feel more Bound.

a) Southern hemisphere.

The north-easterly aspect receives the most sun.

Colour: any strength of colour is suitable as bright light will not wash out its intensity.

b) Northern hemisphere.

South facing spaces are sunny.

Colour: cool colours are a choice for security as they reduce the temperature and make the space feel less hot and more Unbound.

## Texture

Rough surfaces.

Rough textures have low reflectance eg matt surfaces. This means they absorb light making the space feel more Bound.

## Texture

Polished surfaces.

Polished surfaces have high reflectance eg polished wooden boards, polished concrete, high gloss or satin sheen paints. This means they reflect light and increase the feeling of spaciousness making the space feel more Unbound.

## Pattern

## Pattern

If the space is small, horizontal stripes on the walls create the illusion of width and make the space seem wider and larger, or  (more Unbound).

If the overhead plane is low, vertical stripes on the walls create the optical illusion that the walls are taller and the ceiling is higher or (more Unbound).

Table 4.8 Summary of elements materialising Ambience

To summarise, this chapter has analysed the material elements constructing Binding at the level of the expression plane. This has involved a careful analysis of the elements comprising two systems of choice: permeability and ambience. Permeability involves choices for organising the fixed, structural elements in a three-dimensional enclosure: the overhead plane, the wall plane and the base plane. It is strongly concerned with the degree by which a space can be penetrated by the elements, or not. Spaces that can be strongly penetrated by the elements, especially air and natural light, are diaphanous. Spaces can be *visually diaphanous*, that is, constructed in such a way that the occupants can see out of the space and observers are often able to see inside. Alternatively, they can be both *visually and physically diaphanous*, that is, organised in such a way that natural light and air and/or heat are able to move through them. In contrast, spaces that are sealed off from the elements represent a choice for occlusion. Occlusion involves containment. Occluded spaces are thus to a large extent physically and visually sealed from the environment and other neighbouring spaces.

Ambience is concerned with the changeable elements that construct a space: colour, light, texture and pattern. The relationship between these four elements is a strongly dialectic one and they can combine to create powerful optical illusions that substantially alter our perceptions of the length, width, height and depth of a three-dimensional space. Not only do choices for ambience strongly co-articulate with one another, they also co-pattern with choices for permeability. The relationship between ambience and permeability can thus be either complementary or oppositional.

Finally, the elements materialising Binding, both fixed and variable, have been isolated in this chapter in order to 'concretise' the meanings they make. The limitation of this approach is that it does not account for the fact that the construction of three-dimensional spaces incorporates choices from *both* permeability and ambience. Furthermore, it is the way these choices *interact* that is central to Binding and how secure or insecure people feel in a space. To incorporate this important aspect of meaning-making while respecting the space constraints imposed on this thesis is impossible. So the reader is referred to Martin and Stenglin (in press).

# CHAPTER 5

# Implications for museums and future research directions

The primary aim of this thesis has been to theorise Binding, a tool for analysing interpersonal meanings in three-dimensional spaces. In particular, the work on Binding has explored the affectual disposition that exists between a person and the space that person occupies by focusing on how three-dimensional spaces can be organised to make an occupant feel secure or insecure (Chapter 3). Ways of materialising Binding have also been explored through choices from the systems of permeability and ambience (Chapter 4). The aims of this chapter are twofold: to discuss the implications of the work on Binding for museums, and identify those areas that require further research. Section 5.1 discusses the implications of Binding for the museum design, while Section 5.2 outlines some of key areas within the interpersonal, textual and ideational metafunctions that need to be researched in order for a metafunctionally diversified grammar of three-dimensional space to be further developed.

# 5.1 Museum implications

This section will explore the significance of Binding for people working within the applied domains of museum and exhibition design. These include architects, exhibition designers, curators as well as education staff involved in the development of interpretive strategies for exhibitions. 'Interpretive strategies' is a global term used by many museum professionals to refer to all the interpretive media used in an exhibition such as text panels, hands-on activities, audio-visual materials, CD-Rom touch screens and so forth (Dean, 1994; Kelly and Gordon, 2002). In addition, the terms 'media' or 'interpretive media' can also be used (Miles, 1982; MacLulich, 1993).

In essence, the impact of Binding on museum practice is three-fold. First, it can assist museum professionals to design more welcoming and accessible spaces which make visitors feel comfortable, secure and 'at home'. Second, Binding offers a practical tool for assisting exhibition designers in countering the phenomenon of 'museum fatigue'. Third, it facilitates the development of a shared metalanguage for professionals working within the fields of museology, architecture, exhibition and industrial design.

# 5.1.1 Designing for security

Binding has the potential to assist museum professionals in designing spaces which are welcoming. Such spaces are important as they can help make visitors, especially those who are unaccustomed to cultural institutions, feel more comfortable, secure and 'at ease' in unfamiliar surroundings. Binding has the potential to assist with the design of welcoming spaces in several different ways. First, by clearly articulating how to construct spaces that evoke the Bound and Unbound dimensions, it enables museum professionals to make informed and principled decisions about how to organise their spaces with visitor security in mind.

Second, the Binding scale enables architects and exhibition designers to systematically consider the interpersonal impact of the spaces visitors will encounter, and make informed decisions about how to move visitors from the domestic scale of their homes to the institutional scale used inside many museums. This is particularly relevant to the design of spaces which visitors first encounter, for if a space is interpersonally overwhelming, visitors will not engage with it, or remain inside it, for any great length of time — they will simply leave. The Commonwealth Law Court building in Melbourne (discussed in Section 3.2.2.4) offers an exemplary instance of a public building that uses personal baselines from domestic architecture as the bridge leading people into the public realm. Museum design could benefit from the application of similar principles, especially if they desire to become more democratic in their reach.

Third, the work on Binding has shown that it may be more effective if the relationship of security between visitors and three-dimensional spaces is organised as an *incremental* continuum. Incremental changes to space are important in maintaining the visitor's initial feeling of comfort and ease throughout their experience of an entire building. This was again evident in the Commonwealth Law Court building in Melbourne, which demonstrated the potential of slight variations in Binding from one space to another. Slight logogenetic variation appears to be *crucial* to maintaining the feeling of security for visitors. If the changes from one space to the next are too extreme or too abrupt, the user is likely to feel Too Unbound by them. This would make it too difficult to maintain the initial feeling of security that has been established with the occupant of the space. Moreover, the gradations built into the Binding scale (*strongly* Bound, *moderately* Bound, *minimally* Bound and *minimally* Unbound, *moderately* Unbound, *strongly* Unbound) give designers a principled framework for introducing incremental changes to the logogenetic unfolding of three-dimensional spaces.

In addition to carefully considering Binding levels in the spaces visitors first encounter, exhibition designers also need to contemplate how the visitor will be led into more challenging spaces inside the museum. The work on Binding does not suggest, for example,

that museum spaces must be exclusively designed in ways that make visitors feel secure. Daniel Libeskind's Jewish Museum in Berlin is testimony to this. Libeskind deliberately used towering concrete voids to evoke the feelings of insecurity that Jewish people experienced when they were confined and deported. Thus, if a spatial evocation of insecurity is required to meet the communicative objectives of the  project teams or curators, the Binding scale can be used to inform the construction of spaces that make people feel vulnerable, overwhelmed and oppressed.

A further challenge for museum design lies in applying Binding to the design of museum spaces in large buildings that were never designed to function as museums. A recent and well-known example is the Tate Modern Gallery in London, previously, a large, monumentally scaled industrial building, now recontextualised as a cultural institution. Such recontextualisation has been a strong trend in museum design, since the opening of the Louvre in the eighteenth century, and the practice brings enormous challenges to the design of secure spaces. Once again, the Binding scale — in particular, the application of Ambience (colour, light, texture and pattern) together with the use of 'suggested' planes implying enclosure — opens up enormous potential for the construction of three-dimensional spaces that make visitors feel secure.

Finally, as an earlier discussion of tenor (see Section 2.2.3.2a) indicated, building relationships with people is a major interpersonal challenge for museums, especially post-modern museums. Thus Binding provides invaluable assistance to museums trying to create a positive orientation to affiliation with their audiences. It also has the potential to assist museums in increasing visitor contact time. After all, if museums can make their visitors feel welcome, comfortable, safe and secure in their spaces, it is more likely that visitors will remain inside the museum for longer periods of time and feel more positively oriented towards the institution.

# 5.1.2 Countering museum fatigue

Careful variations in Binding also play an important role in helping to counter museum fatigue, the weariness many visitors experience approximately half an hour after they begin viewing exhibitions. Such fatigue is a major problem for designers because once visitors are tired, they are no longer comfortable or able to concentrate on exhibitions and the displays inside them. Yet many exhibitions are designed so that spatial enclosures vary little from one space to the next. Such mono-levels of Binding do not take visitor comfort into account – instead, they simply function to enhance museum fatigue. By using the Binding scale, especially the potential for gradation that has been built into the Bound and Unbound dimensions of the scale, designers have a tool for systematically considering how to design public spaces so that they incorporate spatial variation, keeping visitors alert while at the same time maintaining a positive relationship of security with them.

# 5.1.3 Developing a shared metalanguage

Finally, there is also a need for a shared metalanguage to enable discussions of the construction of spaces. There is much scope, for example, for developing more consistent, systematic and principled ways of discussing and designing three-dimensional exhibition spaces that meet the key objectives formulated by project teams or curators. Like schools and universities, museums are pedagogic sites. However, as discussed in Chapter 2 (see Section 2.2.3.2a), people working within museums tend to be strongly classified on the basis of their professional specialisation. Thus, museum staff are often organised into 'divisions' — the marketing division, the education division, curatorial division(s), the materials conservation division, the exhibition division, and so forth. Often the boundaries around these 'divisions' and the key responsibilities of staff working within them are so strong that there is little scope for the shared negotiation of meanings, even in cultural institutions which have adopted multi-disciplinary approaches to exhibition development.

Such strong classification also makes it difficult for people working on exhibition development to be able to develop a shared metalanguage. This is because designers have their own metalanguage with its lexical specialisation and technical jargon, educators have their own metalanguage and so forth. Yani Herreman, architect and Vice President of the International Council of Museums, is not only concerned that such divisions exist, but feels they generate conflict. He explains his views in the following way:

> …the gap between the conservation, study, treatment and documentation of the collections and the development of activities for the general public has got wider, constituting one of the main sources of conflict between museum designers and museum specialists.

> (Herreman, 2003: 3)

Herreman goes on to advocate the potential of education, namely the integration of museum planning courses into architectural studies, as one way of being able to overcome some of these divisions.

In addition to Herreman's suggestion, theoretical tools such as Binding, which cut across field specialisations because of their focus on semiosis, offer a resource for developing not only shared understandings of semiotic modes, but also a shared metalanguage for talking about ways of meeting common goals. Thus, analytical tools such as Binding make the potentials and limits of three-dimensional space more apparent and open to challenge and redesign if necessary. Such tools are therefore a much needed resource for people working within the museum sector.

Binding also offers project teams and curatorial staff a tool for systematically *analysing* museum exhibitions, a common practice for museum staff. In the past, exhibition analysis has been constrained by the scarcity of shared theoretical tools and understandings. As a consequence, museum staff tend to visit cultural institutions and replicate design features or innovations on the basis of shared affect. In addition to offering a tool for analysis, Binding

helps museum professional raise 'best practice' by giving them important tools for understanding and articulating successful exhibition design and the reasons for it. This also enables them to meet an important strategic objective identified in Saatchi and Saatchi's report, *Australians and the Arts*, mentioned in Chapter 1.

**Objective 4**: Raise best practice throughout the sector in promoting the value of the arts and promulgate this widely to every individual and organisation.

Understand what has worked and why; what has not worked and why not. Where best practice does not exist, develop it.

(Saatchi and Saatchi, 2000: 49)

Binding thus not only provides shared analytical tools, but also opens up systematic ways for museum staff to discuss *interpersonal meanings*. This is one area of meaning-making that staff involved in exhibition design rarely engage with. Too often practical concerns, such as the function of the spaces, their fittings, conservation constraints on the display of objects and appropriate levels of lighting tend to take precedence.

To summarise, one of the central challenges underpinning this research has been to develop a theoretical tool which can assist museum professionals in designing spaces which make visitors feel comfortable, secure and 'at ease'. Not only is the physical and emotional comfort of the visitor integral to the annual visitation figures of a cultural institution, but it has much broader implications. Indeed, it is integral to the survival of the post-modern museum.

Section 5.2 will explore the interpersonal, textual and ideational metafunctions in order to identify those areas which future research could investigate.

# 5.2 Future Research directions

This section will explore the areas which need to be researched and theorised in order for a metafunctionally diversified grammar of three-dimensional space to be developed further. Section 5.2.1 therefore continues with the exploration of interpersonal meanings in three-dimensional space by investigating Bonding. As Bonding constitutes the other half of the interpersonal metafunction, and is the complement of Binding, it will be explored in more detail than either of the other two metafunctions. Bonding is also paramount to the museum achieving its social purpose of transforming visitors by facilitating attitudinal change as discussed in Section 2.2.3.2a (specifically the museum's role as an agent of social change). Finally, Section 5.2.2 examines the textual metafunction, while Section 5.2.3 concludes the chapter, and the thesis, with an exploration of the ideational metafunction.

# 5.2.1 Interpersonal meanings

Bonding is the other interpersonal tool involved in the semiosis of space (the first is Binding). Bonding is concerned with communing, that is, the way the occupants of a space are positioned interpersonally to create solidarity. It is thus concerned with ways of building togetherness, inclusiveness and affiliation. In cultural institutions like museums and galleries, Bonding is about making visitors feel welcome and as though they belong, not just to the building and the physical environment, but to a community of like-minded people — people who share similar values, appreciate some or all aspects of their material cultural heritage and enjoy participating in the shared activities that the institution offers.

Within SFL, work on Bonding has been developed by Martin who has explored it primarily in regard to the semiosis of language (2001; 2002; in press for 2004; in press a; in press b). Essentially, Martin's work on Bonding is concerned with the way language, and to a lesser extent images, negotiate the potential that *feelings* have for aligning readers into overlapping

communities of 'attitudinal rapport' (in press a: 3). According to Martin, feelings play a central role in negotiating communal alignment for they express '…interpersonal attitudes to ideational experience' (in press a: 20), and it is around these shared attitudes that we bond.

Given the importance of feelings in negotiating Bonding, Martin has drawn on the resources of the Appraisal system network (introduced in Section 3.3 and Appendix A) to explore how different texts unfold axiologically to negotiate affiliation. Using Appraisal, Martin is able to show how *shared affect* aligns people around empathy or collective emotions, how *shared judgement* aligns people around character and shared principles, and how *shared appreciation* aligns people around joint tastes or mutual preferences (in press a: 9). In these ways, the successful negotiation of feelings is able to align people in relation to shared values. Martin further suggests that communal alignments may be universal or global in nature, involving bonding around a shared humanity, or they may be more specific, such as bonding into a particular community, such as a community of scholars. Finally, Martin indicates that we can be aligned with more than one community at the same time (in press a: 9).

Martin's work has also shown that Bonding is a multi-dimensional resource. Bonding is thus not only negotiated through language, it can also be negotiated through visual images and the semiotic resonance that is produced when image/verbiage resources are co-deployed in multi-modal texts (1999a; 2001). More specifically, Martin suggests that one role of images in multi-modal texts is to co-articulate ATTITUDE (affect, judgement and appreciation). They may do this by establishing an 'evaluative orientation' to a text by previewing the interpersonal position from which the images and text are to be read. This work also indicates that Bonding has the potential to be negotiated in other semiotics such as music, action and three-dimensional space.

With the semiosis of space, there are at least three analytical tools for considering the ways Bonding is negotiated. The first involves the use of three-dimensional Bonding icons which reconstruct spaces for communing. The second involves Kress and van Leeuwen's notion of 'symbolic attributes' (1996). The third involves the hybridisation of spaces so that one space

serves many functions. Such hybridisation serves to recontextualise the values of one field to another, and in doing so, aligns people into a complex communality.

When analysing three-dimensional spaces, one frequent observation is that spaces are often constructed as replicas of other spaces in the culture, either natural or built. For example, as noted in Peter White's analysis of the Australian Museum's *Shark* exhibition, the entrance to the exhibition was constructed as a shark cage, while the first section replicated the dark, natural environment of the 'shark's world' (1994: 7). Similarly Ravelli's analysis of the Olympic store indicated that several parts of the shop were constructed to simulate sporting venues — swimming lanes, athletic tracks, a pit and so forth (2000). Ravelli refers to these as 'realia' and describes them in the following way:

> There are oars above the windcheaters, for example, a recreation of swimming lanes and swimming blocks among the costumes; a section of floor which looks like an athletics track in the shoe section; an actual recreation of the length of the sandpit in the long jump with the distances marked off on the floor, and even a recreation of the Olympic winners' podium, where shoppers can stand and have their photo taken.

> (Ravelli, 2000: 492)

Although White and Ravelli draw our attention to the existence of such three-dimensional replicas, they do not attempt to distinguish between them in terms of the analytical categories suggested above (bonding icons, hybridisations or symbolic attributes). Museum professionals involved in designing such replicas do not distinguish between them either. They simply refer to them as either 'installations' or 'structured experiences'.

In the following sections, finer distinctions will be made. First, a distinction will be made between the display of unique, rare, valued objects which evoke other spaces, such as museum exhibitions, through *intertextual* references versus *recreations* of swimming lanes, sandpits, athletic tracks and so forth. Objects that intertextually evoke other spaces/places will be

referred to as 'symbolic attributes' in line with Kress and van Leeuwen's work (1996: 108–112), while recreations of one space inside another will be referred to as 'hybridisations'. A third type of spatial reproduction will also be discussed, the bonding icon, which has a strong *rallying* function. Each of these analytical tools will now be introduced and exemplified by drawing on parts of Ravelli's analysis of the Olympic store in Sydney (2000). Sections 5.2.3.1, 5.2.3.2 and 5.2.3.3 will then examine each strategy further in relation to the primary field focus of this thesis, museums. Finally, as section 5.2.1 aims to open up areas for future research, it is beyond the scope of this work to explore how these three Bonding strategies relate, for example, to iconography (van Leeuwen, 2001) or the three different types of signs developed by Charles Sanders Peirce (1955: 102–3).

## 5.2.1.1 Bonding and the Olympic store

The use of symbolic attributes (Kress and van Leeuwen, 1996) is one of the strategies designers use to negotiate Bonding in three-dimensional space. Symbolic attributes draw on shared intertextual meanings and in this way evoke the community which shares these meanings and understands the references. Thus, in Ravelli's analysis (2000), there is evidence of symbolic attributes being used in the store: rowing blades and artefacts from past Olympic Games function as symbolic attributes, evoking intertextual references to cultural institutions like museums which collect valuable material evidence of the past. Not only does the display of such objects in the store invoke the museum-going community which shares these meanings, it also functions at a deeper level, to generate value-transfer. In particular, the worth of the merchandise in the store is elevated through the transfer of the values of rarity and preciousness associated with museum objects. The use of symbolic attributes is thus one of the strategies the store uses to sell what Ravelli refers to as 'something more than merchandise' (2000: 494).

Hybridisation is another tool which negotiates communality in three-dimensional space in powerful ways. By embedding a space within a space, hybridisation facilitates the construction of a complex, multi-functional space. In the Olympic store, for example, people

can shop (that is, look at, browse, try on and/or buy merchandise) as well as imagine what it may feel like to win an Olympic medal (by standing on a podium) or imagine what it would be like to participate in some of the sporting events. As with symbolic attributes, hybridisation also functions at a deeper level to recontextualise the values of one field to another. In this instance, the values associated with the Olympics, and participating in the Olympic Games, are recontextualised onto the field of shopping. Although Ravelli does not use the term hybridisation in her discussion of realia, her analysis of interpersonal meaning strongly points to the power of this strategy for aligning people into a complex communality.

> This is to invite the shopper to actually place themselves *in* the Olympic games: to look at the sandpit, and imagine what it would be like to jump that far; to stand on the winners' podium; to *be in* the swimming pool; to *identify* with the Olympics, and at the very least, to be an observer of something real and actual, something that belongs to the past, the present and the future — all projected as shared — rather than something vaguely imagined or beyond the experience of the ordinary person.

(Ravelli, 2000: 499; emphasis in original)

The final tool for fostering affiliation in three-dimensional spaces is the bonding icon. Bonding icons are emblems or powerfully evocative symbols of social belonging which have a strong potential for rallying. In response to their solidarity function, people can and do rally around these icons. In fact, they instantiate a community and materialise Bonding through the fusion of interpersonal and ideational meanings. Although Ravelli does not identify Bonding icons per se in her analysis, her interpretation of the meanings in the Olympic store clearly points to their existence.

> Visually, the Olympic ideal is represented by the familiar symbol of the five interlocking Olympic rings, representing the five so-called 'continents' of Europe, Africa, America, Asia and Oceania. The Games are universal and unifying, create harmony, engender loyalty to common goals.

(Ravelli, 2000: 504)

As with symbolic attributes and hybridisation, bonding icons are also involved in value transfer. In this instance, the transfer involves recontextualisation, the assignment of the Olympic ideals — harmony, unity and loyalty (Ravelli, 2000: 504) — to the merchandise in the store. The synergy that occurs when the three Bonding tools co-articulate in this way produces a semiotic resonance that is far greater than the sum of its parts (Lemke, 1998b).

The aim of the next three sections is to outline each of these tools further and explore their potential for building overlapping communities of 'attitudinal rapport', specifically in relation to museums and museum exhibitions. Before moving on to consider Bonding in museums, one final point needs to be made. There is a major and significant difference between the Bonding that occurs in retail sites and the Bonding that occurs in museum spaces. In retail, Bonding strategies draw on the power of recontextualisation to contribute layers of 'value-added' to the products available for consumption. In museums, on the other hand, the same Bonding strategies serve a primarily pedagogic function and are used to realign visitors into a new subjectivity, for museums, like schools, are pedagogic sites which share a common goal of public education (see Section 2.2.3.2a for a detailed discussion of the pedagogical role of museums and its evolution). This point is best explained in the words of American museologist, Danielle Rice, and Curator of Education at Philadelphia Art Museum.

> … museums should work to distinguish themselves from consumer-oriented entertainment extravaganzas like Disney World or calculating, multimedia marketing enterprises like Niketown by taking a public and moral stance on major social issues affecting quality of life. I still believe, as I did 10 or even 20 years ago, that museums function symbolically as well as practically. As symbols, museums embody what a culture values most and preserve what it considers most meaningful. They are icons of enlightenment and the human aspiration for truth and beauty. Because of this important symbolic function, it is essential for museums to take carefully considered ethical positions on the shortcomings of today's society. Museums should embrace their symbolic role as leaders of the fight to improve our world.

> (Rice, 1999: 49-50)

Rice makes another important point about the social purpose of museums:

> . . . [Constructivist] theories, combined with the self-criticism that seems to be endemic to the museum profession, have convinced some educators to pull back completely from their function as transmitters of information. After all, if one concludes that visitors' ways of deriving meaning from art are equal to those of museum professionals, then there is no particular necessity to introduce visitors to the values or ideas of the experts.

> (Rice, 1999: 48)

In other words, Rice is saying that museums are pedagogic institutions concerned with cultural reproduction, that is, the transmission of knowledge, and this social purpose distinguishes them from theme parks and leisure centres (Bernstein 1975, 1990). Drawing on Bernstein's theoretical framework, it is possible to be even more specific about the transmission of knowledge by distinguishing between the 'actors' involved in cultural reproduction, that is, the agencies and agents of symbolic control, and the 'goals' or the 'done to,' that is, the subjects of the transmission. Thus Bernstein writes, 'what is reproduced is a function of the degree of integration within *or* conflict between the transmitting agents *and* the response of those who are subject of the transmission' (1975: 149).

Bernstein goes on to indicate there are many agents of symbolic control in a society and classifies them according their function. Thus there are *regulators* (priests, police, lawyers), *repairers* (doctors, psychologists, social workers, counsellors), *diffusers* (people who work in the arts, that is, museums, galleries, theatre, opera, ballet, music), *shapers* (people who work in universities, research centres, research councils), and *executors* (people working in civil service for the government). Teachers fulfil the function of *reproducers*.

The characteristic which all of these agents share is that they employ specialist discursive codes to shape the habits of thinking, reasoning and consciousness in a society. In Bernstein's words, 'These codes of discourse, ways of relating, thinking and feeling, specialize and distribute forms of consciousness, social relations and dispositions' (1990: 135). These

insights make Bernstein's work particularly relevant to museums for attitudinal change —
transformations in the ways people relate, think and feel — has long been at the heart of
public museums, particularly those that emerged in Britain, France and the United States of
America during the late 18[th] and early 19[th] centuries as previously discussed in Chapter 2. In
fact, the guiding tenet of the public museum has always been the notion of the museum as a
democratic institution for the moral and intellectual 'betterment' of its citizens (Einreinhofer,
1997: 33; Bennett, 1995a: 19).

It therefore seems that not only are museums agencies of symbolic control that serve a
diffusing function, but Bonding resources give exhibition designers powerful tools for shaping
forms of consciousness in society by changing the ways visitors think, feel and belong. In
doing so, bonding icons, hybridisation and symbolic attributes enable museum exhibitions to
realign their visitors into new frameworks of sense and sensibility as Section 5.2.1.2 will
discuss. Finally, it is beyond the scope of this thesis to discuss implicit and progressivist
pedagogies, such as constructivism, mentioned by Danielle Rice (1999), except to say that a
theoretical framework for explicit pedagogy will be discussed in Section 5.2.1.3b. An analysis
of the pedagogies used by museums is an important area that future research could pursue.

## 5.2.1.2 Bonding icons: crystallising communal alignment

As discussed in the preceding section, the feelings involved in negotiating communal
alignment are realised not only in language, they may also be evoked through other semiotics.
Through the genesis of shared meanings that evolve amongst members of a community, for
instance, Bonding can also be negotiated through concrete signs or symbols. These may
include three-dimensional objects such as national flags, insignia or iconic buildings such as
the Sydney Opera House. They can also be leaders such as Nelson Mandela (as well as
photographs, busts or sculptures depicting these leaders), songs such as *Swing Low Sweet
Chariot* and *Waltzing Matilda* as well as ceremonial war cries such as the Maori *Haka* or the
Confederacy's *Rebel Yell*. The communing power of these signs lies in their capacity to
symbolise and evoke communality. They are able to do this by crystallising strong

interpersonal attitudes to ideational meanings. In doing so, they allow members of a group to identify with them and rally around them. To reflect the capacity such signs have for evoking powerful feelings of unity and affiliation, they have been referred to as bonding icons.

Bonding icons function to instantiate a community and materialise Bonding through the compression and fusion of interpersonal and ideational meanings. This will be exemplified using a sign that will be familiar to most people living in western cultures, the American flag. Ideationally, the flag represents the United States of America — the land and its people. However, this represents only one set of meanings, as the flag is a composite made of many parts, which in turn have their own layers of ideational meaning. The thirteen stripes for example, represent the beginnings of the nation in thirteen different colonies, while the 50 stars represent the unity of the 50 states. Together, these elements simultaneously compress and evoke the shared history of American people. Ideationally, the flag also functions to compress and evoke abstractions that are part of the collective associations of nationhood that have evolved over time. Phylogenetically then, these include the ideals that North American people have grown to associate with their nation; ideals such as freedom, liberty, equality, justice and democracy.

The colours of the flag, on the other hand, are invested with powerful *interpersonal* meanings. These are best encapsulated in a statement by Nancy Einreinhofer, Director of the art galleries at The William Paterson College of New Jersey:

> The flag also symbolizes the *sacrifice* of our forefathers through the color red [Judgement: resolve]; the *purity* of their intentions through the color white [Judgement: ethics]; and their *bravery* through the color blue [Judgement: resolve].

> (Einreinhofer, 1997: 19; emphasis added)

Significantly, the values symbolised by the colours red, white and blue — sacrifice, purity and bravery — all fall within the domain of ATTITUDE known as JUDGEMENT. Judgement, as

mentioned earlier, is a resource for aligning people around shared principles. In this instance, Einreinhofer points to the power of colour for evoking a collective and shared sense of resolve (sacrifice and bravery) and ethics (purity and sacrifice) in response to the nation's history.

Not only are all of these meanings crystallised in one sign, the American flag, but they also have the potential to multiply (Lemke, 1998b; Ravelli, 2000; Martin in press for 2004; Royce 1998, 2002). The synergy that results from this fusion of meanings means that the flag has the potential to evoke some very powerful emotions — positive or negative. Positive feelings could include loyalty, love of country, devotion, pride, while negative feelings could include fear, anger, hatred, shame or embarrassment. These shared emotions in turn evoke affiliation with one of at least two communities of 'attitudinal rapport': those who identify with the flag and all the values it represents, and those who do not.

Bonding icons thus have a strong *rallying* potential. In addition to their solidarity-building function, people can and do rally around them because they function as a powerfully evocative symbol of social belonging. In fact, they instantiate a community and materialise Bonding through the compression and fusion of interpersonal and ideational meanings. The next section will explore how Bonding icons enable exhibition designers to use specialist discursive codes (Bernstein, 1990) to shape social consciousness. In particular, it will explore how bonding icons can be materialised at two levels: the macro level of a museum-building and the micro level of a display inside an exhibition. Drawing on the resources of Martin and White's APPRAISAL theory, (Martin, 1997, 2000, 2001, 2002, in press a, in press b, Martin and White in press; White, 1997, 1998, 2002, <http://www.grammatics.com/appraisal>) the attitudinal changes some museum visitors feel in an exhibition will be analysed.

## 5.2.1.2a Bonding at a macro level: entire buildings as icons

At a macro level, entire buildings can function as evocative bonding icons. Historically, the best example of this is the Louvre, discussed in more detail in Chapter 2 (see section 2.2.3.2a). Originally a royal palace, a site of privilege, wealth, power and social exclusivity, the Louvre was recontextualised after the French Revolution into a democratic institution in the service of its people (Einreinhofer, 1997: 31). Its democratic symbolism, in turn, inspired the people of the United States of America. Thus Einreinhofer writes:

> The influence of the Louvre was felt across Europe and across the Atlantic Ocean to the shores of America. It was seen as a symbol of the triumph of democracy, equality, and freedom: the world's first great public museum, a palace filled with the world's art treasures, open to all the people. The architecture and the encyclopaedic contents were powerful symbols of intellectual, moral, and democratic progress and inspired the patrons of the Metropolitan Museum to strive to build a collection of similar status.

> (Einreinhofer, 1997: 28)

A contemporary example of a bonding icon is Te Papa Museum in Wellington. It is designed around a very powerful bonding icon: a wedge. On the north-west side of the building, there is a rounded green protrusion emerging from the building, see Plate 5.1. This green protrusion represents the wedge.



Plate 5.1 The wedge exterior, Te Papa, Wellington

A wedge, moreover, has two faces, which most commonly meet in a sharply acute angle, rather than the rounded angle evident in Plate 5.1. Ideationally, wedges have two seemingly contradictory functions. On the one hand, they are used to separate, split and divide things; on the other hand they are used to unite things — to bring things together by 'wedging them in' against one another. The bonding icon of the wedge thus negotiates community by aligning the bi-cultural peoples of New Zealand, both Maori and Pakeha (non-Maori), around the concept of reconciliation: a past that divided them and a future that seeks to unite them.

Inside Te Papa, the wedge functions to literally cleave — divide and unite — the Maori and Pakeha exhibition spaces in the museum building. In terms of its divisive function, all the Maori exhibition spaces are located on one side of the wedge, while the Pakeha display spaces are on the opposite side. In this way the arrangement of exhibition spaces reflects the two faces of the New Zealand nation. The wedge also has a uniting function enabling it to symbolise the reconciliation of Maori and Pakeha cultures. The two cultures meet in the *Signs of a Nation* exhibition, which is spatially located inside the centre of the wedge, see Plate 5.2. At the heart of the *Signs of a Nation* exhibition is the Waitangi Treaty, a seminal text regarded as the founding document of New Zealand. The first part of the exhibition presents the Treaty and some of the differences in meaning between the English version and the Maori translation. The second part of the exhibition discusses some of the abstractions contained in the Treaty — government, citizens' rights and conceptions of land, while the final section examines a land-rights case that is currently before the Waitangi Tribunal. In these ways, the wedge functions to physically unite, in one space, the two main cultural groups of New Zealand. The third space inside the wedge also functions to negotiate a joint pathway in which Maori and Pakeha walk side by side towards a shared future. This pathway of reconciliation can be seen in Plate 5.2 — it is the red carpet vector leading visitors towards 'the light'.

Plate 5.2 Inside the wedge, *Signs of a Nation* exhibition space

The jade green colour of the external wedge, moreover, is invested with powerful *interpersonal* meanings. This choice of colour not only makes it stand out from the cream coloured cladding that has been used on this side of the building through strong contrast, but it also evokes associations of pounamu or green stone. Pounamu is a rock found only in rivers and streams on the South Island of New Zealand. In Maori culture it evokes strong appreciation because it symbolises everything that is valued through its unyielding strength (hence it is commonly used in weapons), its beauty (it is used for adornments) and its rarity, all of which make it a highly prized possession. The colour of pounamu, through the strong evocation of interpersonal attitudes to ideational meanings, is thus able to align people around shared appreciation. By foregrounding value and social significance in this way, colour also functions to bond New Zealanders around a shared attitudinal stance.

Entire buildings can be designed to function as bonding icons which overlapping communities of attitudinal rapport can, and do, rally around. The importance of designing museum buildings which function as bonding icons will be discussed in more detail in Section 5.2.1.2. The focus of this discussion will now shift to a micro level by exploring how individual displays in an exhibition can also have the potential to function as bonding icons.

## 5.2.1.2b Bonding icons at a micro level: exhibition displays

In terms of negotiating communities aligned around shared values, three-dimensional bonding icons can be materialised as displays in museum exhibitions and they seem to have enormous communing potential. An example can be seen in Plates 5.3 and 5.4, the Freedom Bus from the *Indigenous Australians* exhibition inside the Australian Museum, Sydney.



Plate 5.3 Freedom Bus          Plate 5.4 Inside the Freedom Bus

One of the striking things about the Freedom Bus is that it exists as a space that museum visitors can go into. In the words of one museum visitor, 'rather than observing or being on the outside, you sort of stepped in' (museum visitor, cited in Kelly, 1998: 5). Not only can visitors step inside the Bus, they are also invited to sit down in it. These choices for interaction are important to Bonding as they enable the visitor to first develop some sense of being a passenger in a bus. After all, a bus is a vehicle used for travel. In fact, many children make their way to the front of the bus, sit down in the driver's seat and manipulate the steering wheel in at attempt to 'drive' the bus (Kelly, 1998: 7).

Furthermore, the potential for interpersonal interaction inside the bonding icon can be much deeper. In the Freedom Bus, for example, visitors can sit down and watch a documentary on the Freedom Ride. The Freedom Ride was a tour through northern and western New South Wales towns led by the late Charles Perkins and Jim Spiegelman in 1965 to protest against racial discrimination. Visitors who sit down and watch the documentary, through those processes of sitting, watching and listening, develop a strong sense of what it was like to be a social rights activist at that point in Australian history. Through their involvement as 'pseudo participants' in this ride for social justice and equality, visitors may, in turn, develop a sense of empathy for the struggle of Aboriginal people. This empathy, accordingly, rests on a strong sense of impropriety and an alignment around shared ethical principles.

If the empathy and impropriety are felt strongly enough during the interaction, the visitor may experience attitudinal change. The key to such transformation appears to rest on the capacity of the Bonding icon to evoke the full range of Appraisal resources needed for communing. This seems to require that the visitor experiences a strong affectual 'charge' at some point during their interaction with the bonding icon. An example of the affectual 'charge' encountered by visitors to the *Indigenous Australians* exhibition is expressed in the following visitor's comment:

I saw a couple of pictures and just **burst into tears**, I was **a mess**.

(Kelly, 1998: 4; emphasis added)

Once visitors are emotionally moved in these ways, the bonding icon needs to align them around a different Judgement sensibility and a different Appreciation of the value and the worth of the field being considered. This attitudinal realignment or shift is encapsulated in the following visitor's responses to the exhibition.

I felt ashamed of being a human and nor [sic] knowing about pain and suffering caused to them by us.

(Kelly, 1998: 4)

It wasn't that long ago and you think if it happened today. You wouldn't let it happen today. I was hurt by that because I grew up in this country as a young child and it was happening around me and I didn't know it was happening around me as a child. No, definitely. You look back and you think, I was part of it, I wasn't part of it, but I <u>was</u> a part of it.

(*Indigenous Australians* Focus Group Report, Kelly, 1998: 9; emphasis in original)

In fact, if the range of APPRAISAL resources are felt strongly enough, visitors may even be motivated to participate in the field of social justice activism after they leave the exhibition. Some instances of museum visitors engaging in post exhibition-visit social justice activism have been recorded in the *Indigenous Australians* Focus Group Report (Kelly, 1998: 9). In these ways successful Bonding icons are able to re-work the museum visitor's sensibility and align them with the sensibility of the cultural institution.

In terms of semiosis or meaning-making, there seems to be a strong similarity between bonding icons in three-dimensional space and lexical metaphors in language. The use of lexical metaphors, or image-laden language, is a feature of literary language. It creates a tension between meaning and the words used to express that meaning, in much the same way that bonding icons do. Yet, despite this resemblance, there is a major distinction between them: bonding icons have a three-dimensional materiality, that is, they are built, concrete and physical, while lexical metaphors are figurative.

Paradoxically, three-dimensional bonding icons in museum exhibitions tend to be pseudo-real. The bus inside the exhibition, for example, is not the actual Freedom Ride bus, nor is it a real bus, but it does make the visitor sitting inside it feel that it is both. It would be interesting for future research to compare the communing potential of 'pseudo' bonding icons with that of

*'actual'* bonding icons, that is, real buildings that have been removed from their original context and reconstructed inside a museum.[1]

As bonding icons do have enormous interpersonal potential for facilitating empathy, identification and affiliation, further investigations could pursue the semogenetic processes involved in iconisation as well as the ways different modalities co-articulate to produce meanings. National bonding icons, for example, such as the American flag and the Opera House, draw on ideational and interpersonal meanings that are shared by members of given community and that have evolved over a long period of time. So they are able to simultaneously compress and evoke these meanings in very powerful ways, and in doing so, evoke a collective consciousness that constitutes the social bond. Bonding icons such as the Freedom Bus, in contrast, draw on ideational meanings that may or may not be shared by overlapping communities of museum visitors, so other modalities need to be co-deployed if they are to realise their Bonding potential.

Inside the Freedom Bus, for example, audio-visual footage is used — moving images together with language, speech, sound, music and action — to build shared ideational understandings around which museum visitors are interpersonally aligned, especially in relation to shared judgements of impropriety. This suggests that the processes of iconisation, or the ways the attribution of meanings associated with Bonding icons evolve in communities, phylogenetically and ontogenetically, together with consideration of how these meanings change over time as they are contested and renegotiated, could be investigated. Finally, although the issue of individual subjectivity and reader positioning is extremely relevant to this discussion, due to word constraints it will be explored later in Section 5.2.3.2. on hybridisation.

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[1] An example of an actual bonding icon (as opposed to a pseudo bonding icon) would be the Maori Meeting House, Te Hau ki Turanga, which was built by the Rongawhakaata people of Turanga, New Zealand, in the 1840s, and personally transported by them to Te Papa Museum in Wellington, where it is now located in the exhibition space dedicated to Maori cultural heritage.

**Semiotic synergy: Bonding icons and Binding co-pattern to rework sensibility**

As discussed at the end of Section 5.2.1, the potential of Bonding icons for re-working the museum visitor's sensibility and aligning them with that of the institution is closely affiliated with the fact that the museum, like the school, is a pedagogic site. However, not all Bonding icons 'pack the same interpersonal punch'. Halliday's notion of foregrounding, or motivated prominence, may be useful in explaining this phenomenon[2]. In fact, it appears that in three-dimensional exhibition spaces one of the strategies for foregrounding seems to involve the co-patterning of Bonding icons and Binding. One of the best examples of such co-patterning can be found inside the John F Kennedy Library and Museum in Boston (hereafter the JFK Museum).

Designed by the architect IM Pei, the JFK Museum presents a chronological recount of the life of the 35[th] President of the United States of America. Key Bonding icons in the exhibition include reconstructions of President Kennedy's inauguration, the White House and the Oval Office. During their interactions with several of the Bonding icons in the exhibition, visitors are aligned around positive Judgements of Kennedy's principles and political platforms. Namely, the upholding of the economic and civil rights. Significantly, the potential for communal realignment is considerably enhanced when a Bonding icon resonates with strong Binding levels as is exemplified by the Oval Office space.

The Oval Office was important during the Kennedy Presidency because John F Kennedy was one of the first American leaders to regularly communicate with the American people through broadcasts that were nationally televised from his office. Inside the museum, the Oval Office has been recreated as a *moderately* Bound space. Several factors contribute to this. First, it is a reasonably small room with solid floor, wall and overhead planes. In fact, both the scale and shape of the space make it feel firmly enclosed. It is thus both strongly classified and strongly

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[2] Ravelli (2000: 509) has also suggested that Halliday's notion of foregrounding is a useful concept for multimodal discourse analysis.

framed in Bernstein's terms (1975). The choice of furnishings inside the space is also significant. Behind the replica of the President's desk, for example, stands an old television camera, several operational floodlights and two television screens, which have been suspended from the ceiling. These have clearly been included to evoke the function of the room in the live national broadcasting of President Kennedy's speeches.

Secure environments such as the Oval Office are created not only through the organisation of horizontal and vertical planes, but also through the use of lighting. When visitors stand in the Oval Office, for instance, they experience a series of marked changes to the lighting of the room. When all the lights are on the space feels moderately Bound, as shown in Plate 5.5. Then a timer extinguishes the lights, one by one. First, the ceiling up-lights and wall lamps are extinguished as shown in Plate 5.6. Then the down-lights illuminating the green curtain wall fade and the bright spotlight dims as illustrated in Plate 5.7. As a direct consequence of this the Binding levels change too, and the visitor suddenly feels *strongly Bound*, so much so that they subconsciously experience the sensation of almost becoming 'one' with the space.



Plate 5.5 Oval Office          Plate 5.6 Oval Office          Plate 5.7 Oval Office
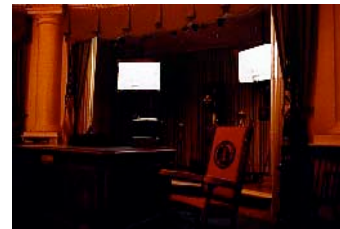
Within seconds of feeling this oneness, the television screens are activated, see Plate 5.7, and visitors are shown a short documentary chronicling the events leading to the President's June 11, 1963 address, on the need for sweeping civil rights legislation. The intense sensation of Binding experienced as a result of the way the space has been constructed and the lighting manipulated is very powerful. In the darkness of this space, many visitors temporarily suspend or surrender their identity and enter into a more communal allegiance.

By Binding the visitor as strongly as this, the exhibition designers are doing more than just making the visitor feel comfortable and secure in a contemplative space. They are using Binding to enable time-travel — making visitors feel as though they are both eye-witnesses in the Oval Office *and* television viewers at that point in time in American history. So successful are these choices for enclosure that they make people feel that they are actually part of a seminal moment in the black American struggle for civil rights. The affectual charge evoked by such simulation opens up the possibility of aligning visitors around positive judgements of Kennedy's principles and a positive valuation of his civil rights achievements. Thus, the co-deployment of resources from Binding and Bonding produces a semiotic synergy that is extremely powerful in its potential for facilitating affiliation and realigning the visitor's sensibility.

Many, if not most, museums aim to move their visitors attitudinally in similar ways. The *Indigenous Australians* exhibition at the Australian Museum in Sydney, as discussed earlier, hopes to inspire visitors to participate in social rights activism by developing empathy for the plight of the weak, the poor and the oppressed, as well as the underlying impropriety that is responsible for their situation. Similarly, Te Papa Museum in Wellington teaches a positive appreciation of reconciliation and a positive judgement of both parties, Maori and Pakeha, through their *Signs of a Nation* exhibition about the nation's founding document, the Waitangi Treaty. In these ways, visiting museums has the potential to bring 'enlightenment' to the visitors, for museums enable them to see and understand things in a new way, and to value and appreciate them differently.

Having established the interpersonal impact that different Binding levels can have on the communing potential of bonding icons, future investigations could focus on the ways that the co-patterning of bonding icons and Binding can impact on the sensibility of museum visitors. For example, if the Oval Office space in the JFK Museum had not been constructed in such a way that it evoked optimal levels of Binding, and yet maintained a relationship of security with visitors, the sense of communal allegiance it fostered would also have been

compromised. Thus, being able to select the level of Binding that best suits the communing potential of the Bonding icon could be further investigated.

In addition, in order to negotiate attitudinal change and transformation, thought also needs to be given to ways of sustaining an affectual charge throughout the duration of the exhibition, and amplifying it at key points. This is where further research into the overlap between Binding and Bonding could be undertaken, together with understandings of how rhythm is packaged in three-dimensional space. In particular, investigations of periodicity[3] could be considered, that is, choices for structuring peaks and troughs of prominence, especially the interpersonal prominence that the co-patterning of Binding and Bonding open up. Finally, there are clearly points in the analysis of three-dimensional space where the benefits of complementary semiotic analyses become apparent. In particular, a multi-modal analysis of the documentaries screening inside each of the Bonding icons discussed so far — the Freedom Bus and the Oval Office — would have much to offer. There is definitely a need to explore the interdependence in meaning-making that exists between different modes. For, as Kress and van Leeuwen (1996), Lemke (1998b) and O'Halloran (1999) point out, the meanings made in different modalities partially overlap and partially diverge. The challenge, in this instance, would involve exploring how choices in a range of semiotic systems overlap and diverge with Bonding and Binding to negotiate communing. Amongst other things, this would involve a more in-depth consideration of the ways meanings are multiplied (Lemke, 1998b).

## 5.2.1.3 Hybridisation

Hybridisation, as previously introduced in Section 2.2.3.2a on the post-modern museum, is concerned with the formation of a 'complex' or many different communities of participants. If museums offer the opportunity to visit only because a person enjoys art or science or natural

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[3] Periodicity is concerned with information flow or the way meanings are 'packaged' (Martin, 1992; Martin and Rose, 2003). Following Halliday and Pike, Martin (1992) uses the metaphor of waves to explain this concept because waves refer to peaks of textual prominence which either point forward or point backward in a text. Big waves, moreover, predict what will happen in each phase of discourse, while small waves refer to peaks of prominence at the start of a clause. In SFL terms, the small peak of prominence in a clause is the Theme. (See Martin (1992) or Martin and Rose (2003) for more detailed explanations of periodicity.)

history, for example, they *exclude* all the people not interested in those fields, see the top part of Figure 5.1.
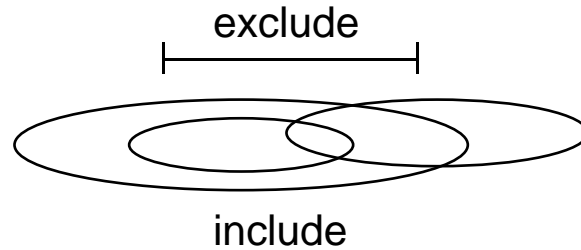


Figure 5.1 Communing (adapted from Martin & Rose 2003: 265)

If, on the other hand, the institution can offer a multiplex set of options that include other fields of the culture such as art, music, film, theatre, public debates, dining, shopping — they increase the number and type of people who can participate in the institution across a broad range of activities. Being able to offer such a broad array of choices for enjoyment and valuing is an important aspect of building a complex of interconnected communities as depicted in the lower half of Figure 5.1. In fact, offering such a broad array of choices has become a global trend amongst museums of the 21$^{st}$ century.

At a deeper level, Bernstein's work on pedagogic discourse (1990) indicates that these are not random selections. In fact, it may be important to distinguish activities involving conspicuous consumption, such as dining and shopping, from the arts-related choices such as film, theatre, music and public debates. The offer of shopping and/or dining inside cultural institutions seems analogous to creating 'value added' products/activities through the recontextualisation of values associated with 'high culture'. In contrast, the layering of multiple choices from 'the arts' involves introducing additional agencies of symbolic control into the museum/gallery setting. All of these agencies, moreover, share the function of *diffusing* discursive relations. Bernstein defines the role of diffusers in the following way.

Diffusers: These are the agencies and agents whose function is to disseminate certain principles, practices, activities, symbolic forms, or to appropriate principles and practices, symbolic forms for the purpose of inducing consumption of symbolic forms, goods, services and activities.

(Bernstein, 1975: 129)

Thus, hybridisation as a Bonding strategy enables diffusing agencies such as museums to offer a multiplex set of options for symbolic control and cultural reproduction in the one site. This, in turn, enables the discourses of symbolic control to be spread over a wide area and between a larger number of people.

In order to accommodate the needs of many different communities and provide activities for their enjoyment, while working at a deeper level to diffuse symbolic control or cultural reproduction, public spaces need to be designed in such a way that they can serve multiple functions. From the point of view of the semiosis of space, the multiplexing of spaces to accommodate a broad range of functions in this way represents a point of inter-functional crossover — where the experiential and interpersonal metafunctions overlap. In fact, it is becoming increasingly common for public spaces to be designed to fulfil more than one experiential function. This means that increasingly they have multiple object and activity-orientations, as will be seen in more detail in Section 5.2.3.

Hybridisation, or the multiplexing of spaces, is important on at least two levels. First, it enables visitors to participate in a range of fields. The provision of public spaces that serve a compound set of functions thus facilitates a range of interactions with a cultural institution. People can then choose to interact as diners, shoppers, art lovers and exhibition goers, researchers, film enthusiasts and/or lovers of fine music. In other words, hybridisation gives the general public the opportunity to 'take-up' more choices and participate in a wider range of social activities and this in turn is instrumental to the reproduction of a culture.

The potential for so many different types of interaction leads to the formation of a hybrid community of participants. In this way visitors are given the opportunity to align themselves into new communities and extend their network of social relationships, while the institution is able to appeal to a much wider and broader audience. This, in turn, is crucial if the institution is to fulfil its diffusing role as an agent of symbolic control.

As the range of interactions hybridisation enables is extensive, the onus is on the institution to *initiate* the interaction by opening up a range of opportunities or choices for participation. It is then up to the individual to decide whether they will accept one of more of the range of offers made by the cultural institution, or reject them. The diversity of choices that hybridisation opens up thus seems to be a powerful way of facilitating interaction and optimising the institution's potential for surviving into the 21$^{st}$ century.

Further research into the ways hybridisation impacts on social interaction has much to gain from the discipline of sociology, in particular Bernstein's work on the ways classification and framing impact on social interaction (1975: 153–6). Of noteworthy relevance here is Bernstein's application of both theoretical tools, classification and framing, to the analysis of a domestic space that is generally private in its function: the lavatory. The insights gained from Bernstein's analysis are rich and appear to strongly complement the work on Binding. In particular, strongly classified and strongly framed spaces seem to correlate with the strongly Bound dimension of the Binding scale, while weakly classified and weakly framed spaces appear to correlate with the Unbound dimension. However, it is beyond the scope of this thesis to follow this line of enquiry except to point out that this area has strong implications for the organisation of museum spaces and could be pursued later by social semioticians interested in exploring the impact of space on social interaction.

Second, hybridisation is important to Bonding as it enables one field of the culture to be recontextualised as another. Correspondingly, the values associated with one field are transferred to the other. For instance, as part of a family festival of activities held to commemorate the opening of the New Asian Gallery at the AGNSW on 25 and 26 October,

2003, there was a screening of the film *Monsoon Wedding*. The screening of films from popular culture such as this are important as they recontextualise the Gallery as a populist institution accessible to citizens of all ages and backgrounds, while the values associated with the Gallery in turn function to recontextualise the film as high culture. Similarly, many large bookstores now include lounge-rooms with sofas and coffee tables which recreate domestic spaces. Such hybridisation transfers values of home and hearth (family life) to the bookstore, while the fictional and non-fictional books on display in the store are recontextualised as objects of everyday life. Through such value transfer, hybridisation is able to facilitate Bonding and simultaneously create a new whole — one that is much greater than the sum of its parts. This is yet another example of the ways meanings can be multiplied (Lemke, 1998b).

Like Bonding icons, hybridisation also resembles lexical metaphor in language. Drawing on the resources of APPRAISAL, Martin has explored the value-transfer of lexical metaphors in relation to the semiosis of language (in press b; 2001). In particular, he has examined the way lexical metaphors are able to reconstrue one field as another and the interpersonal impact this has in terms of provoking reappraisal. For instance, Martin demonstrates how Archie Roach in his song *Take the Children Away* uses metaphor to describe the effect of driving Indigenous people from their land and herding them like animals on missions:

> This story's right, this story's true
> I would not tell lies to you
> Like the promises they did not keep
> **And how they fenced us in like sheep**
> Said to us come take our hand
> Sent us off to mission land
> Taught us to read, to write and pray
> Then they took the children away…

(Roach 1990, cited in Martin, in press b; emphasis in original)

Similarly, Martin draws our attention to the way Bob Ellis' use of imagery provokes reappraisal.

> John Howard says he knows how vulnerable people are feeling in these times of economic change. He does not. For they are feeling as **vulnerable** as a man who has already had his arm torn off by a lion, and sits in the corner holding his stump and waiting for the lion to finish eating and come for him again. This is something more than vulnerability. It is injury and shock and fear and rage. And he does not know the carnage that is waiting for him if he calls an election. And he will be surprised.

(Martin, in press b: 18; emphasis in original)

Clearly such value-transfers can occur in many different semiotic modes and there is scope for exploring, in more detail, the interpersonal impact that such reconstruals of one field as another can have. Of particular interest is a more explicit understanding of how the mapping of values from one field to another functions to provoke reappraisals within the context of museum exhibitions, and how it contributes to the realignment of visitors and shifts in their subjectivities. This issue will now be briefly discussed in relation to museum recontextualisations at two different levels: the macro level of the temple edifice, which has been such a strong choice for the buildings housing museums and galleries in western cultures, and at the micro level, a cell replica inside the *Indigenous Australians* exhibition at the Australian Museum.

## 5.2.1.3a Macro-level hybrids: recontextualised buildings

In many western museums, multiple options for participation in the fields of the culture are not the only three-dimensional materialisations of hybridisation and value-transfer. Hybridisation also tends to be materialised at a macro level in the building housing the institution. During the past 200 years, that is, from the 18th to the 20th centuries, the buildings housing western museums have often been deliberately constructed to look like the Greek and

Roman temples from Antiquity (Hudson, 1987; Tait, 1989; Weil, 1995).[4] In material terms, the imitation of these architectural prototypes has meant that museum buildings of this period are built high on podiums, with flights of steps leading to their entrances. They often have deep porticos at the front with column-lined facades from a mixture of styles or orders, and are frequently guarded by monumental marble lions or sphinxes. The hybridisation of the museum as an ancient temple, moreover, is not confined to the façade of the building. It also extends to the design of many of the internal spaces especially those which resemble 'inner sanctuaries housing powerful effigies' (Duncan, 1998: 475).

At the level of value-transfer, such temple recontextualisations involve constructing museums (secular institutions involved in the collection, research and display of material culture) as religious buildings involved in activities associated with the sacred realm. The value-transfer implicit in this hybridisation is best explained by Stephen E Weil, Deputy Director of the Hirshorn Museum and Sculpture Garden at the Smithsonian Institute, Washington DC.

> To call a museum a temple is to summon up a rich mixture of powerful suggestions. It might suggest, for example, that those of us who work within its precincts are performing some kind of priestly function. It certainly suggests that the attitude most appropriate for visitors to the museum is one of reverence. Above all, it suggests that the museum object toward which that reverence is due may, in some manner, partake of the sacred.

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[4] Some of the museums built between the 18th to the 20th centuries, have also been designed to look like wealthy palaces. The most well-known example is the Metropolitan Museum of Art in New York which was based on the Louvre in Paris. As discussed in Section 2.2.3.2a, the Louvre was initially a palace housing the French monarchy but after the French Revolution the building was recontextualised as a museum and opened for all the citizens of France to enjoy. Given the power of the Louvre's democratic symbolism, it is widely regarded as the prototype of democratic museums in western cultures (Einreinhofer, 1997). It was therefore replicated in the design of the Metropolitan Museum of Art in New York.

To invoke notions of the sacred takes us deeper into the metaphor. Consider how thoroughly the rhetoric that undergirds our daily museum activity is permeated by concepts that relate to the sacred. Don't conservators and curators alike now and then tend to see themselves as guardians of some holy grail? Are they both not specially charged with safeguarding the numinous power of the original object? Don't we all envision museum objects as being in constant danger of pollution — not merely the physical pollution of acid rain and toxic fumes but, as well and worse, the spiritual pollution of sordid commercial interest? Don't we all share a common commitment to ensure and maintain their purity? For that matter, why do some people believe deaccessioning to be so profoundly wrong? Do they think it is a form of desecration to tear out what was once holy out of its museum setting and leave it abandoned and forlorn in the profane world that lies beyond?

(Weil, 1995: 7–8)

In addition to discussing the recontextualisation of museums as temples and how the value-transfer impacts on the institution attitudinally, in terms of its activities and interactions, Weil goes on to hypothetically analyse other institutional sites that museums could have replicated. One of these is the laboratory which, Weil argues, evokes expectations of research, experimental procedures and innovation. Thus, the museum as laboratory hybrid would replace the reverence and faith of the sacred realm with a valuation of the inquisitive spirit and inquiring mind. According to Weil, the result of such choices for hybridisation, and their corresponding value-transfer, would be a more intellectually driven institution. The reconstrual of one field as another with its associated transfer of values thus appears to have the power to provoke some very powerful reappraisals.

At the end of the 20[th] century, however, the design of museum buildings seems to have shifted from hybridisation to bonding icons. Most of the museums built at the end of the 20[th] century no longer look like the temples of Antiquity. Nor do museum buildings resemble any of the metaphors Weil suggests in his reflections; that is, museums are neither designed to look like laboratories nor mausoleums nor Roman forums. Rather, the shift has been to the museum as a

bonding icon — a unifying and identifying symbol of a city, a place where citizens can gather and *rally* at times of communal celebration and a prime tourist destination. Perhaps one of the best known examples of the museum as bonding icon is the newly opened Guggenheim Museum in Bilbao, Spain, see Plate 5.8. Plate 5.9, on the other hand, captures the Bonding potential of museums which are increasingly becoming prime venues for social celebrations such as wedding receptions.



Plate 5.8 The museum as Bonding icon, Guggenheim, Bilbao



Plate 5.9 The museum as wedding destination, Melbourne Museum, Melbourne

Even in its planning stages, the concept of a bonding icon shaped the choice of the museum building in Bilbao (Plate 5.8).

The aim of the selection committee was to choose a building that would be greater than the sum of its parts and with a strong iconic identity of its own so that people would want to

visit the building for itself, while being respectful of the art to be shown inside it. The inescapable analogy was Wright's Guggenheim Museum on Fifth Avenue. The neutral box concept was definitely rejected; instead, frequent references were made to Jorn Utzon's Sydney Opera House (1956–73).

(van Bruggen, 1997: 28–9)

In fact, there seems to have been a global surge in the creation of museums designed as bonding icons since Frank Lloyd Wright's floating, expanding organic spiral, the Fifth Avenue Guggenheim Museum in New York. On this note, architectural writer Justin Henderson says that '…museums consistently rank among the most original, intriguing, and challenging buildings designed in the world today' (1998: 11). Thus, in New Zealand, we find Te Papa Tongarewa, which has been designed with a wedge in its spatial and symbolic centre symbolising reconciliation (as previously discussed in Section 5.2.1.2). Similarly, a major attraction in Berlin is Libeskind's extension to the Baroque Jewish Museum. This extension has been designed as a series of six vertical hollows or voids — austere, abstracted, minimalist spaces designed to evoke the absence of Jewish lives on European culture and history. In Australia there is the National Museum of Australia, designed as a virtual knot that weaves together a series of bent, twisted and fragmented threads representing the different peoples and different stories at the heart of the Australian identity, while in Bilbao, Frank Gehry's museum symbolises either a fish, as suggested by the shingling of the external titanium wall panels, or a boat with billowing sails floating alongside the river.

Thomas Krens, Director of the Solomon R Guggenheim Foundation, offers the following explanation for the shift of museum buildings from temple hybrids to bonding icons.

Museums are an eighteenth century idea, which is the idea of the encyclopedia, in a nineteenth century box – the extended palace — which more or less fulfilled its structural destiny some time in the twentieth century…the eighteenth century idea/nineteenth century box concept was predicated on a horse and buggy culture where people lived in a region and therefore they came to the center, the museum…Since people were fundamentally

nonmobile, the idea was to replicate the image of the museum as encyclopedia in each location that decided to do this.

(Krens, cited in van Bruggen, 1997: 18)

Krens goes on to suggest that as we now live in a global society with extensive transportation systems and an era of mass tourism, many people are willing to make the 'pilgrimage' to a museum. Thus, he writes, 'you can afford to get different identities because you are no longer bounded by the concept of the encyclopedia' (1997: 19). However, as museums have resembled temples for such a long time in the phylogenesis of western cultures, it would be interesting to explore whether their association with values of reverence and sacredness is still intact or whether it is changing, and if it is changing, what are some of the associated shifts in values taking place. The fact that Krens chooses the lexical metaphor of a pilgrimage for a museum visit seems to indicate that museums and the objects they house are still associated with the sacred realm in western societies.

Having explored some of the issues related to hybridisation at the macro level of the museum building, the potential of hybridisation at the micro level of exhibition display will now be considered.

## 5.2.1.3b Micro-level hybrids: displays in exhibitions

Of particular interest to this micro level consideration of hybridisation are the attitudinal changes some museum visitors feel after their interaction with hybrid spaces *inside* museum exhibitions. Adjoining the Freedom Bus in the social justice section of the *Indigenous Australians* exhibition, for example, is a hybrid space, a reproduction of a police cell, which has the potential to evoke powerful feelings of communality, see Plate 5.10. This cell is different from the Freedom Bus discussed in Section 5.2.3.1 because it is not emblematic — it is not an icon that people rally around. Rather, it is a replica of a space in the same way that

recreations of sporting venues were included inside the Olympic store (Ravelli, 2000). In terms of function, this cell recreates a small space used for incarceration.



Plate 5.10 The cell, *Indigenous Australians* exhibition

Furthermore, as the cell is a three-dimensional reconstruction, museum visitors are able to step inside it, which opens up the potential for sustained interaction. Visitors who go inside the cell see a bed, a toilet and a basin, and if they choose to do so, they can sit on the bed. Staff working in the space and teachers who have taken students there on excursion, have recounted stories of people going into the cell and sitting down in the space for up to 30 minutes. One teacher brought a student whose family members have been incarcerated and recounted how powerful the experience of going into the cell was for that student (personal communication with a history teacher from Our Lady of Mercy College, Parramatta, 20 June, 1998). It thus seems that by being inside the cell, sitting on the bed and looking out through the bars, some visitors develop a sense of how it might  feel to be imprisoned and helpless. In this way they can develop a sense of empathy for people who were and still are incarcerated.

The cell, moreover, is a particularly rarefied installation, as not many people have had such an experience. This is reflected in the following comment from one of the visitor focus-groups discussing the three-dimensional replicas inside the exhibition.

> It's the jail. That's one of the most powerful. That is about death in custody. I brought several groups of friends, they came from Sweden, before Christmas and after, and I told them before that the Aborigines hanged themselves, but I never have the chance to go to the real jail, because apparently I don't think many people can go there and investigate.

(Kelly, 1998: 8)

As the preceding quotation indicates, the cell not only has the potential to develop a sense of empathy for those who are imprisoned, it also has the potential to align visitors into a new sensibility around shared Judgements of impropriety in relation to the social justice issue of Aboriginal Deaths in Custody. According to the 1996 Royal Commission into Aboriginal Deaths in Custody, between 1980 and 1989, at least 99 Indigenous people died in prison, youth detention centres or police cells (Aboriginal and Torres Strait Islander Social Justice Commissioner, 1996). Contrary to most expectations, foul play was not a significant factor. Many victims died because of negligence while in custody, and most victims were arrested for minor crimes. One of the central findings was that racism was the major contributing factor to the deaths.

Thus, once museum visitors have developed a sense of empathy for the incarcerated, an attitudinal realignment, based on shared ethics, needs to occur, and for most visitors this requires access to more information. Some visitors, for instance, may wonder what a cell and being imprisoned has to do with an exhibition on Indigenous Australians, others may make the connection by drawing on their own field knowledge and the fact that the cell is located in the section of the exhibition dealing with the issues of social justice; others visitors may actively search for the information they need. In this particular instance, information on Deaths in Custody is presented on a text panel outside the cell. Without access to this information, the

cell replica would not be able to evoke the range of Appraisal resources needed for negotiating the communality that lies at the heart of Bonding.

The importance of intersemiosis to Bonding cannot be ignored at this point. Clearly we need frameworks of analysis to help us understand more about the contribution of different modes to the semiotic practice of constructing a shared sensibility and moving visitors attitudinally by building different enlightenment paths through an exhibition. Two other related areas that need further exploration at this point are the notion of reading position (Kress, 1985) and learning theory (Macken-Horarik, 1996; 1998).

To succeed in moving visitors attitudinally requires careful negotiation with the complex subjectivities of museum visitors. Hybridisations such as the police cell, for instance, are informed and shaped by institutional ideologies and values (Karp et Al., 1992; Hooper-Greenhill, 1992; Hodge and D'Souza, 1994; Hodge, 1998). Not all visitors who read the text panel and interact with the police cell will comply with the discursive positioning of the institution. Some will contest the attitudinal alignment by rejecting it. In fact, there has been at least one such incident. Not long after the exhibition opened, the Australian Museum was accused of racism by an extremely angry visitor who complained that because the focus of the cell was solely on black deaths in custody ignoring all the white people who have died while incarcerated (personal communication with Brett Dunlop, Manager, Visitor Services, 30 April, 1997).

Therefore, hybridisations such as the cell, and bonding icons such as the Freedom Bus, which aim for attitudinal transformation, can benefit from the work of Kress (1985) on reading position and Cranny-Francis (1992) on readership. Kress defines the concept of 'reading position' as being the textual position constructed for the reader in which all the elements of a given text make sense. Cranny-Francis acknowledges the power of this discursive practice (1992: 184) and extends it further by differentiating between different types of readers. According to Cranny-Francis there are tactical readers whose responses to a text involve resistance and non-compliance and there are resistant readers who consciously reject the

positioning of a text and the ideological assumptions and values on which it is based. Although most visitors to museums will, for the most part, be compliant readers who accept much of the discursive positioning of the institution, negotiating the subjectivity of compliant readers is also challenging, as museologist Eilean Hooper-Greenhill points out.

> The total experience (in living history or interactive exhibits), the total immersion (in gallery workshops and events), can have the function, in the apparently democratised environment of the museum marketplace, of soothing, of silencing, of quieting questions, of closing minds.
>
> (Hooper-Greenhill, 1992: 214)

Alongside complex considerations of subjectivity, when discussing ways of moving visitors attitudinally through an exhibition, future research could explore the relationship between learning and three-dimensional space. In particular, a more principled understanding of the semiosis of knowledge would be of use to museum professionals. A semiotic perspective that may be of relevance has been developed by Macken-Horarik (1996; 1998). Macken-Horarik identifies four different but complementary domains of knowledge: the Everyday, the Applied, the Theoretical and the Reflexive. In essence, everyday knowledge refers to commonsense understandings; applied knowledge refers to practical, hands-on learning; theoretical knowledge is concerned with abstractions and technicality; while in the reflexive domain, knowledge is contested.

Macken-Horarik's domains, unfortunately, do not account for all the aspects of learning that take place in museums. For instance, they do not account for the axiological dimension of learning, yet as discussed several times, one of the key aims of museums is to move visitors attitudinally (Einreinhofer, 1997: 33; Bennett, 1995a: 19). So another area for further research would involve exploring whether or not there are Appraisal dimensions to Macken-Horarik's domains of learning. First impressions indicate that there are.

In terms of Appraisal, Macken-Horarik's everyday domain seems to evoke feelings from the APPRAISAL sub-system of Affect. In particular, it seems to have the potential to evoke feelings of comfort, familiarity and a sense of being 'at home' with the objects and ideas on display in cultural institutions. Thus exhibitions of portraiture, such as the Archibald display held annually at the AGNSW, tend to be popular with museum audiences and frequented by a wide cross-section of the community because the paintings are of public figures with whom visitors are familiar. The everyday domain seems able to evoke the feeling that the exhibitions are concerned with everyday things that visitors can relate to; they are not elitist or exclusionary. This suggestion also concurs with Bourdieu's (1969) research into museum visitation, discussed in Section 1.2 of this thesis, where he found a strong correlation between class and the display of everyday objects. He found, for example, that a broader cross-section of the population attended exhibitions of objects drawn from everyday life such as furnishings, ceramics and folk objects. Bourdieu suggested that this is because people of all classes are familiar with everyday objects, know what they are used for and can therefore relate to and appreciate them.

The applied domain, in contrast, seems to overlap with the APPRAISAL sub-system of Judgement. Judgement is concerned with aligning people around shared evaluations of principles (ethics, veracity) and/or social esteem (capacity, tenacity and resolve). In the context of museum displays, Macken-Horarik's applied domain relates to hands-on learning, that is, learning with objects and learning through doing. The applied domain, in turn, seems to align people around shared judgements of positive capacity. These relate to the skills involved in making a work of fine art or making artefacts such as shields or boomerangs. Judgements of positive capacity can also be extended to the work of museum professionals. Increasingly, visitors are being given the opportunities to accompany aquarists and marine biologists in their daily museum work. Visitors are also increasingly shown the applied results of art historical research such as the use of x-ray technology to unravel historical layers of meaning in an artwork. Access to such research findings tend to evoke judgements of positive capacity from museum visitors. These judgements, in turn, seem to strongly correlate with the applied domain of learning.

The theoretical domain seems to correlate with the APPRAISAL sub-system of Appreciation. In particular, it appears to have the potential to invite visitors to develop a very different appreciation of the value of a field, from their commonsense, everyday perspective. It is therefore the domain which apprentices visitors into new knowledge, that is, theoretical knowledge and understandings, via technical language and abstraction. This induction often occurs through written language, via the text panels on the walls; it can also take place in the spoken mode through commentaries given during guided tours, documentaries, curator-led talks in exhibitions or symposia involving world-experts in a given field. For instance, text panels often articulate a thematic interpretation of the works on display — an interpretation not available to visitors in the everyday domain. In terms of Appraisal, the theoretical domain tends to evoke Appreciation, in particular, positive valuation of a field, because visitors come to know things in new ways and value them differently. In fact, learning in most museum exhibitions seems to be bi-focal: it concerns learning about some field *and* learning to value it in the way the institution wants.

The fourth and final domain is the reflexive one, where knowledge is contested. Many educators refer to this domain as critical literacy (Wells, 1987; Delpit, 1988; Rothery and Macken, 1991; Cranny-Francis, 1992; Luke, 1993; Rothery and Veel, 1993) for it is the domain where it is recognised that knowledge is not set in concrete but open to dialogue. It is also the domain in which knowledge is contested and not seen in terms of absolute truths. But the challenger needs to be informed. This means that to engage with the key messages of an exhibition reflexively, the visitor needs to be able to draw on the specialised knowledge and understandings of the theoretical domain. Thus, the reflexive domain has the potential to literally and metaphorically change the way visitors see an object or an artwork. It also has the potential to change a visitor's stance on a moral issue like reconciliation. The reflexive domain is thus extremely powerful as it has the potential to facilitate re-bonding, that is, to reconfigure the museum visitor's sensibility in relation to the field of the exhibition. So the reflexive domain has the potential to rework the visitor's attitude in a way that cuts across Affect, Judgement and Appreciation. As a result, the visitor develops a new sense/sensibility.

This seems to be the underlying intention behind hybridisations such as the police cell replica in the *Indigenous Australians* exhibition.

A principled understanding of Macken-Horarik's domains of knowledge would provide invaluable tools for museum project teams. For, unlike schools and universities, which classify their learners according to their age, achievement or pre-requisite levels of knowledge, museums exhibitions are open to all members of the public regardless of their background. In fact, it is probably accurate to say that most exhibitions are aimed at general family audiences. Admittedly, families are not a homogenous group. Within a given family, members may have different levels of knowledge about different fields. Some or all members may be novices, some members may be amateurs with strong general knowledge, while others may be experts in the field. This variation makes it difficult for curators and museum project teams to be able to 'pitch' the levels of knowledge presented in exhibitions appropriately. Given these challenges, a principled understanding of the semiosis of space, coupled with a principled understanding of the semiosis of knowledge, including ways of moving visitors attitudinally and axiologically, has much to offer public museums striving to build a community of people aligned around shared institutional sensibilities.

## 5.2.1.4 Symbolic attributes

The third tool which can be used in three-dimensional spaces to evoke Bonding is what Kress and van Leeuwen refer to as symbolic attributes (1996:108–12). In Kress and van Leeuwen's work, symbolic attributes refer to two-dimensional signs which appear in visual images. The notion of symbolic attributes can be seen in Anthony Browne's picture book *The Tunnel* (1989). *The Tunnel* is a story of familial love involving a brother and sister who quarrel endlessly and are forced to spend time together in order to learn to appreciate and value one another. Many of the illustrations contain references to fairy tales and familiar cultural associations. In the Orientation stage of the narrative, for example, there are visual depictions of a black cat and a witch's hat (1989: 2), while in the Complication stage there is an image of the hunter's axe from Little Red Riding Hood (1989: 15) and Rapunzel's rope (1989: 16).

Symbolic attributes such as these constitute intertextual references. Such intertextuality is important to Bonding because it evokes the community which shares the meanings and understands the reference.

The intertextual meanings evoked by such symbolic attributes seem able to evoke more than just a sense of Appreciation. They also seem to be able to evoke Affect (in this instance the sense of rescue relief associated with the hunter's axe) and transfer these emotions, together with a sense of foreshadowing the resolution, to the second text, the picture book. Finally, there is also a sense in which positive Judgement is evoked in relation to the capacity or giftedness of the illustrator in being able to draw such clever intertextual parallels. In these ways, symbolic attributes appear to be able to evoke the range of Appraisal resources needed for negotiating the communality that lies at the heart of Bonding.

Symbolic attributes, moreover, are not confined to two-dimensional images. They equally apply to the third dimension. In her analysis of the Olympic Store, discussed earlier in this chapter, Ravelli (2000) points out that one of the distinguishing features of this store was the inclusion of three-dimensional sporting 'realia' such as rowing blades, as well as Olympic artefacts from past Games. These, as was seen, function as symbolic attributes in that they are able to evoke intertextual references to cultural institutions such as museums. Not only does the inclusion of such objects invoke the museum-going community which shares these meanings, it also functions to generate value-transfer. In particular, the worth of the merchandise in the store was elevated through the transfer of the values of rarity and preciousness implicit in museum objects.

### 5.2.1.4a Macro level symbolic attributes on buildings

Similarly, symbolic attributes can be found at a macro level in museum buildings and at a micro level in museum exhibitions. At the macro level, symbolic attributes abound in museum buildings, especially recently constructed museums such as the National Museum of Australia, which opened in March, 2001 and was designed by Ashton, Raggart and Martin, a Melbourne-

based firm of architects, see Plate 5.11. The building housing the National Museum of Australia is a striking example of post-modern architecture which celebrates fragmentation, rejects the distinction between high and popular culture, and blends, in the one building, symbolic attributes from many other buildings and western cultural traditions. The windows in the hall, for instance, are an intertextual reference to the windows in the Opera House in Sydney. There is a fish on one wall of the building (fish were early symbols of Christianity); there are dimples along one of the curving gold aluminium walls which look like Braille lettering; there are arrows which invoke signs from our everyday lives and one of the walls that curves around the central courtyard resembles a series of black, white and red dominoes.



Plate 5.11 Museum building with symbolic attributes — National Museum of Australia

The main symbolic attribute, however, is a 6 metre wide x 4 metre high spiral ramp which loops in front of the entrance to the museum, see Plates 5.12 and 5.13. This loop evokes many references a roller coaster ride and a skateboard ramp to name two from popular culture. At another level, it is also a reference to the linear axes of Walter Burley Griffin's city plan for Canberra. The lines which created his axes, however, have been bent, twisted, stretched and fragmented in the loop, but still create symbolic vectors that link the building to the city centre, the parliamentary triangle and Uluru, the symbolic, geographic and Aboriginal heart of the Australian continent.

Plates 5.12 and 5.13 The loop, National Museum of Australia

In order to discuss the value-transfer of the symbolic attributes used in the National Museum of Australia, the institution needs to be located within the broader context of national museums. National museums, together with international and national exhibitions, once functioned to tell grand narratives, that is, triumphant and inspirational stories of national progress (Davidson, 2001: 12), as well as being repositories for the display of treasures from other lands. This is why the buildings were monumental in scale and adorned with symbolic attributes associated with the glorification of the nation. The National Museum of Australia, in contrast, was built during the post-colonial era embracing the notion that a nation is an imagined community shaped by an interplay of forces and that it is both pluralistic and constantly in flux as the following quote from the Museum's Founding Director, Dawn Casey, indicates:

> Our goal is to tell the stories of Australia in a way that is familiar to Australians — not a museum for all people all of the time, but a museum for many people, an everchanging reflection of an everchanging society and a continual process of negotiation and renegotiation with stakeholders who often have in common only that they have many differences.

(Dawn Casey, 2001: iii)

The symbolic attribute of the loop fulfils many important communing functions. At one level, it creates an imaginary vector that links the building to the symbolic and geographical heart of the nation: Uluru. After all, a nation occupies a geographical place. Furthermore, this connection has the potential to be inclusive of Australia's Indigenous peoples. At another

level, the loop connects the museum to the nation's political seat of power, the parliamentary triangle, in particular, New Parliament House on Capital Hill. This is another important connection as a nation is also a political construct. Finally, the loop's references to popular culture — roller coaster rides and skateboard tracks — together with the dominoes — function to include those people who may feel excluded from cultural institutions. Furthermore the non-monumentality of the building, with its fragmented forms, bright colours, multitude of textures and industrial materials breaks with the sandstone, temple recontextualisations of the past and signals a bold, innovative and experimental national museum. It is not insignificant, moreover, that ARM, the architects chosen to design the building, are a firm renowned for their irreverence — a quality that is also deeply valued amongst many Australians. In these ways, the symbolic attributes designed as part of the building's exterior may function to facilitate the transfer of values, in particular the value of inclusiveness, which lies at the heart of this post-modern national museum.

## 5.2.1.4b Micro level symbolic attributes in exhibitions

The interpersonal significance of symbolic attributes also extends to the micro level of the exhibition. In the *Dead Sea Scrolls* exhibition, for instance, which was held at the AGNSW in 2000, symbolic attributes were used in very powerful ways. In the central space housing the actual scrolls, large cream columns were placed at the entrance and exit of the space. All of the columns were abstracted or minimalist in design. This abstraction meant that they did not feature any of the ornamentation or embellishment typically associated with the columns of Antiquity. Thus the column shafts were *not* grooved, and capitals and entablatures were *not* present. Despite their stark abstraction, the columns in the exhibition served an important symbolic function in that they evoked intertextual references to temples built in Antiquity.

These intertextual references were further reinforced by the elevation of the flooring in the exhibition, discussed earlier, see Section 4.2.3.1b; most ancient temples were built on elevated platforms. Moreover, open porticos were built in front of temples, supported by columns with a *corresponding* portico and supporting columns at the opposite end of the building. Once again this feature is hinted at in the design of the exhibition space. The symmetrical placement

of the columns at the entrance and exit of the installation hints at the symmetry that characterised the architecture of ancient temples. By displaying the scrolls inside a space that uses symbolic attributes to evoke deep cultural resonance with temples of the past, there is also a value transfer. The values transferred to the scrolls include sacredness, reverence and deep spiritual and religious significance.

The evocative power that symbolic attributes can have on communal alignment should not be underestimated. In the initial plans for the *Indigenous Australians* exhibition, for example, the young Aboriginal designer had drawn a long corridor with text panels and objects displayed on the walls. Suspended from the ceiling of the corridor were a series of coloured football socks. These socks functioned as symbolic attributes in that they were an allusion to the way some Aboriginal people hung themselves while incarcerated. When the preliminary sketches of the exhibition were presented to the Project Team for consideration, the Indigenous members of the team strongly objected to the football socks because they felt it would be too confronting for Indigenous visitors. Consequently the socks were removed and the Project Team decided to reconsider the way it intended to deal with the controversial, sensitive and difficult issue of Aboriginal Deaths in Custody (personal communication, Tim Sullivan, Chairperson, *Indigenous Australians* exhibition, 19 December, 2003).

This is just one instance of the power that symbolic attributes can have, as the values they evoke have the potential to impact negatively, as well as positively, on communal alignment. It also points to the significance that shared knowledge can exert on communing potential, for it was primarily the Indigenous members of the team who understood the intertextual reference. The non-Indigenous members, for the most part, were outside the culture and did not have the field knowledge to enable them to engage with the meanings evoked by the football socks until the allusion to hanging was clearly explained to them by the Indigenous staff. The evocative power of symbolic attributes is thus strongly field dependent, but when invoked, has the potential to be extremely powerful.

To summarise, attitudinal change has long been at the heart of public museums, which have been concerned with the moral and intellectual 'betterment' of their citizens since the 18th

century (Einreinhofer, 1997: 33; Bennett, 1995a: 19). As discussed in this thesis, it requires the careful consideration of two related challenges:

- how to design spaces that make people feel safe and secure
- how to facilitate attitudinal change in visitors.

The first of these challenges, the design of spaces that make people feel secure, has been the main focus of this work and was addressed in the exploration of Binding (Chapters 3 and 4). Binding is an interpersonal resource which is crucial to facilitating attitudinal change because it enables exhibition designers to create spaces which make most visitors, including those who have not been socialised into the practices of museum visiting, feel comfortable and secure in the unfamiliar institutional surroundings of museums.

The second challenge involved in facilitating attitudinal change, that is, constructing a shared sensibility, has been discussed in Section 5.2.1. It is a multi-faceted undertaking, and in terms of choices for organising space, involves using one or a combination of the following resources:

- bonding icons
- hybridisations
- symbolic attributes.

It also requires understandings of how these can be co-patterned with Binding. Finally, the complex negotiation of visitor subjectivities involves a consideration of how to induct visitors into Macken-Horarik's domains of knowledge, especially in relation to the axiological dimension of learning. In essence, then, if museums are to fulfil their overriding social purpose, which requires them to be agents of social change, they need to think carefully about constructing secure and welcoming spaces that build enlightenment paths which foster affiliation. By working in tandem, the combined resources of Binding and Bonding have the potential to invite visitors to belong to a community of people aligned around shared knowledge, values and understandings.

Finally, the interpersonal resources of Binding and Bonding also address the challenges involved in public access and public display which were identified in Chapter 1 (see Section 1.4). The ways in which they do this are summarised in Table 5.1.

| Public access | Challenges | Social semiotic resources |
|---|---|---|
| | Make newcomers feel welcome and secure in the museum. | Binding. |
| | Give newcomers entry points for understanding the objects on display. | Bonding (Macken-Horarik's domains, 1996; 1998). |
| | Develop strategies for inviting newcomers to belong to a community of like-minded people. | Bonding (bonding icons, symbolic attributes or hybridisations; Macken-Horarik's domains, 1996; 1998). |
| Public display | Space-related issues (how to physically design/organise the exhibition space). | Binding. |
| | Space-related issues (selecting the most appropriate design metaphors for the field of the exhibition). | Bonding (bonding icons, symbolic attributes or hybridisations). |

Table 5.1 Public access and public display meet Binding and Bonding

Having completed the exploration of the interpersonal metafunction, Section 5.2.2 will examine some of the choices which exist for organising the textual metafunction in three-dimensional space.

# 5.2.2 The textual metafunction

As one of the central tenets of SFL is Halliday's metafunctional hypothesis (introduced in Section 2.2.1.2), the following two sections will attempt to 'open-up' the remaining two metafunctions for the space grammar developed in this thesis: the textual and the ideational. Section 5.2.2 will therefore explore resources for organising textual meaning in three-dimensional space, while Section 5.2.3 will focus on ideational meaning.

The textual metafunction is concerned with the way 'texts' are organised as semiotic reality. Buildings, like written and spoken texts, unfold in time, but they also unfold in space. So, in accounting for the logogenesis of a building, two types of tools are required. First, tools that enable *static* descriptions of three-dimensional spaces; second, tools that describe the way three-dimensional spaces unfold *dynamically*. Static tools are needed because a building is a fixed and constructed entity, while dynamic resources are required because buildings unfold through the dynamic unfolding of a user's pathway.

In considering the logogenesis of a building, five resources appear to have potential for exploring the textual organisation of spaces. They are:

- Theme–Rheme (as developed by Halliday, 1985a)
- Information value (as developed by Kress and van Leeuwen, 1990; 1996)
- Path–Venue.
- Prominence (which is similar to Kress and van Leeuwen's notion of salience, 1990; 1996)
- Framing (as developed by Kress and van Leeuwen, 1990; 1996).

The first tool, Theme–Rheme, has the potential for analysing the textual organisation of the *entrance(s)* in a building. The second, Real–Mediator–Ideal, relates more to the ways the *vertical layers* inside spaces are organised. These layers can either be the storeys within a building or the layers in a single volume of space (for example: an altar, a choir loft and the

pews inside a single storey church). The third tool, Path–Venue, describes the organisation and flow of spaces *within* and *between levels*, while Prominence, the fourth tool, is concerned with ways of drawing people *out of one space* and luring them *into another*. Finally, framing is concerned with the degree to which adjoining three-dimensional spaces are connected into one seemingly continuous flow of space, or disconnected and marked off from one another into discrete enclosures.

Of the five tools described above, most thought has been given to the way Halliday's concepts of Theme–Rheme apply to the semiosis of space. So in the next section, Theme–Rheme will be applied to two different types of buildings: a retail complex, the Broadway Shopping Centre in Broadway in Sydney and the National Museum of Australia in Canberra. Each of the other five tools will then be discussed in a more exploratory way to raise for consideration some of the issues further research might be concerned with.

# 5.2.2.1 Tools for describing the fixed layout of a building

### 5.2.2.1a Theme–Rheme

Halliday refers to Theme as 'the element which serves as the point of departure of the message' (1985a: 38). It is also the element that comes first in the clause in English. In the unfolding of a building, the Theme or point of departure is the *entrance*, for it spatially orients us to the other spaces inside the building. We can therefore consider the rest of the building to be the Rheme.

Furthermore, when considering the Theme or entrance to most homes, often it comprises only one space such as a hallway, while the entrance to many large buildings tends to consist of at least two spaces: a small passageway or vestibule, followed by a large entrance foyer. The first space, often a small and Bound passageway appears to function as a transitional point, a space that marks the transition from the exterior to the interior of a building. The main pedestrian entrance to the Broadway Centre, for example, consists of a small space with

escalators followed by a larger entrance space. Similarly, the Theme of the National Museum of Australia consists of the small triangular vestibule, see Plate 5.14, and followed by an extremely large entrance space known as the hall, see Plate 5.15. The hall is circular in shape and consists of many small hubs: a cloaking hub, a shopping hub, a cafeteria hub, eating hubs, resting hubs and so forth.



Plate 5.14 Initial entrance to the hall, National Museum of Australia
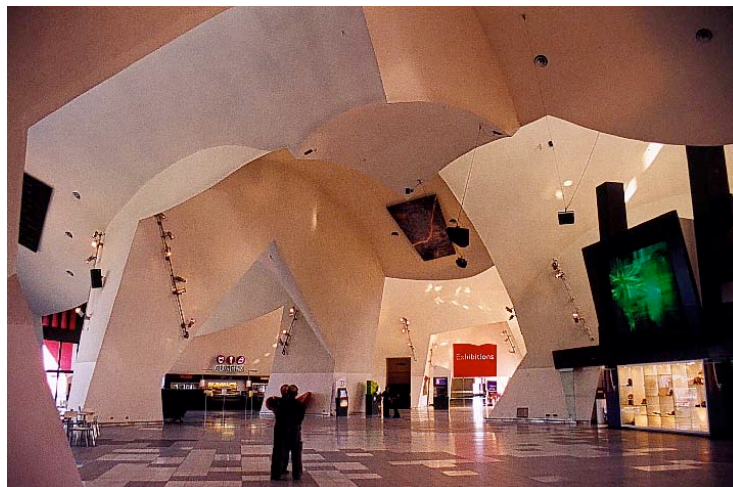


Plate 5.15 Main entrance to the hall

Just as the Theme in a clause can have three types of elements: topical, interpersonal and textual (Halliday, 1985a), similar elements can be found in the entrances to buildings. These entrances are strong textual Themes cataphorically pointing us into the building and they can also be strongly interpersonal. In the entrance to a large department store called David Jones in Elizabeth Street, Sydney, for instance, shoppers are greeted by a doorman wearing white gloves and a livery suit, there is a foyer, a large floral arrangement is usually placed high on a plinth and there is a grand piano. A pianist entertains shoppers with ambient background music at key retail times in the day. Grand points of departure such as this provide the users of the building with a strong interpersonal orientation of status and prestige.

Similarly, in museums most entrance spaces also tend to have strong interpersonal Themes. In the National Museum of Australia, for example, staff are positioned at a desk close to the second entry point into the Hall, see Plate 5.16. They smile, greet visitors, issue them with maps, give them cloaking as well as directional information, answer any questions and point them forward into the building. They are also often the final point of interpersonal contact that visitors have with the institution as they leave the building.



Plate 5.16 Staff waiting to greet visitors to the National Museum of Australia

In addition, soft ambient music plays in the background and there is an interactive that has been designed to make strong interpersonal contact between the institution and younger visitors. It is titled 'This is your museum' and has a mirror face reflecting the face of younger visitors who stand in front of it, see Plate 5.17.

Plate 5.17 'Your Museum' interactive, National Museum of Australia, Canberra

Other museums, such as the Metropolitan Museum of Art in New York and the Getty Center in Los Angeles, give strong interpersonal orientations of status and prestige to their entrance spaces through the display of large floral arrangements. In most museums, the glossiest and most expensive materials, such as marble, tend to be displayed in their entrance foyers. O'Toole indicates that these choices send strong interpersonal messages. 'As a rule, the higher you rise (status wise), the smoother you get, so in the Director's suite, your walls are wood-panelled or highly plastered and satin-finished and your floors are highly polished or carpeted in fine wool or silk' (1994: 101). Clearly, the choice and quality of materials used in the entrance spaces of buildings send strong interpersonal messages of status and prestige.

So far, some of the choices for materialising textual and interpersonal Themes in three-dimensional space have been discussed. Three-dimensional spaces also have topical Themes which will now be explored. The entrance to a building like a retail centre, for example, has a strong topical Theme with an ideational element which primarily functions to assist users with way-finding. In shopping centres this is typically the store directory with a map of each floor and a list of all the retailers and their location. The Broadway Centre also uses colour brochures with maps of each level in the complex. They locate these in stands on the left hand side of each entry point to the Centre.

The entrances to museums also have topical Themes which appear to be strongly bi-focal: they have both a strong way-finding orientation and they also preview the content of the exhibitions. In the National Museum of Australia, for example, in addition to the map of the Museum which staff members personally hand to every visitor, there are several prominent directional stands, see Plate 5.18, as well as a combined directional stand and interactive 'Wayfinder' touch screen, see Plate 5.19. These touch screens give visitors information about both types of topical Theme: maps showing the location of each exhibition in relation to where the visitor is standing in the Hall *as well as* written previews of the experiential content of the exhibitions and photographs of some of the key objects.



Plate 5.18 Directional stand



Plate 5.19 Combined directional stand/'Wayfinder' touch screen

Furthermore, the topical Themes which preview the content of the exhibitions seem to function in ways that are similar to macro-Themes in spoken and written texts. In the National Museum of Australia, for instance, macro-Themes are materialised in three main ways, using a variety of semiotic modes. First, they are presented as written texts in the multi-media 'Wayfinder' touch screens just discussed. Second, they are foregrounded on a large, centrally located screen which features a video montage of moving images and text, see Plate 5.20. This video previews the names of the major exhibitions in the Museum and some of the key themes

explored by the Museum. For example, the verbiage accompanying the images of the *Eternity* exhibition includes the following lexis: passion, fear, laughter, love, mystery, hope, separation, devotion, joy. These are the names of the sub-themes the exhibition explores.



Plate 5.20 Documentary film footage as a macro-Theme

Finally, macro-Themes are displayed on the ceilings of the Hall as a series of specially commissioned artworks, see Plate 5.21. These were produced by four contemporary Australian artists and visually represent the experiential focus of the museum's permanent exhibitions. In other museums, macro-Themes are often materialised by large banners suspended from the ceiling or other forms of signage. Macro-Themes such as these are clearly multimodal as they *most frequently* combine visual images and verbiage, a feature which points again to the need for a clearer understanding of how the co-deployment of semiotic systems impacts on meaning-making in the third dimension.

Plate 5.21 Visual images (artworks) as macro-Themes

## 5.2.2.1b Organising the vertical plane: Real – Mediator – Ideal

The second tool for analysing the static organisation of a building or series of spaces concerns the way that the levels or stacks within the building are vertically organised. In relation to the vertical plane, in western cultures public buildings are often made up of several levels stacked onto one another. This means they are often constructed as a floor complex, analogous to the notion of a clause complex in language. In fact, many public buildings such as museums and shopping centres are vertically polarised in this way and organised as paratactic serial structures.

The organisation of the vertical plane can be further analysed using Information Value, the tool Kress and Leeuwen have developed for exploring polarisation (1990; 1996).[5] Information

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[5] Kress and van Leeuwen have developed two multimodal tools for analysing Information Value in terms of the composition of texts. In addition to Real – Ideal, they also use Given – New, which explores the polarisation of meanings associated with left and right. However, Kress and van Leeuwen do not apply Given – New to the semiosis of three-dimensional space because they point out that with regard to architecture, 'Left and right are not usually polarised' (1996: 260). This trend is further reinforced by Ravelli's analysis of the Olympic Store in Sydney (2000). Thus Ravelli observes, 'very little use is made of the horizontal axis as a structuring principle' (2000: 500). Nevertheless, Martin and Stenglin (in press) did find that Given – New can be applied to the organisation of some, although not all, spaces. So Given – New does appear to have some applicability to the third dimension but clearly more investigation is needed into how, when and why it tends to be taken up as a choice.

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Value is concerned with an important characteristic for the compositional organisation of elements in western cultures — the *opposition* between top and bottom. Kress and van Leeuwen exemplify this in relation to multimodal texts indicating that higher up in some multimodal texts we tend to find what is positioned as 'ideal', the generalised, or the essence of something, while lower down we often find the 'real', the specific, or the instance. In advertisements, for example, there might be a photo of an attractive island, or a person, or a car, at the top, whereas the more factual information generally goes at the bottom. Sometimes, however, the distinction between Real and Ideal is not as clear cut, so Kress and van Leeuwen indicate that there can also be a mediating space with a bridging function linking these oppositions. They refer to this semiotic space as the Mediator, and exemplify it with triptychs, both medieval and contemporary.

In their account of architectural semiosis, Kress and van Leeuwen apply the principles of Real–Ideal to the *façades* of some buildings (1996: 260). The Real includes elements such as the entrance to a building and the doors, while the Ideal encompasses elements such as clock towers, globes, spires and crosses. Thus they write:

> The vertical dimension is used to polarise, to produce difference, with the Ideal, the element(s) that give(s) the building its more general and 'ideal' significance on top…Below, on the other hand, is the space of the Real — the forecourts where we meet, the doors through which we enter.

(Kress and van Leeuwen, 1996: 260)

Given the cultural orientation to vertical polarisation, it is not surprising to find that sacred and holy places such as altars tend to be located on elevated base planes (as discussed in Section 4.2.3). This elevation clearly enables them to function as the Ideal element in the space. Similarly, sacred buildings such as churches, temples, shrines and even museums are also often built on elevated ground planes (or foundations). This raises them above their surroundings in the built environment and gives them an Idealised presence.

The principles of Real–Ideal can also be applied to the textual organisation of the meanings made *inside* a building, especially a building made up of a vertical floor complex such as the National Museum of Australia. The National Museum of Australia building, for instance, is divided into three levels which function as Real, Mediator and Ideal. The entry level is on the Ground floor of the building and functions as the Mediator. The museum also has a lower ground floor level, the Real, and an upper level, Level 1, which is the Ideal. The vertical organisation of the building, moreover, overlaps with the three experiential themes of the museum: people, land and nation. The way they overlap is summarised in Table 5.2.

| Vertical organisation | Experiential theme | Specific focus of the Experiential theme |
|---|---|---|
| **Ideal** (Level 1) | People | — Migration including terra nullius. |
| **Mediator** (Ground floor) | Land | — The geographic heart of the nation. |
| | Nation | — 23 key events in Australian history. |
| | People | — First Australians exhibition. |
| **Real** (Lower Ground floor) | Nation | — Images and symbols of national belonging: Victa lawnmower, Hills Hoist and so forth. |
| | People | — First Australians exhibition. |

Table 5.2 Summary of the vertical organisation of the National Museum of Australia, Canberra

The starting point for exploring the vertical organisation of the exhibitions inside the National Museum of Australia is the Mediator level of the building. The themes located at that level are respectively Land, Nation and People. Land constitutes the actual point of departure because one of the central tenets of the museum is that a nation occupies a distinctive geographical

place (McIntyre and Wehner, 2001). As land symbolises the place to which a nation belongs, it leads the museum's exploration of how Australian national history has been shaped. The visitor then moves forward into the *Nation* exhibition, also located on the Mediator level of the building. This space, moreover, constitutes the physical and symbolic heart of the building. It presents a synopsis of Australia's collective memory from 1788 to the present day as encapsulated in 23 chronologically organised snapshots of key events in Australian history.

The *Nation* exhibition functions textually as Mediator in other ways too, for it constitutes the Pathway that physically leads to exhibitions which explore other thematic concerns. For instance, it leads the visitor forward to one consideration of the People theme: the *First Australians* exhibition. It also leads the visitor downstairs, to the lower ground floor and the Real exploration of Nation, which consists of the images and symbols of belonging to Australia: the digger, the shearer, the kangaroo, the Hills Hoist, the Victa lawnmower, the Australian Broadcasting Corporation (the ABC) and so forth.

On the Ideal level, or Level 1 of the building, is a theatrette and an exhibition space. The theatrette screens a film called *What Next?* It is a montage of documentary footage that presents an overview of some of the collective memories of Australian people since white occupation. Also on the Ideal level is the *Horizons* exhibition, which presents issues related to 'the peopling' of Australia since 1788. These include explorations of terra nullius, the First Fleet and migration, including contemporary issues related to border policing and refugees.

While Kress and van Leeuwen's concepts of Real – Mediator – Ideal can clearly be applied to the organisation of the levels inside a building, there are several related issues that require consideration in terms of the vertical polarisation of space. Does Mediation of the vertical plane occur in three-dimensional spaces? Or does each level in a building function as the Ideal to every other level that is below it? In other words, is the organisation of the levels characterised by recursion, or more technically, does a hierarchy of periodicity (Martin, 1992; Martin & Rose, 2003) operate in three-dimensional space?

## 5.2.2.1c Path – Venue

Once a visitor enters a building and has been Thematically oriented to it — textually, interpersonally and topically — they find themselves in the circulation area. So another tool for analysing the textual organisation of fixed spaces is needed and the notion of Pathway – Venue is proposed. It is concerned with the flow of people and how access to the spaces within each level is organised.

Once users are in a circulation area, the textual focus seems to shift to channelling, distributing and circulating them into the stores of a shopping centre, the exhibitions of a museum or gallery, and/or the rooms of a house. The spaces designed to regulate 'people flow' function as the Paths. Their role is to channel, distribute and circulate occupants into the other parts of a building. Paths thus constitute the traversable arteries of the building. They are the built medium along which people move or the conduits designed for walking, meandering and strolling.

In terms of their materialisation, Paths can be vertical or horizontal, linear or circular, stationary or moving. Some of these choices are shown in Plates 5.22 and 5.23.



Plate 5.22 Path, JFK Museum      Plate 5.23 Path, Canadian Museum

Not only do Paths function to circulate, channel and distribute people, they are also designed to deposit them. The point at which people are deposited is the Venue. The term *venue* has been selected to denote this point because the actual word comes from Old French and literally means 'a coming'. Thus venues are the places visitors 'come to' or move towards as they stroll along the Paths. From an ideational point of view, the Venue is the experiential hub to which each path leads.

Finally, there appears to be strong inter-functional overlap between the notions of Path–Venue and Binding, especially in relation to the dimension of insecurity. For example, if the Paths are constructed as strongly Bound, tunnel-like arteries which cataphorically channel the visitor into a building, but do not deposit them soon enough at a chosen Venue, or provide them with clear sight lines or viewing paths of the Venue towards which they are moving, the visitor can begin to feel extremely insecure. It is not uncommon in these situations for visitors to experience strong feelings of claustrophobia and oppressiveness — as though they have literally been 'boxed in'. In fact, staff from the National Museum of Australia have said that one of the frequent concerns expressed by visitors who are new to their museum is the feeling of being trapped by the design of the Paths which they lead visitors deeper and deeper into the museum without clearly indicating the location of chosen destinations or how to exit the building.

To summarise, from a textual point of view, Paths are concerned with information flow. From an experiential point of view, they constitute a route and/or a destination. Interpersonally, they can be constructed as any one of the four dimensions of the Binding scale: Too Bound, Bound, Unbound or Too Unbound. Venues, on the other hand, are the deposit points. They are the places where visitors stop, stay and engage. Thus they can be visually represented in the following way, see Figure 5.2.
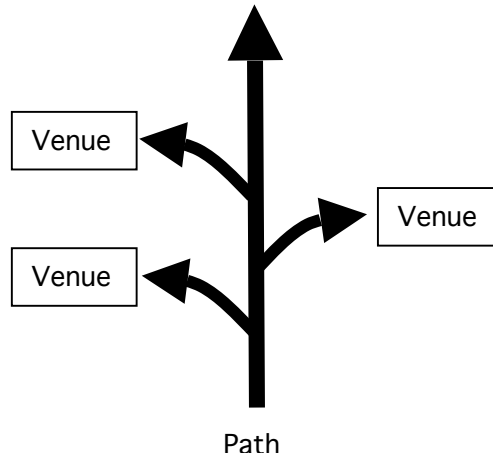
Figure 5.2 Path – Venue

## 5.2.2.1d Prominence

Prominence is a complementary tool for understanding 'way-finding' and 'people flow' in three-dimensional spaces. It is analogous to Kress and van Leeuwen's notion of salience, which is concerned with the composition of two-dimensional images (1996: 183). Like salience, Prominence is also concerned with attracting the viewer's attention. However, the function of Prominence is to attract the occupant's attention in order to *draw them out of one space* and *lead them into another*. One of the central concerns of Prominence is thus the 'drawing power' of a space: its potential for luring, enticing and inducing people to move towards the next space.[6]

Professionals working in the area of museum and exhibition design tend to use the term 'sight lines' to refer to Prominence (Kabos, 2002). Prominence does indeed create sight lines or gaze vectors so that people who are circulating through a building can see their way forward. By literally enabling the user of the space to identify where to flow as they look for openings in their visual field, Prominence enables the user's gaze to construe avenues or paths. In these ways, Prominence enables the user's gaze to probe, sense the possibilities and 'open up' the potential for flow.

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[6] In museum design, the term 'sight lines' tends to be used to refer to Prominence or the 'drawing power' of a space (Kabos, 2002).

To exemplify, in the National Museum of Australia, the circular design of the main entrance Hall together with the visual uniformity of the shape and colour of the spatial hubs inside the entrance space, meant that way-finding was difficult for many visitors. In particular, they had difficulty probing and locating the opening that led from the entrance Hall to the exhibition areas. To overcome this problem, an extremely large and prominent sign was placed above the entrance passage leading to the exhibitions, see Plate 5.24. Not only is the sign prominent in terms of its size, but careful colour selections ensure that it is also able to attract the attention of most museum visitors. The background colour of the sign is thus red, the lettering is silver and the combination contrasts starkly with the white walls and ceilings of the surrounding space. By drawing peoples' attention in this way, Prominence enables users of the space to locate openings so that it is clear where they are to flow and they can construe a pathway.



Plate 5.24 Prominence, National Museum of Australia

Prominence tends to be materialised by visual elements that draw the occupant's gaze. These can be either ideational or non-ideational. Ideational elements include signage as discussed in relation to the topical Themes of the National Museum of Australia, see Section 5.2.1.1a. Non-ideational elements include the relative size of doorways and pathways, colour contrasts and lighting (in particular, the notion of the light at the end of the tunnel shown in Plate 5.25). Non-ideational elements also include the conspicuous placement of objects at the end of a

pathway functioning as the 'visual lure', see Plate 5.26. These can be placed high on the wall or in the middle of the vertical plane. Furthermore, non-ideational elements include vectors formed by the arrangement of the lights overhead on the ceiling plane, and/or lines in the floor plane, see Plate 5.25 and/or vectors along a wall. They also include gaze vectors or sightlines.



Plate 5.25 Prominence — light/floor vectors  Plate 5.26 Prominence — visual lure vectors

Although prominence is typically realised by vision and gaze, it is possible to use other modalities such as sound and other senses such as smell. The Collins Bookstore in Broadway, Sydney, for example, uses the aroma of freshly ground coffee from their coffee shop to draw people into the main section of the store. Clearly, more work could be done on the multi-modal materialisation of Prominence and the ways the different modalities co-articulate to draw a visitor out of one space and into another.

## 5.2.2.1e Framing

The final tool for exploring the textual organisation of three-dimensional spaces is Framing. Framing refers to the way the elements constructing a space or a series of connected spaces may be either disconnected, that is, separated from each other, or connected, that is, joined

into one seamlessly integrated whole (Kress and van Leeuwen, 1990: 97-98; 1996: 183). In terms of textual meaning, Framing orders interpersonal and textual meaning by signalling that the elements, or units of information organised in a space, either belong together or do not. Framing, furthermore, is not concerned with absolutes, but rather, with degrees (van Leeuwen, 1998). This means that a space may be Framed either strongly or weakly.

In his analysis of an exhibition about time in the Old Royal Observatory in Greenwich (1998), van Leeuwen introduces Framing with the following example drawn from Iedema's research into administration.

> One Government department where some of our research was conducted has four floors. The top executive structure on the fourth floor has its own sealed offices. On the third floor offices surround an open plan layout with dividers which are about person-high and separate individual desks. On the second floor, similar dividers separate groups of desks, while the first floor has no separate offices and the dividers are about four feet (1 m) high. Institutional rank is translated into degree of spatial independence.

> Iedema (1995: 153), cited in van Leeuwen (1998: 15)

As the quotation indicates, Iedema's analysis of Framing is strongly focused on the organisation of the walls, especially their height. Framing in three-dimensional spaces seems to be equally materialised by other choices for constructing a wall plane, such as the openness or 'closedness' of the spatial envelope, the permanence of the walls, their span and the visual weight of the materials including their depth.

In fact, all three enclosing planes — the wall plane, the overhead plane and the base plane — seem to play an important role in determining how strongly or weakly a space is framed. Thus, in analysing Framing, the organisation of the overhead plane could also be considered, especially the number of planes constructed, the material used and its depth, the height of the ceiling/roof and its shape. Similarly the base plane also seems to play a role in determining how connected or disconnected a space is. Of particular relevance would be the consideration

of the materials used. For example, in museums, the flooring often changes from hard materials such as terrazzo to wooden floorboards or softer materials such as carpet. Shifts in flooring such as this are important for several reasons. In addition to impacting on Binding by increasing the degree of resilience felt underfoot and thus enhancing visitor comfort, such changes can also signal a textual transition, that is, the visitor has moved from one experiential section of the museum to another, see Plate 5.27. The ways changes in flooring can organise three-dimensional spaces have also been discussed in relation to open plan housing such as warehouse conversions (see Section 4.2.3.2d).



Plate 5.27 Framing through flooring changes, Queensland Art Gallery, Brisbane

Furthermore, the systems materialising Ambience appear to be very relevant to the analysis of Framing. In particular choices for colour (hue, value, saturation) seem to have the potential to impact strongly on constructing a sense of continuity or discontinuity between spaces, as do choices for lighting, pattern and texture. All of the systems of Ambience seem to have an important function in creating visual and cohesive spatial continuity/discontinuity. For example, complementary choices tend to create continuity, while contrasting choices tend to create discontinuity (as discussed in relation to floor coverings in Section 4.2.3.2d).

Finally, it should also be pointed out that Bernstein (1975) has also used the term 'framing' in his work. In relation to architecture, Bernstein uses framing to refer to the physical delineation of a space and how strongly or weakly that space is insulated from other spaces in a house. This meaning is analogous with the way Kress and van Leeuwen have used the term. At another level, Bernstein uses framing to explore the social relationships or the types of interaction that takes places between the occupants of differently framed spaces. Strong framing, for example, means reduced options for interaction, whereas weak framing allows for a range of options. This is another example of inter-semiotic complementarity, as the analysis of social relationships falls within the interpersonal metafunction of three-dimensional space. Although it is beyond the scope of this thesis to account for the ways differently framed spaces impact on social interaction, this is another productive area that could be pursued in future research.

## 5.2.2.2 Tools for describing the dynamic unfolding of a building

The final challenge for the textual metafunction concerns the development of a dynamic tool that is able to account for the flow of people through three-dimensional spaces. As this is both central and Given, the challenge is to find an appropriate metalanguage for describing, theorising and analysing this flow from the point of view of logogenesis. When working with the semiosis of two-dimensional objects, such as written texts, for example, the eyes move and reading pathways become important. In three-dimensional constructs, on the other hand, it appears that people physically move through the meanings and all their gazes can be considered textual. The challenge of conceptualising this dimension of semiosis is both an interesting one but one that lies far beyond the scope of this study.

Having considered some of the aspects of textual meaning that require further research, the final area to explore is the ideational metafunction.

# 5.2.3 Ideational meanings

In order to be considered a complete semiotic description, the grammar of space needs to be able to demonstrate how three-dimensional spaces are able to represent aspects of the ideational world. Within the semiotic system of language, Halliday refers to ideational meanings as those that construe experience as though it were natural reality (1978). He further sub-divides ideational meaning into two sub-sections: the experiential and the logical. In paradigmatic terms, the basic difference between the two is that experiential meanings construe experience using non-recursive systems such as PROCESS TYPE in English, while logical meanings construe experience using recursive systems such as AGENCY, TENSE or PROJECTION. In language, moreover, experiential meanings are concerned with 'goings on': processes which involve doings, beings, feelings and happenings, and these, in turn, involve participants and are associated with circumstances.

In his exploration of the semiosis of architecture, O'Toole has investigated some of the ways experiential meanings are construed in three-dimensional spaces. His research indicates that just as experiential meanings are central to language, they are also pivotal to the semiosis of three-dimensional space.

> In the first place, most architecture, unlike painting, fulfils a primarily practical function: the function of a building is, first and foremost, the <u>use</u> for which it has been designed…so how can we relate this to what we have been calling the Representational function? The point is that buildings are not just functional machines; they have signs of their practical functions written all over them: they signify their function as use. This makes architecture more similar to language than to the merely contemplative visual arts. I therefore use Halliday's term *Experiential* to designate this function.
>
> (O'Toole, 1994: 85)

As the preceding quotation indicates, O'Toole conflates experiential meaning with the practical uses and functions of three-dimensional spaces. This is a most productive approach to pursue. One way to understand *even more* about the specific nature of the practical functions that built spaces are designed to serve involves contextually projecting experiential meaning. Using Martin's stratified model of context, a contextual projection of experiential meaning gives a focus on field (Martin, 1992: 536). A field-focus in turn means that experiential meanings can either have an object orientation (nominal group) or an activity orientation (transitivity processes, especially material processes). Each of these choices clearly involves experiential meanings since activities and things are phenomena that construe some external reality.

## 5.2.3.1 Activity and object orientations of three-dimensional spaces

In order to illuminate more about the experiential nature of built spaces, architectural buildings and spaces will now be explored according to their activity and object orientations. An activity orientation, for instance, enables buildings to be classified in terms of doings or processes. At a very general level, we might distinguish between buildings for congregating (churches, concert halls, sporting stadiums and so forth) and buildings for nesting (houses and blocks of units). It is also possible to classify buildings according to their activity orientation at a more delicate level. We can thus distinguish between different types of congregating buildings: retail buildings, worship buildings, teaching buildings, performance buildings, administrative buildings, recreational buildings, court buildings, sporting buildings and so forth.

As field contains *both* an activity orientation and an object orientation we also need to account for the objects involved in the processes of retailing, worshipping, teaching, performing and so forth. In a building designed for congregating such as a suburban shopping centre, for example, the main activity that takes place is shopping, while the objects could include groceries, clothing, books, furniture, home wares and so forth. In nesting buildings such as houses, on the other hand, many different activities take place. These activities, moreover, often occur in distinct spaces which have been designed to fulfil discrete functions. In a

kitchen, for example, the activities are primarily cooking, washing and eating while the objects include the oven, stove, microwave oven, pots, pans, utensils, cutlery, plates, glasses and so forth. Furthermore, the activities which take place in a bathroom involve washing the body and grooming while the objects are the shower recess, the bath, soap, water, taps, towels, bath mat and so forth.

In a cultural institution such as an art gallery, viewing, contemplating and musing would be the main field-related activities, while the artworks — the paintings, sculptures, installations and performance pieces — would be the objects. It is also possible to analyse the experiential function of museum and gallery spaces in more detail. The entrance foyer of the National Museum of Australia, for example, has several very different activity and object orientations as encapsulated in Table 5.3.

| Activity | Objects |
| --- | --- |
| Orienting visitors | Desk/stand with maps. |
| | Signage. |
| | Directional computer interactives. |
| | Large screen with video montage of key themes covered in the exhibition. |
| | Video welcoming visitors to the museum and introducing them to the array of special programs for that day. |
| Toileting | Toilets. |
| | Cubicles with doors. |
| | Mirrors. |
| | Basins, taps and soap dispensers. |
| | Hand dryers. |
| | Bins. |
| | Nappy changing facilities. |

| | |
|---|---|
| Shopping | Merchandise. |
| | Shelving, display stands, racks and cabinets. |
| | Cash registers. |
| | Sales counter. |
| | Signage. |
| | |
| Eating and drinking | Tables and chairs. |
| | Fridges, ovens and coffee machines. |
| | Accessory table with utensils and napkins, cash registers. |
| | Trays and disposal bins. |
| | |
| Resting | Comfortable couches and lounges. |
| | Sound system for ambient music. |
| | |
| Cloaking | Staff. |
| | Counter/bench. |
| | Storage bays for objects. |
| | Tokens. |
| | |
| Ticketing (for special exhibitions) | Computer/cash register. |
| | Counter. |
| | Ticketing machine. |
| | Staff. |

Table 5.3 Experiential analysis of the entrance hall to the National Museum of Australia, Canberra

The range of activities that take place inside the entrance hall to the National Museum of Australia — orienting, toileting, shopping, eating/drinking, resting, cloaking, ticketing —

indicates that the space has been designed to serve multiple functions. It also indicates that the relationship between activity orientation and object orientation can be much more complex than a simple one to one correlation. In fact, it seems to be increasingly common for public spaces to be designed to fulfil more than one experiential function (as previously discussed in Section 2.2.3.2a).

Spaces designed to fulfil a multiplex of functions appear to be a feature of post-modern society. In Australia, for example, many retail spaces no longer simply function to display and sell merchandise. Only one level of the Cotton Shop in Darling Harbour in Sydney, for instance, functions as a retail store; the other level functions exclusively as a museum, complete with display cabinets, showcases and computer interactives. In addition to museum displays, retail spaces increasingly seem to incorporate coffee shops and performance spaces. In keeping with this trend, and in order to optimise revenue (discussed in Section 2.2.3.2a), it is not surprising that many museum spaces are also designed to serve multiple functions. In addition to displaying objects, they often house musical performances, film screenings, theatre performances as well as hosting conferences and functioning as venues for social celebrations such as wedding receptions, graduations, conference dinners and so forth.

Finally, the object orientations discussed in this section could be further sub-divided into furnishings (tables, chairs, lounges, desks, cupboards), fittings (taps, soap dispensers, mirrors, fixed shelving), accessories (curtains, blinds, rubbish bins, pots, pans, glasses) and so forth. In addition to considering their experiential functions, future research could also explore the ways objects such as these, together with the way they are arranged in a three-dimensional space, can materialise interpersonal and textual meanings. For instance, O'Toole (1994) points out that the arrangement of 'easy' chairs in a lounge room can facilitate and enhance interaction between the occupants of the space. Thus he writes, 'Grouped in a rough circle at easy talking distance around a coffee table, they signify what Ervin Goffman called a "with"[7], a group of people in ongoing interaction with each other' (1994: 97).

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[7] For further information on the work of Erving Goffman, O'Toole refers the reader to E Goffman (1968). *Relations in Public*. Hammondsworth: Penguin, p. 54.

Similarly, the placement of objects in a three-dimensional space can also materialise important textual meanings. The placement of a cluster of objects in the centre of a space, for instance, can impact on Path and the way people flow through a space as it often means they need to walk around the objects and obstacles in their way (see Section 5.2.2.1c Path–Venue).

Furthermore, the placement of objects that draw the visitor's gaze can be important to the materialisation of Prominence, which is concerned with drawing users out of one space and leading them into another (see Section 5.2.2.1d on Prominence). Thus further research could explore the tripartite organisation of meaning in relation to objects such as furnishings and fittings and the ways they are arranged in three-dimensional spaces.

## 5.2.3.2 Exploring particulate structures

In researching the ideational metafunction there is also scope for exploring the types of particulate structure that map experiential and logical meanings in three-dimensional spaces. Halliday (1978: 139) associates ideational meanings (experiential–logical) with particulate realizations. For Halliday, particulate structures are segmental. Experientially they divide bounded wholes into parts, as reflected in constituency representation. In fact, a part–whole approach to particulate structure has widely been applied to the modelling of text structure both within SFL and elsewhere.

Experientially, part–whole approaches are concerned with breaking text down into discrete chunks. These chunks, moreover, are most commonly organised sequentially and are characterised by the linear unfolding of meaning towards some teleologically driven goal. Within SFL, these approaches have been labelled genre-based approaches (reviewed in Christie, 1992; Cope and Kalantzis, 1993; Martin, 1993a; 1998; Rothery 1989; 1996). Martin has suggested that such part–whole particulate approaches have been informed by the analysis of linguistic units into constituents or particles (Martin, 1992; 1995a; 1995b; 1997).

Martin has therefore argued that genre descriptions should not be limited to such a part–whole bias as these are reductive representations for text structure (1992: 546–60; 1993b). So Martin

(1995a, 1997), White (1997, 1998) and Iedema (1997) have looked beyond part–whole models for representing particulate structure and they have modelled experiential and logical meaning in the following way. First, they have suggested that experiential meaning revolves around one main element, a nucleus, and several dependent elements, the satellites. Second, they have suggested that logical meaning involves multiple nuclei, which are serially related. This means that in serial structure, 'the text unfolds, step by step, with each step dependent on the immediately preceding' (Martin, 1997: 17). Martin, White and Iedema thus indicate that particulate structure organises text into either orbital or serial patterns. This is best exemplified with textual examples because these structures have mainly been applied to the semiosis of language.

White, for example, defines a nucleus as a section of a text that contains the 'core informational and interpersonal meanings' (1997: 111). He then draws on a 'hard' news story to exemplify the particulate structure of an orbital text. The headline and the opening sentence constitute the nucleus. The rest of the text functions as the satellites which specify the meaning of that nucleus through elaboration, contextualisation, appraisal and explanation. In this way, texts which are orbitally organised have a nucleus — satellite structure. Furthermore, orbital and serial structures in three-dimensional spaces can be modelled in the following way, see Figure 5.3.
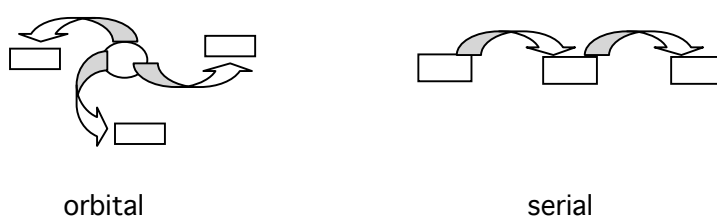


orbital                              serial

Figure 5.3 Orbital and serial structures

Orbital structures also appear to have the potential for application to the organisation of three-dimensional space. Just as a text with an orbital structure has only *one* nucleus, in the built environment mono-nuclear buildings would include gazebos and single-volume monuments such as the art deco Anzac War Memorial in Hyde Park, Sydney. Orbital structures also seem

to have the potential to map onto the experiential design of many museum and gallery exhibitions. An example of this can be seen in Figure 5.4, *Under the Sign of the Cross Exhibition* at the Canadian Museum of Civilisation (2000).
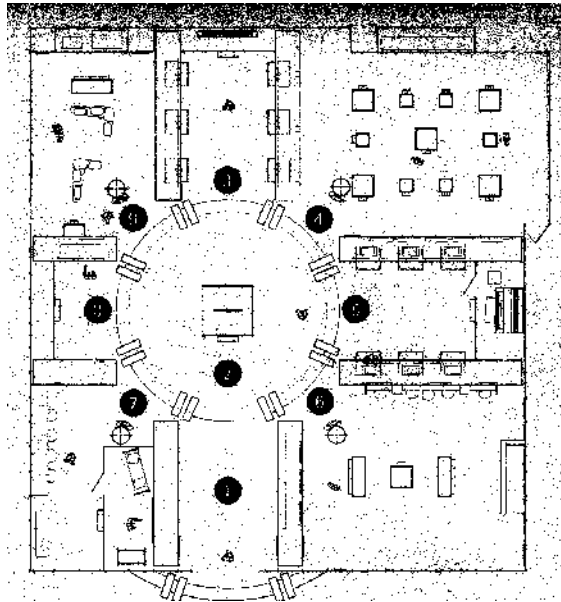


Figure 5.4 *Under the Sign of the Cross* exhibition plan, Canadian Museum of Civilisation

The mono-nuclear element appears to be located in the centre of the exhibition in the space numbered '2'. In this particular instance, it was a large crucifix. The crucifix appears to have been chosen as the nucleus because it is the most readily identifiable icon of Christianity. Moreover, it was centrally located in the spatial hub of the exhibition because the communicative goals of the exhibition were to explore the impact of Christianity on Canadian life using the museum's collections. Thus, placing the nucleus in the hub of the space means that visitors walk around, in front of and behind the crucifix as they move from one thematic section of the exhibition to another. Although more work is clearly needed, orbital structures appear to suit the spatial organisation of exhibitions which take a thematic approach.

Serial structures, on the other hand, are multi-nuclear, as mentioned earlier. This means they contain *several* nuclei or several core meanings. Serial structures also appear to have the potential to suit the spatial design of museum exhibitions. As spaces that adopt a serial

structure are multi-nuclear, they can be organised temporally. This makes them a suitable choice for museum exhibitions that are chronologically organised. It also means that they are easier to manage in terms of visitor flow. An example of a serially organised exhibition can be seen in Figure 5.5. It comes from the JFK Library and Museum in Boston.
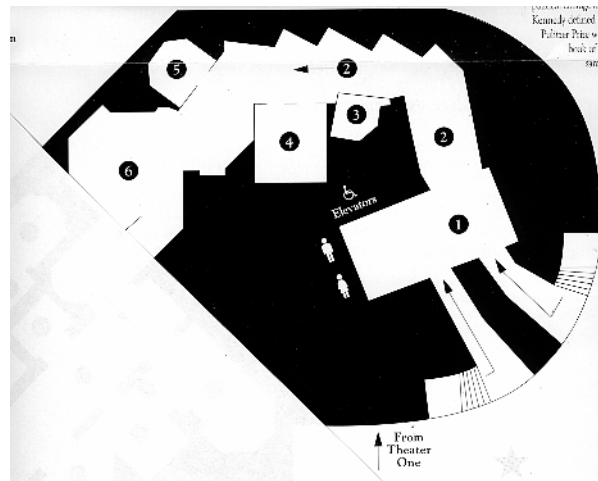


Figure 5.5 Map of Sections 1–6, JFK Museum, Boston

The first space of the JFK exhibition that visitors enter is marked with a '1' on Figure 5.5. It begins the exploration of John F Kennedy's life with the LA Convention of July 13, 1960, in which he  was nominated as his party's presidential candidate. The spaces marked '2', '3' and '4' continue the chronological focus on his  life by presenting snapshots of his campaign trail, complete with the election results, presented in the space marked '5'. The space marked with a '6' on the map represents the culmination of Kennedy's political campaign as it recreates his inauguration on the lawns of the White House on January 20, 1961. As Sections 1–6 of the JFK exhibition indicate, serial structures suit the organisation of chronological exhibits.

The two examples of exhibition structure discussed so far, however, come from two very small exhibition spaces and are therefore not representative of the complexity inherent in analysing large-scale museum exhibitions and buildings. In fact, the map of the John F Kennedy exhibition shown in Figure 5.5 was taken from the *first part* of the exhibition only.

To demonstrate the challenges involved in analysing the entire space, the complete exhibition map is shown in Figure 5.6.
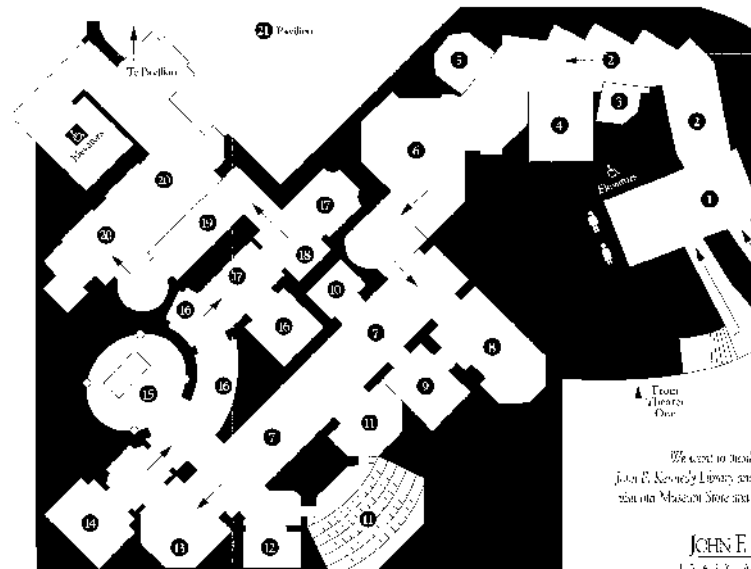


Figure 5.6 JFK Museum – complete exhibition layout

In contrast to the serial structure of spaces 1–6, spaces 7 to 13 on the map are organised using an orbital structure with space number 7, which recreates the corridor of the White House, functioning as the mono-nucleus. Then the serial structure reappears in spaces 14–20. Although further investigation is needed, the use of both structures seems to indicate that large exhibition spaces could be organised in ways that are analogous to Martin's notion of macro-genres in text (1994, 1995b), that is, they have a macro structure; in this instance a serial structure, with embedded particulate structures.

To add to the complexity, there are many different choices for organising the stages of an exhibition. As previously mentioned in Section 2.2.3.2a, exhibitions can be organised *chronologically* and *thematically*. Yet another choice for organising an exhibition is a *geographical* one. The Treasures of Asia exhibition at the AGNSW in 1999 was organised into eight sections along a geographical trajectory, moving from India to Japan. The significance of this organisation was that it enabled the interpretation to focus on geographical commonalities and variations in the art produced by Asian countries.

Natural history exhibitions, on the other hand, are often organised scientifically as information reports. These usually begin by scientifically classifying a group of animals and then describing their habitats, distributions, food, appearance, diversity, behaviours and so forth. In contrast, the *Sharks* exhibition held at the Australian Museum in 1994 combined a scientific information report with a strong and explicitly stated conservation message (White, 1994). This conservation message was realised through the combination of elements from a number of different genres used in western cultures to formulate arguments and control behaviour. The genres used were an exposition, a discussion and a directive.

Given the range of genre choices for exhibitions, it would be useful to research how particulate structures that best suit different types of exhibition genres are most effectively conflated with the organisation of three-dimensional spaces. This would enable project teams to make informed decisions about the genre, particulate structure and spatial combination which would best enable them to achieve their communicative goals. In fact, the organisation of information through the selection of appropriate stages for the temporal and spatial unfolding of the meanings made by an exhibition seems to be an extremely important research area to pursue.

By way of conclusion, the grammar of three-dimensional space is concerned with the ways interpersonal, textual and ideational meanings can be made in architecture. Interpersonally, there are two tools which explore the way meanings can be constructed in three-dimensional spaces: Binding and Bonding. Binding mediates the security or insecurity of a space, while Bonding is concerned with the attitudinal disposition of the occupant of a space. In particular, it is concerned with ways of negotiating affiliation through the use of bonding icons and/or symbolic attributes as well as the hybridisation of spaces. Bonding is also concerned with the axiological dimension of learning as it applies to Macken-Horarick's domains of knowledge (1996; 1998).

Textual meanings can also be identified in architecture. This means it is possible to account for the ways spaces are textually organised using the resources of:

- Theme–Rheme (as developed by Halliday, 1985a)
- Information Value (as developed by Kress and van Leeuwen, 1990; 1996)
- Path–Venue
- Prominence
- Framing (as developed by Kress and van Leeuwen, 1990; 1996).

Ideational meanings also co-exist in three-dimensional spaces and can be analysed in terms of the practical functions spaces have been designed to serve. This involves a consideration of both the object and activity orientations of the space. Furthermore, ideational meanings are concerned with particulate structures, which may be either orbital or serial. As we have seen, both can be applied to the organisation of a series of spaces.

Finally, this thesis has drawn on the tools of SFL to develop a set of social semiotic resources that can be used to analyse the tripartite organisation of three-dimensional spaces. Building on the work of O'Toole (1994), Kress and van Leeuwen (1996) as well as van Leeuwen (1998), this thesis has taken the metafunctions as its point of departure (after Halliday 1978, 1985a). But, unlike the researchers who have opened up the modality of three-dimensional space, this thesis has tended to reason more from the types of structure associated with the metafunctions than from types of meaning as they have been developed in functional grammars of English. For interpersonal meaning, in particular, the research has been more influenced by work on feeling (White, 1997, 1998; Ravelli, 2000; Martin, 2000, 2001, 2002, in press a, in press b; Martin and White, in press), rather than work on dialogue. This, in turn, has led to the development of Binding and Bonding, as opposed to commands and offers in Kress and van Leeuwen (1996). In particular, Binding uses a topological framework, the Binding scale, to capture the emotional dimension of architecture. So the social semiotic theory developed in this thesis gives meaning to how a space makes occupants feel. Textually, the orientation has included a dynamic perspective, involving Path and Venue, in order to implicate the unfolding texture of meaning through three-dimensional space.

Before concluding, the issue of representation remains to be discussed. In a research project such as this one, the problem of how to represent three-dimensional spaces has to be addressed. Photographs were chosen because they offer frozen and static snapshots of differently constructed spaces. Although these were useful for introducing and exemplifying the way built and natural spaces evoke different dimensions of security and insecurity, there are clearly limitations to representing texts that exist in the third dimension using two dimensional forms (van Leeuwen, 2001). Thus future work, especially analyses of interconnected spaces that unfold logogenetically, could explore three-dimensional modelling strategies involving film and/or animation.

In closing, this thesis has begun developing a social semiotic theory space that theorises the way people's emotions can be affected by the organisation of three-dimensional space, built or natural. In particular, it gives meaning to how a space makes its occupants feel — does it make them feel *free*, does it *dominate* them, does it *stifle* them, does it make them feel *vulnerable* and *exposed*, or does it make them feel *protected* and *secure*? Its starting point was not how structural elements are put together, but what the different combinations mean. It is hoped that the theoretical framework developed in this thesis can assist people involved in constructing spaces, especially architects and museum designers, to better understand and articulate how space can transcend the limits of three, even four dimensions as well as providing them with a powerful resource for achieving their pedagogic goals.

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# APPENDIX A

The brief discussion that follows complements the description of AFFECT presented in Section 3.4 of the thesis by continuing with the exploration of the other two systems that comprise ATTITUDE. As the field of architecture in western culture is closely related to some aspects of the visual arts, in particular, sculpture, choices for APPRECIATION will lead this brief exploration and will be followed by a description of JUDGEMENT. Within JUDGEMENT, the following discussion will show how choices from the various sub-systems tend to be most closely associated with the people who are involved in designing spaces, that is, architects, developers, builders, interior designers and so forth.

# APPRECIATION

In section 3.4 it was pointed out that the different sub-systems of ATTITUDE that individual architects foreground tend to depend on whether they approach architecture from the point of view of aesthetics, form and function, or both. Thus some architects foreground aesthetics because they approach buildings as sculptures. This, in turn, suggests that they would be likely to make *negative judgements* about buildings that are designed to foreground form and function. The converse also occurs, that is, architects trained to value and design buildings that are primarily functional in their orientation tend to make negative judgements about architecture as sculpture.

The system of APPRECIATION involves the speaker/writer's evaluation of the worth of a text, object or process in a culture. It is made up of three sub-systems: Reaction, Composition and Valuation as shown in the system network below in Figure A1:
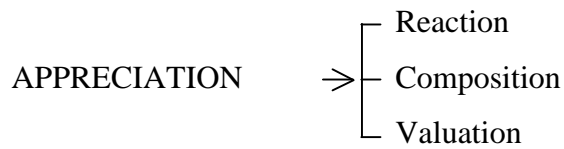
```
                              ┌─ Reaction
        APPRECIATION    ⟹├─ Composition
                              └─ Valuation
```

Figure A1 APPRECIATION system network

# Reaction

Reaction describes the emotional impact of the work on the reader/listener/viewer. Positive Reactions include evaluations such as 'captivating, absorbing, engaging, stunning, fascinating, moving, entertaining, dramatic' etc. Negative Reactions include lexical items such as 'dull, boring, tedious, dry, uninviting, flat, predictable, monotonous' etc.

An example of a text in which evaluations of the worth of a building are made using lexical items from the sub-system of Reaction has been included below. It is taken from one part of the Warringah Shire councillors' response to a building proposal from prominent Australian architect, the late Sydney Edward Ancher. Ancher was a leading Modernist who broke new ground with his designs for flat-roofed houses on Sydney's North Shore from 1930s onwards.

> It is the policy of this Council to require flat roofed buildings to be surrounded with a low parapet to hide . . . the **ugly** [Appreciation: negative Reaction] view of a flat roofed building . . . It is this council's endeavour that the design of buildings in the shire should be as **pleasant** [Appreciation: positive Reaction] and **pleasing** [Appreciation: positive Reaction] as possible.

> (Quoted from Boyd, 1952: 206-207; emphasis added)

The flat roofed building in Ancher's proposal was obviously outside the architectural building style that the councillors regarded as 'pleasing to the eye'. These councillors evidently saw their role as that of endorsing buildings that they believed would have a positive aesthetic

impact on the residents of their shire. Such value judgements and the power to enforce them, can, over time, lead to strong conformity in building designs that are seen to be acceptable within a culture at a particular point in its genesis as discussed in more depth in Section 3.1.2.5 of Chapter 3 on Binding.

# Composition

Composition refers to the organisation or arrangement of parts to create a unified whole, especially in the visual arts. Positive evaluations of Composition are made by terms such as 'harmonious, simple, elegant, intricate, rich, detailed, precise' etc. Negative evaluations of Composition are made by such terms as 'ornamental, discordant, disordered, irregular, disproportionate, extravagant, simplistic.' It should be noted that the coding of these items is heavily context-dependent, for an artist may deliberately choose to distort a subject in order to draw the viewer's attention to the meanings they wish to make.

A textual example of positive and negative evaluations from the sub-system of Composition comes from Robin Boyd's appraisal of the Queen Anne style of architecture which flourished in Australia after the depression of the 1890s. The late Robin Boyd was not only a leading architect of his time but also an architectural historian and critic. His contribution to Australian architecture is honoured annually through the Robin Boyd Award for Housing.

> From **formal symmetry** [Appreciation: positive Composition], the plan and silhouette **crumbled** [Appreciation: negative Composition] into a **disordered assortment of bays, dormers, pouches and spires** [Appreciation: negative Composition], attempting in a **desperate chorus** [Appreciation: negative Composition] to look '**picturesque'** [Appreciation: positive Reaction], which was the new watchword.

> (Boyd, 1952: 66; emphasis added)

Robin Boyd thus positively values buildings with balanced compositions, especially those characterised by the formal symmetry of the architectural style known as Classicism. The Queen Anne style, in contrast, which deviates from these principles, is negatively evaluated by him. To make his point unambiguously clear, he has selected a number of highly charged negative lexical items from the sub-system of Composition: 'crumbled,' 'disordered,' and a 'desperate chorus.'

# Valuation

In the fields of Visual Arts and Literature, Valuation relates to a proclamation of 'the message' of the work. Positive Valuations are made by using terms such as 'challenging, significant, profound, provocative, inspiring, universal, unique' etc. Negative Valuations are made using lexical items such as 'shallow, insignificant, banal, uninspiring, disturbing, sentimental, irrelevant, conservative, reactionary' etc. Like the sub-system of Composition, there is also a strong degree of context dependency for some choices from the sub-system of Valuation.

Valuations, moreover, can change over time. Negative valuations of houses designed by the late Sydney Ancher, for example, would be strongly rejected today, so much so, that widespread action is currently taken to preserve many of his buildings. Furthermore in summing up many people's reactions to modern art, art critic Robert Hughes has even called one of his books, *The Shock of the New* (1980/1991). The title of Hughes' book illustrates a tension between Appraisal made at a given point in time, and a long term view of it. Appraisal can indeed change over time as the discussion below further illustrates.

In countries such as Australia, strong valuations tend to be provoked when public space is at risk as it was in Sydney in the late 1990s with the proposed development of prime public real estate at East Circular Quay. This was clearly shown in the texts produced in response to the private development at East Circular Quay — a development that is now commonly referred

to as 'the Toaster'. Before construction began, thousands of protestors gathered outside the Opera House in a mass rally. One speaker at the rally made the following comment.

I've come to demolish that **hideous monstrosity** [Appreciation: negative valuation].

(In the Mind of the Architect series, Episode 2, June 2000; emphasis added)

In fact one of the points made in the Mind of the Architect series (2000) was that before it opened, 'the Toaster' was commonly evaluated by Sydneysiders as '**appalling'** [Appreciation: negative Valuation] and an '**obscenity'** [Appreciation: negative valuation]. Today, however, personal communications with many Sydneysiders as well as the architect of the East Circular Quay development, Andrew Andersons (26 October 2002), indicate that the term 'Toaster' is losing its strident and negative overtones.

In the past, the space was a promenade used as the main pedestrian route to the Opera House and Botanic Gardens. Now, according to Andersons, the space is used much more than it ever was before — an argument supported by the fact that there are a range of facilities there, all of which are regularly patronised. The facilities include retail outlets, restaurants, bars, coffee shops and a Dendy theatre. Sydneysiders do appear to enjoy the space and frequent it often. These shifts seem to indicate that many people's valuations of 'the Toaster' have either changed or are in the process of changing and becoming more positive.

# JUDGEMENT

The JUDGEMENT system involves an explicit evaluation of other people and their actions. These evaluations are made by reference to socially determined expectations regarding behaviour. It should be noted therefore that this is a highly culturally specific domain of analysis. There are five major sub-systems of JUDGEMENT, each with either a positive or negative value. They are Propriety, Veracity, Tenacity, Capacity and Normality (Martin,

1997; White, 1997; Martin, 2000; Martin and White, in press) as shown in the system network in Figure A2 below.

```
                                              ┌─  propriety
                       ┌─ social sanction  ⇒ │
                       │                      └─  veracity
   JUDGEMENT  ⇒ │
                       │                      ┌─  tenacity
                       └─ social esteem   ⇒ ├─  capacity
                                              └─  normality
```
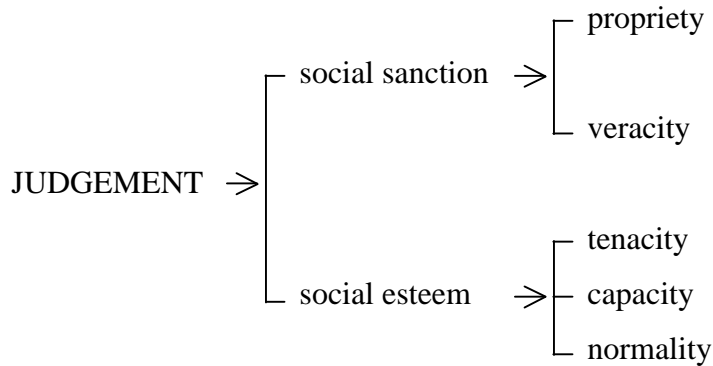
Figure A2 JUDGEMENT system network

Each sub-system will now be elaborated. Some instances of the lexical items realising each sub-system have been included, together with instantiations of the sub-systems drawn from short architectural texts, wherever possible.

# Propriety

Propriety is based on a socio-cultural ethical system of right and wrong. Propriety thus involves assessing one's compliance or defiance with the social system as endorsed by public institutions such as schools and law courts. If one complies, one is often judged positively. Instances of positive ethical judgements include lexical items such as 'moral, good, upright, ethical, kind'. Instances of negative ethical judgements include words such as 'immoral, evil, corrupt, wicked, mean, bad'.

Responses to buildings and architectural spaces, however, rarely involve choices for Propriety because we do not judge buildings — we value and appreciate them. Architecture is thus a cultural, not an ethical, domain. This means that architectural issues with ethical overtones tend to be recontextualised through choices of Appreciation. A point that can be exemplified

in reference to the fairly recent and acrimonious debate over the proposed new entrance to the National Gallery of Australia in Canberra. Plans for a redevelopment were drawn up in 2001 by the architect Peter Tonkin. However, they have since been stopped by objections from the original architect, Colin Madigan, who has likened the redevelopment proposal to the destruction of the carved stone Buddha figures in Afghanistan. Madigan's position is strongly protected by the introduction of 'moral rights' legislation in Australia in 2001. This legislation was introduced to protect the integrity of the artist. However Australian architectural writer and historian Elizabeth Farelly argues that constructing the debate in terms of 'morality' and 'ethics' is going too far (2001). In her opinion there are two issues at stake here: aesthetics and ownership.

If explicit choices for Propriety are made within architecture, moreover, they tend to be made in reference to individuals such as developers. For instance, the Premier of New South Wales, Bob Carr, who has positioned himself as a guardian of public spaces and architecture during his term in office, has been quoted as saying:

> At this moment we have the opportunity. Are we going to set up a framework that will guarantee the future of the heart of the city, or we going to let it slip gradually into the **greedy** [Judgement: negative Propriety] hands of developers and lose it? Forever.

<div align="right">(cited in O'Brien, 2001: 10; emphasis added)</div>

# Veracity (truth)

Value judgements relating to veracity or truth concern integrity and falsity. Instances of positive judgements of veracity include attributes such as 'honest, credible, real, genuine, trustworthy,' etc. Instances of negative judgements of veracity incorporate values such as 'dishonest, deceitful, hypocritical, deceptive'. Judgements relating to veracity have to do with how truthful someone is and are not a common choice in architectural texts.

However during the 1950s and 1960s, when Modernism was first introduced to Australia, there was a notable exception to this. The proponents of Modernism extensively used Veracity, in particular the attribute of 'honesty' to justify this new architectural style. In fact it was not only used to justify Modernism but more importantly, to try to change the building practices of the time. Thus Peter McIntyre, colleague of the late Melbourne architect and critic Robin Boyd, says:

> Boyd wanted to change the Australian house, and specifically he wanted to bring logic and **honesty** [Judgement: positive Veracity] back into our buildings. If a block of land faced west, for instance, why have the living room and the main bedroom facing the street when these would become unbearably hot by nightfall. Boyd wanted to site the house so that it broke with the conventions of the time. **Honest expression of materials** [Judgement: positive Veracity] was another platform. If there was a piece of timber used or a concrete wall, he wanted this **exposed for what it was** [Judgement: positive Veracity].

> (Interview with author in 1985, cited in Archer, 1987: 203–4; emphasis added)

This example constitutes a most interesting and metaphorical use of the term 'honesty' for it does not represent how most people would define honesty in terms of everyday life. In other words, it represents a highly specific recontextualisation of honesty within the field of architecture. The notion that a material must not be disguised, that it must be exposed for what it is, symbolises the integrity embodied in architectural principles and was a cornerstone of the Modernist movement of the 1950s and 1960s. The open display of materials and finishes in a built space also meant that more care and better craftsmanship were required by builders because the materials could no longer be hidden behind plaster or pulpboard — they were exposed for all to see.

# Tenacity (resolve)

Tenacity or resolve is another sub-system of the Judgement system. It is construed by reference to inner mental or emotional states rather than external moral regulation. Judgements of tenacity have to do with how resolute a person is. Instances of positive tenacity include values such as 'brave, reliable, flexible, careful, dependable' etc. Instances of negative tenacity include lexical items such as 'cowardly, weak, unreliable, stubborn, obstinate, reckless' etc. These judgements are based on the writer/speaker's evaluation of the participants' emotional disposition or state of mind.

Tenacity relates to architecture in that bringing about change in any field is very difficult and requires a lot of resolve. Given the negative criticism architects frequently experience in the public domain, especially if their work pushes the boundaries for organising space, the commitment an architect feels to the aesthetic and functional principles underlying their work must be extraordinarily strong for them to continue designing. If choices for tenacity are made in architectural writing, therefore, they tend to refer to how resolute an individual architect is and are sometimes used in conjunction with judgements of the architect's capacity. For this reason, they will be exemplified in the next section.

# Capacity

The sub-system of Capacity assesses the person or actions with reference to an assessment of their ability: whether or not the individual has the capacity to perform some action or achieve some result. Positive judgements of Capacity are made by using lexical items such as 'clever, skilled, accomplished, thorough, painstaking' etc. Negative judgements are made by using words such as 'incompetent, inept, superficial, inexpert, foolish, ignorant'.

An example of the realisation of both positive and negative evaluations of the sub-systems of Capacity and Resolve is included below. It comes from an interview with the innovative

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Melbourne-based architect, Sean Godsell, who was recipient of the 2002 ar + d award for architecture.[1] The interview is also part of the ABC series, 'In the Mind of the Architect'. Godsell was asked to respond to people's negative reactions to a home he had built in a beach suburb of Victoria.

> Do I go home at night and burst into **a flood of tears**? [negative Affect; Token: negative Capacity]. No. In one sense it's more **grist to the mill** [Token: positive Resolve], it just makes you **stronger** [Judgement: positive Capacity] and more **determined** [Judgement: positive Resolve]. That sort of criticism would never **deter** [Judgement: positive Resolve] me. It's not a **deterrent** [Judgement: negative Resolve], it's an **irritant** [negative Affect: Unhappiness] and it goes away…

> (In the Mind of the Architect, 21 June 2000, Episode 1; emphasis added)

At no point in the above response, did Godsell allow negative affect to dominate — thus he did not surrender to feelings of sadness or despair. Although his response does show that negative valuations of his building did impact on him affectually, his Capacity and Tenacity helped him to overcome these negative emotional feelings. In fact, he made only two choices for negative Affect in his response. The first was an instance of inscribed Affect and a Token[2] of negative Capacity, which he immediately negated. The second, 'irritant,' was an explicit choice. It came much later in his response and he quickly diminished its impact by saying, 'it goes away'. In this way Godsell has reacted to negative Valuations of his work by constructing them as a conflict between his own Capacity and Tenacity.

Responding to peoples' negative criticism in this way appears to be a powerful coping mechanism Godsell has developed for it enables him to preserve his self esteem and carry on in the face of widespread disapproval, even condemnation. Given that Godsell's work breaks

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[1] The ar + d award is issued by the magazine, *Architecture Review*, based in the United Kingdom, in conjunction with d line hardware. The winner is selected from about 700 entries drawn from more than 60 countries around the world. The aim of the award is to celebrate the work of young architects.

[2] A Token is an instantiation of *indirect* APPRAISAL in which the speaker or writer expects the reader or listener to attribute certain evaluative meanings to the description of events, actions and/or people's behaviours.

new ground by pushing the boundaries associated with organising space, this strategy appears to be an essential one in terms in ensuring his continued productivity.

# Normality (fate)

The final sub-system of JUDGEMENT is Normality or fate. Positive evaluations of Normality include 'lucky, fortunate, gifted, talented'. Negative evaluations include 'obscure, unexpected, peculiar, odd, doomed' etc. To assess an event or action as remarkable is to assess it against a set of expectations about what is usual or unusual. The interesting thing about normality concerns the lack of textual examples of its use within the field of architecture. Normality is about usuality and is therefore not expressed because what is seen as usual tends not to be commented by members of the culture.

# Summary

The APPRAISAL analysis of texts associated with the field of architecture has shown that choices for JUDGEMENT tend to be made in response to individual architects. In particular, we tend to judge the tenacity and capacity of individual architects; while choices from APPRECIATION tend to be made in respect of buildings we value, respond to and appreciate. Our appreciations, moreover, tend to be context-dependent and also have a strong tendency to change over time.