Brief as virtual building:

How configurational is a construction brief?

by

Emma Louise Gribble

The Bartlett School of Graduate Studies

University College London

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ABSTRACT

This study explores current briefing practice and tests the proposition that a construction brief contains sufficient prescriptive information regarding spatial relationships to constitute a 'virtual building' with its own inequality genotype: it asks 'how configurational is a construction brief?' Starting from the premise that space syntax theory (Hillier and Hanson 1984) fills certain logical gaps in the literature on briefing, it argues that current advice on the briefing process which states that understanding the client's organisation is critical, supports the direct use of space syntax methodology in developing the brief. The research methods used include an archival study of RIBA Client Design Advisor statements on briefing, a questionnaire on the content of construction briefs, unstructured interviews and a syntactic analysis of three generic briefs: government design guidance on magistrates' courts (CSDG 2004), primary schools (BB99 2004), and acute mental health units (HBN 35 1996). The findings suggest that architects conceptualise the briefing process in at least 3 different ways and use a wide range of techniques to elicit information from the client. That a high proportion of construction briefs (in this study) include client attitudes and values with spatial implications and reference to spatial relationships in terms of permeability, visibility, intelligibility and control. And that generic briefs do encode meaningful regularities between syntactic measures and institutional attitudes towards different categories of building user. Despite recommendations that briefing should start early and continue throughout the project, this study indicates that in practice briefing is often separated from the design process. It is argued therefore that the cultural content of a construction brief should be made explicit so that informed decisions can be made regarding its validity and applicability. The findings of this study indicate that space syntax methodology could be used to this end. However, this proposition would need to be tested with a larger sample of construction briefs before this could be asserted with any confidence. Finally, further study is proposed into the circumstances in which the benefits of using generic design guidance, briefing templates and standard briefs outweigh the costs. It is suggested that this could draw on the ideas of transaction costs and human error theory.

KEY WORDS: **SPACE SYNTAX, CONSTRUCTION BRIEF, VIRTUAL BUILDING, INEQUALITY GENOTYPE[1], SOCIAL CONSTRUCTION OF REALITY**

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1   A consistency in spatial patterning (indicated by regularities in syntactic measures) which reflects cultural values and practices.

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CHAPTER 1
Introduction

In 1997 the Construction Industry Board published 'Briefing the Team'. This was the result of a renewed interest in the briefing process and a belief that it was key to improving levels of satisfaction with building procurement in the UK. The principal innovation recommended by the CIB was the concept of the strategic brief. This was a statement of what the client wanted to achieve with the building project in terms of their social or business objectives. It was intended as the precursor to the project brief: first the clients needs are defined (the strategic brief) and then they are translated into an architectural prescription for how those needs can be met (the project brief). The project brief could be written as a set of performance requirements or developed through a design process of 'conjecture and test' (Hillier 1996:419) but in practice it often takes the form of prescriptive documents such as schedules of accommodation, adjacency diagrams and room data sheets. The proposition tested here is that this kind of brief contains sufficient information about spatial relationships to constitute a virtual building which can be analysed to test for probable social consequences (and internal consistency between the strategic and project briefs). The research question which developed from this proposition was 'how configurational[1] is a construction brief?'. The intention in asking this question was to investigate the extent to which current briefing practice and advice (for clients and consultants) on the briefing process reflects an understanding of the social significance of spatial configuration and to consider the different mechanisms through which space syntax theories and methodologies can (and do) improve the briefing process. As Lewin (cited Kolb 1984:4) observed 'there is nothing so practical as a good theory'.

The point at which a client starts thinking about a possible building project represents the start of a critical phase in the life of a building. It is during the briefing process that man's role as an agent in transforming the environment (rather than as a subject responding to it) is most explicit. Consequently, this phase of building procurement is of special interest to researchers studying the relationship between man and the built environment. As Hillier and Hanson (1984:9) have argued, the man-made ordering of space is 'already a social behaviour'. The briefing process is a key mechanism by which the spatial content of society is reproduced in the built environment and the organisation of space is used as a means of constructing social reality.

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1   The space syntax definition of configuration is 'relations which take into account other relations'. Proponents of space syntax theory argue that the way the parts are put together to form the whole is more important than any of the parts taken in isolation.

Kolb (1984:40) described experiential learning as a 'four stage cycle learning cycle involving four adaptive learning modes - concrete experience, reflective observation, abstract conceptualization and active experimentation'. Hanson (2001:06.4) adapted Kolb's conceptual diagram to show how it could be applied to the construction industry.

DOING
concrete experience

INTERVENING
architectural design and test

PLANNING
active experimentation

REFLECTING
reflective observation

BRIEFING
adapting current knowledge to meet new design context

EVALUATING
movement and observation studies

THINKING
abstract conceptualisation

GENERALISING
design guidance, good practice guidelines
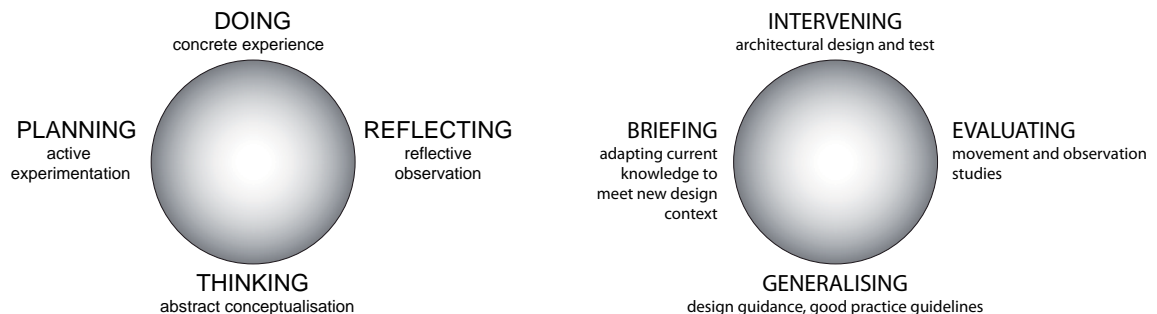
Figure 1 Kolb's learning cycle adapted by Hanson (2001:06.4)

In her model, Hanson defines the four stages as intervening, evaluating, generalising and briefing. This clearly illustrates the significance of briefing in the learning cycle. Zeisel (2006:78) makes a similar point when he argues that in order for architectural knowledge to develop designers and researchers must 'make explicit some of the behavioural expectations they hold for planned buildings, the operational procedures they see being used to test their expectations, and the theories on which their expectations are based'.

Checkland (1989, cited Green 1995:155-6) has argued that 'facts and logic will never supply a complete description of a human situation. Equally important will be the myths and meanings by means of which human beings make sense of their world'. Green explains the significance of this argument to the briefing process when he says that 'the perceptions of individuals become an important part of reality, because it is their perceptions which govern their behaviour'. This means that a building project cannot be considered in isolation from its social context. Schon (1991:40-41) observes that the first task of the professional is to 'frame the problematic situation'. This aspect of professional practice is explicit in the briefing process which Pena et al described as 'problem seeking' (Pena et al 1977:15).

As implied above, the subject of briefing was selected for a number of reasons. Firstly, while it is widely believed to be critical to the success of building projects, briefing is still considered problematic. Secondly, a study of the briefing process seems to offer a potentially illuminating perspective on man's relationship to the environment as both subject and agent. And thirdly it comprises a key link in the learning cycle which needs to be complete if we are to learn from our

mistakes. Recent work on briefing (since the 1990s) suggests that developing an understanding of the social context of a project is an essential part of the briefing process. This implies a new interpretation of the form-function relationship, in which 'function' is understood to relate to cultural values and attitudes as well as practical needs. This is important because, as Green (1995:155) points out, an individual's perceptions effect their behaviour and therefore have a potentially significant impact on how a building is used. The selection of Space Syntax (Hillier and Hanson 1984) as the theoretical framework for this thesis was informed, in part, by the fact that it addresses precisely this aspect of briefing: the relationship between social context and the built environment.

The range of research methods used is indicative of the exploratory aims of this study. Chapter 2 comprises a literature review. It outlines key themes in the professional guidance and research on briefing and considers how they relate to space syntax theory. Chapters 3, 4 and 5 report on investigations into current briefing practice. Three research methods were used. Chapter 3 reports on a qualitative analysis of statements on 'briefing, output specification and contract documentation' submitted by architects applying to join the RIBA Client Design Advisor (CDA) Register. This source of data was selected in the expectation that it would indicate how architects conceptualise the briefing process and what methods they use to elicit information from their clients. Chapter 4 reports on the findings of a questionnaire sent to all RIBA CDAs and the 50 top clients listed in the RIBA journal article 'Who dares wins' (Nov 2006). This was designed to find out what kind of information is currently included in construction briefs. Sample groups were selected with a view to exploring good practice. Chapter 5 reports on unstructured interviews with architects and a specialist in post-occupancy evaluation. Respondents were asked to reflect on their experience of the briefing process. The report takes the form of a review of the key themes raised and concludes with a consideration of how they relate to space syntax theory and methodology. Chapter 6 reports on the syntactical analysis of generic design guidance for 3 types of public buildings: a primary school, an acute mental health unit and a magistrates' court. The intention here was to test whether there were any regularities in the relation of syntactic measures (derived from adjacency diagrams) to the room labels assigned in the brief. A similar exercise was carried out by Kabo (2005) who undertook a syntactical analysis of a public library programme. However, the purpose in his case appears to have been to check syntactic measures against the norm for that building type rather than to test for social meaning (and the analysis did not apply orthodox syntactic measures).

Space syntax theory and the briefing process are both primarily concerned with the form-function relationship. This thesis concludes that there are a variety of ways in which space syntax theory and methodology might inform the development of the construction brief. The findings also indicate that most project briefs contain references to spatial configuration and related social issues.   However, these may be expressed in terms of local rather than global properties and it is suggested that briefing practice would benefit from making the construction brief more explicitly configurational. The analysis of the generic briefs indicates that they do carry information about cultural attitudes and values and may therefore be understood as 'virtual buildings'. The implications of this are discussed and further work is proposed on the advantages and disadvantages of using generic design guidance and standard briefing templates. It is suggested that this work might draw on the ideas of transaction cost and human error theory.

CHAPTER 2
Literature review: Briefing guidance and space syntax theory

As Barrett and Stanley (1999:5) have observed, construction briefing has been the subject of considerable attention since the 1960s. This has resulted in a wide range of publications from academic papers to practical guides for construction professionals. The intention in this chapter is to review the key themes in this literature and consider how current thinking on the briefing process relates to Hillier and Hanson's (1984) theory of space as an aspect of social life. In this way it will attempt to establish the academic context for the research question 'How configurational is a construction brief?' and consider whether there are any gaps in the professional guidance on briefing which could be filled by space syntax theory or methodology.

The first three themes reviewed below are essentially different aspects of the same issue but they will be discussed separately for the sake of clarity. The early literature on briefing is dominated by what Green (1996:10.1) has described as the rational positivist paradigm of decision making. Hillier et al (1972:245) noted that in the 1960s programmatic statements took a clear line: 'design was a problem-solving activity, involving quantifiable and non-quantifiable factors. Research, it was thought should bring as many factors as possible within the domain of the quantifiable, and progressively replace intuition and rules of thumb with knowledge and methods of measurement'. As Green (1996:10.3.5) has pointed out, in this model 'the notion of an optimal design was seen to exist independently of the aspirations of the building users'. Schon (1991:39-40) suggests that this emphasis on problem solving resulted in a failure to recognise the importance of 'problem setting' in professional practice. When problem setting[1] is understood as a key aspect of briefing, the limitations of the positivist paradigm become clear - it has no mechanism for taking into account the subtleties of social context or the conflicting aspirations of different building users. Hillier et al observed (1972:247) that scientific philosophy had shifted away from positivism and that 'the cognitive schemes by which we interpret the world and pre-structure our observations are increasingly seen to be the essential subject matter of science'. An equivalent shift has now taken place in briefing guidance and this is reflected in the emphasis on briefing as problem setting (Blyth and Worthington 2001:3, Kamara et al 2002:9).

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1   Schon (1991:40) argues that 'in real world practice problems do not present themselves as givens' and that professionals have to 'set the problem'. He suggests that 'when we set the problem, we select what we will treat as the 'things' of the situation, we set the boundaries of our attention to it, and we impose upon it a coherence which allows us to say what is wrong and in what directions the situation needs to be changed'

The ontological shift described above is associated with a change in attitude to the relationship between briefing and design. Pena et al (1977:20) was very clear that 'programming precedes design just as analysis precedes synthesis. The separation of the two is imperative and avoids trial and error design alternatives'. However, later writers such as Barrett and Stanley (1999:3) argue that, to the contrary, 'briefing must be seen as a process not an event … and that it not only starts early but continues to inform all the technical work throughout the project'. Green (1995:160) has also observed that 'there is a body of opinion which contradicts the prevailing assumption that the client's objectives can be pre-determined' and observes that 'clients are often unable to articulate their requirements until they have been exposed to a range of initial design concepts'. Lawson (1997:121) makes a similar point: 'it is clear that many components of design problems cannot be seen until some attempt has been made at generating solutions… In fact both objectives and priorities are likely to change during the design process as the solution implications begin to emerge. Thus we should not expect a comprehensive and static formulation of design problems but rather they should be seen as in dynamic tension with design solutions'. Barrett and Stanley (1999:50) suggest that Minzberg's work on the implementations of strategies can provide an insight into how initial ideas about aims can shift during the briefing process as some things prove unrealisable and new ideas emerge (figure 2).
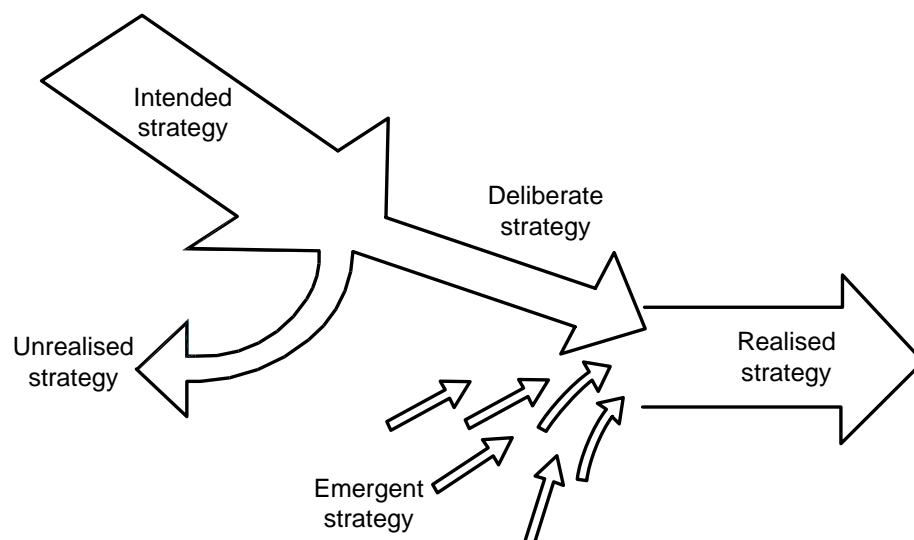
Figure 2
Strategy into Practice (Source: Mintzberg and Waters, 1985)

These views about the relationship between briefing and design are consistent with Hillier's (1996:419) concept of design as conjecture and test and represent a change in theoretical thinking which is grounded in an understanding of what actually happens in practice. There are dissenting voices however, for example Kamara et al (2002:30) argue that 'a solution-based approach tends to shift the focus from the requirements of the client to that of the designer(s)' and suggest

that there are inherent dangers in proposing solutions before the client's needs are thoroughly understood (this argument is discussed further in Chapter 5).

The third theme, which is conceptually related to the two discussed above, is how briefing takes place over time. The Architect's job book (RIBA 7th edition:64-66) describes the briefing process as cyclical and advises that 'clients may wish to modify their requirements even after the approval of the project brief'. However, the diagram representing the process of brief and design development shows an essentially linear process (despite the internal feedback loops at each stage). The influential CIB publication Briefing the Team (1997:5) describes briefing for construction as 'an iterative process involving regular feedback throughout the project' but again the diagrammatic overview of the process is linear with regular 'sign off' points. Lawson (1997:31-33) argues that although maps of the design process which show 'a sequence of distinct and identifiable activities which occur in some predictable and identifiably logical order' appear at first sight to be quite sensible 'the reality is much more confused'. March and Olsen (1997 cited Barrett et al 1999:11) also criticise this model of rational decision making. They call for a suspension of rationality which 'allows the free-play of intuition' or what March calls 'the technology of foolishness'. Computer scientists researching artificial neural networks recognise that the power of human thought lies precisely in its non-linear nature. This is particularly true when it comes to solving the complex, multi-level interactive problems of building design. Barrett and Stanley (1999:14) express some sympathy for the kind of fuzzy thinking 'in which goals do not precede the action but rather emerge from it' but note the tension that exists between this approach to briefing and the linear process models which assume pre-existing goals.

There is one point on which briefing guidance is curiously silent and that is how the statement of client's needs (the strategic brief) is translated into architectural specifications(the project brief).This is the omission which Hillier and Galal (1999:5) noted in Alexander's proposition that 'we should renew architecture through a systematic procedure involving the analysis of needs followed by a synthesis of form'. Hillier points out that there is no logical way to translate functional needs into architectural form because the two are not commensurate and argue that this step in the process requires some kind of mapping from one to the other. He suggests that the only available basis for this mapping is cultural knowledge, i.e. the architect's or client's pre-conceptions of potential building solutions. In support of this idea, Hillier and Galal (1999:3-4) argue that 'the word school links in our minds two distinct kinds of pattern: "school" as an organisation with a set of roles and activities; and "school" as a kind of building which accommodates them'.

They conclude from this that 'the process of architectural design inevitably begins with form-function ideas that are both tacit and powerfully formed by culture'.

Hillier and Leaman (19754:4-10) explored the idea of tacit form-function ideas in more detail in an earlier paper in which they argue that the design process is informed by deep cultural structures which are analogous to what biologists call genotypes. They illustrate this concept with the example of an army setting up camp. The army manual or standing orders will prescribe certain definite relations between 'kitchens, sentry posts, flags, fences and other paraphernalia' while the actual layout of each camp will be affected by local constraints including, personal, environmental and strategic considerations. In this example 'the genotype is the information carried in the instructions and embedded in the instrumental set [the army equipment]' while 'the phenotype is the observed layout and activity of the camp'. Hillier and Leaman argue that genotypes are usually unconscious and suggest that army standing orders [for camp layout] are an extreme example because they are explicit. One of the questions addressed in chapter 6 is whether the generic design guidance produced by government departments could also be understood as a form of explicit genotype.

Many form-function ideas are specific to their time or place. For instance, the concept of school would have held very different meanings for Victorian Board School Governors and 1960s post Plowden Report primary school teachers (Gribble, 2007). Duerk (1993:147) refers to the problems which can arise when designers and building programmers are 'so immersed in their own culture that they see their own criteria for what works as the only criteria rather than as a set of possible values'. She observes that we are not always aware of our most basic cultural assumptions about how the world works: 'it is difficult for a fish to discover water'. Leaman (2002:10), who has carried out over 300 post occupancy evaluations, advises that 'with buildings context is everything' and this includes 'how local cultures effect perceptions and behaviours'. Green (1995: 156-7) also recognises the importance of local culture and argues that construction professionals should take into account the ontological position of naturalistic research in which 'reality is no longer seen to exist out there, it becomes a social construct which is continuously renegotiated'. He suggests that it is no longer enough for an architect to understand the characteristics of the client's organisation, he must also understand how the client makes sense of it, 'from the inside'.

The effect of social context on building use has significant implications for the briefing and design process. Culture is not static, and as Schon (1991:49) has

observed the conditions of practice include 'uncertainty, instability, uniqueness and value conflict'. This gives rise to the question: if the tacit knowledge of form-function relationships which designers use to develop project briefs is based on their experience of existing buildings then how can they respond to uniqueness and change? Hillier (1996:427) suggests that the answer lies in bringing the unconscious genotypes that constitute this knowledge 'into the realm of reflective thought' so that their influence and validity can be assessed (1999:6). He (1993:10) argues that it is this conscious reflection which differentiates architects from vernacular builders and gives rise to the implicit theories about the form-function relationship which architects use to pre-structure the design problem. Bafna (pers. com. Aug 2007) observes that most design briefs are informed by 'folk theories of architectural function and user behaviour' and suggests that space syntax research should be able to test the validity of such proto-theories.

Hillier and Galal (1999:3) observe the paradox that while organisations can often move into existing buildings with relative ease, there are also cases of 'pathological buildings' which are radically unsuitable for their purpose. This creates confusion about the nature of the form-function relationship and the validity of the briefing process. Hillier (1996:371) suggests that this confusion arises in part from a failure to distinguish between generic function and specific function. He (1996:7-8) argues that there are three filters between the vast field of architectural possibility and architectural actuality. The first filter relates to generic function, this is responsible for what all buildings have in common – the organisation of space which makes them viable as buildings in terms of occupation and movement (and what makes them convertible from one function to another). The second filter relates to specific cultural function, the programmatic requirements of a particular building type, and the third relates to the constraints which influence the design of an individual building. It might be argued that briefing is concerned principally with the second filter, cultural function, and that this is where the clients' input is critical. A good architect should be knowledgeable about generic function and design but they cannot be expected to have an understanding of the cultural practices of all organisations and businesses.

Many writers now seem to recommend that briefing and design should take place concurrently so that as O'Reilly (1987:11) suggested 'by the time the brief is fully developed the design will also be largely formed'. However, as will be indicated in chapter 4, this is not always the way things happen in practice. Research into briefing has tended to focus on the briefing process rather than the product, the construction brief. The proposition tested in chapters 4 and 6 is that the construction brief can be the subject of research itself.

CHAPTER 3
Archival analysis: RIBA Client Design Advisor statements on briefing

The purpose of this exercise was to find out about current briefing practice and the methods of enquiry architects use to develop the brief. The research method selected for this purpose was an archival study of applications to the RIBA Client Design Advisor Register (launched 6 October 2005). This is a register of 'experienced professionals[1] … accredited by the institution to guide clients through the often difficult process of commissioning buildings' - the CDA cannot be the main architect on a project. Although applicants to the CDA register must demonstrate that they have 12 core skills[2] covering all stages of procurement from project initiation to post completion services, Fletcher (Chair RIBA CDA Steering Group) believes that the key role of the CDA is advising on the briefing process (Fletcher 2007 pers. com. 3 Aug). The RIBA CDA register was contacted to request permission to view the applicants' 200 word statements on 'Brief writing, output specification and contract documentation' - one of the 'core skills'. The RIBA Research Officer, forwarded this request to all the CDAs on the register (101 individuals). 29 positive replies were received representing 28.7% of RIBA CDAs. There were two principal reasons for the selection of this source of data: firstly, the intention was to study good practice and it was anticipated that Client Design Advisors would have a particular interest and expertise in the briefing process and secondly, using archival data is a way of accessing the views of a number of individuals in a relatively short period of time[3]. The data received

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1   Architects are required to have at least 5-10 years relevant experience of the industry and of working directly with clients and their stakeholders.

2   The 12 core skills are defined as:
- The ability to champion and assess design quality
- Client and stakeholder leadership and facilitation
- Business case making and project initiation
- Brief writing, output specification and contract documentation
- Project budget, value and risk management
- The ability to select and commission project teams
- Knowledge of strategic and feasibility studies and appraisals
- Procurement and construction management including partnering
- Knowledge of planning procedures
- Knowledge of funding and development processes
- Programme preparation and evaluation
- Post completion services

3   The use of this data had both advantages and disadvantages. On the positive side, the data was fixed so it could not be influenced by the preconceptions of the researcher. However, on the negative side some of the shorter statements did not describe the briefing process in any detail. This may have been due to a second limitation of the data selection, that several of the core skills cover issues which might also be defined as part of the briefing process. These issues may therefore be provided as part of the client service even though they are not included in the statements analysed. In hindsight, it might have useful to request access to the CDA statements on all the core skills.

from the RIBA CDA register comprised 22 statements on 'brief writing, output specification and contract documentation' and 7 combined statements[4] in which all 12 core skills were covered. The statements were analysed to assess the way briefing is conceptualised (by identifying verbs used), common themes, tools and methods used to elicit the client's requirements and CDA's views on what constitutes a good brief.

The choice of verbs used in the CDA statements implies that briefing is conceptualised in at least 3 different ways. Firstly, terms such as advise, guide and facilitate suggest that the task is owned by the client but that the CDA assists in the decision making process. Secondly, terms such as listen, consult, research and analyse imply that the task is owned by the CDA but defined by the client's circumstances and thirdly use of the verbs discuss and collaborate indicates that briefing is framed as a 'bilateral task' (Schon 1991:231). Clearly, the choice of specific terms also reflects subtle differences in the degree of agency attributed to each party. A fourth set of verbs: articulate, define, formulate, elucidate, translate, and tease-out indicate that the task of briefing is to make tacit requirements explicit and finally, terms such as conceptualise and develop [options] imply that briefing is a creative process.

A number of themes recurred in the statements. These are listed in Table 1 with the number of CDAs who referred to them indicated.

Table 1 Common themes in CDA statements

Relationship/personal characteristics eg empathy, openness	6
Understanding the client organisation	11
Achieving consensus/reconciling conflicting values	4
Planning for change/future needs	4
Reference to skill level/experience of client	6

The first theme reflects an understanding that effective communication depends on developing positive working relationships. The following three themes suggest that CDAs are responding to the conditions of professional practice which Schon (1991:39) observed: 'complexity, uncertainty, instability, uniqueness and value-conflict'. The final theme implies that CDAs recognise that the skill level of the client will a critical factor in determining the kind of support and advice required from the architect.

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4   These date from an earlier period when the requirements for the applications were different.

The CDAs referred to a number of different tools and methods which they used to develop the brief. These are listed in Table 2 with the number of CDAs who referred to each one indicated. Two CDAs referred to employing a range of practical tools but did not give details within the text.

Table 2 Tools and methods used by CDAs to elicit information for brief

Stakeholder meetings/workshops	9
Interviews	5
Visits to similar projects	5
Presentations about other buildings	1
Survey of existing buildings, fixtures and fittings	1
Value management/value engineering (VM)	3
Risk assessment	2
Design Quality Indicator tool (DQI)	1
Design Tool Kilt AEDET	1
Options assessment	4
Observations of current building/audit of space use	3
Reference to national design guidance	2

VM[5] DQ1 [6] AEDET[7]

The method of eliciting information mentioned most often is stakeholder meetings and workshops. This is one way to overcome the potential communication gap between designers and user clients (figure 3).
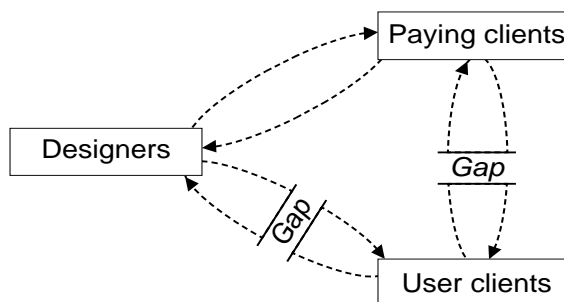
Figure 3 The user-needs gap (source: Zeisel 2006:50)

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5   Green (2007:650&655) argues that there are two kinds of value management. He contrasts the social constructivism of Soft VM with the implicit positivism of Hard VM. He argues that the prevailing rhetoric of Soft VM is 'learning, sense making and consensus building' while the rhetoric of Hard VM is 'optimization, efficiency and cost reduction'. It is not clear what kind of VM is referred to here.

6   The DQI is a non-technical questionnaire designed to collect views about a project from all stakeholders. It covers three areas: functionality, build quality and impact. The DQI can be weighted to reflect how the respondents judge the success of various aspects of the building. It is designed to be used at four different stages: strategic briefing stage, design briefing stage, mid-design stage and in-use.

7   NHS Estate's Achieveing Excellence Design Evaluation Tool (AEDET) was produced to assist hospitals developing design specifications and shares a common strategy with the DQI.

Other methods which were mentioned at least 3 times include interviews and visits to similar projects, options assessment, observation of the current building and value management.

Several CDAs referred to the product of the briefing process, the construction brief itself. Their comments covered three areas of interest: the desirable characteristics of a brief, the medium for conveying information and the appropriate level of prescription. CDAs advised that briefing documents should be tailored to their purpose and audience, and that they should be concise, unambiguous, clear, comprehensive, realistic and easy for all parties to understand. It was argued that output specifications 'need to have a design dimension in the form of diagrams and drawings so that the client's requirements are sufficiently clear and definitive, while still leaving room for the bidders' designers to make their contributions'. Another writer proposed that construction briefs for repeat clients 'should define the project attributes that contribute most value to the organisation and use a balance of prescriptive and performance specifications to encourage innovation while avoiding re-inventing the wheel'. A third suggested that 'a good brief will articulate vision, set broad parameters/requirements and define other constraints within which a design team would be expected to work'. Further extracts from the CDA statements are provided in Appendix 1.

The CDA statements analysed demonstrate that architects conceptualise briefing in different ways and use a wide range of methods to elicit information from their clients. The concluding discussion in Chapter 7 will consider whether these differences (including attitudes to the appropriate level of prescription) might be related to the context and type of project. The analysis also indicates that CDAs recognise that human beings are involved in the briefing process and as Barrett and Stanley (1999:14) observe 'efforts at better briefing must accept, accommodate and work with this reality'.

CHAPTER 4
Questionnaire: The configurational content of construction briefs

The purpose of this exercise was to assess the extent to which spatial relationships are prescribed in construction briefs. The intention was to find out which aspects of spatial configuration are referred to explicitly and which client values and attitudes are recognised (by clients and architects) as having spatial implications. This section was effectively designed to put the research question, 'how configurational is a construction brief?', directly to the respondents. An electronic questionnaire was prepared using an on-line questionnaire writing service and e-mailed to the respondents in the form of a link to the survey web site[1] (responses were anonymous). The initial contact was made at the beginning of August 2007 and the link was held open for 30 days (one thank you/reminder e-mail was sent). Two sample groups were selected, one from the supply and one from the demand side of the construction industry. The first group was architects on the RIBA Client Design Register (101 individuals) and the second group was the 'Top 50 Clients' named in the RIBA Journal article 'Who Dares Wins' (2006). These groups were selected in order to explore good practice. The decision to use an electronic questionnaire was based on the need to collect data regarding a relatively large number of construction briefs within the limited time available[2].

There are several precedents for the use of questionnaires in researching the briefing process[3]. However, the questionnaire used in this study focused on the information recorded in the construction brief, rather than on how it was prepared. Respondents were asked to recall the briefing documents prepared for their last completed project and answer questions on the content.

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1   www.surveymonkey.com

2   The e-mail addresses of the clients named in the RIBA journal article were found using a combination of internet searches and telephone calls. Where a company would not give out the director's e-mail address, the survey link was sent to their PA with a request to forward it to their boss (12 clients). Where the individual named in the article had left the company, their successor was contacted in their place (5 clients). The CDAs were contacted with the help of Anna Gagliano of the RIBA who e-mailed the survey link to all the architects on the RIBA CDA register.

3   The most well known is the survey carried out as part of Newman et al's (1981:6) study. The purpose of this questionnaire was to 'obtain basic information about the architectural profession, their size of practice, their clients and workload and some of the profession's attitudes towards problems and good practice in briefing'. It included closed questions on the services undertaken during briefing and open questions regarding problems and good practice. Later studies by Brown and Kamara et al also used questionnaires. Brown's study (2001:8) focused on the level of failure to meet client expectations and the perceived causes of failure. He also asked questions about the medium of the brief and the project team (composition and timing of appointment). Kamara et al's survey (2002:21) was in the form of a series of specific statements about the briefing process to which respondents were asked to reply 'yes' 'no' or 'not sure'. These statements covered issues such as the relationship of briefing to design, use of formal procedures, change control, sequence of decisions and level of satisfaction with the briefing process.

The principal questions related to two distinct types of information: the attitudes and values of clients and the spatial relationships prescribed in the brief. The intention was to identify the kind of information which clients and architects include in both strategic and project briefs (these terms were not used explicitly). Although the questions were designed to cover those aspects of building design which are addressed by space syntax research, the use of specialist space syntax terms was avoided. However, the inherent limitation of this approach is that there are no widely recognised terms in standard English to describe global qualities of spatial configuration such as integration and choice. This is precisely the problem that Hillier (1996:4) refers to when he observes that configuration is non-discursive, that is we don't know how to talk about it.

The first two questions relate to the respondents' role and work experience. These questions were designed to put the answers to the rest of the survey into context. There were an almost equal number of responses from clients and architects (19 from clients and 21 from architects). This represents a response rate of 38% for clients and 21% for architects. More than half the clients described themselves as developers (11) and only one ticked the box for 'user inexperienced in construction procurement'. The respondents work in a wide range of sectors with approximately half of both clients and architects having experience in more than one sector. There is also a great deal of variety in the building types cited as the last project worked on (a copy of the survey and data on responses is included in Appendix 2).

Question 3 asked whether the respondent's last project was used by different categories of people (as defined by their roles and responsibilities). The purpose of this question was to check the context of the answers to question 5 (about control of access and visual links). Nearly all the respondents (94.9%)[4] reported different categories of users in their last project while 74.4% reported that these categories were explicit i.e. obvious to outsiders and that there were different rules of access for different categories of user.

The responses to question 4 indicate that the client values and attitudes listed were explicitly referred to in a high proportion of construction briefs: security/accessibility (100%), interaction/privacy (89.7%) innovation/conservation (82.5%) hierarchy/equality (73.7%) and autonomy/control (75%). Similarly, the responses to question 5 indicate that the spatial relationships listed were explicitly referred

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4   There was an unexplained discrepancy between the number of respondents confirming the existence of different rules of access for different categories of use in question 4 (74.4%) and the number reporting that control of access within the building was explicitly referred to in the brief (87.5%) in question 5.

to in a high proportion of construction briefs: control of access to the building (95%), ease of access to the building (90%), ease of access within the building (87.5%), intelligibility of circulation system (77.5%), visual links with the external environment (77.5%) and visual links within the building (75%).

The purpose of question 6 was to assess the correspondence between the brief and the final design. The responses to this question indicate that the design team made assumptions about client requirements in 35% of the projects under consideration. The comments provided in relation to this question vary from asserting that this is desirable i.e. that it is the designer's role to add value, through a neutral observation that the designer had to fill in gaps in the brief, to a concern that the designer had made a false assumption.

The responses to question 7 are fairly evenly split with 27% of respondents reporting that the brief was developed by the client prior to appointment of consultants, 40.5% reporting that the brief was developed by the client and consultants working together prior to design and 32.4% reporting that the brief was developed by the client and consultants working together throughout the project. However, when the responses from different types of respondent are analysed separately (table 3, Appendix 2) it is clear that user clients are much more likely to work on projects where the brief was developed prior to appointment of consultants (57.1%) than developers (20%) or architects (16.7%). Several of the comments given in relation to this question also suggest a link between briefing method and type of project. However, there is no clear correlation between construction sector and briefing method. This could be because the individual projects are so diverse or because the sample size is too small to reveal any underlying regularities. The significance of context, including procurement method, client experience and building type, in determining the most effective briefing method will be reviewed in the concluding discussion Chapter 7.

Question 8 was intended to assess whether the last projects were long model conservative buildings or short model generative buildings in order to put the answers to questions 4 and 5 into context. However, although the results suggest fairly long model buildings, they should perhaps be disregarded due to the high number of respondents (10) who used the optional comment box to report not understanding the question or suggest that it did not apply to their projects.

Question 9 asked clients 'How do you know what briefing information your consultants will need?' and question 10 asked architects 'How do you know what briefing questions to ask your client?'. There were three principal types of

answer: experience, discussion, and standard briefing documents. Out of the 21 architects, 13 cited experience, 5 cited discussion and 3 cited a combination of the two. While out of the 19 clients, 6 cited experience, 5 cited discussion, 4 cited standard briefs, 1 cited a combination of experience and discussion and 1 cited a combination of experience and a typical briefing template (there was one void answer). In this context standard briefs might be considered as a means of transmitting experience.

The high number of architects and clients who referred to experience when asked how they knew what information would be required in the briefing process is consistent with Mackinder et al's (1982:73) finding that experience was 'by far the greatest influence on design decision making'. It is also consistent with Hillier's proposition (1996:62) that there are only two logical bases for predicting how a design will work: 'known precedent and theoretical principle'. He argues that both are essentially based on experience, the first on specific known cases and the second on theory derived from a study of the generality of known cases. Mackinder et al (1982:73) reported that architects tended to 'speak enthusiastically about experience, at the same time being rather vague about what it is and how it helps them'. This suggests that the application of experience happens at an intuitive level and operates through pattern recognition and the kind of non-linear thinking which is difficult to explain in a logical way (as discussed in Chapter 2).

The high proportion of respondents (over 70%) who reported that the construction brief for their last project explicitly referred to client values and attitudes suggests a general recognition that social abstractions are embodied in building design. The high proportion of respondents (over 75%) reporting that their briefs explicitly referred to issues related to permeability, visibility, control and intelligibility also suggests that the issues addressed by space syntax methodology are critical aspects of the construction brief. However, the absence of terms referring to the global qualities of spatial configuration meant that the questionnaire could not distinguish whether these references referred to local spatial relationships only or whether they reflect an understanding of the social significance of location within a global system. Nevertheless, the high reported incidence of references to spatial relationships indicates that there is a place for spatial configuration within the construction brief which could include explicit references to global qualities. For example, 'the managing director's office should be located no more than one step depth from the integration core [5]'. These qualities could then be tested as part of the design review process which is discussed in Chapter 5.

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[5]   See Chapter 6 for definition integration core.

CHAPTER 5
Unstructured interviews: Reflection on the briefing process

Following the analysis of the RIBA CDA statements on briefing, 5 interviews were arranged to explore the subject of current briefing practice in more depth. The informants selected were architects with a particular interest in the briefing process and a specialist in post-occupancy evaluation. The interviews were unstructured and informants were invited to talk about their views on construction briefing. Each interview lasted approximately 1 hour and took place between 24 July and 7 August 2007. This chapter covers some of the same ground as Chapter 2 but in a more immediate way because the views expressed are based on personal experience of the briefing process and therefore largely the result of reflection-in-practice (Schon 1991) rather than academic research. The content of the interviews included several recurrent themes and overlapping subject areas. For this reason, the findings are reported in the form of a review of the key ideas raised together with related themes. The interviewees were Teresa von Sommaruga Howard[1], Hans Haenlein[2], Paul Fletcher[3], Adrian Leaman[4] and Maximo Martinez[5].   A brief description of their professional background is provided in the footnotes to put their views into context.

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1   Teresa von Sommaruga Howard is both an architect and a group analytic psychotherapist. These professional roles come together in her interest in how the 'physical context facilitates or prevents good-enough emotional relationships' and her work as an organisational consultant in the public sector. She is currently co-writing a book with Karen Franck on the briefing process called Letting the Client Speak.

2   Professor Hans Haenlein MBE has been an RIBA Design Examiner and external examiner at over 25 of the 42 UK schools of Architecture. He has a special interest in the transfer of knowledge from the academic sector to practice and vice versa. He worked with Professor John Bennett at the University of Reading on the initial research on Client Briefing for Sir Michael Latham's DOE sponsored review of the construction industry and he continues to research into the briefing process. His practice specialises in the planning and design of education and community buildings.

3   Paul Fletcher began Virtual first, the educational organisation facilitating the Teamwork initiative and led Teamwork2000, 2001 and 2002, public demonstrations of multi-disciplinary design collaboration. He is chair of the RIBA Client Design Advisor steering group. His practice specialises in advice to public sector clients in the early stages of procurement.

4   Adrian Leaman, is Education Director at the Usable Building Trust, a charity that aims to promote feedback between users and designers. He is also Principal of Building Use Studies and has carried out over 300 post occupancy evaluations some of which, the PROBE studies, are in the public domain. These include assessments of technical and environmental performance but their main focus is on how occupants experience buildings. He taught on the Design Brief Management MSc course with John Worthington at the Institute of Advanced Architectural Studies, York University.

5   Maximo Martinez is an Associate Director of Space Syntax Ltd. He leads interdisciplinary projects which range from strategic urban design to brief development, and strategic design of complex buildings including hospitals, museums and office environments.

The principal themes raised are clearly interrelated but they can be characterised as follows: the relationship between architect and client, the role of the architect, and the different tasks which constitute the briefing process. The subject of architectural education[6] was also raised in relation to these themes. The chapter concludes with a consideration of the relevance of space syntax theories and methodology to the briefing process.

Von Sommaruga Howard believes that successful briefing depends to a large extent on the quality of the relationship that is developed between the client and the architect. Architects responding to Newman et al's (1981:59-78) survey on briefing reported numerous problems which they associated with client shortcomings. These ranged from failure to resolve internal conflicts within the client organisation to indecisiveness, uncertainty, preconceptions about solutions, and lack of understanding of their role in the briefing process. Von Sommaruga Howard argues that blaming the client is an inappropriate response because it is the architect's professional responsibility to manage the relationship with the client as well as the uncertainty that is inevitably involved in any creative project. Lawson (1997:85) also recognises the importance of the relationship between client and designer and suggests that it 'actually constitutes a significant part of the design process. The way that designers perceive and understand problems is to some extent a function of the way this relationship works'.

The CIB (1997:12) recommend that an options appraisal should analyse the client's self image and culture as well as their activities and function. While Leaman argues that the client's understanding of their own organisation needs to be checked against reality. These are potentially sensitive areas and von Sommarruga Howard suggests that they cannot be addressed 'cold': the architect needs to establish a rapport with the client based on mutual trust over time.

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6   There are four ways, it might be argued, in which the nature of architectural education fails to prepare students to manage the briefing process. Firstly they often receive no specific training in briefing (although the ability to 'articulate a client's brief' is an RIBA requirement for part 3 students) secondly students generally work on individual projects and do not gain experience of working collaboratively with others, thirdly the crit process teaches students to defend their work against criticism instead of learning to listen openly and carefully to reservations about their proposals and fourthly architectural education tends to focus on formal architectural design problems - what Lawson (1997:91) describes as 'designer generated constraints' rather than client requirements. In the context of this paper a fifth issue might be added to this list: the failure to introduce students to the body of case studies produced by space syntax researchers which focus on space rather than form (what a building does, rather than what it is) and highlight the social consequences of design decisions.

Barrett and Stanley (1999:49) make a similar point. They adapt the Johari window[7] (developed as a counselling model) to reflect the relationship between clients and their designers and argue that both trust and time are needed to allow the process of disclosure (client) and feedback (architect) to take place effectively.
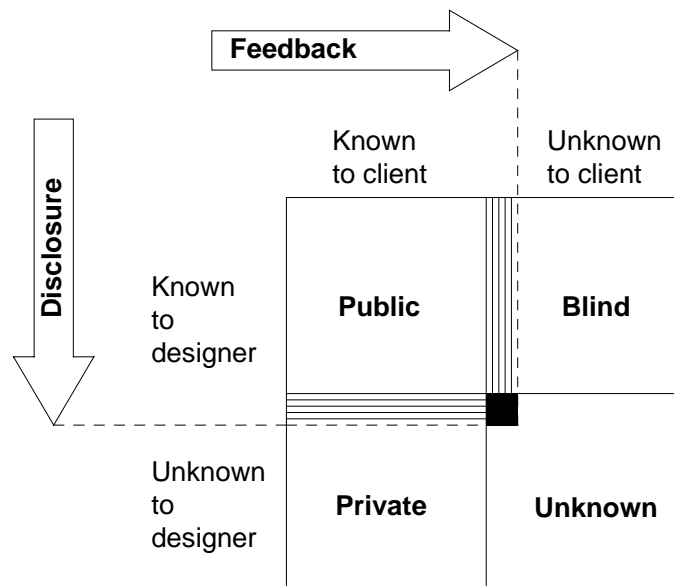
Figure 4
Johari window adapted for the construction industry
(source Bedjer 1991 cited Barrett et al 1999:49)

Haenlein suggests that the development of architecture as a profession has led to architects claiming special rights over a field of knowledge and this in turn has resulted in a tendency for clients to abrogate responsibility for their own projects. Haenlein argues that it doesn't work when architects try to be the 'font of all knowledge' and that much more powerful results can be achieved when clients are actively engaged in the briefing and design process – when it is understood as a 'bilateral task' (Schon 1991:231). The client knows about their organisation and the architect knows about buildings so it is necessary 'to invent a process which brings the two sides together'. However, as Haenlein observes, there may also be internal tensions within each side, for instance between the headmaster, the bursar and the facilities manager on a school project or between consultants from different disciplines.

7   Barrett et al (1999:49) refer to Bedjer's (1991:13) use of the Johari window as a tool to understand the briefing process: '[the Johari window] shows that at the start of any relationship there is some shared knowledge that occupies the 'public' quarter'. In addition the client is excluded from a 'blind area' and the designer from a 'private area. Finally, there is an 'unknown area' in which information and ideas that neither party knows at the start are to be found'. Briefing involves a reduction of the unknown area through a process of disclosure of information by the client and feedback of possible solutions by the architect.

Heinlein suggests that it is part of the architect's role to help people talk to each other so that they can discover for themselves what the problems are. He is clear that 'you cannot get all the information you need from one person' - it takes a whole organisation to write a brief ['make a plan for change']. Fletcher also sees bringing the whole team together for 'collaborative briefing sessions' and facilitating communication as part of the CDA role. This avoids what Kamara et al (2002:8) describe as the 'sequential "over the wall" syndrome' in which information for building projects is re-interpreted at each stage of the process before being passed on down the line.
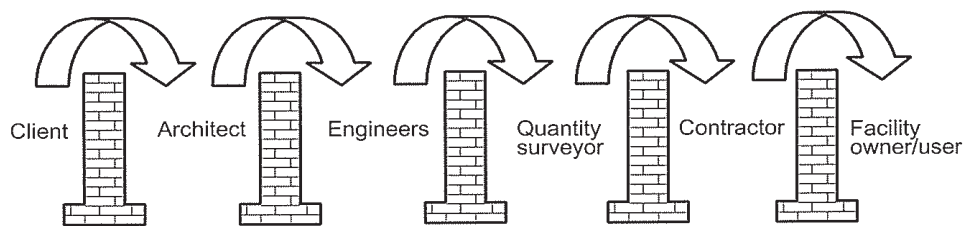
Figure 5 Sequential 'over the wall' syndrome for building projects
(source Kamara et al (2002:8)

Lawson (1997:42) has observed that architects have a 'solution-focussed strategy' that is they learn about a problem through attempts to create solutions rather than through an analysis of the problem itself. Kamara et al (2002:30) argue that this method of defining a problem by proposing solutions (in the form of sketches and drawings) tends to shift the focus of attention away from the client's requirements and towards the designer's. This view is supported in some measure by the findings of Darke and Rowe. Darke (1978 cited Lawson, 1997:44) observed that architects tend to 'latch on' to a simple idea or 'primary generator' very early in the design process to help them narrow down the range of possible solutions. While Rowe (1987 cited Lawson 1997:45) found that architects used 'lines of reasoning based on some synthetic and highly formative design idea rather than an analysis of the problem'. As these design ideas are developed before the client's needs are fully understood, there is a risk that using them as the basis of a design strategy may run counter to satisfying the client's primary concerns about usability. Fletcher argues that architects should spend more time finding out about their client's real needs before they start to propose solutions. He supports his argument with the analogy of a patient going to the doctor with a headache. A good doctor will attempt to diagnose the cause of the headache before prescribing a pain-killer – the patient could need to buy new glasses, avoid foods which trigger migraine, or reduce their stress levels. Haenlein makes a related point

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when he argues that briefing needs to start much earlier than is normal practice and that architects should make an effort to understand the economic and social conditions which drive their client's business or organisation.

All the respondents stressed the importance of communication[8]. The client communicates what they need the new building to do and the architect communicates possible solutions (within the constraints of site, budget, programme, and current legislation). As discussed in chapter 2 the content of each message will be largely influenced by the professional experience and personal preferences of each party.

Bedjer (1991:132) argues that there are three ways in which the communication of these messages can be distorted:

a: Problems with the senders formulation, like linguistic problems, not adapted to the receiver's previous knowledge, too much information, not adapted to the means of communication.
b: Problems with the dispatch, like: noise, delay, high speed, body language.
c. Problems with the receiver's perception, like: rejection of the means of communication, needs, interests and expectations (you hear what you want to hear and filter the rest), the receivers preconceived impression of the sender and of the problem.

These problems are particularly common in the briefing process because of the different training and life experiences of the parties involved. Architects, clients and users belong to different 'thought communities' (Fleck 1979 cited Zerubavel 1997:9-12) and tend to focus their attention, interpret their experiences and evaluate things in different ways. This can lead to all kinds of misunderstandings. Martinez provided the following example: a client might say to an architect 'I really like that building' and the architect could take this as a suggestion to work with a

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8   Barrett and Stanley (1999:84) also observe that 'the briefing process is essentially one of communication'. They refer to communication theory and the 4 strategies which are generally believed to be necessary for effective communication: 'First the information should be coded to make sense to the recipient. Second, the message should be robust and then reinforced, ideally by repetition and the use of multiple media. Fourth, feedback should be sought to ensure that the receiver has received what the sender thought they were sending.' Barrett and Stanley report that 'many clients complain that the final building is not what they were expecting' (1999:86) and suggest that this is because architects do not follow these communication strategies and fail to take into account the context of the briefing process. They assert that 'appropriate visualisation techniques' are an essential element of successful communication. However, Luck (2007:28) observed the use of artefacts (such as drawings, product samples and models) to mediate understanding in design conversations and suggests that 'the users' confidence in the appearance of the building was … gained in conversation, rather than the ability of the artefacts to represent a future reality'. Schon (1991:227-30) argues that for effective communication to take place professionals need to abandon what he calls the strategy of 'mystery and mastery' by which they seek to 'master the situation while keeping their own thoughts and feelings mysterious'. This requires them to be open about private dilemmas and expose their assumptions to public test. Schon believes this is necessary to create the conditions for free and informed choice.

similar architectonic form. However, the client might be responding to a particular quality of the space which has little to do with architectural expression and much more to do with its social quality, for instance the way the spatial configuration tends to bring people together, the high degree of natural surveillance or the simple legible layout. It has also been widely observed that many clients have difficulty reading drawings and that clients and architects tend to use different vocabularies (or more confusing still the same vocabulary to mean different things).

However, distortion of communication is only part of the problem, a more deep seated difficulty arises from the fact, observed by Hillier (1993:11), that 'because space is built so pervasively into social and cultural life, we tend to take it for granted, to the point that its forms become invisible to us …'. This means that clients are often not consciously aware of the distinctive ways in which they use space: their habitual patterns of space use may only be brought into the realm of conscious thought when they are disrupted. This seems to be what happened in the Langtry Walk Childrens' home studied by De Syllas (1991:31). As soon as staff visited the building, they recognised that the exceptionally permeable plan and multiple circulation routes would frustrate the two basic aims of staff working with the children: 'to engage the child within a relationship' and to ensure that the 'child feels safely held'. De Syllas argues that this mismatch between built form and patterns of use was the result of inadequate briefing and contrasts the failure of Langtry Walk with the success of two similar sized homes in which the briefing process was much more thorough (1991:46). Lawson (1997:299) observes that many buildings fail in use not because of some technical fault but because the client and users do not behave in the way that the designers assumed that they would. This is recognised by Leaman who argues that 'all assumptions must be properly thought through and out in the open'. The briefing process should therefore include an investigation into the distinctive patterns of behaviour which have become 'second nature' to the client (and therefore invisible to them), as well as the client's explicit knowledge of their organisation's cultural norms.

If, as Barrett and Stanley (1999:3) propose, briefing should not only start early but continue throughout the project then an essential part of this process will be what Fletcher describes as 'participatory reviews'. There are two potential benefits to inviting the client to participate in reviewing the design as it develops[9].

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9   Hillier (1996:419) argues that design is an iterative process of 'conjecture and test'. The participatory review can be seen as one aspect of the 'test'. It might be argued that the advantage of viewing briefing as conceptually distinct from design (even when it takes place concurrently) is that it clarifies which design decisions should be referred back to the client to be tested against their anticipated needs and which can be tested internally (against designer generated constraints) as part of the design process.

First, it provides an opportunity to check that the design meets the brief (and that the architect's assumptions about how the client will use the building are correct) and second, (paradoxically) it allows the client the opportunity to review the brief and reflect on whether it should be revised in the light of new information revealed by the design process. The participatory review should also reveal any potential conflicts between the client's stated aims (as recommended by Leaman) and provide an opportunity to discuss how they might be resolved. However, Rowe (1987 cited Lawson 1997:45) records 'the tenacity with which designers will cling to major design ideas and themes in the face of what at times, might seem insurmountable odds'. There is a risk that this tenacity may constrain the architect's ability to respond to any doubts or concerns that the client may express about design direction. This may be why some government bodies (NHS, CABE, English Heritage[10]) are suggesting that clients need independent design advisors to support them through the review process[11] .

To summarise, the task of briefing may be understood to include: developing a relationship with the client, understanding their organisation, facilitating communication, diagnosing needs, testing assumptions, revealing potential conflicts and reviewing the design as it develops. The method of empirical research developed by space syntax (Hillier 1996 p.246) involves 'investigating space as a pattern in itself, then analysing its relationship to the distribution of different categories and labels [of spaces] … and then systematically observing its use'. These methods of research can be applied directly to the briefing process and Martinez reports that Space Syntax Ltd. are commissioned to advise on strategic briefs and diagnose existing problems as well to assist in design development and reviews. The observation and analysis of space in both the client's existing facilities and similar building types can be a means of testing assumptions and revealing potential conflicts within the brief. It can also be a way to develop a relationship with the client and understand their organisation. Karimi, (SSS6 Workshop 2007) describes how presenting the findings of space syntax analysis to clients can result in a kind of 'ahaa' moment when they suddenly recognize something of which they were previously aware at a sub-conscious level but had been unable to put their finger on. He suggests that this kind of experience can be invaluable in developing client confidence and trust.

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10   www.riba.org/go/RIBA/News/Press_4986_html viewed 03/06/07

11   Fletcher makes three further points in favour of independent client advisors: The first is that when briefing and design are carried out by the same practice there is a tendency to commit insufficient resources to researching the client's needs because the architect sees their primary task as design. The second is that defining the brief prior to design reduces the range of potential design solutions and thereby keeps the design period within reasonable limits (and reduces the amount of abortive design work) and the third is that eliciting information from client and user groups requires a specific skill set which may not be possessed by the design architect.

Space syntax theories regarding the use of spatial configuration in the social construction of reality are key to understanding the briefing process. The idea that while space does not determine individual behaviour, it does have a probabilistic effect on everyday use (movement flows and patterns of co-presence), clearly needs to be taken into account when attempting to match spatial forms to client requirements. As Hanson (2007 10 Aug. pers. com.) observes, syntactical analysis is objective and reproducible. This means that it can be used to support or refute an architect's intuitions about space and provide an evidence base for design decisions. The results of spatial analysis can therefore be used to resist what have been described as 'weapons of mass deception' or 'illusionist's tricks', the kind of powerful presentation techniques and high quality images which might be employed to 'sell' a scheme.

As was seen in Chapter 3, a range of local spatial relationships are prescribed in most construction briefs. However, it is less common to refer to global qualities because they are more difficult to put into words (where global qualities are prescribed they are generally implicit in adjacency diagrams). As Hanson (2007 10 Aug. pers. com.) observes space syntax is useful because it provides the means to describe these qualities and therefore makes it possible to talk about them. This has been done in two ways, firstly through the development of a vocabulary of terms to describe the qualities of spatial configuration at a global level[12] and secondly through axial line, convex space and visibility graph diagrams in which colour is used to represent the value of syntactic measures. These methods make complex ideas easy to grasp intuitively and therefore make it possible to bring them into the briefing process.

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12   This vocabulary includes terms such as 'normal' and 'reversed' buildings, (Hillier and Hanson 1984 cited Hanson 2001:6.12) 'shallow core' and 'deep core' buildings (Hillier, 1996 and Orhun et al, 1996 cited Hanson 2001:6.12), and 'generative' and 'reproductive buildings', (Hillier and Penn 1991 cited Hanson 2001:6.12).

CHAPTER 6
Syntactic analysis: Generic briefs as 'virtual buildings'

As discussed in Chapter 2, there are two main schools of thought about briefing. One sees 'design and briefing as integral parts of the same process with much of briefing carried out through design' (Blyth and Worthington 2001:21) while the other (Kamara et al 2002:4) calls for 'solution neutral design specifications' to be produced prior to design.   In practice, as was seen in the CDA statements and responses to the questionnaire, a range of approaches are used. Clients responsible for multiple repeat projects such as government departments and large businesses like Macdonalds or Tesco may develop generic briefs based on lessons learned from previous projects. This chapter reports on the analysis of design guidance for three different types of building which was carried out to test the proposition that a generic brief of this kind contains sufficient information on the spatial relationships which determine control, hierarchy and interaction to be understood as a virtual building with its own inequality genotype. If this were the case then it would indicate that analysis of construction briefs could have two potential benefits. Firstly, if the probable social consequences of prescriptive design advice could be predicted then it would be possible to check for internal consistency between the strategic brief and the project brief and secondly, making the social content of the brief explicit would make it easier to tell when it was no longer suitable for use (due to changing social values and attitudes) – it could operate as a kind of 'sell by' date.

The three generic briefs selected for analysis were government design guides for public buildings: magistrates' courts, primary schools and acute mental health units. The law, education and the mental health service are powerful social institutions with distinctive systems for categorising people into different types. It was therefore anticipated that institutional attitudes and values regarding the relationships between different types of building user would be written into these generic briefs (either tacitly or explicitly). Presented as design guidance these documents have significant authority in limiting the range of possible solutions because they are prepared by the government bodies responsible for funding projects. They are intended to be used by clients and consultants in preparing specific project briefs. As such they define those relationships which are considered essential to the building type and those which may be influenced by local judgements. Selecting this type of generic brief for analysis rather than specific project briefs means that the analysis has to take into account the range of options left open. However, while the absence of a single definitive 'virtual building' complicates the task of configurational analysis, the advantage

of studying this type of brief is that it focuses on the essential attributes of the building type and does not include the specifics of budget, programme, site and individual preferences.   As these documents define the range of options within which alternative designs must fall if they are to be considered suitable for a particular building type, and do not address the kind of contingencies which inform a specific design, it is suggested that they could be considered as a kind of explicit genotype like the army standing orders described in Chapter 2.

The principal documents selected for analysis are the Court Standards and Design Guide (Department for Constitutional Affairs, 2004), Accommodation for people with mental illness Part 1 – the Acute Unit, Health Building Note 35[1] (National Health Service Estates, 1996) and the Briefing Framework for Primary School Projects, Building Bulletin 99[2] (Department for Education and Skills, 2004). Two methods were used to review the content of these documents. A preliminary investigation took the form of a textual analysis in which the configurational content of each brief was identified (see Appendix 3), while the principal research method was a syntactic analysis of the spatial relationships prescribed in the brief.

Where the generic brief includes an adjacency diagram (as in the case of the court and primary school design guidance) this was used as the basis for the graph analysis using Pajek software. Where the relationship diagram included in the brief is insufficiently clear for analysis (as in the case of the mental health unit) an attempt was made to construct the graph from the spatial relationships described in the text. The graphs were justified[3] and analysed for four syntactic measures: connectivity, integration, control value and global choice[4].

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1   HBN 35 was read in conjunction with the following texts: National Minimum Standards for General Adult Services in PICU and LSE units (Department of Health, 2002) and Safety, Privacy and Dignity in Mental Health Units (Department of Health, 2000) and Not just bricks and mortar (Royal College of Psychiatrists, 1998).

2   Building Bulletin 99 was read in conjunction with Schools for the Future BB95 (DfES 2002).

3   A graph is justified by choosing one space as the root of the graph and putting all spaces directly connected to it i.e. one step away from the root space on the first level of the graph, all spaces two steps away on the second level and so on. In this study the public entrance was selected as the root space for all the justified graphs.

4   Connectivity measures the number of direct connections a space has to other spaces. Integration describes the average depth of a space to all other spaces in the system (normalised to eliminate the effect of the number of spaces so that it can be used to compare systems of different sizes). Control value measures the degree to which a space controls access to its immediate neighbours taking into account the number of alternative connections that each of these neighbours has. Global choice is a measure of movement through a space. A space has high global choice when it is on a large number of the shortest routes connecting all spaces to all other spaces in the system. This analysis was done using Pajek so the figure given for choice is actually 'betweeness centrality' but this is a good approximation of the syntactic measure of global choice. (Bjorn Karqvist 1993).

The spaces were also classified into 4 topological types A, B, C and D[5] and the space-link ratio was calculated to indicate the density of the graph ie how 'ringy' it is. The results of this analysis were then reviewed to see whether there were any underlying patterns between the proposed use of space (as defined by the brief) and the generic function reflected in the syntactic measures.

There is an obvious limitation to this method – the nodes in the adjacency diagrams represent bounded spaces (or in even the case of the school diagram small complexes of related spaces). This means that visual connectivity (and therefore the potential for co-presence) is only implied and not completely described. This limitation is clearest where the main circulation is represented as a single node. In reality, circulation usually consists of a number of visually discrete spaces defined by changes of corridor direction. The justified graph prepared from the adjacency diagram therefore contains less social information than would be contained in a convex space graph[6]. However, as might be expected, the adjacency diagram contains information about adjacencies so for instance it might prescribe that two rooms should be located together at one end of a corridor or have doors facing each other on either side of a corridor. This information (which has social implications) is lost when the layout is represented topologically – all rooms off one space are topologically equivalent. The adjacency diagrams (published 2002 and 2004) also bear a similarity to the bubble diagrams popular in the 60s and 70s in that they indicate the relative sizes of spaces. Bubble diagrams fell into disrepute because there was a tendency to mistake them for design solutions – one advantage of a J-graph over an adjacency diagram is that it cannot be mistaken for an architectural design.

The analysis of the adjacency diagram in the magistrates' court[7] generic design guidance (figure 6) revealed a shallow bush-like J-graph (figure 7) with 19 rings and a space:link ratio of 124:145 (0.86). As might be expected the adult custody cells are deepest from the public entrance (step depth of 8).

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5   Hillier and Galal (1999:9) defines these four topological types of space as follows: A spaces have a single link, they are dead-end spaces. B spaces have more than one link and form part of a connected sub-complex in which the number of links is one less than the number of spaces, that is a complex which has the topological form of a tree. C spaces are in sub-complexes in which there are exactly the same number of links as spaces, that is sub-complexes in the form of a ring and D spaces are spaces which lie on more than one ring.
 In a convex space graph each node represents a convex space i.e. a space in which no line from any point to any other point inside the space passes through the boundary.

6   In a convex space graph each node represents a convex space ie a space in which no line from any point to any other point inside the space passes through the boundary.

7   The analysis of the court was done without including the exterior.

However, the magistrates retiring rooms are also relatively deep at a step depth of 6. A consideration of the roles of magistrates and defendants suggests that the virtual building is operating in different ways in different parts of the building i.e. what Hillier and Hanson (1984:183-4) defined as a normal building where step-depth is used to express social status (magistrates) and as a reversed building where step depth is used to create powerlessness (defendants). The control values indicate the difference between the spaces occupied by the defendants and magistrates. The magistrates' retiring rooms have a control value of 0.63 while the custody cells have a control value of 0.05 (the lowest value in the court building). The youth, male and female holding corridors in the custody suite have a high control value (5.93, 7.1 and 5.1 respectively) the only space with a higher control value is the public court hall (15.21).

The spaces with the highest global choice (betweeness centrality) are the public court hall, the general staff office and the main circulation for each category of building user. It could be argued that this would have been fairly easy to predict intuitively but the data does suggest one slightly less obvious quality of the spatial configuration – that although the courtrooms are type D spaces and each located on three major circulation rings they are on relatively few of the shortest routes between spaces (global choice 0.02). This is suggestive of how the court actually operates – the rules of court procedure determine that nobody uses the courtrooms as a through route. Hanson (1996:55) describes how participants in trials are kept apart even within the courtroom itself.

The spaces which comprise the integration core (the 10% most integrated spaces) are the public court halls, the staff general office, the public entrance hall, the staff/magistrates entrance lobby, the custody circulation, the courtroom lobbies and the non-court staff and magistrates circulation. The most integrated space in the building is the public court hall which is located relatively shallow within the building i.e. 3 steps from the public entrance. This is in line with the court services stated aim of providing 'direct and easy public access to the courtrooms' (CSDG 2004:17.2). The fact that the court hall also has the highest control value and a high global choice value (0.42 – only the general office has a higher value) indicates that the activities which take place in and around the court hall are central to the operation of the court.

The design guidance proposes that magistrates are allocated their own area separate from the court staff. Ranking the integration values shows that the spaces in the magistrates area are less integrated than the court staff offices. When contrasted with the 19th century magistrates court at Bow Street (Gribble

Figure 6

Adjacency diagram: Magistrates' court generc brief (souce CSDG 2004)
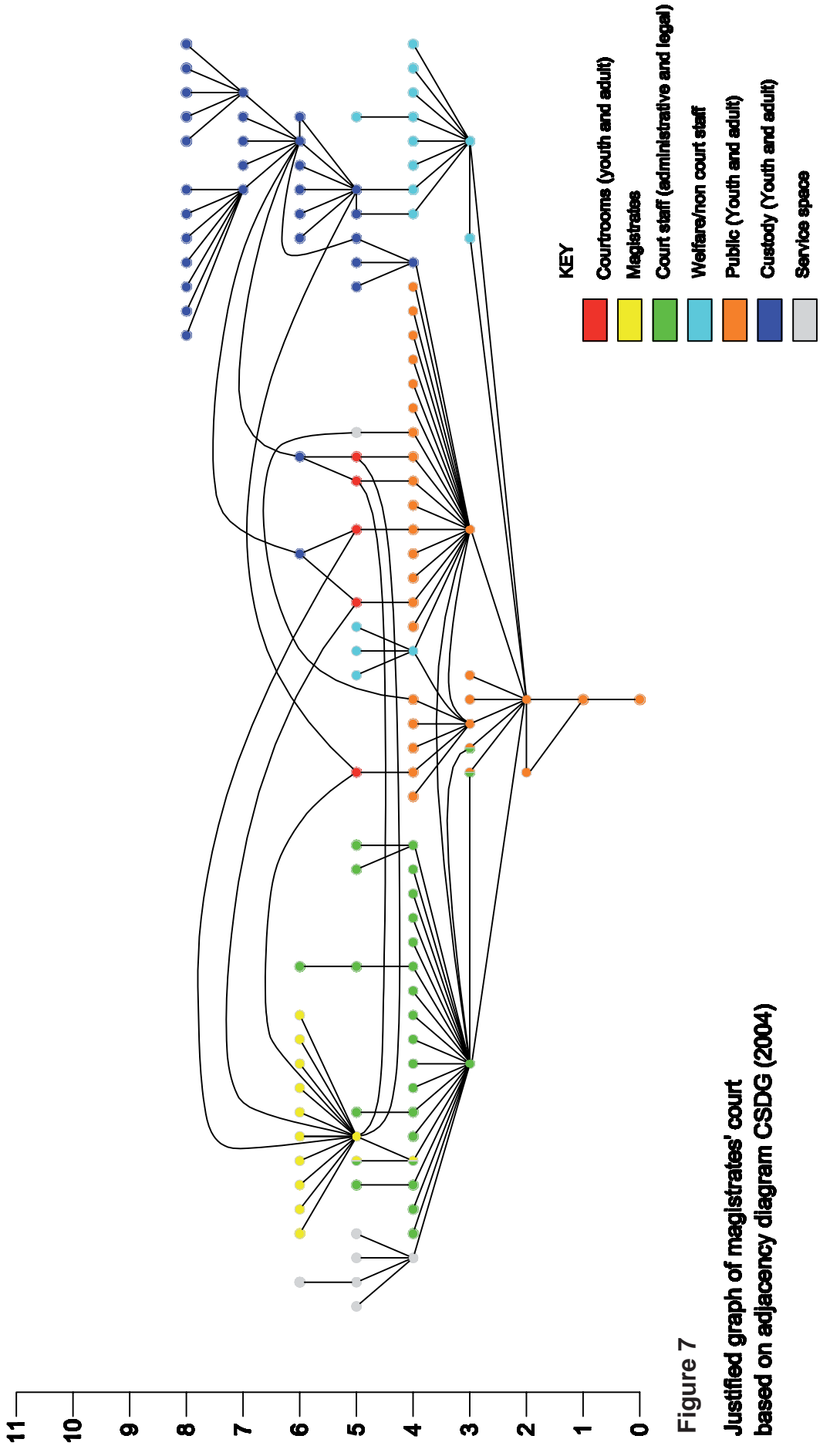
Figure 7

Justified graph of magistrates' court
based on adjacency diagram CSDG (2004)

KEY

Courtrooms (youth and adult)
Magistrates
Court staff (administrative and legal)
Welfare/non court staff
Public (Youth and adult)
Custody (Youth and adult)
Service space

2007) in which the magistrates and court staff are accommodated in the same well integrated area, this is suggestive of a shift away from a system in which power was held by individuals with high social status to one in which power is held by the bureaucracy of the court service.

The analysis of the adjacency diagram in the primary school[8] generic design guidance (figure 8) shows a relatively shallow bush-like j-graph (figure 9). The space-link ratio is 29:35 (0.83) and the j-graph has 7 rings (6 consisting of 3 nodes and 1 of 4). The deepest spaces, the changing room and the kitchen are only 3 steps from the public entrance. However, some of the nodes in the adjacency diagram represent the small complex of spaces assigned to each year group. These include 2 classrooms, 2 storage spaces, 2 cloakroom/lockers and 3 WCs. The text (2002:47) suggests that these spaces can be arranged in different ways for instance access to WCs and cloakrooms could be directly from the main circulation, from a shared lobby, directly from each classroom or from the playground. It suggests that the size and location of WCs 'can have an impact on the potential for bullying' and it is clear that the options described above would determine the level of control and natural surveillance over access to each space.

The corridor was much more integrated than the other spaces in the school diagram so the colour banding was based on mean depth rather than integration which would have showed only the highest and the lowest colour band (Dalton 2005). However, the integration ranking shows that the 10% most integrated spaces are the circulation, the reception and the main hall. These spaces also have the highest control value (17, 1.05 and 1.55 respectively) with the corridor being a highly controlling space. The control value of reception is suggestive of the level of concern about unauthorised access to school premises. There is only one type B space and this is enroute to the complex containing the head's office. This is indicative of the head's status within the school.

The analysis of the mental health unit is more challenging but also potentially interesting because it requires the generation of a graph from the spatial description in the text. The number of spaces and their use labels are taken from the schedule of essential accommodation for a 15 bed adult acute ward[9] and

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8   The analysis of the primary school was done without including the exterior.

9   The graph of the adult acute mental health ward does not include the following spaces which were referred to in the text but not included in the schedule of essential accommodation: intensive care ward, seclusion room, admission suite, electro-convulsive therapy suite, off-ward activities or out-patient services. The option selected for the mother and baby facility is a larger room with ensuite facilities which could also be used by a disabled person.

Figure 8
Adjacency diagram: Primary school generic brief (source BB99 2004)

KEY

- Basic teaching areas
- Halls
- Learning resource areas
- Staff and administration
- Non-net areas (kitchen, circulation, plant WCs and personal care storage)
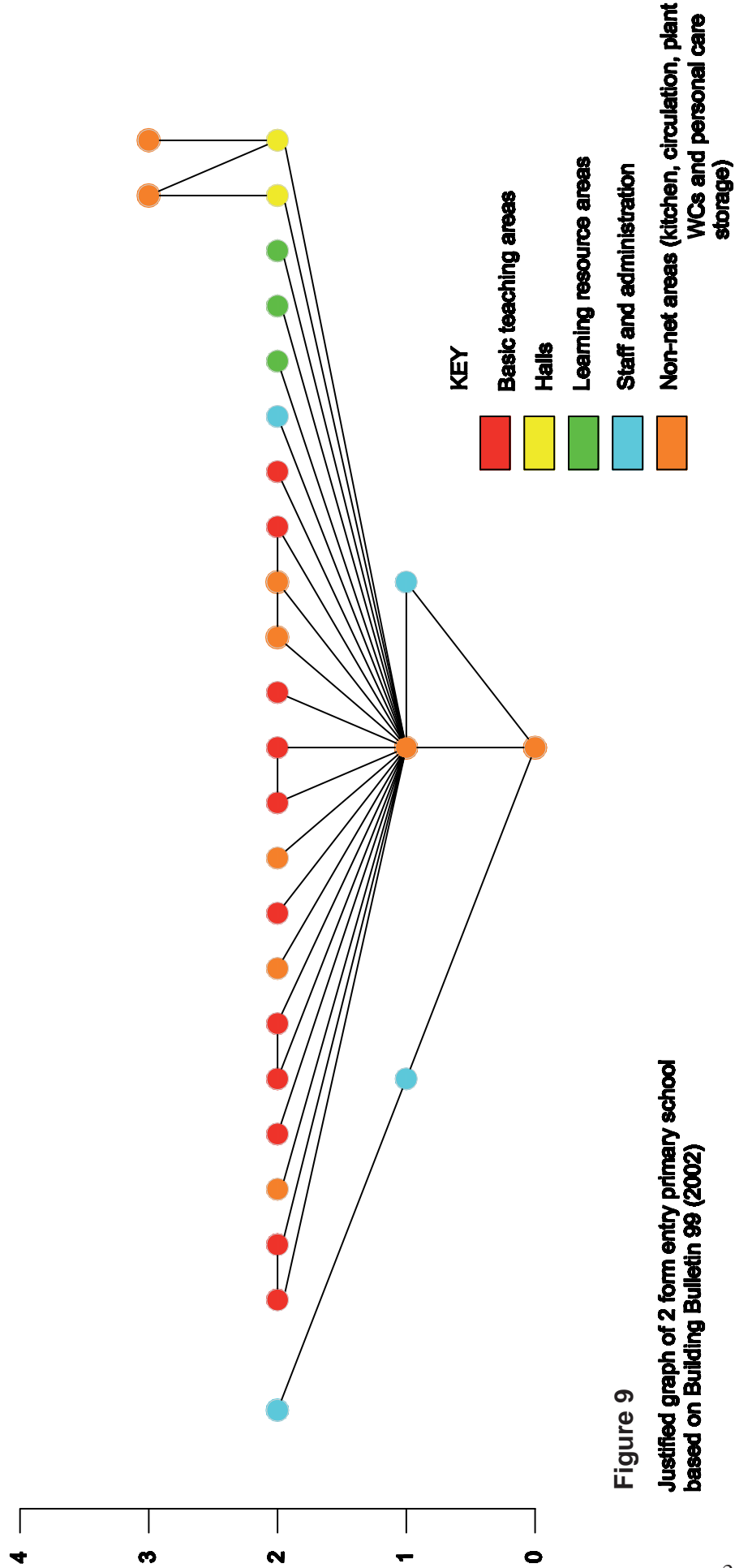
Figure 9

Justified graph of 2 form entry primary school based on Building Bulletin 99 (2002)

their relationships are taken from the text. As indicated in the adjacency diagram (figure 10) some of the spatial relationships are implied rather than described precisely. This allows some room for interpretation which might be seen as a limitation in the context of this study. For instance, it is possible that the route from the main entrance into the unit could be via the foyer rather than the staff base provided the geometry of the design allowed a line of sight through the foyer. In a live project these options would be discussed with the client.

Analysis of the adjacency diagram based on the text of the acute mental health unit design guidance shows a shallow tree-like graph (figure 11). In accordance with the text (which makes three references to the need to avoid 'race-track' corridors) it has no rings of circulation. This is explicitly related to the need to 'maintain adequate observation of patients at all times' (HBN 35:13). The deepest spaces are the ensuite facilities and the dining room servery at 5 steps from the front entrance. The ensuite facilities are also the least integrated spaces (1.00). This provides a degree of privacy and dignity which is not afforded when patients have to use shared facilities located off a main circulation route. The integration core comprises the staff base and the main circulation spaces with the most integrated space being the staff base (3.62). These spaces together with the reception foyer/waiting area also have the highest control values: staff base (9.50), circulation (7.07), Foyer (5.57) and ward circulation spaces (2.57) and betweeness centrality (see Table 8 Appendix 3).

The tree-like graph and central location of the staff base (reminiscent of Bentham's Panopticon), might suggest an over-controlling regime. However, De Syllas's (study of children's homes and Peatross's (1997) study of control in restrictive settings suggest that paradoxically, if the building layout supports containment and natural surveillance then more relaxed relationships can develop between staff and residents. However, the suggestion 'that it is always preferable for the female accommodation to be furthest from the main hospital circulation' (Safety Privacy and Dignity 2000:13) is questionable given that segregation may not be the best method of ensuring safety.

The analysis of these three generic briefs suggests that there are meaningful regularities between their syntactic measures and institutional attitudes towards different categories of building user. This implies that different modes of insitutionalisation (Hanson 2001:6.12) are encoded in the brief prior to design. However, there are potentially some methodological problems associated with analysing what is essentially a prescription for a range of viable options rather than a specific design.
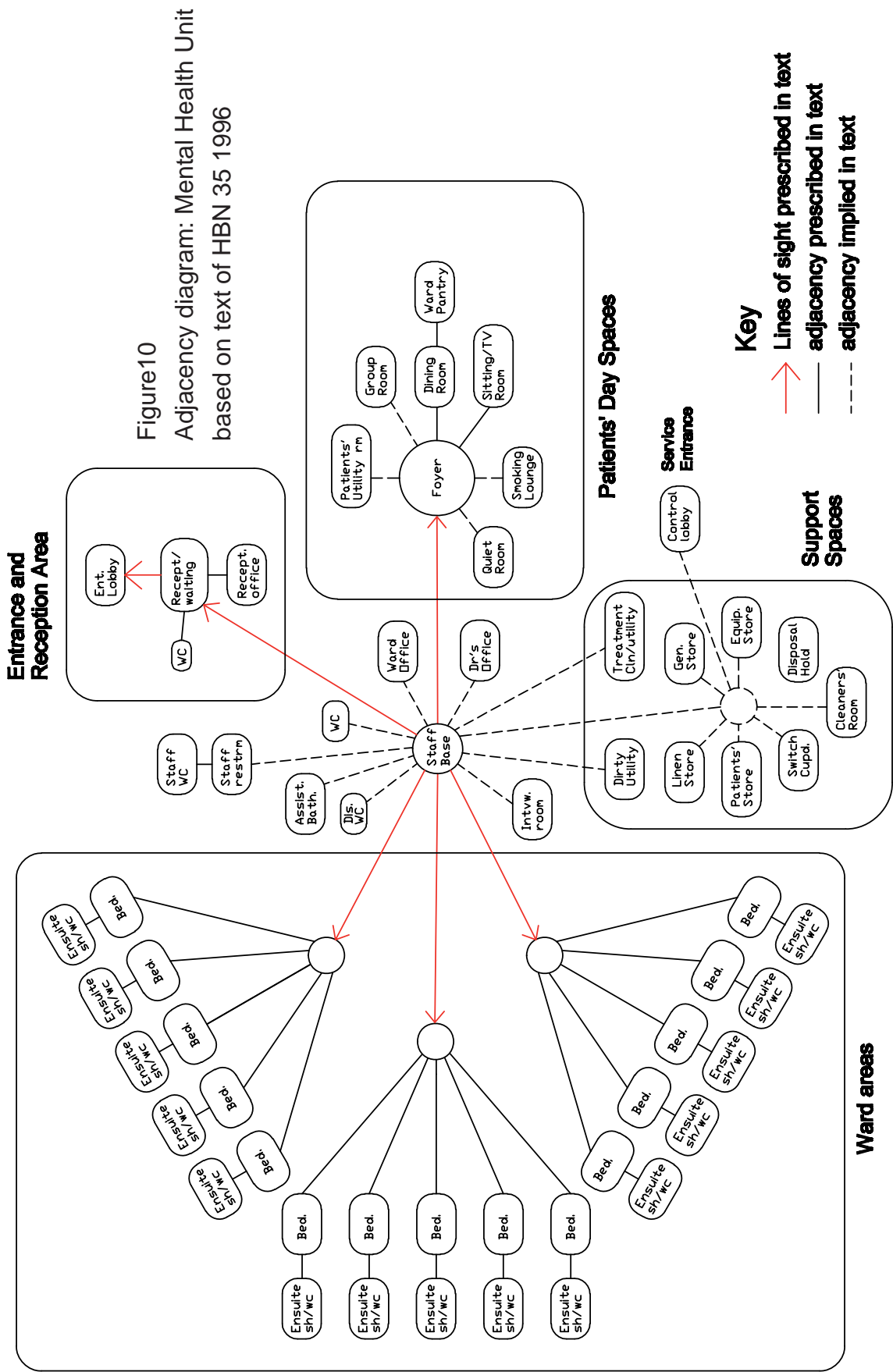
Figure10
Adjacency diagram: Mental Health Unit
based on text of HBN 35 1996

Entrance and Reception Area

Patients' Day Spaces

Service Entrance

Support Spaces

Ward areas

Key

Lines of sight prescribed in text

adjacency prescribed in text

adjacency implied in text

KEY

- Ward areas
- Sanitary facilities
- Patients' day space
- Ward administration
- Support spaces
- Entrance/reception areas

Figure 11

Justified graph 15 bed acute adult ward (mental health unit)
based on spatial relationships in Health Building Note 35 (1996)

CHAPTER 7
Conclusion

This study had two interrelated aims. The first aim was to explore current briefing practice and reflect on the different ways in which space syntax theory and methodology can be applied in the briefing process. Three research methods were used to address this aim, an archival study of CDA statements on briefing, a questionnaire on the content of construction briefs, and 5 unstructured interviews. The CDA statements analysed in Chapter 3 were found to address the following themes: how the briefing process is conceptualised (and who owns the task), methods used to elicit information, the medium of the brief, desirable characteristics of a construction brief and the appropriate level of prescription. The analysis suggests that the architects in this sample conceptualise briefing in at least 3 different ways and employ a wide range of techniques to elicit information from the client including observation of the existing building (which may use similar methods to space syntax research - details were not provided). The responses to the questionnaire reported in Chapter 4 suggest that over 70% of the construction briefs most recently completed by this sample group contained references to client attitudes and values regarding social issues which have spatial implications such as interaction/privacy, autonomy/control, security/accessibility, innovation/conservation an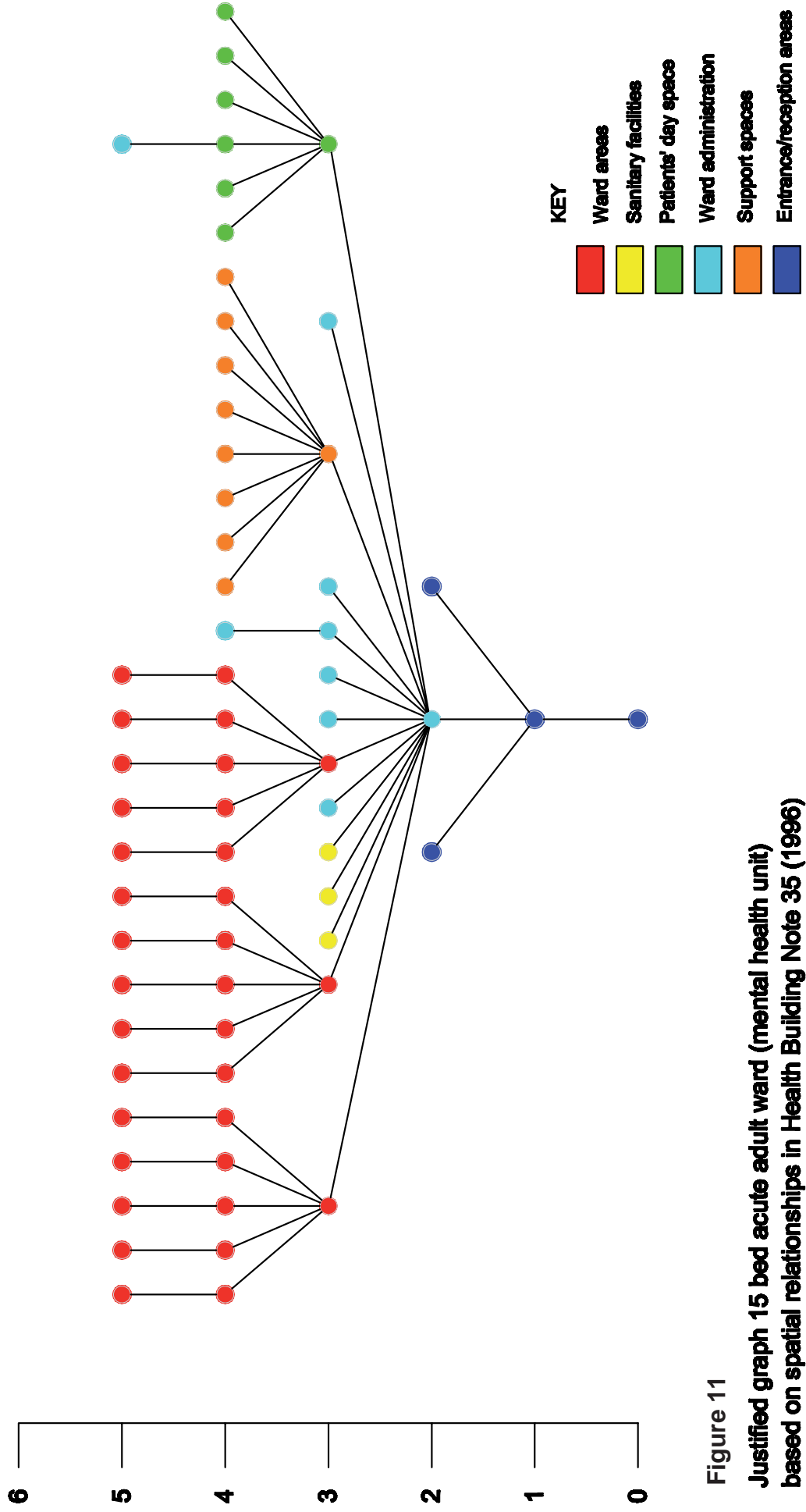d hierarchy/equality. The responses also indicate that over 75% of the construction briefs referred explicitly to spatial relationships in terms of permeability, visibility, control and intelligibility. However, the questionnaire could not distinguish whether these relationships were expressed in terms of local qualities only or whether they included global qualities. It was suggested that explicit reference to the global qualities of spatial configuration in project briefs might help ensure that client values are reflected in the design. The unstructured interviews reported in Chapter 5 covered a range of themes. These included the relationship between architect and client, the role of the architect and the different tasks which constitute the briefing process. The chapter ended with a summary of how space syntax theory and methodology could be used to assist in the briefing task: to establish a relationship of trust with the client, to facilitate communication, to diagnose the problem, to test assumptions, identify potential conflicts between aims and to review the design. The use of space syntax methodology as a tool for communication, diagnosis and design review is made viable by representing syntactic measures in coloured diagrams. Bosselmann (1998 cited Carmona et al 2003:265) explains the significance of visualisation when he says that 'because the real world's "richness and complexity" cannot be completely represented, designers inevitably select from reality an "abstracton of actual conditions"" for them the process of representation is a complex form of reasoning'. He argues

that what designers choose to include in their visualisations influences their view of reality and the design decisions they make. Simon (1969, cited Zeisel 2006:24) makes the same point in a more extreme way when he proposes that "solving a problem simply means representing it so as to make the solution transparent'. This is the basis of Hillier's (1996:67) argument that space syntax theory can also generate design options. However, if a conceptual distinction (more or less artificial depending on the circumstances) is made between briefing and design then this function clearly relates more to design than to briefing.

The second aim of this thesis was to test the proposition that construction briefs contain sufficient information regarding spatial relationships to be considered as virtual buildings with their own inequality genotype. Despite recommendations that briefing should start early and continue throughout the project, this study indicates that in practice briefing is often separated from the design process. Brown (2001:32) reported similar findings and observed that 'despite the current emphasis on process as opposed to the singular act, briefing in practice is an event that happens quickly and results in a fixed document'. Architects working with this kind of document are often faced with the dilemma as to whether to follow the client's generic guidance/brief or question its validity. The purpose of testing whether briefs can be analysed syntactically was to find out if space syntax could be employed to help construction professionals make informed judgements about the applicability of different kinds of construction brief (including generic design guidance and standard briefs as well as project briefs).

Chapter 6 reports on the analysis of generic design guidance for 3 kinds of institutional buildings. The adjacency diagrams included in the brief or described in the text were analysed syntactically using Pajek. The results of this analysis were then reviewed to see whether there were any meaningful regularities between the room labels (as specified in the brief) and the syntactic measures. The findings indicate that the values for measures such as integration and control do reflect cultural assumptions about the different categories of building user and management practice regarding relationships between users. Due to restricted time and resources, this study was limited by the small number of documents analysed. A larger study might address different kinds of brief, a wider range of buildings types or 10-20 specific project briefs for the same building type to test whether the same inequality genotype can be detected in each one. This would constitute a more rigorous test of the proposition that there is sufficient prescriptive spatial information in construction briefs to allow them to be understood as 'virtual buildings'. The move towards separating briefing from design encouraged by government support for new procurement methods such as PFI (CABE 2005)

and Client Design Advisors suggests that the quality of construction briefs will become increasingly critical as opportunities to develop them during the design process are reduced. This could make the ability to test briefs for cultural content prior to design particularly useful. Hanson (2000:97) argued that it is 'essential for architects and urban designers to understand how social ideas about inequalities in power and control get built into our frameworks and assumptions, and why in the final analysis, architecture cannot be divorced from politics'. It is argued here that politics are present in the construction brief prior to design.

The introduction referred to Kolb's learning cycle and Hanson's adaptation of this to the construction industry. It was argued that briefing is an essential stage in the learning cycle through which architectural knowledge, (the evidence base for design) can be developed. However, this begs the question as to how this architectural knowledge should be disseminated. Possible means include exemplar designs, generic design guidance, design codes, briefing templates and standard briefs (Hillier 1972:259). The use of these mechanisms for passing on architectural knowledge raises concerns regarding validity, applicability, misinterpretation and loss of opportunity for creativity. On the other hand, Leaman observes that post-occupancy evaluations reveal that designers make the same mistakes time after time. Also design time is limited and may not be best spent reinventing the wheel, paradoxically lack of generic design guidance may restrict innovation. Several CDAs and respondents to the questionnaire suggested that the way they approach briefing is dependent on context i.e. the nature of the project, procurement method or client. Green (1996:160) argues that briefing method should be matched to client organisation. The question as to whether the benefits of using standard briefs and design guidance outwiegh the costs therefore seems to depend on context and Penn (pers. com. 14 Aug 2007) suggests that the decision on briefing method should be based on an analysis of the transaction costs applicable to the circumstances (e.g. uniqueness, instablity) of the project in hand. Barrett and Stanley (1999: 12-13) suggest that human error theory provides a useful perspective on briefing. It is suggested that research into the relationship between briefing method and project context drawing on these two concepts would prove interesting. It could address the research question as to whether clients' choices regarding briefing method are based on an accurate assessment of transaction costs.

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Pajek software by Vladimir Batagelj and Andrej Mrvar

APPENDIX 1
Data from RIBA CDA statements

This research request was forwarded to all RIBA Client Design Advisors by Anna Gagliano, RIBA Research Officer, in June 2007.

I am a post-graduate student on the Advanced Architectural Studies MSc at the Bartlett, University College London. My thesis topic is 'Space Syntax and the briefing process' and the purpose of my research is to explore whether Space Syntax theories and techniques could be used to help clients and architects communicate during the early states of project development. It is proposed that data will be collected from three distinct categories of expert - clients, architects and space syntax researchers and that informants will be selected from the current RIBA Client Design Advisor register, the '50 Top Clients' as listed in the RIBA Journal article 'Who Dares Wins' (Nov 2006) and contributors to the 6th International Space Syntax Symposium 2007.

Initially, permission is requested for access to the 200 word statement on 'Brief writing, output specification and contract documentation' (one of the 12 core skills) provided by all applicants to the RIBA CDA register. It is intended that these statements will be analysed to assess how architects conceptualise their role in the briefing process and the experience, skills and abilities required to elicit clients' requirements effectively. This data will be used to inform the design of a questionnaire and semi-structured interviews on construction briefing. However, although it is hoped that Client Design Advisors will be willing to participate in the next stage of this study, granting permission to use the statements held by the RIBA CDA register will not be taken to imply a commitment to any further involvement. This project is covered by UCL Data Protection Registration reference No. Z6364106/2007/6/35, Section 19, Research: Social Research and all data presented in the thesis will be anonymised unless specific permission to make public is granted.

If you have any further questions regarding this research request please contact me, Emma Gribble, at e.gribble@ucl.ac.uk .

Extracts from RIBA CDA statements on 'brief writing, output specification and contract documentation' – one of the 12 core skills

Documents should be tailored to their purpose and audience. A strategic brief can be succinct and should not be padded out with any unnecessary or excessively detailed information. A designer should be able to define the essence of strategic design and planning .. by capturing it in words… in one power point slide.

It is of course important that everyone involved understands that the brief and the design are inextricably interconnected, and that design advice is available as the brief is developed.

Output specifications and contract documents … need to have a design dimension in the form of diagrams and drawings so that the client's requirements are sufficiently clear and definitive, while still leaving room for the bidders' designers to make their contributions … Many of the documents prepared for clients for PFI are unnecessarily long and wordy, and at the same time vague and aspirational, leaving it open to contractors to do virtually what they like.

I have experienced receiving many 'heavy handed' briefing and specification documents that have illustrated a lack of real understanding on the part of the writer; where a project is not rescued from this situation, it can often lead to defensive relationships, aggressive management, reduced design quality and dissatisfaction for all parties, especially those who have to live with the end result for years!

[Briefs for organisations seeking continuous improvement in repeat building programmes] should define the project attributes that contribute most value to the organisation and use a balance of prescriptive and performance specifications to encourage innovation while avoiding re-inventing the wheel.

A good brief will articulate vision, set broad parameters/requirements and define other constraints within which a design team would be expected to work.

… researching organisational needs in both their current form and, as far as possible, for the future. Prediction has been and remains an important part of this activity.

An independent architect appointed at this stage can often help a client consider possibilities that might not at first sight seem obvious.

As a client advisor, I would enable and encourage the use of a rolling brief to facilitate flexibility and quality.

To assemble relevant information my process has involved in-depth interviews with a cross section of personnel (at all levels within an organisation) and then a sifting of facts, figures and informal asides that has enabled me to bring to light the "unique pattern" by which an organisation generates its success.

A brief should be an instrument of creativity rather than a constraint.

Preparing an outline brief is an essential client role, responsibility for which should never be divested.

Acting as a bridge the CDA enables the client understand processes and options, whilst helping the design team 'get into the users shoes'.

Part of [the CDA role] is helping the client grasp nettles and face up to uncomfortable realities.

The brief also covers 'just in time' decision making – when decisions must be made, and when they can sensibly be left to a later stage.

… knowledge and skill are necessary but so is integrity, broad-mindedness and wisdom.

… the need for post completion performance standards for buildings to be more soundly founded in the briefing and design stages of the project.

We thoroughly enjoyed the way the developing design was able to secure support from an otherwise disjointed body. We were asked to be no only architects but, during the project process, we needed to be the glue as well.

Brief writing should be a clear and comprehensive definition of the project, setting out how the activities should ideally be carried out, their spatial and equipment needs and their inter-relationship.

A well defined brief leads to a good solution.

Successful projects … are usually the result of a special relationship between the client and the building design team'.

Individuals and groups need to exchange views to understand their own and each other's positions, in order to develop a robust brief that takes the range of needs into account.

… early clarity about shared or diverse assumptions is vital.

Observing closely how people actually use their current building or site can also play a role in clarifying new opportunities. We at [ ] have specialised in techniques for doing this and have found that, when current behaviour is described on the basis of real evidence, users may realise that this is somewhat different from the behaviour that they have been describing to themselves and their brief writer. Finding this out early has helped numerous clients of ours to get the right brief and thus a suitable building.

Being familiar with how the client/users behave makes it easier to think through the 'day in the life of' particular users and to prevent things happening that, while not necessarily a disaster, can cause constant minor irritation and detract from client satisfaction.

I regularly prepare design briefs incorporating, functionality, impact and build quality, by means of descriptions, diagrams, schedules of proposed accommodation [including linking spaces, circulation allowance and anticipated future expansion].

[A brief should] convey to bidding consortia not only a comprehensive statement of space, environmental, technological, and social needs but also a clear indication of the design quality standards to be achieved.

APPENDIX 2

Data from questionnaire

Text of e-mail with survey link sent to all RIBA CDAs and 'Top 50 clients'

Dear [Respondent's name]

I am a post-graduate student on the Advanced Architectural Studies MSc course at the Bartlett, University College London and my thesis topic is construction briefing. As part of my research I am contacting the architects on the RIBA Client Design Advisor register and the 'Top 50 Clients' named in the RIBA Journal article 'Who Dares Wins' (Nov 2006) to ask about their experience of the briefing process.

I would be very grateful if you could complete this questionnaire by clicking on the following link (It should take no more than 5-10 minutes).
http://www.surveymonkey.com/s.aspx?sm=uXgbnTJMo764bHId5azdTw_3d_3d

This project is covered by UCL Data Protection Registration reference No. Z6364106/2007/6/35, Section 19, Research: Social Research and all data will be anonymised. If there are any questions you would like to ask before completing this questionnaire please contact me on e.gribble@ucl.ac.uk.

Thank you very much for your help.

Regards

Emma Gribble

Questionnaire as it appeared on Surveymonkey website (1of 2)

1. What is your role within the construction industry?

◯ Client (developer)

◯ Client (user experienced in construction procurement)

◯ Client (user inexperienced in construction procurement)

◯ Architect

2. What sector/s do you work in?

☐ Education

☐ Government and public

☐ Health

☐ Homes and housing

☐ Industrial and commercial

☐ Retail

☐ Sport and leisure

What was your last project? - please specify building type

[   ]

3. Please answer this question in relation to your last completed project:

	Yes	No
Is the building used by different categories of people [as defined by roles and responsibilities] for example, teachers and pupils, or residents and visitors?	◯	◯
Are the different categories of user explicit i.e. obvious to 'outsiders'?	◯	◯
Are there different rules of access for different categories of user?	◯	◯

4. Please answer this question in relation to your last completed project:

Please mentally review your records of the briefing process. Were client attitudes and values regarding the following issues referred to explicitly?

	Yes	No
Innovation/conservation	◯	◯
Interaction/privacy	◯	◯
Autonomy/control	◯	◯
Security/accessibility	◯	◯
Hierarchy/equality	◯	◯

Optional comment

[   ]

5. Please answer this question in relation to your last completed project:

Please mentally review your records of the briefing process. Which of the following issues were referred to explicitly?

☐ Control of access to the building (who can go out, who can go in)

☐ Control of access within the building (who can go where)

☐ Visual links with the external environment (who/what can be seen, looking out and looking in)

☐ Visual links within the building (who can see, and who/what can be seen, from where)

☐ Intelligibility of circulation system

☐ Ease of access within the building (complexity of route from space A to space B and/or C etc.)

☐ Ease of access to the building (complexity of route from outside to space A and/or B, etc.)

Optional comment

[   ]

Please give an estimate of these effects in your last building. [1 = negligible effect, 5 = significant effect]

	1	2	3	4	5
Building layout/design of circulation system	○	○	○	○	○
Social norms of behaviour	○	○	○	○	○
Optional comment					

9. Please answer this question if you are a client [Architects please go to question 10].

How do you know what briefing information your consultants will need?
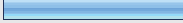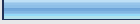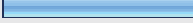
10. Please answer this question if you are an architect.

How do you know what briefing questions to ask your client?

NB The sequence of the constituent parts of questions 4 and 5 was randomised so that they appeared in a different order each time the site was accessed.

Summary of questionnaire responses from Surveymonkey website (1 of 3)
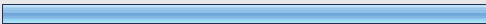
1. What is your role within the construction industry?

		Response Percent	Response Count
Client (developer)		28.2%	11
Client (user experienced in construction procurement)		18.0%	7
Client (user inexperienced in construction procurement)		2.6%	1
Architect		**51.3%**	20
		answered question	**39**
		skipped question	**1**

2. What sector/s do you work in?

		Response Percent	Response Count
Education		**43.6%**	17
Government and public		33.3%	13
Health		25.6%	10
Homes and housing		35.9%	14
Industrial and commercial		35.9%	14
Retail		15.4%	6
Sport and leisure		23.1%	9
What was your last project? - please specify building type			38
		answered question	**39**
		skipped question	**1**

3. Please answer this question in relation to your last completed project:

	Yes	No	Response Count
Is the building used by different categories of people [as defined by roles and responsibilities] for example, teachers and pupils, or residents and visitors?	**94.9% (37)**	5.1% (2)	39
Are the different categories of user explicit i.e. obvious to 'outsiders'?	**74.4% (29)**	25.6% (10)	39
Are there different rules of access for different categories of user?	**74.4% (29)**	25.6% (10)	39
		answered question	**39**
		skipped question	**1**
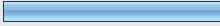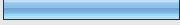
Summary of questionnaire responses from Surveymonkey website (2 of 3)

4. Please answer this question in relation to your last completed project: Please mentally review your records of the briefing process. Were client attitudes and values regarding the following issues referred to explicitly?

	Yes	No	Response Count
Innovation/conservation	**82.5% (33)**	17.5% (7)	40
Interaction/privacy	**89.7% (35)**	10.3% (4)	39
Hierarchy/equality	**73.7% (28)**	26.3% (10)	38
Security/accessibility	**100.0% (40)**	0.0% (0)	40
Autonomy/control	**75.0% (30)**	25.0% (10)	40
		Optional comment	3
		answered question	**40**
		skipped question	**0**

5. Please answer this question in relation to your last completed project: Please mentally review your records of the briefing process. Which of the following issues were referred to explicitly?

		Response Percent	Response Count
Ease of access to the building (complexity of route from outside to space A and/or B, etc.)		90.0%	36
Ease of access within the building (complexity of route from space A to space B and/or C etc.)		87.5%	35
Control of access to the building (who can go out, who can go in)		**95.0%**	38
Control of access within the building (who can go where)		87.5%	35
Visual links with the external environment (who/what can be seen, looking out and looking in)		77.5%	31
Visual links within the building (who can see, and who/what can be seen, from where)		75.0%	30
Intelligibility of circulation system		77.5%	31
		Optional comment	7
		answered question	**40**
		skipped question	**0**

6. Please answer this question in relation to your last completed project: Did the design team make any assumptions about client requirements (regarding spatial relationships) which were not discussed and recorded in the briefing documents?

		Response Percent	Response Count
Yes		35.0%	14
No		**65.0%**	26
		If your answer was 'yes' please give details	13
		answered question	**40**
		skipped question	**0**

7. Please answer this question in relation to your last completed project: Which of the following statements most accurately describes your experience of the briefing process?

		Response Percent	Response Count
The brief was developed by the client prior to appointment of consultants		27.0%	10
The brief was developed by the client and consultants working together prior to design		**40.5%**	15
The brief was developed by the client and consultants working together throughout the project		32.4%	12
	Is this typical of your experience on other projects?		32
	answered question		**37**
	skipped question		**3**

8. Please answer this question in relation to your last completed project: How much do building design and social norms of behaviour effect the chances of two individuals meeting? Please give an estimate of these effects in your last building. [1 = negligible effect, 5 = significant effect]

	1	2	3	4	5	Response Count
Building layout/design of circulation system	3.2% (1)	3.2% (1)	19.4% (6)	**48.4% (15)**	25.8% (8)	31
Social norms of behaviour	3.3% (1)	20.0% (6)	**40.0% (12)**	33.3% (10)	3.3% (1)	30
					Optional comment	15
					answered question	**31**
					skipped question	**9**

9. Please answer this question if you are a client [Architects please go to question 10]. How do you know what briefing information your consultants will need?

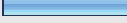|	Response Count
	19
answered question	**19**
skipped question	**21**

10. Please answer this question if you are an architect. How do you know what briefing questions to ask your client?

	Response Count
	21
answered question	**21**
skipped question	**19**

NB Text based responses are covered in the following pages

Responses to question 2 (second part)

What was your last project? – please specify building type

1. 60 unit residential scheme
2. Rainham Marshes Environmental Education Centre
3. Newbuild affordable housing
4. Law courts
5. Commercial office building of 1M. square ft.
6. Children's hospital
7. Primary school
8. Residential: extension for handicapped child and carer
9. Housing
10. HM court
11. Commercial development
12. Higher education
13. Weir Link Community Centre, London SW12
14. 30 Unit shared ownership scheme
15. Commercial speculative offices
16. Leisure hospitality
17. CDA for an Authority's BSF programme
18. Healthcare
19. Leisure centre
20. Headquarters for FA Premier League
21. Domestic cancer support centre
22. 95000 Sq ft Health Centre
23. Various developments along Regent Street
24. Central London office development
25. Museum
26. Student residences
27. Residential
28. Government and public
29. Care Homes
30. Orchestral rehearsal/performance/educaton space
31. Embassy and Ambassador's Residence
32. Major Acute Hospital
33. PFI Treatment Centre
34. British Embassy Sana'a
35. Monitor and advisor on behalf of the DCSF
36. More London a commercial office complex in central London
37. PFI hospital
38. Kielder Observatory
39. -

Projects by sector

Education	4
Government and public	5
Health	7
Homes and Housing	8
Industrial and commercial	5
Retail	1
Sport and leisure	8

Text of responses to Qs 4, 5 & 6

Q. 4 Please mentally review your records of the briefing process. Were client attitudes and values regarding the following issues referred to explicitly?

Optional comments:

1. All issues were fully discussed by the Development Steering Group with which we developed the Brief
2. Brief required in-depth investigation
3. I wrote the Brief (I am an architect) and carried out DQI's, Stakeholder meetings etc

Q. 5 Please mentally review your records of the briefing process. Which of the following issues were referred to explicitly?

Optional comments:

1. These are all key aspects that I have incorporated within the official Court Standards Design Guide
2. All fairly normal for hospitals
3. Each of these issues were discussed with the Development Steering Group with which we developed the Brief
4. These are essential for an Embassy
5. See NHS Briefing Guides for PFI and Capital schemes; Patient Dignity and Privacy issues
6. Specialist mental health environment

Q.6 Did the design team make any assumptions about client requirements (regarding spatial relationships) which were not discussed and recorded in the briefing documents?

If your answer was 'yes' please give details:

1. The point of the team is to turn a brief into a building, it therefore requires their skill, etc – eggs, grandmothers!
2. With building security a paramount consideration the design solution offered a larger footprint at first floor level ie moving some operations originally planned at ground floor to avoid the ability to ascend the building externally.
3. It was possible to create a vaulted ceiling in the kitchen/dining as a 'bonus'.
4. Those requirements which were not explicitly defined in the client design briefing.
5. All spatial relationships were fully discussed with the development steering Group with the help of cardboard and 3D computer models.
6. Intelligibility of spaces within the building or outside were not referred to in the brief.
7. External relationships to existing surrounds.
8. Through consultation with education advisors to fill gaps in the brief.
9. Assumed no lobbies to doorways required.
10 Too complicated to reply.
11 Although the brief contained a space relationship diagram, the architect exploited part of the first floor office space by creating a double height space, lit from above with floor voids between ground and first floors.
12 Grouping of subject areas in the high school.
13 Client requirements high level [department/department]. We had to assume room/room relationships.

Table 3
Answers to Q. 3-8 analysed by role in industry

Q. 3	Developer	User exp.	Architect
Building used by diff. categories	90	100	95
Cat. obvious to 'outsiders'	70	100	75
Different rules of access	90	71.4	70

Q. 4	Developer	User exp.	Architect
Innovation/conservation	100	100	65
Interaction/privacy	90.9	100	85
Hierarchy/equality	80	100	60
Security/accessiblity	100	100	100
Autonomy/control	81.8	85.7	70

Q. 5	Developer	User exp.	Architect
Ease of access to building	100	85.7	85
Ease of access within building	90.9	100	85
Control of access to building	100	85.7	100
Control of access within building	100	100	80
Visual links with exterior	72.7	100	70
Visual links within building	72.7	85.7	75
Intelligibility of circulation	81.8	71.4	75

Q. 6	Developer	User exp.	Architect
Assumptions - YES	27.3	28.6	40
Assumptions - NO	72.7	71.4	60

Q. 7	Developer	User exp.	Architect
Client prior to design	20	57.1	16.7
Client/architect prior to design	40	28.6	44.4
Client/architect throughout proj.	40	14.3	38.9

Q. 8 (part 1)		Developer	User exp.	Architect
Effect of building on encounter				
Low	1	0	16.7	0
	2	0	0	6.3
	3	0	16.7	31.3
	4	75	50	31.3
High	5	25	16.7	31.3

Q. 8 (part 2)		Developer	User exp.	Architect
Effect of social norms				
Low	1	0	16.7	0
	2	12.5	16.7	26.7
	3	37.5	50	40
	4	50	16.7	26.7
High	5	0	0	6.7

NB Figures for client/user inexperienced were omitted because of the small sample size (1).

Table 4
Answers to Q. 7 collated with answers to Q. 1 (1 of 2)

Views on briefing process	Role within construction industry	Project sector	Is this typical of your experience on other projects?
-	Client/developer	Homes/housing	All three
A	Client/user	Sport/leisure	Yes
B	Client/user	Gov/public	Yes
C	Client/developer	Commercial/ind.	Yes
C	Architect	Health	Yes
C	Architect	Education	Generally the brief is defined early in the process and then reviewed as the design develops.
B	Architect	Homes/housing	No: typically the brief has been developed prior to consultant appointment.
B	Architect	Homes/housing	Yes
C	Architect	Sport/leisure	We have developed this way of working over the years and apply it to all our projects.
C	Client/user	Homes/housing	YES
A	Architect	Commercial/Ind.	Typical of speculative commercial developments. Some corporate clients start the process by handing out briefing documents usually based on their experience on past projects, but in essence designed to achieve a balance between capital outlay and marketability of the project.
B	Architect	Sport/leisure	Yes
C	Architect	Education	Yes
B	Client/developer	-	No
A	Architect	Health	No, usually we are involved earlier but this was a CABE run competition with a well considered initial brief.
C	Architect	Sport/leisure	Brief development included the constructor on this partnering project.
-	Architect	Sport/leisure	The brief was developed by the consultant. This is typical of my experience.
C	Client/developer	Health	Fairly typical in the world of the public sector.
C	Client/developer	Retail	The ideal is a combination of all three in my opinion.
B	Client/developer	Commercial/ind.	Yes.
A	Client/user	Sport/leisure	Although I have ticked the first option, it is also true to say that our brief develops further when the consultant team is on board.
B	Architect	Gov/public	Depends
B	Architect	Homes/housing	Yes
B	Architect	Sport/leisure	Yes

Table 4
Answers to Q. 7 collated with answers to Q. 1 (2 of 2)

A	Client/user	Gov/public	Yes, a comprehensive brief. But I think, only because I am an architect appointed before the project team. The Brief should stipulate constraints and not design aspects in detail. Most design aspects need to be left to the design team and discussed at stakeholder workshops.
-	Architect	Health	Yes
B	Architect	Health	Within the Health Service – yes. A brief has to be established for the business case in varying degrees of complexity and completeness. There is much guidance centrally available to assist the briefing process. My own experience and process is to tease/sweat the brief for as long as possible to provide as much information as possible.
A	Client/user	Gov/public	Yes
C	Architect	Education	Yes
B	Client/developer	Commerical/ind.	Depends on type of project, it is typical for commercial developments of this size and nature.
B	Architect	Health	Broadly yes.
C	Client/developer	Sport/leisure	Yes
B	Client/developer	Homes/housing	-
A	Client/developer	Homes/housing	-
A	Client/user/inexp	Health	-
C	Architect	Education	-
B	Architect	Commercial/ind.	-
A	Architect	Gov/public	-
A	Client/developer	Education	-
A	Client/user	Homes/housing	-

Table 5
Answers to Q. 7 collated with construction sector

	A The brief was developed by the client prior to appointment of consultants.	B The brief was developed by the client and consultants working together prior to design.	C The brief was developed by the client and consultants working together throughout the project.
Education	1	-	4
Government and public	3	2	-
Health	2	2	2
Homes and housing	2	4	1
Industrial and commercial	1	3	1
Retail	-	-	1
Sport and leisure	2	2	2

Text of responses to Q. 8

Q. 8   How much do building design and social norms of behaviour effect the chances of two individuals meeting?

1.   Unfortunately life is not so mechanical.
2.   I don't really understand the question.
3.   We use the building design to encourage meetings (e.g. public and enquiry desk staff, but we also want to prevent meeting, e.g. prosecution witnesses meeting friends of the defendant.
4.   Don't understand the question! In hospitals, design is primarily and evolution of functional and departmental relationships.
5.   The question is too general for valid comment: meeting socially? For business? Individuals of similar ages, or of the same sex? Of the same social class or role etc. etc.
6.   I don't understand the question.
7.   This question is slightly ambiguous. I've given it my best shot.
8.   Social norms of behaviour assumed, not based on actual behaviour of specific social groups.
9.   I don't understand this question.
10.   Effect of informal contacts often underestimated.
11.   Not sure I understand the question.
12.   Apologies – I don't understand this question – or at least I don't understand it in relation to the type of projects for which I am responsible.
13.   There is not much need for chance social meeting in an Embassy. But it could happen at a function held in the mult-function space or when an Ambassador is entertaining.
14.   The reasons for visiting the building are personal and private – ie health issues. This natural has an effect on the aspects of social integration. The building design does provide central circulation/ waiting and 'social' spaces but because of the reasons for attending people tend to be somewhat insular.
15.   I don't think this question is relevant to our projects.

Text of responses to Q. 9

Please answer this question if you are a client:

How do you know what briefing information your consultants will need?

1 Thirty years of experience; if something is omitted she asks.
2 Experience having also worked in the Architectural profession.
3 The organisation has a design brief, standard employer's requirements, design meeting checklists, utilises Housing Corporation standards as well as standards relevant to specialist client groups.
4 I am part of the client but also an architect, therefore I know what the users require and what the designer will need in the brief to achieve the requirements.
5 We use past experience of capital developments and evaluation
6 Experience of instructing consultants as a developer/landlord
7 Out consultants are continuously involved in the Development Steering Group briefing process.
8 STANDARD BRIEFING AGENDA DOCUMENTATION
9 From experience and discussion with the consultants
10 Because we ask them and we give an overall brief of what vision we have
11 This is v. difficult – we spend a lot of time in user groups trying to pin down the brief – which gets changed regularly
12 Experience and ask them what they need.
13 We have a standard brief which is amended to suit each project and we are working with design teams regularly
14 The majority of our building projects relate to gallery refurbishment. This means that each project faces very similar issues and challenges. Given the number of projects completed in recent years , we have built up an extensive range of briefing documents to assist in the briefing process. This stops us reinventing the wheel each time.
15 Based on experience and we have typical briefing templates
16 Yes
17 I am an established 'client' within my organisation but am also a registered architect and so have an insight into what a practising architect requires.
18 We discuss it with the design team.
19 Developed through discussion with all interested parties including user groups, architects etc.

Text of responses to Q. 10

Please answer this question if you are an architect:

How do you know what briefing questions to ask your client?

1   Generally from experience of many other past projects. You need to know how to interrogate a client politely.
2   [ ] have a value management process which starts at Business 'needs and wants' and Project 'needs and wants and then develops these into a value tree. Options are scored against the value tree.
3   From experience.
4   Experience. I work on lottery projects and so the building has to reflect the business plan.
5   From experience.
6   Experience and understanding of human nature.
7   A knowledge developed of the issues I believe are important.
8   The Development steering group consists of all key stakeholders in the project; our role is to get them talking to each other about the project and to steer the discussion in such a way that all the key issues are addressed; we keep a record of the discussion and develop the brief progressively out of this.
9   Usually based on experience, but a set of questions for specific building designs is usually collated, particularly when the client offers no briefing document.
10 Experience, use briefing books and references, attend seminars/training in briefing, listen and understand their business case.
11 Depends on the building type, and after consultation with the client on visions, values, functionality etc.
12 Listening intelligently to what they have to say and previous experience
13 Experience supported by RIBA plan of work and office Quality Management System.
14 Long experience
15 Interviews, discussion, audits, observation, creative workshops
16 Mixture of research and experience to develop a vision of a design and response to the selected site to test with the client and develop options for discussion.
17 Experience of working in a specific sector (arts and culture).
18 From extensive experience of designing hospitals.
19 By using the question 'why?' – this then opens up the discussion and then leads to other questions. See also some Project Management advice which tends to suggest that there are '5 whys?' i.e. you start with an initial question then drill down to the next level, then the next etc.
20 Experience and knowledge/understanding of school design issues
21 Years of experience in a specialist sector!

APPENDIX 3
Data from textual and syntactic analysis

Textual analysis: description of method and findings

The aim was to analyse the text in an internally consistent and repeatable way so it was necessary to select coding categories which were exhaustive and mutually exclusive. Since the 1960s a wide range of methods for managing information during briefing have been proposed (Duerk, 1993:154-160, Kamara et al 2002:35-60 and Ryd 2004:86-98). These precedents were reviewed before deciding on the coding categories for this exercise. However, as Duerk observes there are 'many different structures and strategies for ordering information, just as there are many ways of cutting a cake'. The principal purpose here was to assess the extent of information on spatial configuration in these generic briefs. The initial coding category was therefore configuration (spatial relationships – permeability/ visibility). The remaining categories were selected to cover all other aspects of the brief: metric/numerical (numbers to be accommodated/schedule of areas), form/ architectural expression, material quality (maintenance/life-cycle/sustainability), functionality (services/detail design) and a non-building category - management strategy/tactics. The tactics for coding decisions[1] were developed through a trial analysis and applied to sections of each generic brief.

The danger of all systems of classification is that they suggest that the information relates to separate entities rather than different aspects of a single whole. This is clearly a false impression: for instance, the spatial relationships between rooms (configuration) cannot exist separately from the rooms themselves (metric/ numerical).

Colour coding was used to analyse the text without deconstructing it so that the relationships between different kinds of client requirements were not lost. The words relating to spatial relationships (within sentences coded as relating to configuration) were underlined to highlight how these relationships are conceived and communicated. A pilot analysis of sections of each text reveals that different categories of user are made explicit as are differential rules of access. Cultural values with spatial implications such as privacy, and security are referred to and spatial relationships in terms of visibility, permeability, and control are also metnioned. The building types reviewed are clearly long model buildings and

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1   There is no category for resources/restraints such as budget, programme and site because generic briefs do not include this kind of information. Government legislation was coded according to its subject. Reference to views/lines of sight are coded as configurational when related to function and as form/architectural expression when related to aesthetics or quality of light. Statements of client need are coded as management strategy/tactics where they cannot be associated with a particular performance requirement or architectural specification.

and issues of containment, observation and control are considered critical where people are under stress, emotionally disturbed or vulnerable. The words underlined in the text, indicate the limited range of words used for describing spatial relationships. Most refer only to local relationships although the court guidance refers to a central core or axis and Safety Privacy and Dignity refers to the main circulation route. In general, the spatial relationships are prescribed eg adjacent, linked, near to, but they are also expressed in terms of performance requirements eg must be able to 'make eye contact' with people arriving, and aims eg privacy, security.

Sample page text: Magistrates' court (CSDG 2004)

Public Section 17

1 General

Public areas together with their associated circulation form the central core or axis from which most non-judicial functions of the Court building radiate. All court users (with the exception of the judiciary and specified car park users) enter the building by the main entrance door where adequate facilities and space for security checks should be provided. The arrival concourse contains the Information/Enquiry Point and the Cause List Display, both of which should be clearly seen on entering the building, as should a 'directions' indicator board.

Public circulation then leads to Court Waiting Areas which may be combined with associated circulation to form concourses off which are located courtrooms and the consultation/waiting rooms. Pay phones are to be situated in each concourse providing a degree of privacy. Waiting areas should be visually interesting, preferably with external views.

Public circulation gives access to private and semi private accommodation occupied by Court Service and Non Court Service staff and to Probation, Custody Visits and refreshment facilities. Access must also be provided to Crown Court Office counters.

Direct access from the arrivals concourse to the Jury Assembly Area is desirable.

Public toilets appropriately sized are to be provided in locations convenient for Court Waiting/Concourse, normally on each floor.

Adequate facilities must be provided for the admission of wheelchairs and handicapped persons and for their subsequent circulation within the building. In particular attention must be paid to court access and access to the Jury Assembly Area.

2 Finishes

Durable, easy clean finishes are necessary in these areas since heavy traffic can be expected.

Floors will generally have a hard non-resonant finish (see also Section 30). In all cases some form of 'barrier' matting is to be incorporated immediately within the entrance.

Walls generally should be finished with material which will minimise possible wear, discoloration and disfigurement and be easily kept clean.

Toilets should have anti slip tile floors and ceramic glazed wall tiles for the full height with some colour introduced.

3 Accommodation Accessible to the Public

The public area comprises the courthall and public entrance with a number of associated rooms for supporting facilities; for example, interviews, waiting and refreshment. This part of the building is open to the general public during court hours, after which circulation may be restricted. The public also requires access to the public counter after court hours. The counter may conveniently be sited off the entrance vestibule. The design and layout of the public area centres on the courthall, which is the main waiting and circulation space. This space is used for informal consultations.

One of the difficulties in courthouse planning is to provide direct and easy public access to the courtrooms and those parts of the office accommodation open to them, whilst at the same time ensuring that such circulation is appropriately contained. The public area is most vulnerable to vandalism and disturbance. The courthall should therefore be designed for ease of surveillance, and with sufficient space at the entrance to mount security inspections. The brief should specify for designers and special requirements, such as defence witness waiting areas and mother and baby facilities; whilst these may not increase the area, they will have a significant effect upon layout.

3.1 Appearance and Impact

The interior design of the public areas should be designed to be clearly laid out and have the affect of calm. An overtly authoritarian or institutional feel should be avoided.

4 Main Entrance

The main entrance should be entered via a draught lobby and security point (Appendix 17/A). From the entry point the courthall, stairs, lift, public enquiry counter and payments desk should be visible. Discrete interview rooms should be accessible off the entrance, adjacent to the enquiry counter.

The public enquiry counter/ information point must be located within or opening onto the entrance hall. Where county courts are co-located with magistrates' courts the public users for a) county court and magistrates' court family jurisdiction and b) magistrates' court criminal and civil jurisdiction should be directed to their separate circulation routes from the entrance hall after passing through security. Separate entrances to the building for the two groups may be appropriate where particular circumstances dictate. The circumstances in which separate entrances to the building might be appropriate for these parties or for youth courts would be:

■ where the building is particularly large; or

Colour coding key

Configuration	
Metric/numerical	
Form/architectural expression	
Material quality	
Functionality	
Management strategy/tactics	

Sample page text: Primary School (BB99 2004)

4: Staff and administration (zone s)

The staff and administration area sits mostly within non-teaching area. The diagrams in the outer margin look at layout options for these spaces. The total staff and administration area must[1] include:

- an office for the head teacher of at least 10m²;

- a medical inspection (MI) room, which may also be used for visiting therapists or other support for pupils with SEN and disabilities, if there is a separate 'sick bay';

- a work and social space for teaching staff, usually in the form of a central staff room for work and social use. Diagram a in the outer margin of page 43 shows a notional layout for a combined space with designated ICT area and free tables for laptop and general work. Storage units for teachers' personal possessions and papers can be included, particularly for visiting staff who may not have a class base, however this will depend on the school's policy.

Staff and administrative area:

- offices for other senior teaching staff, such as the deputy or assistant heads, who may need privacy for interviews and pastoral support;

- a main office for administrative staff, with storage space for confidential records and a link to reception;

- a secure reception area, with access to the rest of the school controlled by the office staff;

- separate reprographic facilities[2].

It may also include:

- an interview/meeting room[3], ideally adjacent to the entrance foyer so that it can be used by visitors without them entering the main school. This could be linked to or shared with a parents' room;

- a caretaker's office;

- a 'sick bay', near to the reception and main office, for pupils who are ill and waiting to be picked up (this is different to the MI room above).
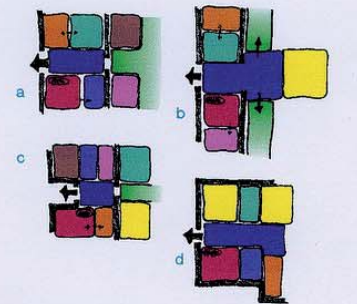
Key:
- ■ = general office with reception
- ■ = headteacher's office
- ■ = interview/meeting room
- ■ = parents room
- ■ = MI/therapy room
- ■ = sick bay
- ■ = staff room
- ■ = primary circulation
- ■ = secondary circulation

a: A reception area is flanked by the office and headteachers room. The headteacher's room has a moveable acoustic partition link to a larger interview room for staff or parental meetings. A secondary circulation area provides security for the rest of the school, here, parents who participate in school activities and visiting medical staff can be accommodated.

b: A reception area opens out into a circulation area to the rest of the school. A separately secured secondary circulation route is not shown. Administration areas run along the front of the school, a staff room is located further into the centre of the building.

c: Reception sits by the main entrance, linked to the headteachers office. A secure secondary circulation area has the staff room and meeting room off it, the meeting room could act as additional space for staff when required. A parents' room sits at the front of the school for ease of access.

d: This layout does not show a secondary entrance to the school. Here, the staff room is at the front of the school, offering a link with admin and the Headteacher. The staff room is split between a work area (at the front) and a social space, in between is a meeting room, which is linked via moveable acoustic partitions so as to create a large space for whole staff meetings and functions.

1. The Education (School Premises) Regulations 1999 require any primary school with over 120 pupils to have an office for the head teacher, and all schools to have an MI room and space for staff to work and socialise.

2. Reprographic facilities, and possibly ICT printing services, can usefully be positioned in a central room (but not in circulation areas) with adequate ventilation, if appropriate staff are available.

3. If there is a meeting room, the head's office may be less than 10m². A separate meeting room has the advantage that it can be used while the head's office is occupied.

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Colour coding key

Configuration	
Metric/numerical	
Form/architectural expression	
Material quality	
Functionality	
Management strategy/tactics	

73

Sample page text: Mental Health Unit (HBN 35 1996)

4.0 Adults with acute mental illness – specific functional and design requirements

Entrance and reception area

4.1 There should be easy access to the site. From the site entrance and from the car parks to the entrance to the unit there should be clear direction signs. Index maps may be useful but the design of the facility should ensure the entrance is obvious.

4.2 Most patients arriving at the unit will be ambulant but some, especially those attending services for the elderly, may be in wheelchairs or use walking aids. Provision needs to be made for patients arriving on a stretcher trolley although this would be rare.

4.3 The unit should have its own entrance with only one main access point. Any link corridors with the main hospital should enter the unit at this access point so that all entries and departures are clearly visible. (For operational reasons, and to prevent the total size of the unit becoming too big, it may be necessary to have a separate entrance to the facilities for elderly people with mental illness.)

4.4 A separate service entrance will be provided for the delivery of goods, etc. This will be locked when not in use.

4.5 The entrance to the unit will be via a draft lobby with two sets of doors. It is for local decision whether the doors are fitted with an interlock system. From the entrance the reception should be clearly visible.

4.6 The reception counter should if possible be naturally-lit and provide a low, open, friendly facility that does not give any sense of a barrier or generate a feeling of "them and us" for the patient

4.7 Staff at the reception desk need a clear sightline through the entrance area to be able to make eye contact with and greet people arriving and also as a security measure, and should be able to view all waiting areas. Receptionists should be able to raise an alarm in case of danger from violent behaviour or other emergency situation.

4.8 A fall-back situation may be provided, for example the ability to retreat into a safer lockable room which could also be used as a general reception office or store, or possibly a patient finance/banking service point. Any "safe" room must have a telephone.

4.9 Space will be required at the reception desk for visual display terminals (VDTs), keyboards and a working supply of stationery and office accessories.

Waiting areas

4.10 The waiting area at reception should be informal and divided so that family groups can sit together. There should be easy access to WCs, including wheelchair access facilities from the waiting area. Vending machines are often appreciated but provision needs to be made for the disposal of litter. Waiting areas are useful locations for displays of various types of information.

Wards

General

4.11 On the wards there should be a clear distinction between private areas, namely patients' bedrooms, and the public areas including lounge, foyer and dining areas. The bedrooms could be grouped in small clusters of about five rooms to help reduce the apparent scale of the ward and to make the provision of separate facilities for women easier to achieve. This would also make the separation of vulnerable patients from those who may abuse them easier to achieve.

4.12 Restless patients should be able to wander about between the various public spaces and their own rooms without creating problems of observation or any problems for the functioning of the unit. It should not be necessary for a member of staff to follow a patient around constantly.

4.13 Adult acute wards should not have more than about 20 beds. The bed allocation/management system should ensure that, once admitted, patients do not need to be moved for non clinical reasons.

"Wards that are too large make it difficult to deliver personalised care for individuals. Insufficient numbers of beds mean that the atmosphere becomes unsatisfactory because of the need to remove patients, which sometimes involves lodging them on other wards, with little warning, and inevitably leads to a greater proportion of individuals becoming upset and exhibiting disturbed behaviour". *(The Health of the Nation, Suicide Prevention.)*

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Colour coding key

Configuration	
Metric/numerical	
Form/architectural expression	
Material quality	
Functionality	
Management strategy/tactics	

Table 6
Syntactic measures: Magistrates' court adjacency diagram (CSDG 2004)

No.	Mean depth (MD)	Integration value (max-min)	No.	Room type
62	2.73	2.57	62	Public - Courthall
99	2.82	2.44	99	Staff - General Office
68	2.94	2.30	68	Public - Entrance hall
95	3.21	2.02	95	Staff/magistrates - Entrance lobby
51	3.25	1.98	51	Public - Youth courthall
28	3.26	1.97	28	Custody - Circulation
77	3.31	1.93	77	Courts - Lobby
78	3.31	1.93	78	Courts - Lobby
79	3.31	1.93	79	Courts - Lobby
80	3.31	1.93	80	Courts - Lobby
40	3.34	1.90	40	Non LCD - circulation
91	3.36	1.88	91	Magistrates - Circulation
75	3.44	1.82	75	Courts - Youth court
69	3.53	1.76	69	Courts - Court
71	3.53	1.76	71	Courts - Court
72	3.53	1.76	72	Courts - Dock/secure exit
74	3.53	1.76	74	Courts - Court
76	3.56	1.74	76	Courts - Lobby
48	3.57	1.73	48	Public - Lobby
92	3.57	1.73	92	Staff/public - Public counter
93	3.57	1.73	93	Staff/public - Reception desk
31	3.64	1.69	31	Non LCD - Welfare worker
29	3.65	1.68	29	Custody - V-D
32	3.65	1.68	32	Non LCD - Multi-purpose
55	3.69	1.65	55	Public - Refreshments
24	3.72	1.64	24	Custody - Youth holding corridor
41	3.72	1.64	41	Public - Ushers
42	3.72	1.64	42	Public - Prosecution witness
43	3.72	1.64	43	Public - Consultation
44	3.72	1.64	44	Public - Multi-purpose
56	3.72	1.64	56	Public - Probation
57	3.72	1.64	57	Public - Duty solicitor
58	3.72	1.64	58	Public - Press
59	3.72	1.64	59	Public - Disabled WC
60	3.72	1.64	60	Public - Mother and baby room
61	3.72	1.64	61	Public - Public WC
19	3.73	1.63	19	Custody - Assembly
120	3.73	1.63	120	Staff/services - Goods entrance
111	3.77	1.61	111	Staff - Computer Manager
117	3.77	1.61	117	Staff - Accounts section
96	3.79	1.60	96	Staff - secretary
102	3.79	1.60	102	Staff - Legal Section
98	3.81	1.59	98	Staff - Deputy Clerk
100	3.81	1.59	100	Staff - Principal Assistant
103	3.81	1.59	103	Staff - Admin. section
104	3.81	1.59	104	Staff - Tea room
105	3.81	1.59	105	Staff - Catering
106	3.81	1.59	106	Staff - Restroom/medical
107	3.81	1.59	107	Staff - WC
110	3.81	1.59	110	Staff - Incident control room
112	3.81	1.59	112	Staff - Post room
113	3.81	1.59	113	Staff - Stationery
114	3.81	1.59	114	Staff - Repro.
115	3.81	1.59	115	Staff - Archives
66	3.90	1.54	66	Public - security arch
65	3.90	1.53	65	Public - security desk
63	3.92	1.53	63	Public - Interview room
64	3.92	1.53	64	Public - Cause list
70	3.94	1.51	70	Courts - Dock/secure exit
73	3.94	1.51	73	Courts - Dock/secure exit
30	3.99	1.49	30	Non LCD - Youth offending team
36	4.03	1.47	36	Non LCD - Secure witness entrance
35	4.06	1.45	35	Non LCD - Secure witness suite
94	4.19	1.39	94	Staff/magistrates - Secure car parking
53	4.21	1.39	53	Public - Refreshments
23	4.22	1.38	23	Custody - Youth holding room
49	4.23	1.38	49	Public - Multi-purpose
50	4.23	1.38	50	Public - Consultation
52	4.23	1.38	52	Public - WC
26	4.24	1.37	26	Custody - Interview
27	4.24	1.37	27	Custody - Interview
33	4.32	1.34	33	Non LCD - Non LCD staff
34	4.32	1.34	34	Non LCD - WC
37	4.32	1.34	37	Non LCD - Multi-purpose
38	4.32	1.34	38	Non LCD - Multi-purpose
39	4.32	1.34	39	Non LCD - waiting room
18	4.35	1.33	18	Custody - Van Dock
81	4.35	1.33	81	Magistrates - Assembly area
82	4.35	1.33	82	Magistrates - Library
83	4.35	1.33	83	Magistrates - Retiring room
84	4.35	1.33	84	Magistrates - Kitchen
85	4.35	1.33	85	Magistrates - Retiring room
86	4.35	1.33	86	Magistrates - Retiring room
87	4.35	1.33	87	Magistrates - Clerks
88	4.35	1.33	88	Magistrates - Retiring room
89	4.35	1.33	89	Magistrates - WC
90	4.35	1.33	90	Magistrates - Retiring room
45	4.56	1.25	45	Public - Crown Prosecution Service
46	4.56	1.25	46	Public - WC
47	4.56	1.25	47	Public - Advocates
54	4.57	1.25	54	Public - Services
14	4.60	1.24	14	Custody - Male holding corridor
7	4.63	1.23	7	Custody - Female holding corridor
123	4.69	1.21	123	Staff/services - Service yard
20	4.70	1.20	20	Custody- Youth WC
21	4.70	1.20	21	Custody - Youth holding room
22	4.70	1.20	22	Custody - Youth holding room
25	4.70	1.20	25	Custody - Youth holding room
1	4.71	1.20	1	Custody - Staff WC
2	4.71	1.20	2	Custody - Kitchen
9	4.71	1.20	9	Custody - Holding offices
119	4.71	1.20	119	Staff/services - Cleaners' store
121	4.71	1.20	121	Staff/services - Cleaners
122	4.71	1.20	122	Staff/services - Refuse
109	4.74	1.19	109	Staff - Computer room
116	4.76	1.18	116	Staff - Strong room
118	4.76	1.18	118	Staff - Records
97	4.77	1.18	97	Staff - Clerks to Justice
101	4.77	1.18	101	Staff - Senior Court Clerk
67	4.88	1.15	67	Public - draught lobby
10	5.58	0.97	10	Custody - Male holding room
11	5.58	0.97	11	Custody - Male holding room
12	5.58	0.97	12	Custody - Male holding room
13	5.58	0.97	13	Custody - Male holding room
15	5.58	0.97	15	Custody - Male holding room
16	5.58	0.97	16	Custody - Male WC
17	5.58	0.97	17	Custody - Group holding room
3	5.61	0.97	3	Custody - female officer
4	5.61	0.97	4	Custody - Female holding room
5	5.61	0.97	5	Custody - Female holding room
6	5.61	0.97	6	Custody - Female WC
8	5.61	0.97	8	Custody - Group holding room
124	5.68	0.95	124	Staff/services - Maintenance store
108	5.73	0.94	108	Staff - Store

Room type	No.	Betweeness centrality (max-min)	Control value	Connectivity	Type of space
Staff - General Office	99	0.44	5.42	22	D
Public - Courthall	62	0.42	15.21	20	D
Custody - Assembly	19	0.28	5.07	10	D
Public - Entrance hall	68	0.21	4.65	11	D
Magistrates - Circulation	91	0.21	12.00	16	D
Custody - Circulation	28	0.17	2.55	4	C
Non LCD - circulation	40	0.15	7.09	10	D
Custody - V-D	29	0.14	0.35	2	C
Custody - Youth holding corridor	24	0.14	5.93	9	D
Staff/magistrates - Entrance lobby	95	0.13	1.11	3	C
Custody - Male holding corridor	14	0.11	7.10	8	B
Public - Youth courthall	51	0.09	4.79	8	D
Custody - Female holding corridor	7	0.08	5.10	6	B
Staff/services - Goods entrance	120	0.08	3.55	5	B
Courts - Youth court	75	0.07	1.24	3	D
Non LCD - Multi-purpose	32	0.06	0.21	2	C
Public - Lobby	48	0.05	3.18	5	C
Staff - Accounts section	117	0.03	2.05	3	B
Staff - Computer Manager	111	0.03	0.55	2	B
Courts - Dock/secure exit	70	0.03	0.77	3	D
Courts - Dock/secure exit	73	0.03	0.77	3	D
Courts - Court	69	0.02	0.90	3	D
Courts - Court	71	0.02	0.90	3	D
Courts - Dock/secure exit	72	0.02	0.90	3	D
Courts - Court	74	0.02	0.90	3	D
Public - security arch	66	0.02	1.59	3	C
Staff - secretary	96	0.02	1.05	2	B
Staff - Legal Section	102	0.02	0.55	2	B
Staff - Computer room	109	0.02	1.50	2	B
Staff/services - Service yard	123	0.02	1.20	2	B
Courts - Lobby	76	0.02	0.46	2	C
Courts - Lobby	77	0.02	0.38	2	C
Courts - Lobby	78	0.02	0.38	2	C
Courts - Lobby	79	0.02	0.38	2	C
Courts - Lobby	80	0.02	0.38	2	C
Public - Refreshments	55	0.01	0.55	2	C
Non LCD - Secure witness entrance	36	0.01	0.50	2	A
Non LCD - Youth offending team	30	0.01	0.60	2	C
Non LCD - Secure witness suite	35	0.01	1.10	2	B
Public - Refreshments	53	0.00	0.63	2	C
Public - Services	54	0.00	1.00	2	C
Custody - Staff WC	1	0.00	0.10	1	A
Custody - Kitchen	2	0.00	0.10	1	A
Custody - female officer	3	0.00	0.17	1	A
Custody - Female holding room	4	0.00	0.17	1	A
Custody - Female holding room	5	0.00	0.17	1	A
Custody - Female WC	6	0.00	0.17	1	A
Custody - Group holding room	8	0.00	0.17	1	A
Custody - Holding offices	9	0.00	0.10	1	A
Custody - Male holding room	10	0.00	0.13	1	A
Custody - Male holding room	11	0.00	0.13	1	A
Custody - Male holding room	12	0.00	0.13	1	A
Custody - Male holding room	13	0.00	0.13	1	A
Custody - Male holding room	15	0.00	0.13	1	A
Custody - Male WC	16	0.00	0.13	1	A
Custody - Group holding room	17	0.00	0.13	1	A
Custody - Van Dock	18	0.00	0.21	2	C
Custody- Youth WC	20	0.00	0.11	1	A
Custody - Youth holding room	21	0.00	0.11	1	A
Custody - Youth holding room	22	0.00	0.11	1	A
Custody - Youth holding room	23	0.00	0.61	1	C
Custody - Youth holding room	25	0.00	0.11	1	A
Custody - Interview	26	0.00	0.25	1	A
Custody - Interview	27	0.00	0.25	1	A
Non LCD - Welfare worker	31	0.00	0.19	2	C
Non LCD - Non LCD staff	33	0.00	0.10	1	A
Non LCD - WC	34	0.00	0.10	1	A
Non LCD - Multi-purpose	37	0.00	0.10	1	A
Non LCD - Multi-purpose	38	0.00	0.10	1	A
Non LCD - waiting room	39	0.00	0.10	1	A
Public - Ushers	41	0.00	0.05	1	A
Public - Prosecution witness	42	0.00	0.05	1	A
Public - Consultation	43	0.00	0.05	1	A
Public - Multi-purpose	44	0.00	0.05	1	A
Public - Crown Prosecution Service	45	0.00	0.20	1	A
Public - WC	46	0.00	0.20	1	A
Public - Advocates	47	0.00	0.20	1	A
Public - Multi-purpose	49	0.00	0.13	1	A
Public - Consultation	50	0.00	0.13	1	A
Public - WC	52	0.00	0.13	1	A
Public - Probation	56	0.00	0.05	1	A
Public - Duty solicitor	57	0.00	0.05	1	A
Public - Press	58	0.00	0.05	1	A
Public - Disabled WC	59	0.00	0.05	1	A
Public - Mother and baby room	60	0.00	0.05	1	A
Public - Public WC	61	0.00	0.05	1	A
Public - Interview room	63	0.00	0.09	1	A
Public - Cause list	64	0.00	0.09	1	A
Public - security desk	65	0.00	0.42	2	C
Public - draught lobby	67	0.00	0.33	1	A
Magistrates - Assembly area	81	0.00	0.63	1	A
Magistrates - Library	82	0.00	0.63	1	A
Magistrates - Retiring room	83	0.00	0.63	1	A
Magistrates - Kitchen	84	0.00	0.63	1	A
Magistrates - Retiring room	85	0.00	0.63	1	A
Magistrates - Retiring room	86	0.00	0.63	1	A
Magistrates - Clerks	87	0.00	0.63	1	A
Magistrates - Retiring room	88	0.00	0.63	1	A
Magistrates - WC	89	0.00	0.63	1	A
Magistrates - Retiring room	90	0.00	0.63	1	A
Staff/public - Public counter	92	0.00	0.54	2	C
Staff/public - Reception desk	93	0.00	0.54	2	C
Staff/magistrates - Secure car parking	94	0.00	0.33	1	A
Staff - Clerks to Justice	97	0.00	0.50	1	A
Staff - Deputy Clerk	98	0.00	0.05	1	A
Staff - Principal Assistant	100	0.00	0.05	1	A
Staff - Senior Court Clerk	101	0.00	0.50	1	A
Staff - Admin. section	103	0.00	0.05	1	A
Staff - Tea room	104	0.00	0.05	1	A
Staff - Catering	105	0.00	0.05	1	A
Staff - Restroom/medical	106	0.00	0.05	1	A
Staff - WC	107	0.00	0.05	1	A
Staff - Store	108	0.00	0.50	1	A
Staff - Incident control room	110	0.00	0.05	1	A
Staff - Post room	112	0.00	0.05	1	A
Staff - Stationery	113	0.00	0.05	1	A
Staff - Repro.	114	0.00	0.05	1	A
Staff - Archives	115	0.00	0.05	1	A
Staff - Strong room	116	0.00	0.33	1	A
Staff - Records	118	0.00	0.33	1	A
Staff/services - Cleaners' store	119	0.00	0.20	1	A
Staff/services - Cleaners	121	0.00	0.20	1	A
Staff/services - Refuse	122	0.00	0.20	1	A
Staff/services - Maintenance store	124	0.00	0.50	1	A

Integration colour band key

2.24-2.57	red	
1.92-2.24	orange	
1.59-1.92	yellow	
1.27-1.59	aqua	
0.94-1.27	blue	

Table 7
Syntactic measures: Primary school adjacency diagram (BB99 2004)

No.	Mean depth (MD) min-max	Integration value	Room type
29	1.14	18.01	Circulation
12	1.90	2.77	Reception
10	1.93	2.67	Hall
11	1.97	2.57	Interview/social services, parents/community room
7	2.00	2.48	Hall
27	2.00	2.48	SEN Group Room M/therapist
28	2.00	2.48	Hygiene room
1	2.03	2.40	Nursery: playroom, storage, 3 WC
15	2.03	2.40	Small group room
16	2.03	2.40	Junior Yr 6: 2 classrm, 2 storage, 2 cloakrm/lockers, 3 WC
19	2.03	2.40	Small group room
20	2.03	2.40	Junior Yr 4: 2 classrm, 2 storage, 2 cloakrm/lockers, 3 WC
24	2.03	2.40	Infant Yr 2: 2 classrm, 2 storage, 2 cloakrm/lockers, 3 WC
25	2.03	2.40	Small group room
26	2.03	2.40	Infant Yr 1: 2 classrm, 2 storage, 2 cloakrm/lockers, 3 WC
2	2.07	2.32	Reception: 2 classrm, 2 storage, 2 cloakrm/lockers, 3 WC
3	2.07	2.32	Senior Management staff rm, central stock, Staff WC
4	2.07	2.32	Food science/D&T
5	2.07	2.32	ICT: ICT, technician/server
6	2.07	2.32	Library
17	2.07	2.32	Resource store
18	2.07	2.32	Junior Yr 5: 2 classrm, 2 storage, 2 cloakrm/lockers, 3 WC
21	2.07	2.32	Resource store
22	2.07	2.32	Junior Yr 3: 2 classrm, 2 storage, 2 cloakrm/lockers, 3 WC
23	2.07	2.32	Resource store
13	2.76	1.41	Sick bay, general offices, copier/repro.
8	2.79	1.39	Changing
9	2.86	1.33	Kitchen
14	3.69	0.92	Staff & Admin: Head's off., mtg rm, c/takers off. M.store. Dis WC

Room type	No.	Betweeness centrality (max-min)	Control value	Connectivity	Type of space
Circulation	29	0.95	17.00	22	C
Reception	12	0.14	1.05	3	C
Hall	10	0.10	1.55	3	C
Sick bay, general offices, copier/repro.	13	0.07	1.33	2	B
Hall	7	0.03	0.55	2	C
Changing	8	0.00	0.83	2	C
SEN Group Room M/therapist	27	0.00	0.38	2	C
Hygiene room	28	0.00	1.05	3	D
Nursery: playroom, storage, 3 WC	1	0.00	0.38	2	C
Reception: 2 classrm, 2 storage, 2 cloakrm/lockers, 3 WC	2	0.00	0.05	1	A
Senior Management staff rm, central stock, Staff WC	3	0.00	0.05	1	A
Food science/D&T	4	0.00	0.05	1	A
ICT: ICT, technician/server	5	0.00	0.05	1	A
Library	6	0.00	0.05	1	A
Kitchen	9	0.00	0.33	1	A
Interview/social services, parents/community room	11	0.00	0.38	2	C
Staff & Admin: Head's off., mtg rm, c/takers off. M.store. Dis WC	14	0.00	0.50	1	C
Small group room	15	0.00	0.55	2	C
Junior Yr 6: 2 classrm, 2 storage, 2 cloakrm/lockers, 3 WC	16	0.00	0.55	2	C
Resource store	17	0.00	0.05	1	A
Junior Yr 5: 2 classrm, 2 storage, 2 cloakrm/lockers, 3 WC	18	0.00	0.05	1	A
Small group room	19	0.00	0.55	2	C
Junior Yr 4: 2 classrm, 2 storage, 2 cloakrm/lockers, 3 WC	20	0.00	0.55	2	C
Resource store	21	0.00	0.05	1	A
Junior Yr 3: 2 classrm, 2 storage, 2 cloakrm/lockers, 3 WC	22	0.00	0.05	1	A
Resource store	23	0.00	0.05	1	A
Infant Yr 2: 2 classrm, 2 storage, 2 cloakrm/lockers, 3 WC	24	0.00	0.55	2	C
Small group room	25	0.00	0.55	2	C
Infant Yr 1: 2 classrm, 2 storage, 2 cloakrm/lockers, 3 WC	26	0.00	0.05	1	A

Mean depth colour band key (Dalton 2005)

1.14-1.65	red	
1.65 - 2.16	orange	
2.16-2.67	yellow	
2.67-3.18	aqua	
3.18-3.69	blue	

Table 8
Syntactic measures: Acute Mental Health Unit adjacency diagram (based on text in HBN 35 1996)

No.	Mean depth (MD)	Integration value (max-min)	Room type
54	1.98	3.62	Staff base
32	2.65	2.16	Ward circulation
53	2.65	2.16	Ward circulation
65	2.65	2.16	Ward circulation
29	2.71	2.08	Circulation
6	2.74	2.05	Foyer
2	2.86	1.91	Reception foyer/waiting area
14	2.92	1.85	Staff restroom
15	2.95	1.82	WC
16	2.95	1.82	Assisted bathroom
17	2.95	1.82	Disabled WC
18	2.95	1.82	Ward office
19	2.95	1.82	Doctors' office
20	2.95	1.82	Interview room
21	2.95	1.82	Dirty utility room
22	2.95	1.82	Treatment clean/utility room
34	3.58	1.38	Single bedroom
36	3.58	1.38	Single bedroom
38	3.58	1.38	Single bedroom
40	3.58	1.38	Single bedroom
42	3.58	1.38	Single bedroom
44	3.58	1.38	Single bedroom
46	3.58	1.38	Single bedroom
48	3.58	1.38	Single bedroom
50	3.58	1.38	Single bedroom
52	3.58	1.38	Single bedroom
56	3.58	1.38	Single bedroom
58	3.58	1.38	Single bedroom
60	3.58	1.38	Single bedroom
62	3.58	1.38	Single bedroom
64	3.58	1.38	Single bedroom
8	3.68	1.33	Dining room
23	3.68	1.33	Linen store
24	3.68	1.33	General store
25	3.68	1.33	Patients' store
26	3.68	1.33	Equipment store
27	3.68	1.33	Switch cupboard/plant
28	3.68	1.33	Disposal hold
30	3.68	1.33	Cleaners' room
31	3.68	1.33	Control lobby -service entrance
5	3.71	1.31	Patients utility room
7	3.71	1.31	Group room
10	3.71	1.31	Sitting/TV room
11	3.71	1.31	Smoking lounge
12	3.71	1.31	Quiet room
1	3.83	1.26	Entrance lobby
3	3.83	1.26	Reception office
4	3.83	1.26	WC
13	3.89	1.23	Staff WC
33	4.55	1.00	Ensuite shower/WC
35	4.55	1.00	Ensuite shower/WC
37	4.55	1.00	Ensuite shower/WC
39	4.55	1.00	Ensuite shower/WC
41	4.55	1.00	Ensuite shower/WC
43	4.55	1.00	Ensuite shower/WC
45	4.55	1.00	Ensuite shower/WC
47	4.55	1.00	Ensuite shower/WC
49	4.55	1.00	Ensuite shower/WC
51	4.55	1.00	Ensuite shower/WC
55	4.55	1.00	Ensuite shower/WC
57	4.55	1.00	Ensuite shower/WC
59	4.55	1.00	Ensuite shower/WC
61	4.55	1.00	Ensuite shower/WC
63	4.55	1.00	Ensuite shower/WC
9	4.65	0.98	Ward pantry

No.	Room type	Betweeness centrality (max-min)	Control value	Connectivity	Type of space
2	Reception foyer/waiting area	0.92	3.07	4	B
54	Staff base	0.88	9.50	15	B
32	Ward circulation	0.29	2.57	6	B
53	Ward circulation	0.29	2.57	6	B
65	Ward circulation	0.29	2.57	6	B
29	Circulation	0.24	7.07	9	B
6	Foyer	0.21	5.57	7	B
8	Dining room	0.03	0.64	2	B
14	Staff restroom	0.03	0.57	2	B
34	Single bedroom	0.03	1.17	2	B
36	Single bedroom	0.03	1.17	2	B
38	Single bedroom	0.03	1.17	2	B
40	Single bedroom	0.03	1.17	2	B
42	Single bedroom	0.03	1.17	2	B
44	Single bedroom	0.03	1.17	2	B
46	Single bedroom	0.03	1.17	2	B
48	Single bedroom	0.03	1.17	2	B
50	Single bedroom	0.03	1.17	2	B
52	Single bedroom	0.03	1.17	2	B
56	Single bedroom	0.03	1.17	2	B
58	Single bedroom	0.03	1.17	2	B
60	Single bedroom	0.03	1.17	2	B
62	Single bedroom	0.03	1.17	2	B
64	Single bedroom	0.03	1.17	2	B
1	Entrance lobby	0.00	0.25	1	A
3	Reception office	0.00	0.25	1	A
4	WC	0.00	0.25	1	A
5	Patients utility room	0.00	0.14	1	A
7	Group room	0.00	0.14	1	A
9	Ward pantry	0.00	0.14	1	A
10	Sitting/TV room	0.00	0.14	1	A
11	Smoking lounge	0.00	0.14	1	A
12	Quiet room	0.00	0.14	1	A
13	Staff WC	0.00	0.50	1	A
15	WC	0.00	0.07	1	A
16	Assisted bathroom	0.00	0.07	1	A
17	Disabled WC	0.00	0.07	1	A
18	Ward office	0.00	0.07	1	A
19	Doctors' office	0.00	0.07	1	A
20	Interview room	0.00	0.07	1	A
21	Dirty utility room	0.00	0.07	1	A
22	Treatment clean/utility room	0.00	0.07	1	A
23	Linen store	0.00	0.11	1	A
24	General store	0.00	0.11	1	A
25	Patients' store	0.00	0.11	1	A
26	Equipment store	0.00	0.11	1	A
27	Switch cupboard/plant	0.00	0.11	1	A
28	Disposal hold	0.00	0.11	1	A
30	Cleaners' room	0.00	0.11	1	A
31	Control lobby -service entrance	0.00	0.11	1	A
33	Ensuite shower/WC	0.00	0.5	1	A
35	Ensuite shower/WC	0.00	0.5	1	A
37	Ensuite shower/WC	0.00	0.5	1	A
39	Ensuite shower/WC	0.00	0.5	1	A
41	Ensuite shower/WC	0.00	0.5	1	A
43	Ensuite shower/WC	0.00	0.5	1	A
45	Ensuite shower/WC	0.00	0.5	1	A
47	Ensuite shower/WC	0.00	0.5	1	A
49	Ensuite shower/WC	0.00	0.5	1	A
51	Ensuite shower/WC	0.00	0.5	1	A
55	Ensuite shower/WC	0.00	0.5	1	A
57	Ensuite shower/WC	0.00	0.5	1	A
59	Ensuite shower/WC	0.00	0.5	1	A
61	Ensuite shower/WC	0.00	0.5	1	A
63	Ensuite shower/WC	0.00	0.5	1	A

Integration colour band key

3.09-3.62	red	
2.56-3.09	orange	
2.04-2.56	yellow	
1.51-2.04	aqua	
0.98-1.51	blue	