THE RELATIONSHIP BETWEEN HOSPITAL RECEPTION AND WAITING AREA DESIGN AND THEIR APPROPRIATENESS IN USE

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THE RELATIONSHIP BETWEEN HOSPITAL RECEPTION AND WAITING AREA DESIGN AND THEIR APPROPRIATENESS IN USE

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DEDICATION

"This thesis is dedicated to Jesus Christ, my wife, Iris Ione, our parents, brothers and sisters and the children He has entrusted us to care for."

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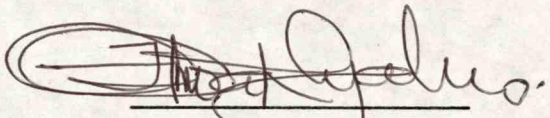
DECLARATION

1 The Candidate, Joseph Amoah - Nyako, while registered for the degree of Doctor of Philosophy, was not registered for another award of the CNAA or of a University during the research programme.

2 The candidate, Joseph Amoah - Nyako, while registered for the degree of Doctor of Philosophy, did undertake and complete advanced studies in connection with the programme of research in partial fulfilment of the requirements of the degree.



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ABSTRACT

THE RELATIONSHIP BETWEEN HOSPITAL RECEPTION AND WAITING AREA DESIGN AND THEIR APPROPRIATENESS IN USE

The study investigates the relationship between design and use of the main reception and waiting area in hospitals. The investigation is based on the assumption that, via its effect on user attitudes, design influences appropriateness in use.

This study was prompted by the availability of considerable evidence which suggested that hospital users were particularly dissatisfied with the design of reception and waiting areas in many hospitals. Compounding the problem is a lack of empirical studies examining the relationship between the design of main reception and waiting areas and appropriateness in use.

The results obtained from a case study in National Health Service hospitals, designed to the Nucleus system, showed that neither the differences in the number of amenities, nor their physical size, nor the 'proximity' between the main reception and waiting area and other departmental reception and waiting areas, produced differences in their appropriateness in use. In practical architectural terms, it seems that neither the inclination to design compact forms for higher proximity, nor increasing the number and size of amenities (shops, banks, telephones, toilets, etc.) in the reception area, are likely to produce more satisfactory designs.

The study identified that there was numerous variations in the type and format of design guidance produced by different governmental departments. It was also found that it was difficult to differentiate between the intricately related guidance, standards and measures for cost control and the different operational policies. It was found that although some of the DHSS design guides are adopted in private hospitals, the operational policies and the underlying objectives (high occupancy, short stay, hotel type accomodation which contradicts the NHS concept of 'health for all' on which DHSS guides were based), influence the extent of use of these DHSS guides. Also, the design guides for Nucleus hospitals were found to be much more comprehensive and detailed than those available for the earlier hospitals, Greenwich, Best Buy and Harness.

After a case study in a private hospital, it was found that several other factors, e.g. the lack of signposting, the attitude of reception staff in the point of entry, were considered in addition to the actual building in order to provide a friendly and welcoming atmosphere for the patients. The reasons why private hospitals place a more humanistic approach to the design of the main reception and waiting areas than those within the NHS, were identified.

The study also found that the measurement by which the extent of appropriateness in use of the main reception and waiting area could be assessed, was complicated.

The study indicated that there was no specific definition for the main reception and waiting area. The area was often defined in terms of its relationship to the out-patients department.

Finally, the study identified that there were several other factors apart from the three main design variables which affected the user attitudes to the design of the reception and waiting area. However, the provision of some specific amenities affected the overall satisfaction with the use of the main reception and waiting area.

CHAPTER ONE

THE RELATIONSHIP BETWEEN THE DESIGN OF HOSPITAL RECEPTION AND WAITING AREAS AND THEIR APPROPRIATENESS IN USE; A PROBLEM IDENTIFIED

1.1 The Objectives of the Study

The objectives of the study are threefold: firstly, to investigate the relationship between the design of the main reception and waiting areas in two National Health Service hospitals designed with the Nucleus system and also in a private hospital and their appropriateness in use in order to confirm or deny the importance of the factors given in the literature, interviews and observation of the hospital in use as the main causes of patient dissatisfaction. Secondly, to identify the impact of different approaches to the design of this area in the National Health Service and the private hospitals in order to establish why the private hospitals appear to have a more humanistic approach to the design of this area than those within the National Health Service hospitals and thirdly, to provide recommendations and suggestions for the future design of this important area of hospital.

1.2 The Design of Reception and Waiting Areas - The Problem

> 'The main reception and waiting area is the area where most patients are often introduced into a hospital, and a pleasant, welcoming atmosphere, free and devoid of an institutional atmosphere will contribute to the patients confidence in the hospital treatment and allay fears.'(1)

Designing whole hospitals is a complex process,(2) but to design areas such as the main reception and waiting area that will satisfy the needs of the users (patients and

staff) as the opening quotation from one of the design guide produced by the Ministry of Health suggests is most difficult to achieve. The main reason for this difficulty in satisfying user needs is that of identifying these needs, especially those of the patients. Realistically, it is argued that the basic necessity in order to provide appropriate solutions is for the design team whatever the composition to spend ample time in existing hospitals, possibly as patients, in the area covered by this study, in order to identify and understand the specific and apparent needs of the patient and the staff who work there before any attempt is made to provide the accommodation required. According to Rodgers, 'Designers should be put to a hospital bed, trundled around and frightened out of their wits ... and we might then get better hospitals.'(3) Lindell argues that in order to understand the relationship between a hospital and the human being, it is necessary to undertake a 'longitudinal study'(4) involving following a human through a complete hospital experience. This study, he argues begins at home when the individual becomes aware that he is going into hospital. Several variables are critical to his perception of the hospital which among others include, the meaning of going into hospital, whether the individual is scared, or whether the individual is alone.(5) The assumptions often made by the majority of design teams are based on the importance, availability, and use of design guides which have been produced by the central government departments, in the case of hospitals, by the Ministry

of Health now called the Department of Health. These hospital design guides are in the form of Hospital Building Notes, (now being updated as Health Building Notes), discussed in detail in Chapter 2.

The design teams basic assumption is that since their content has been based on extensive research and development work undertaken by the Ministry of Health, the adoption of the guides standards, recommendations and operational policies will lead to a closer match between the design of the main reception and waiting area and user requirements. On the other hand Mr. Roger Dixon argues that the contents of the design guides were based on the limited experience of those who wrote them. It is therefore not very suprising that these standards, recommendations and or operational policies have rarely been adopted wholly in most of the National Health Service hospitals designed to date. According to Rodgers,

> 'You have to understand the work activities and operational policies, but the most difficult problem for an interior designer is to reverse his role and become the patient and relate to his or her requirements.' (6)

As a result of the non adoption of the totality of the standards, recommendations and operational policies contained in the guidance, there are considerable differences, deviations and modifications by the individual architects and designers, to satisfy the demands of individual projects and local regulations and requirements.

In spite of these deviations and modifications from the guidance by designers before commissioning, the main reception and waiting areas continue to be one of the important areas

in National Health Service hospitals which are often altered to suit the changing needs, non-medically (the creation of a non-medical atmosphere and satisfying social needs), technologically (use of modern information technologies), and politically (in order to make them competitive with other hospitals - by virtue of opting out of the National Health Service Trusts in line with the current governmental thinking in the provision of medical care in Britain).

The reasons for these alterations argued by most of the members of hospital staff interviewed are threefold. Firstly, the user requirements are not fully understood. Where they are understood they are not always incorporated in the guidance. Where they are incorporated in the guidance they have not been clearly stated in design terms for easy understanding and implementation. For example, 'the provision of a satisfactory level of amenity,'(7) one of the user requirements in the guidance. The form, layout or type(s) of amenity are not clearly stated. One expects that the basic amenities such as toilets, waiting area, reception desk to be clearly stated and optional ones such as snack bar, shops, telephones, banks, newsagents, florists, creche, post office, children play areas are often mentioned for possible inclusion in a phased development.(8) Having listed these amenities, no mention is made in the guidance of why they are required and the context in which they are required. Further, an examination of another of the user requirements in the guidance highlights the

problem, 'the provision of a pleasant, welcoming, non-institutional atmosphere,'(9) includes subjective concepts subject to different interpretations by different designers. Achieving these requirements will invariably depend on the experience and ingenuity of individual designers in the design of these areas. There is no doubt that most patients continue to complain of reception and waiting areas as being depressing, dull, unwelcoming, unfriendly, drab and dark, (even though in most cases the design guidance lighting standards are met.)

Another requirement mentioned in the guidance is the need to provide for privacy (10) and security (11) in such a 'public building'. 'Privacy is often difficult to cater and design for. The guidance and literature also offer suggestions for the use of colours, soft furnishing and plantscaping. The guidance is short on specifics, by asking for example, for 'soft pastel colours'(12) - the colour chroma , value or hue have not been specified in any way. This leaves the individual designer to rely on personal experience, likes or dislikes, rather than on empirically verified colours in order to achieve the guidance objectives of a reduction in the level of anxiety, fear and stress (13) experienced by the users. The design guidance is inadequate in explanation and/or provision of the appropriate solutions for most of these subjective concepts. Secondly, the technological advancement in medicine and information collection and storage have not in the past been anticipated accurately by the research

and development group responsible for the design guidance and accordingly have not been incorporated. Remarkable changes have had to be made to the design both at the briefing, design and in use stages of the main reception and waiting area by designers in order to satisfy or accommodate these changes. Thirdly, the building regulations and statutory requirements are different for the different locations where these hospitals are to be built. Standardised hospitals, although cost effective might not necessarily be appropriate for all sites.(14)

Another aspect is the attitudes of the patients for the hospital, whether they are being treated privately or under the National Health Service. It is apparent that whereas the private sector hospitals consider the patients as clients and customers,(15) the public sector patients, according to Newman and Ullathorne, are often considered as "fodder to be processed in the hospital machinery" or "experimental guinea pigs".(16, 17, 18)

Due to the lack of empirical evaluation of the main reception and waiting area in existing buildings,(19) and the apparent lack of understanding of the user requirements, the design of several aspects of this area in most National Health Service hospitals appear to be unsatisfactory.

This study is to investigate the relationship between hospital reception and waiting areas and their appropriateness in use. In order to do this the main

reception and waiting areas in hospitals which were designed based on design guidance were required. In addition they were to be different in several design aspects, but especially in the three variables selected for the study, namely, size, amenity and 'proximity' to other departmental reception and waiting areas.

The users, especially the patients, were selected for study because they have often had no representation on the design team. One of the assumptions (and the common mistakes) made is that the design team which often comprise mainly hospital management, administrative and medical staff do not often work specifically in this area. As a result it is likely that they will be less conversant with the patients requirements in this area compared with the porters, reception staff and the ambulancepersons. The porters especially and the receptionists who work in these areas are barely consulted about their understanding of their design and use. Most of the design guides it can thus be argued have been based on the hospital staff and the design teams wrong assumptions.

The term 'hospitals' it has been noted in the literature is most likely to have evolved from the original word 'hospes' within which the users the sick people were 'patiently' waiting for treatment or death. The word 'patient' might therefore have evolved from these early concepts as well as the word 'hospices'.

'Patient' used in the hospital context is therefore a general term provide the first control for this study.

There are inpatients and outpatients. The assumption is that inpatient needs are often catered for in the wards where they spend most of their time, although occasionally they socialize in the main reception and waiting area. Outpatient needs in the main reception and waiting area will be more difficult to cater for, since they often display a wide range of illness, injuries, age differences, attendance differences, accompaniment differences etc. Each of these groups has its own requirements in its respective clinics but the common area where they will share facilities either for entering the hospital or relaxing or waiting to attend clinics or transport will be the main reception and waiting area. Although their medical needs will be different in the various clinics, their non medical and social needs will be the similar in the main reception and waiting area. A further factor is that the current and future trend of health care would be towards outpatient rather than inpatient treatment. (21) There is the likelihood of reduction of ward beds and an increase in the accommodation for outpatient departments in most of the National Health Service hospitals.

In the private sector it has been argued by Goodman that 'once past the postmodernistish [sic] entrances, the hospital is often the same image as the National health service hospitals.'(22) Although this argument is often disputed by hospital administrators,(23) there is a general agreement among most professionals such as

Ullatorne who suggests sarcastically that private hospitals are generally, 'hotels with oxygen masks on,.' Or as Rodgers suggests, 'they are Holiday inns with oxygen; they are to kid the patient that he or she is not in a hospital'.(24) However there is the general agreement among the designers that most of the designs of private hospitals in the United Kingdom are based on modified Department of Health design guidance.

Although no firm conclusions can be reached from the existing literature about the quality of care in the types of hospitals now dominant in the private and public hospitals, no study of the quality of care in the non-medical aspects of care has been undertaken.(25)

1.3 **Scope of the Investigation**

The focus will be on outpatients who will be used as a source for data collection on the subjective measurements of appropriateness in use. This will encompass user perception and attitudes towards the objective measurements (the measurements of design). The design of the main reception and waiting area will be used as a vehicle for the objective measurements. Two Nucleus hospital with different design of the main reception and waiting area and the private BUPA hospital in Harpenden are selected for this study.

1.4. **The Structure of the Thesis**

The thesis has been structured as follows. Chapter 1 is the general introduction. Chapter 2, 3, and 4 are background chapters. Chapter 2 assesses the general role and development of design guidance. Chapter 3 while focusing on Nucleus hospitals discusses the impact of the design guidance on the design of the four main

generic forms of hospitals the methods of hospital development in general in the United Kingdom. Chapter 4 expands on the discussion in Chapter 3 but focuses on the assessment of the methods of the design of main reception and waiting area; design guide for the main reception and waiting areas are discussed as well as an analysis and critique of the design of the main reception and waiting areas especially in the hospitals visited, are discussed under the following headings , the users, the user requirements, the type of activities, and the setting. Three of the design variables are selected for the study. Chapter 5 devises a method by which the appropriateness in use can be measured. The general measurements devised and applied in this study are described. The appropriateness in use indicators and their measurements are also identified, and discussed. An outline of the evaluation model is provided, as well as the operationalisation of the hypotheses, involving the relationship between design and appropriateness in use.

Chapter 6 focuses on the research methodology adopted to test the hypotheses. The pre-pilot, pilot studies including the findings reviews and appraisals, the refinement of the then methodology and how they influenced the main case studies are discussed.

Chapters 7, 8 and 9 examine the empirical evidence used to test the hypotheses which is discussed in Chapter 10. Chapter 7 explores user attitudes to other design variables, related to the hospital and to the main reception and waiting areas, apart from the study's three key

design variables.

Chapter 8 is a comparative study of the reception and waiting area design in terms of the dependent variables in the form of three subpropositions; a) differences in size, b) differences in amenities and c) differences in 'proximity'. Chapter 9 is a comparative study of the reception and waiting area design in terms of the independent variables, the appropriateness in use variables namely, a) user attitudes towards size, b) user attitudes towards amenities and c) user attitudes towards 'proximity'. Chapter 10 analyses the relationship between the design variables discussed in chapter 8 and the independent variables discussed in chapter 9. Chapter 11 discusses the test of the hypotheses for its confirmation or denial.

Chapter 12 is for general inference, summary and conclusions in which the general findings of the research are discussed and are related to the original problems identified.

1.5 Importance and Reason for Investigation

The importance of this investigation is that although hospital main reception and waiting areas provide the transitional zone between the public and medical care, and are often the areas where patients are introduced into a hospital, and in spite of the fact that there is a general agreement that a pleasant, welcoming atmosphere, free and devoid of an institutional atmosphere will contribute to patient confidence in hospital treatment and allay fears, very few empirical studies have been

undertaken of these areas in order to identify specifically the main causes of user dissatisfaction. Secondly Nucleus hospitals are the current hospital system adopted by the British Government for the development of hospitals, they have become exemplar plans and huge investments have been made in them. It has been argued that identifying the existing mistakes in the guidance and in the existing buildings will help the improvement of future guidance and subsequently the image of these areas in future National Health Service hospitals. The current trend seem to suggest competition between public hospitals on one hand and between public hospitals and private hospitals on the other. Rodgers emphasizes that owing to these possible future changes in health care,

> ' reception and waiting areas in hospitals are slowly taking on a design look, and they are now an arena for the presentation of the newlook health care system, it is part of the front line providing an interface with the community.'(26)

There is no reason 'why the NHS cannot adopt a similar approach to the design of reception and waiting areas as the private hospitals'. (27)

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CHAPTER 2

THE ASSESSMENT OF THE METHODS OF HOSPITAL DESIGN IN THE UNITED KINGDOM

2.0 Introduction

It is generally accepted in the literature that there is a relationship between the briefing process, the resulting design and the appropriateness in use of the resulting design. The main aim of this chapter is to explore the development of government design guides for buildings in Britain, particularly for hospitals, in order to identify their aims, the general trends and to assess to extent to which these design guides have been concerned with the promotion of the match between the resulting buildings and their users' requirements. An additional aim is to identify any other factors which may have an impact on the achievement of that match especially in hospital buildings.

Discussions of the role and development of design guidance in the United Kingdom are undertaken. This chapter begins with the discussion of the design guidance in general, followed by those for education, then housing and in more detail those for hospital buildings.

2.1 The General Development and Role of Design Guides

Government design guides has been defined by Jenks,[1] as a generic term used for documents produced by central government research and development groups and local authorities which in Britain include, inter alia,

Building Bulletins, Building Notes, Equipment Notes, Technical Memoranda and Occasional Papers.'(1)

From the introductions to a wide range of design guides, especially the Hospital Building Notes, a number of general aims can be identified. These general aims are,

i) to assist those involved in the briefing and design stages not only of new buildings but also of adapted or extended existing premises.(2)

ii) to help local authorities and those who assist them, for example architects and engineers, in the conduct and planning of a building programme. This help can include the preparation of a building programme, the assessment and control of building costs in addition to the design of the various departments within the building and/ or their functional relationships.(3)

iii) to review building requirements in order to give advice on the methods of translating these requirements into design so as to encourage simultaneously the raising of building standards and the reduction of costs.(4)

Prior to the Second World War, there was some design guidance available in Britain. These guides were mainly for education and housing, with very little for hospitals and other health buildings. The reason for this according to Saint, was that health and housing did not enjoy the long-standing tradition of political conformity in the concept of provision for all as it was in education.(5) Although the early guidance for

education, housing and health buildings provided limited information on planning and layout requirements, sizes of rooms and departments, and costs, it left many basic questions unanswered. However the guides did introduce general concepts and/or helped to shape opinions upon which the the production of future design guides were based.(6,7) According to Jenks, 'in addition to design guidance, there has been apparently no shortage of advice from other professions, even from royalty, for the complicated, bewildering profession of architecture to aid their varied and complex roles'.(8,9) Other forms of design guidance includes those produced on the availability of materials for the new building programme.(10,11)

A considerable quantity of design guides were introduced by central government after the second world war with the main objective of controlling resources and providing standards for the public sector building programmes in these three areas; education, housing and health. These public sector building programmes which were initiated by their respective legislation in these years - education, 1944,(12) housing, 1946,(13) and health, 1948 (14) were seen by the then Labour government to be essential not only for replacing buildings demolished or damaged during the Second World War (15,16) but also to replace old and outdated buildings.(17, 18) After this legislation, central government control over the issue of guidance for these types of buildings increased considerably. Reviews, especially in the Architects Journal in the early

1950s suggest that these postwar design guides were apparently generally well received at least initially. (19,20,21,22,23) These reviews reflected a basic assumption that by observing the guidance, particular benefits would be ensured, coupled with the likelihood of an improvement in the overall environment. (24)

The development of design guides for education, housing and health undertaken by their respective governmental departments will be briefly outlined. Although the emphasis is on hospital design guides which are of most relevance to this study, the design guides for education and housing are considered because it is argued from the literature that to a limited extent they influenced the development of the hospital design guides.

2.2 The Development of Design Guidance for Education

2.2.1 Pre- First World War

In the 19th century educational buildings were first provided by the church and then by the state. The state took over the leading role in the control and design of schools in 1874 (25) after the 1870 Act (26) which made school attendance compulsory. (27) Subsequently, there was an increase in the requirement for school buildings. The introduction of compulsory schooling was made effective in the 1880 Act, (28). This act was in fact an amendment of the 1870 Act and it also resulted in the subsequent increase in the requirement for more school buildings.(29) In 1899, the Board of Education set up a central board of education for the

administration of schools; this board, which existed until 1944,(30) issued some standards and provided limited advice for new school buildings.(31) The observance of these standards and limited advice as well as the local authority provision of schools which was achieved with the help of central government funding resulted in a significant departure from the quasi-religious architectural forms of the older church-financed schools towards a more secular design for school buildings. This approach reflected the growing primary concern for health, and changes in educational philosophy which led to i) the development of class teaching, ii) the abandonment of single classroom schools except in small villages and iii) provision for specialist activities. (32) It was evident that the space and other standards of schools provided by the state through the local authorities tended to be higher than those provided by the church,(33) and the architectural styles adopted for schools in different parts of the country showed remarkable differences, (34) in aesthetics, function, (35) and in the design styles for the two levels of education, elementary and secondary. (36,37)

2.2.2 Inter War Years

After World War 1 there was a greater emphasis on the materials and methods of construction than on user requirements in the organization and layout of schools. The reasons for this change in emphasis were due to the economic and political crises experienced immediately

after the war. Much attention was paid to costs which was confirmed in the reports by the departmental committee appointed to investigate the cost of school buildings. (38,39) During this era the school building programme was also given a low priority (40) compared with other pressing needs until the Haddow reports, 'The Education of the Adolescent,' and 'The Primary School,' were published in 1926 and 1933 respectively. The significance of these reports were the impact they had on school building design from 1926. Other factors such as the adoption of some aspects of the concept of pavilion building and the modern movement for school buildings also had a significant impact. (41,42) The Education Act of 1944,(43) known as the Butler Act made significant changes in the whole system of education. Among these were the replacement of the Board of Education by the Ministry of Education the increase of the school leaving age from 14 to 15 and the establishment of secondary schools. (44)

2.2.3 Post Second World War

After 1949, a considerable amount of literature emphasizing the educational philosophies underlying new school designs as in the Haddow reports, were incorporated into the building bulletins issued by the Ministry of Education. The first of these bulletins was published in 1949.(45) It suggested that the user needs of children and teachers should be used as the basis for the design of schools, rather than the standards or schedule of areas and building regulations.(46) A statement in this

bulletin which was concerned with primary schools(47) and which was the first post Second World War guidance to be issued by any of the government departments in Britain, set the foundation on which the production of later design guidance by the other government departments, particularly those for health and housing, was based. (48) The format of these bulletins was produced by the Ministry of Education, which was obliged by the 1944 Education Act to produce standards for school premises, (49) and included regulations and prescription of minimum areas for school sites, the various teaching and other rooms in the building. (50)

In addition to these pieces of instruction, circulars which were not mandatory but advisory were provided in the administrative memoranda.(51) An editorial in the Architects Journal claimed that although these bulletins were confined in scope and were limited to a single building type, schools, they attempted to indicate the knowledge necessary for the architect for each separate aspect of design.(52) It was also recognized that although there was pressure for more schools as a result of the school building programme being halved for years during and immediately after the war, there was inadequate and inexperienced design staff for school buildings in most local authorities.(53) This suggests that there were possibilities that the translation of this design guidance into actual design might not have been satisfactory. In general, the design

guidance which was based on research and development and the testing of live projects appeared to more readily acceptable to the architectural profession than the earlier ones which were prepared by committees and/or were primarily concerned with costs.(54)

2.3 The Development of Design Guidance for Housing

2.3.1 Pre- First World War

In housing since the 18th century, although there had been copy(55) and pattern books which contained design guides, as well as suggestions by both builders and articles by individual renowned architects(56,57) it was only after the first world war that some form of design guidance was published for large scale public housing projects.

2.3.2 Inter War Years

The early guidance began with the Tudor Walters report of 1918 (58) followed by the Dudley Report nearly 26 years later in 1944.(59) The Tudor Walters report which provided the basis for the Housing, Town Planning etc Act of 1919 (60,61) set out to some standards and detailed housing designs and explained how these designs could be achieved within the existing resources, in order to meet the huge postwar demand for houses. The housing manuals produced in 1919(62) also incorporated many of the Tudor Walters recommendations but did not provide enough guidance.(63) Consequently,a pattern book of plans, elevations and working drawings was issued in the 1920s to fill this gap.(64) The content of the pattern book, although not binding, was influential in promulgating the expected standards.(65)

It was in 1944 that the Dudley report was produced. It also aimed at providing guidance for designing houses after the second world war. In addition, housing manuals similar to those produced after the Tudor Walters report of 1919 were also produced. This type of publication had various technical appendices and supplements. (66) For example it covered special needs houses, and included a manual for flats and houses (67) as well as a range of approved plans with some layout suggestions in specifying minimum room area standards. (68)

2.3.3 Post Second World War

In 1959, the Ministry of Housing and Local Government (MoHLG) Research and Development (R & D) group similar to that set up by the Ministry of Education was established to provide guidance based on research and development unlike those produced by committees. Contrary to the established objectives, these committees, although they interviewed a wide range of people, had neither a research base nor the advantage of testing live projects in order to inform themselves adequately about the users requirements. Their emphasis was on the reduction of building costs. The guides produced by the R & D group, called Design Bulletins, covered a wide range of subjects.

Advice was given about accommodation for elderly people; safety in the home, the external environment and their layout and some standards. Reviews of the Ministry of Housing and Local Government guides in the Architects Journal, especially of the first two (69,70) were not

as enthusiastic (71,72) as those accorded to the design guides issued by the Ministry of Education. Despite these initial reactions the majority of the guides were considered significant.

The Research and Development group responsible for housing, was renamed the Housing Development Group; it was disbanded as a separate professional group (or directorate) in the Department of the Environment in the early 1970s and no Design Bulletin has since been published through the Department of Environment. (73)

2.4 The Development of Design Guidance for Health

2.4.1 Pre First World War

For health buildings, there was little current information or design guides for hospitals until after the second world war. Literature shows that the strong relationship between religion, healing and health, from early prehistoric times through the classical era until the Crusades, influenced the overall design of hospitals considerably. During this era, knowledge about hospitals in terms of the requirements for good medical care and health were lacking, and form rather than function played the prominent role in the design of hospitals. Most of these hospital forms, as a result of this approach, resembled temples, or churches of the early Christian era. (74,75)
According to Clay, these churchlike buildings were referred to as houses of hospitality or 'hospes'. (76)

The two religions, Christianity and Islam, played an

important role in the further development of the hospital. Stone argues that following the Crusades, hospital designs in Britain were based on the basic forms developed as a result of the fusion between the high level of sanitation and hygiene and pharmacology evident in the Arabic Islamic culture and the European concepts of the Christian form of medical care and hospital design.(77) However the development of this fusion was shortlived, since the provision and development of hospitals declined considerably in Britain. Literature indicates that many of these hospitals were destroyed together with the monasteries which ran them in the 16th Century. (78) However there appeared to be a revival of the development and provision of hospitals during the Renaissance. However in spite of the development and growth of medicine during the Renaissance, the basic components of the hospital identified prior to this revival and which included wards, chapel, pharmacy, stores and mortuary, were simply reorganized with an ordered system of communication. (79,80)

During this Renaissance era some hospitals took a very long time to build; the Ospedale Magiorrie, for example took nearly 167 years, and according to Stone, its Architect Filarete, was one of the first to introduce hospital design into the sphere of municipal buildings.(81) However the length of time taken for the Renaissance examples is shorter compared with the Hotel D'ieu in Paris, started in 829, and which grew with the city, through the Renaissance until its destruction by

fire in the 17th Century. (82)

On the other hand, Pickstone argues that during the industrial revolution hospital forms reflected the industrial thinking of that era and 'mass produced', (83) the pavilion type of hospital. Examples of this approach are the Royal Naval Hospital built at Stonehouse near Plymouth in 1867, which might have been influenced by an earlier example of a similar approach, the Labroisere Hospital in France built in 1843. These examples, for the first time showed the application of a more rational approach to hospital design.(84,85)

Specific guidance was lacking for hospitals until Florence Nightingale drawing on her experience in the Crimean War published her '<u>Notes on Hospitals</u>' in 1853. (86,87) The concepts in this publication which emphasized the need for fresh air, light and ventilation, ample space, good overall vision from of the patients from the nursing staff and the need to subdivide the hospital into separate buildings,(88) attempted to change the existing hospital conditions and their nursing methods. This publication had a significant impact on hospital buildings in general, but especially on wards. The plan form evolved, often refered to as the Nightangale Ward was used for nearly seventy years after its publication.(89,90)

2.4.2 Interwar Years

No guidance was produced during the interwar years, and very few special articles dealing with hospital design were

published in the Architects Journal. (91,92,93) Such articles mainly provided descriptions of existing hospitals, including plans and photographs, but contained very little information or specific guidance which could be used for designing hospitals. In 1925, a paper by Saxon-Smell, for example, gave some guidance and notes on hospital sites, the layout of the building and some information about the several buildings or departments to be included in a general hospital of say 300 beds.(94) However in 1934,the Departmental Committee on Hospital Standards set up by the London County Council's Public Health Department published an Interim Report which gave some guidance.(95) This was followed by the Report of the Departmental Committee set up by the Ministry of Health, on the cost of hospitals and other public buildings, which was published in 1937. (96)

Although 'modern' hospital forms in Britain were being designed and built, they were generally based not only on the limited guidance available but on examples of hospitals which had been built abroad, especially those in the USA and Europe.(97) Malkin, suggests that the provision of guidance either by the central government or otherwise was lacking in the United States, this is illustrated by the fact that even up to the early 1970s there was only a handful of articles on limited aspects of office space-planning which were available to the departments of Health, Education, and Welfare and there was only a handful contained in their Medical and Dental practice magazines. It

was apparent from these publications that the emphasis on institutional projects in the United States were on the existing stringent requirements for hygiene, and low maintenance costs.(98)

2.4.3 Post War Design Guidance for Health

After the second world war, design guidance for health buildings developed rapidly. This was not only due to government involvement through the creation of the National Health Service and in the production of guidance but also to the demand for more hospitals coupled with the advancement in the medical sciences, medical equipment, and construction. Different forms of spaces and required emergency services had to be accommodated. An outline of these design guides developed for health buildings illustrates their increase in scope. The first and most important of these guides, published in 1953, was the Nuffield Report, '<u>Studies in the Functions and Design of Hospitals</u>'.(99) It was published by a research team sponsored by the Nuffield Provincial Hospital Trust, together with the University of Bristol, to investigate all aspects of hospital design. From the literature, it seems that the results of this experimental and innovatory research led to the revision and re- evaluation of the planning of a number of hospital departments. It gave some ideas and suggestions about how to understand hospitals, and bridged the gaps in the understanding of the relationships between hospital departments, physical environment, caseloads, and demand for hospitals. It gave

some specific guidance on hospital design, especially for in-patient accommodation. (100) To enable the team to test its results and recommendations, it was commissioned to design the outpatients department at Larkfield Hospital in Glasgow, Musgrave Park in Northern Ireland, and the Corby Health Centre in Northamptonshire. These three projects were then appraised and evaluated over a number of years after their completion, and were found to operate successfully, thus endorsing the work of the team.(101) The approach adopted for the Nuffield report higlighted the need for a research base for the development of design guidance for medical buildings. Such a group was set up within the MoH in 1957 and was enlarged in 1958 with the objective of 'exploring new areas of hospital design and briefing'.(102) Subsequent to its formation a large number of publications on design guidance for hospitals have been published by this group. These publications have been used to design a number of different types of hospitals, notably the Greenwich, Best Buy, Harness, and Nucleus hospitals, which are discussed in Chapter 3

According to Professor Moss, three categories of hospital guidance have been produced, namely, 'design guidance' with information on what to do, 'design procedural guidance' with information on how to do it and the 'systems and standards' with information on what to do and how to do it. (103) Among these publications are the `Hospitals Buildings Operations Handbook', (104) issued in 1953, which was considered the first step in consolidating all the

memoranda on hospital building operations published by the Regional Health Boards (RHB), the Board of Governors (BG's) and Hospital Management Committee (HMC) series.(105) The main points in the handbook were,

i) the general control and planning of a hospital building programme,

ii) detailed financial information such as capital and maintenance costs, and

iii) procedures for commencing, constructing and completing a hospital project with no specific guidance on user requirements.(106)

Drawing on information from the pilot schemes which were based on the Nuffield Report, (Larkfield Hospital in Glasgow, Musgrave Park in Northern Island, the Corby Health Centre in Northamptonshire) as well as on the available guidance, the DHSS initiated guidance for a new general hospital building programme in 1966.(107) The publication of `The Hospital Plan for England and Wales' contained general guidance for this massive building programme. (108) According to Enoch Powell, the then Minister for Health, this plan was not merely for building, remodelling or improving large numbers of hospitals but also for the modernization of the whole pattern and content of the hospital service.(109) The plan was, generally speaking, a series of national strategies and their operational policies. (110) In order to implement this massive building programme, other publications such as the `Hospital Building Notes' and the 'Hospital Design Notes' were issued beginning in 1961

Although the DHSS indicated that the first three of these Building Notes, HBN1, HBN2, HBN3, were to bridge the immediate gap for this programme until the R & D programme became available,(111) it was not until seven years later that the next was published. These early building notes, according to Professor Moss, are more fully descriptive than most of the other guidance. Spaces, rather than an understanding of their function, were the design guides prime concern. (112) For example HBN 1 gave some guidance on general principles such as departmental relationships, the overall areas required, and a short treatise on whole hospitals or development control plans. (113) The other departmental Building Notes, from 4 to 39 were all concerned with basic performance requirements for each of the departments described in HBN3. These guides from 4 to 39, all contain information under the same format, namely scope, general considerations, list of rooms, description of rooms, engineering services and appendices. However, Professor Moss, argues that in these guides it is section 3, containing the list of rooms, which has had the greatest influence on hospital design over the years since their publication. (114) The main source for standard departmental policies is recognized as contained on in the building notes, but in fact the building notes give little information on function, organization and/or staffing levels. (115) It is in only HBN 23, Pathology, that operational policies, for example, have been mentioned. Even in this case these operational policies have been discussed at the departmental

level rather than at the individual room/space level.(116)

A number of the Hospital Building Notes have now been updated. These are referred to as Health Building Notes.(117) The format of these Health Building Notes are different from that of the Hospital Notes. These Health Building Notes have been expanded to include scope, general departmental considerations, general design considerations, functional requirements, engineering services, cost information, activity data sheets, appendices and bibliography. A schedule of areas has also been provided to be used in conjunction with the activity data sheets and the code sheets with the respective paragraph number in the Building Notes. The detail activity sheets are not included in the guidance but can be obtained from the DHSS offices. Other design guide publications include `The Hospital Technical Memoranda,' (118) which were published starting from 1961 and deal with technical aspects of the hospital services, such as fire precautions, electrical and mechanical services. These are also now being updated and published as 'Health Technical Memoranda'. (119) Other design guides such as 'The Hospital Equipment Notes', include information about hospital equipment and provide a back-up for the 'Hospital Technical Memoranda',(120) and the 'Hospital Building Bulletin', deals with the operational and design aspects and examines these in more detail than the 'Hospital Building Notes.'(121)

The other important design guide is 'Hospital Building Procedure Notes' (HBPN's) known as CAPRICODE, (122) published in 1967. Capricode is the mandatory procedural framework governing the inception, planning, processing and control of individual health building schemes. The aim of Capricode is to provide a consistent and streamlined approach to capital development to achieve the best use of resources through the selection and construction of relevant and cost effective schemes that open on time and and within budget. It identifies the main activities and provides the framework for delegation with effective management, and proper accounting for expenditure and performance.(123) Capricode provides a methodology for a systematic approach to hospital design, based on a standard method for recording information required to design, equip health buildings. It was intended to cover all stages of design from briefing through design and construction to commissioning the building, and also include some aspects of evaluation. The significance of Capricode is its relationship with the standard RIBA stages.

The term `policies' although refered to as `planning policies' was introduced in the design guides for the first time.(124,125) The definition of these policies are given in section 2.4.4.1

Capricode was also intended to be a source of reference for planning buildings for health and welfare services and was intended to be the general framework

through which a hospital project should be carried out. An aspect of Capricode relevant to this research is its definition of 'communication' and 'circulation', within hospitals. 'Communication' areas are defined as the total spaces required to provide access to, or between, the various hospital departments - staircases, lifts, walls, entrance halls, corridors, together with plant rooms and other engineering spaces such as large vertical shafts. 'Circulation' routes are defined as the total spaces required to link together rooms of the individual departments, together with the spaces occupied by internal partitions and the like.(126)

In addition to the form of guidance outlined is the '<u>Design Briefing System</u>'. (DBS) (127) This is a series of documents to be used in conjuction with new or revised building notes to help specify user requirements for a design brief and are produced by the DHSS. These DBS documents adopts a checklist approach which provides a framework to guide project teams through consideration of organization and planning options, in order to lead to an acceptable list of activity spaces. Although the application of the DBS is confined mainly to planning complete departments, it can also be used to prepare briefs for extensions and upgrading of existing accommodation.(128, 129)

The 'systems and standards' approach, adopted in order to reduce the design and construction costs of

hospitals,(130) necessitated the use of a format different from those associated with the hospital building notes. Although Professor Moss argues that guidance for hospitals designed with this approach, such as the Harness and Nucleus designs are to be regarded as design solutions rather than design guidance, (131) it is acknowledged in the appendices of these guides that references were made to the existing hospital building notes etc, and other publications, or research related to individual departments in order to provide the designer with other references which can be consulted.

Two hospital concepts, Harness and Nucleus, have so far been produced by the DHSS, using the systems and standards approach. The Harness guidance will be briefly discussed but the emphasis at this stage will be on the Nucleus guidance which has superseded the former. The Harness guidance contains full descriptions of individual spaces, including their functional and environmental aspects, which are described fully, on room data sheets (A sheets). On these same sheets, codes are given which refer to the individual items required to be put in the space. The equipment requirements or activity units, as they have become known, are drawn both in plan and elevation on Activity Unit Data Sheets (B Sheets) to which a computer holds a steadily growing index. Whole room assemblies are shown to 1/50th scale plan, and wall elevations on what are referred to as `C sheets'. `D sheets' give the activity unit code as reference together with the

quantity, size, cost, and manufacturers' data base reference for individual items. 'B sheets' are coded to a nationally agreed system and can be used therefore by an hospital authority for designing, equipping, and commissioning a new building whether it is a Harness hospital or not. It is the activity unit which provides the continuous thread throughout the sequence of Harness hospital planning tasks from briefing to evaluations. Operational policies for the whole hospital and departments within the standards and systems programme have been produced to a common format, which includes a schedule of accommodation and a line diagram of the standard department.(132) Although a complete Harness system has not been built, it is argued that the examples at Stafford General Hospital and Southlands Hospital are fairly representative of what it was intended.

The Nucleus design guides, although similar in approach to the Harness system, are contained in a series of publications. (133) In several introductions to most of the publications on Nucleus hospitals, other design guides, articles by renowned architects involved in hospital projects, for example, Powell and Moya, and in other literature, it has been argued that the guidance is not only a method which demands the use of standard plans and forms for most departments required for a new hospital, but is also a system of designing and building a hospital which can start from a Nucleus of about 300 beds, and be enlarged by adding further

templates.(134) According to Professor Moss, 'they have become exemplar plans.' (135) These standard plans have been ingeniously and successfully developed to fit into a uniform and cruciform-shaped block, referred to as the template or cluster. This template has been developed along a grid of 5.4 metres with an overall grid of 16.2 metres, and has a total area of 1000m2. Accompanying these basic templates are 'Green Packs' which, argues Powell and Moya, provide the designer with the detailed list of the activities and the equipment that must be incorporated into each template,(136) 'everything to the last thermometer which must be included in the hospital has been carefully detailed.' (137) The Green Packs also contain the Activity Data Base which consists of the A, B, C, D and G sheets. The A sheets, as figure 2.1 illustrate, specify the functional requirements in descriptive terms and provide the references to the related B and C data sheets, as well as the environmental and engineering services required. The B Sheets, as figure 2.2 illustrate, provide the graphic representation and descriptive list of all items of equipment required to perform the activities specified on the A sheets. The C sheets, as illustrated in fig 2.3, show a standard room layout taken from a standard departmental layout plan, that is items from all B sheets assembled together in a working relationship. The D sheets, as figure 2.4

key plan and A sheets

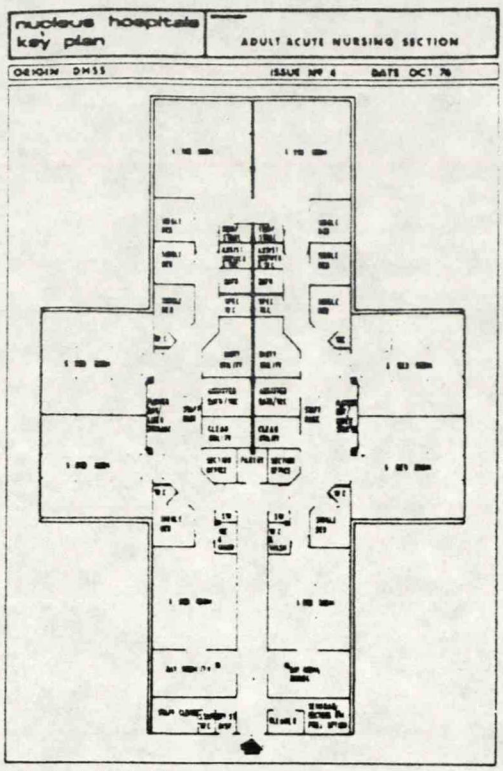

FIG 31 KEY PLAN

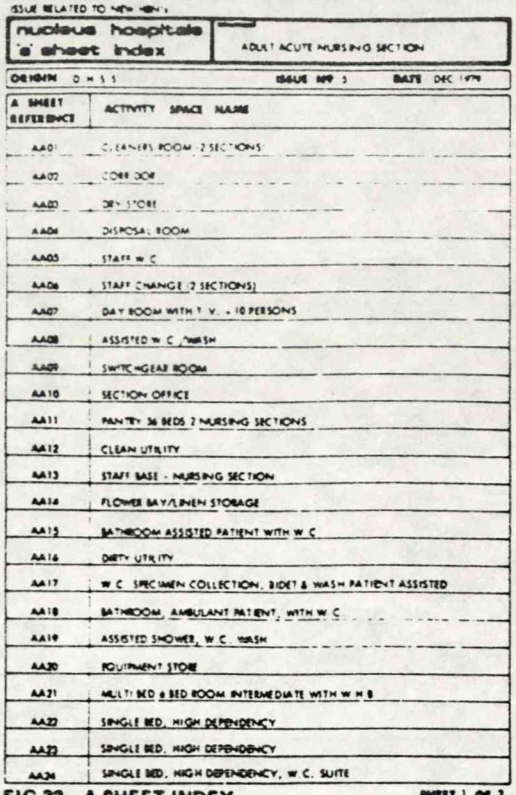

FIG 32 A SHEET INDEX

SHEET 1 OF 2

A

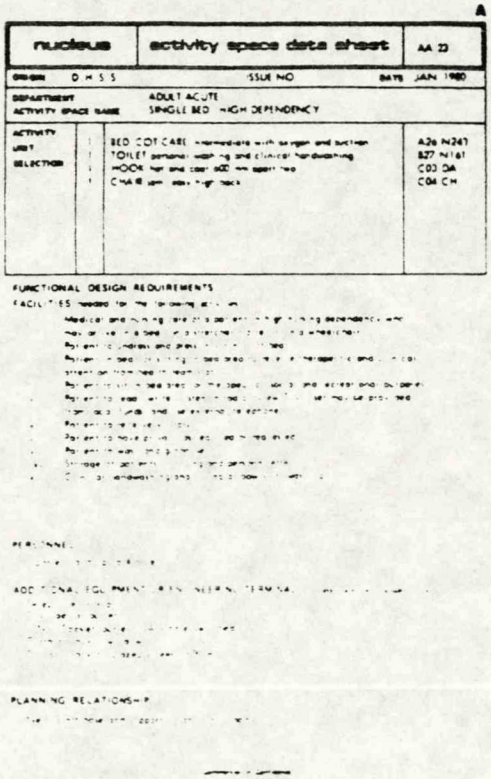

FIG 33 A SHEET

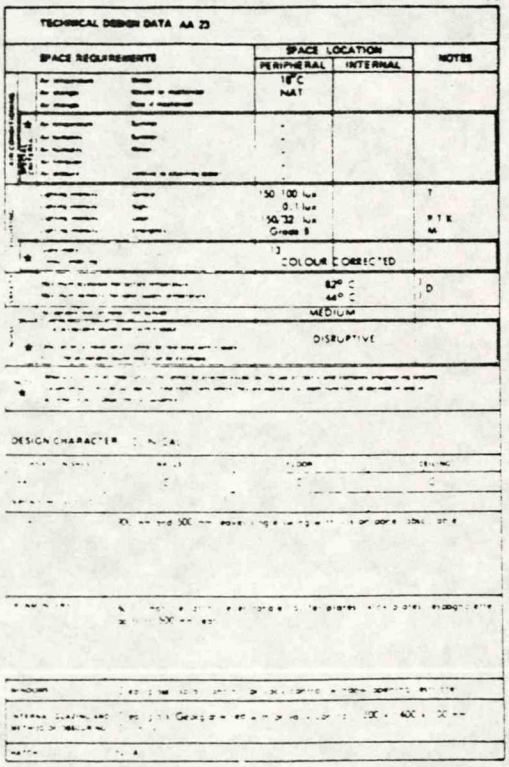

FIG 34 A SHEET REVERSE

5·5

Figure 2.1 Nucleus Hospital : The A Sheet

illustrates, have the equipment schedule related to the B sheets. The G sheets, as figure 2.5 illustrates, show the schedule of 'departmental' equipment. Nineteen of these cruciform-shaped templates or 'clusters' have been provided and these form the basis for the development of whole hospitals which are often built in phases. (138) Comprehensive, specific and detailed operational policies have been provided for each cluster of the Nucleus hospital departments. These operational policies outline both explicitly and implicitly the activities and functions expected to be performed by the users of the various spaces. The accommodation schedule, expected traffic, space utilization, whole hospital and departmental functional relationships, the relationship of individual departments to the overall hospital policies and plans such as domestic services supply and disposal, engineering services, individual departmental packages.(139) The guidance indicates that whole hospital policies, which are expected to be consulted during the planning, commissioning and implementation processes have been provided in separate documents.

Professor Moss argues that the methods in use in the late 1950s and early 1960s before the publication of the Hospital Building Notes concentrated on rooms or departments as the units of enquiry. Existing departments in hospitals or in other hospitals were studied with the aid of checklists as the basis for future requirements.(140) However even at this early stage it was identified that

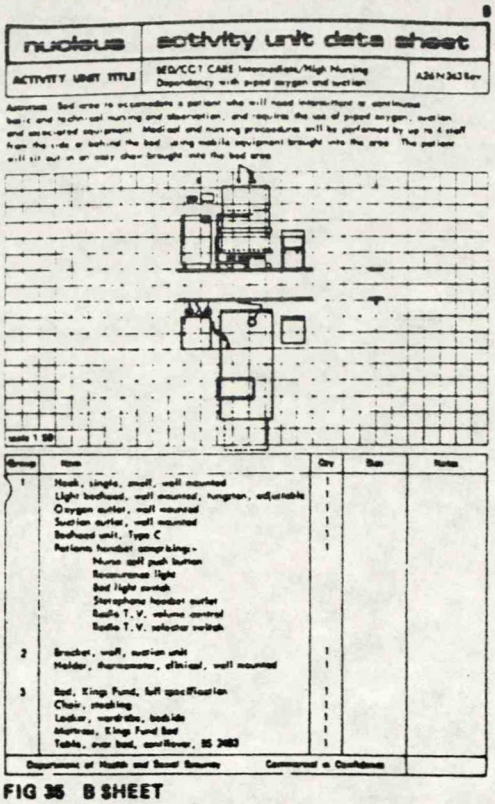

FIG 36 B SHEET

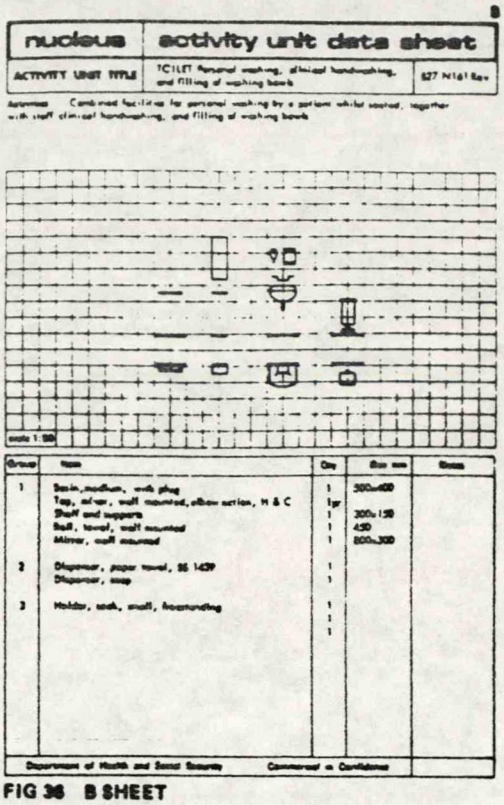

FIG 38 B SHEET

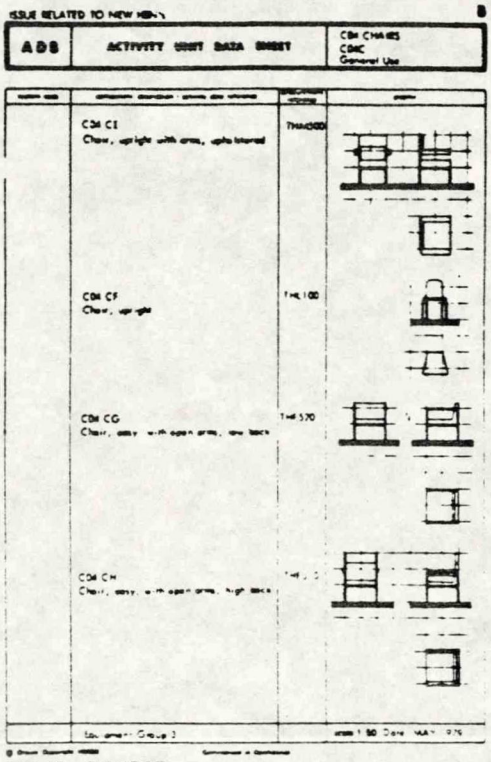

FIG 37 B SHEET

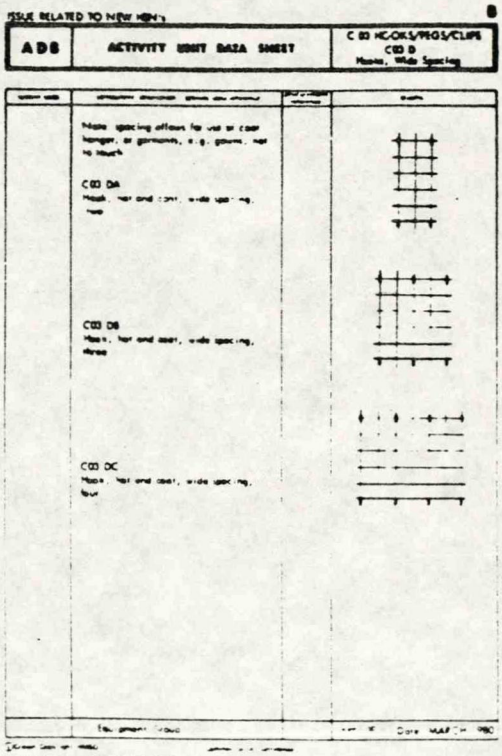

FIG 38 B SHEET

5:6

Figure 2.2 Nucleus Hospital : The B Sheet

obtain various views of user requirements was necessary in order to ensure that the majority of the users would be satisfied with the completed building.(141)

A detailed assessment of the design guides has been made by Professor Moss (142) and the relationship of these guidance to the development of the four main design concepts by the DHSS has also been made by Nightingale. (143) This illustrates the sequential development of the four main design concepts, discussed in detail in Chapter 3, in relation to the DHSS guidance. Prominent among the reasons for the evolution of these design concepts and the appraisal of the design guidance were the changes in governmental policies,(144) the reduction in NHS expenditure, especially after the 1973/74 oil crisis, and the subsequent development of the systems and standards approach not only for hospitals, but also for other public sector buildings, especially in education about the same time. (145)

2.4.4 Other Factors

From literature, the hospital guidance interviews with DHSS officials and hospital designers, several factors other than the design guides, have had an impact on the design and use of buildings. Although the level of conformity to the design guides, which can be due the differences in the interpretation of the design guides by different designers, has an impact on the final design, it has been argued that the level of detail of these operational policies, the extent to which they are incorporated in the design guides and the extent to which these

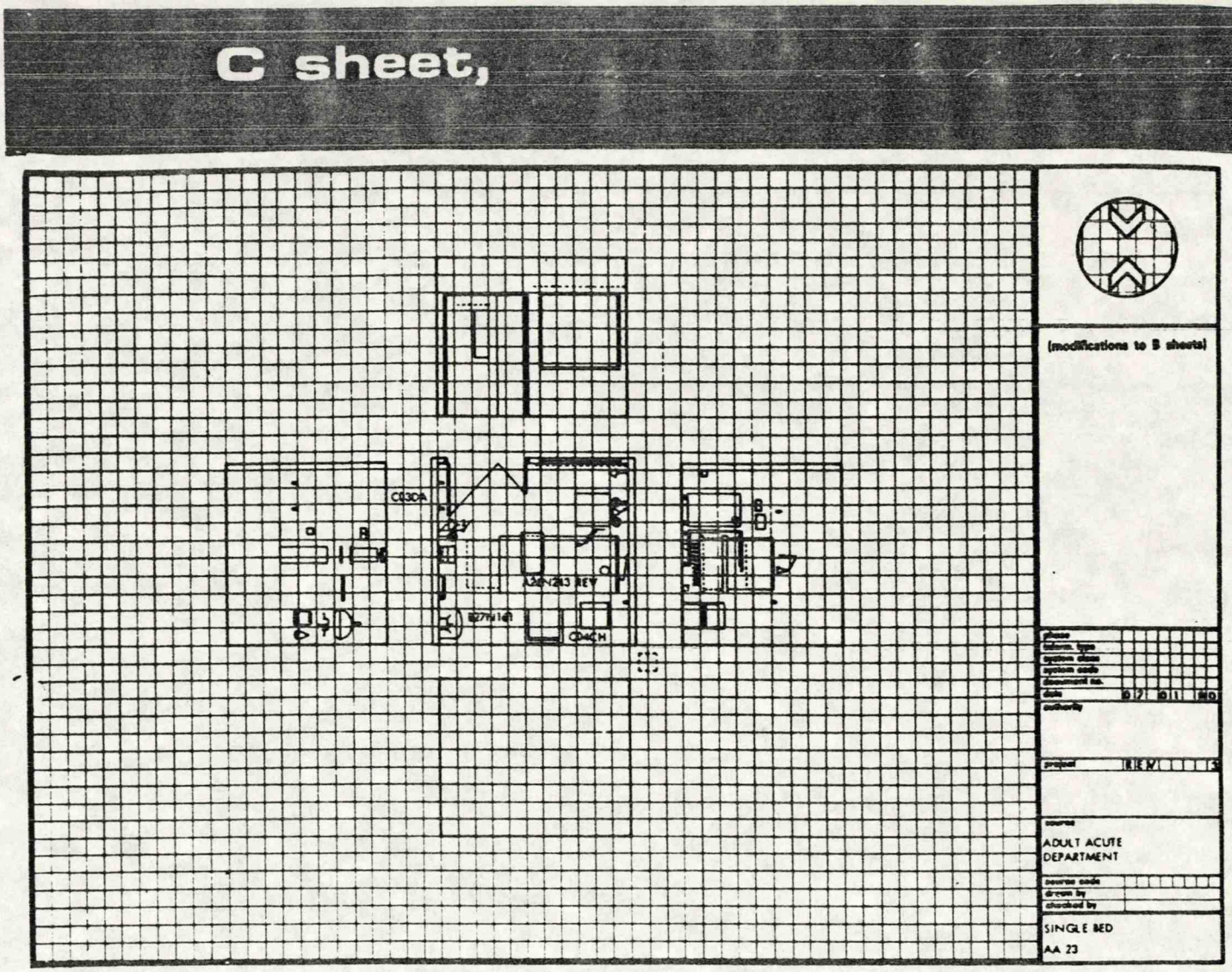

FIG 39 C SHEET

Figure 2.3 Nucleus Hospital : The C Sheet

operational policies contained in the design guides are implemented in the completed building after commissioning affect the buildings appropriateness in use. The definitions of operational policies will be considered briefly.

2.4.4.1 Operational Policies - Definitions

These operational policies, as defined by Jefford, are an agreed method of operation of a particular department in a hospital or service in terms of its functional requirements and their implications. (146) He argues that the aim of these policies is to produce an efficient organization of the hospital departments in relationship to each other. They are supposed to relate to the hospital as a functioning entity, and he suggests that the terms used in them are more precise than the words organization and communication. Stone, in an appraisal of the Best Buy Hospital at Bury St. Edmunds, also emphasizes the importance of operational policies and argues that in order to reduce spaces in hospitals, acceptable operational policies must be critically investigated at all levels (147). This appears to support Jeffords earlier argument that as soon as the general assessment for the need of a new hospital has been made and a range of provision in the broadest terms has been established, detailed operational policies must be considered. (148) However a study of the pre-Harness design guidance and interviews with the DHSS and hospital administrators indicate that although these operational policies were discussed at the planning

D

nucleus | **activity space data sheet** | AA23

ORIGIN D.H.S.S. DATE JAN 1980

DEPARTMENT ADULT ACUTE
ACTIVITY SPACE NAME SINGLE BED, HIGH DEPENDENCY

EQUIPMENT SCHEDULE

Group	Item	Quantity		Item Code
1	Hook, single, small, wall mounted	1		
	Light bedhead, wall mounted, tungsten, adjustable	1		
	Oxygen outlet, wall mounted	1		
	Suction outlet, wall mounted	1		
	Bedhead unit, Type A	1		
	Patients handset comprising:	1		
	Nurse call, push button			
	Reassurance light			
	Bedlight switch			
	Stetophone headset outlet			
	Radio T.V selector switch			
	Radio T.V. volume control			
	Basin, medium, with plug	1	500x400	
	Tap, mixer, wall mounted, elbow action, H & C	1 pr		
	Shelf and supports	1	300x150 450	
	Rail towel, wall mounted	1		
	Dispenser, soap	1		
	Mirror, wall mounted	1	800x300	
	Hook, hat and coat, wide spacing, two	1		
	Socket outlet, 13 amp, switched, single	1		
	Telephone jack point	1		
	T V aerial outlet	1		
	Curtain track, window	2		
	Curtain track to glazed screen - 1600 mm	1		
2	Bracket, wall suction unit	1		F O 7 0 2
	Holder, thermometer, clinical, wall mounted	1		F O 7 0 4
	Dispenser, paper towel, BS1439	1		
	Dispenser, soap	1		T C H 6 0 0
	(Continued)			

Commercial in Confidence

For DHSS Use

D SHEET

Figure 2.4 Nucleus Hospital : The D Sheet

G

nucleus | **departmental data sheet** | AA

ORIGIN D.H.S.S. DATE May 1978

DEPARTMENT ADULT ACUTE NURSING SECTION
(MATERNITY ANTE NATAL combined with ADULT ACUTE

SCHEDULE OF 'DEPARTMENTAL' EQUIPMENT

Group	Item	Quantity		Item Code
	BEDDING AND LINEN			
4	Bedgown, open back	14		C A A 0 0 3
	Bedjacket	42		C A A 0 0 4
	Bedwear, adult	150		C A A 0 0 6
	Blanket, adult, single	135		V C B 0 4 0
	Clothing, protective, Adult Acute Ward, Nucleus, alloc	1		B A A 0 1 2
	Counterpane, adult, single	75		V C F 0 2 0
	Cover, air ring/cushion, calico	50		V M C 3 0 0
	Cover, electric blanket	5		V M C 3 3 0
/	Cover, mattress, cotton, adult, single	28		V Q C 0 6 0
	Drawsheet	180		V C J 0 5 0
	Gown, dressing	50		C F G 0 5 0
	Gown, operation	75		C F G 7 0 0
	Pillowslip	250		V C L 0 5 0
	Sheet, adult, single	250		V C S 0 1 1
	Sheet, mortuary	5		V M S 0 7 0
	Towel, bath	90		V M T 1 1 0
	Towel, hand	90		V M T 1 2 0
	Uniforms, staff, Adult Acute Ward, Nucleus alloc	1		B A A 0 0 8
	GENERAL			
2	Firefighting allocation	1		N O O 2 0
3	Blanket, electric	2		V C B 8 0 0
	Chair, commode, tubular, metal	1		T S F 2 1 0
	Chair, commode, tubular, metal, mobile	1		T S F 2 2 0
	Chair, stacking	6		T H L 1 1 0
	Cradle, bed	10		T L M 2 4 0
	Dryer, hair	1		P O O 0 6
	(Continued)			

Commercial in Confidence

For DHSS Use

G SHEET

Figure 2.5 Nucleus Hospital : The G Sheet

and briefing stages of the projects they were not incorporated into this guides. These policies were later prepared as separate documents and handed over to the hospital administration after the commissioning of the projects. It has been extremely difficult to gain access to a copy of these operational policy documents either at a hospital or at the DHSS.

In the systems and standard approach, especially in the Nucleus guidance however, a greater quantity of operational policies have been incorporated. These inform the users of the activities expected to be undertaken in each of the departments. Evidence from literature, for example, Rubin et al, argues that, `the use of space appears to be a source of conflict between architects and building occupants; architects often claim that building occupants do not use space for the purposes for which they were designed for. On the other hand, the occupants often complain that the spaces are unsuited to required activities.' (148)

Interviews with DHSS officials and hospital designers and staff at the hospitals seem to confirm the view by Rubin et al. They suggest that, 'the operational policies, in some cases, were virtually neglected from the very first day that the buildings were commissioned. In others, due to the number of modifications to the completed buildings, these policies have been modified or have simply been ignored or have not been adequately communicated to the users. In

other cases, especially in the Nucleus hospitals, these policies have been modified to suit each individual department in the hospital by the hospital administration, but they have not been successfully implemented due especially to staff shortages and the costs involved in strictly adhering to these policies. In other cases additional requirements have resulted in the incorporation of additional policies not originally considered and included in the publication. These arguments and comments seem to suggest that the implementation of the operational policies in the completed buildings varies considerably from hospital to hospital.

2.5 **The implications of the Health and Medicine Act 1988**

The Health and Medicine Act of 1988 came into force on the 15 November, 1988. (150) Hidden among the main provisions of the act is section 7, 'the extension of powers of the Secretary of State for the financing of the health service,' which has a number of subsections three of which has design and organizational implications. These three are, 'to supply accommodation to any person', and 'to supply services to any person and to provide new services', and to make such charge he considers appropriate for anything that he does in the exercise of any such power and to calculate any such charge on any basis that he considers to be the appropriate commercial basis'. The Act goes on to make these powers conditional on the functioning of the health service not being 'significantly interfered with'. So that for example, According to Nightingale, if a

hospital decides to introduce a shopping mall along its main concourse, provided 'communication' and 'circulation' were not impeded this would be allowed. (151)
These far reaching provisions, together with the removal of restrictions of financial arrangements for certain bodies in the Act, will dramatically increase the options available to health service managers in their exploitation of their resources.

Presently it is possible to identify three significant patterns for the commercial exploitation of the non-medical aspects of health care. This is evident in the redesign of the main reception and waiting areas in some hospitals. These patterns are i) the wholly NHS approach, where the commercial aspects within the main reception and waiting area are undertaken by voluntary groups, especially the League of Friends or the Royal Women Voluntary Services, ii) the wholly private enterprise where the hospital goes into contract with a commercial concern to undertake the provision and management of the commercial activities within the main reception and waiting area as in in the case of the Adenbrookes Hospital, in Cambridge,(152) in this case the British Airways Services have taken over the main reception and waiting area and have a 10 year management contract with the hospital and iii) a fusion between i. and ii.

Since the NHS is gradually entering the market economy, aspect of the Private health care which it might have to contend with in organizational and design terms will now be considered.

2.6 Private Health Care

According to Nightingale, since 1948, the National Health Service has been complimented by an independent health sector comprising a broad spectrum of private, voluntary and charitable bodies not only in such areas such as elective surgery where the public provision is universal, but also in areas where the NHS coverage is limited. The range from hospices, nursing and convalescent homes to fitness training, screening and chiropody. The 'growth' of the National Health Service has also seen the growth in the private sector and the contribution of the latter is at the moment very significant as the following figures indicates.

i) 9% of the population in the UK (5.34 million) are covered by private insurance.

ii) private sector acute hospitals have 6% of acute beds and treat over 510,000 in patients and day cases a year,

iii) 17% of all elective surgery in England, including 28% of all hip replacements and 19% of all coronary artery bypass grafts are performed privately

iv) 70% of all hospice beds are private

v) there are some 78,000 private beds in Nursing Homes, accounting for virtually all nursing home provision in the United Kingdom. (153)

One of the largest provider of private health insurance extensive range of health facilities in the United Kingdom is the British United Provident Association, (BUPA) and according to Nightingale ' are keeping a close eye on the developments in the NHS that might present opportunities

for co-operation.' (154)

2.7 Summary and Conclusions

This chapter has shown that there are numerous variations in the type and format of design guidance produced by different governmental departments. It is difficult to differentiate between the intricately related guidance, standards, measures for cost control and differential operational policies. Emphasis in the standards, measures for cost control and operational policies varies in most publications, but this is particularly the case for hospital guidance. Some of the standards are mandatory, others are not; some guides specify the minimum and maximum standards, others are related to other variables such as rooms or number of activities within a space, for example, doctors sessions, others contain specific plans and specific inter-departmental relationships. While some types of guidance contain detailed operational policies, others contain just brief descriptions of the required spaces.

In spite of these variations, there are a number of common underlying themes in hospital guidance. From the early guidance through to the current system and standards programme it is apparent that the provision of guidance and standards was closely related to the control of the capital and maintenance costs of hospital building. In addition there is the general assumption that 'if the design guides were followed, the aims, objectives, and user requirements

set up in the guidance should be achieved in the completed building'. (155)

The Oxford Method and other guidance by other health authorities have also been produced but these will not be discussed in this study.

In private hospitals, although most of the DHSS design guides are adopted, their operational policies and underlying objectives if profit making influences the use of these guides.

In future we might agree with Nightingale who suggest that 'architects will have perhaps the best opportunity yet to offer their services to a health service hungry to exploit its commercial potential for the benefit of both the patient and staff.' (156)

It is against this background that the next chapter traces the impact of the design guides on the development of the four main hospital design concepts developed by the DHSS and compares this with that of a private hospital.

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CHAPTER 3

THE IMPACT OF DESIGN GUIDANCE ON THE DEVELOPMENT OF HOSPITALS IN THE UNITED KINGDOM

3.1 Introduction

This chapter examines the impact of design guides on the development of National Health Service Hospitals in Britain in order to identify which aspects of the design guides has had a greater influence on the design of the four main concepts developed by the DHSS. An identification, assessment and criticism of the four main hospitals in the United Kingdom will be made. Other topics to be considered will include, first, the comprehensiveness of design guidance and standards, second, the extent to which the buildings conformed to the available guidance, third, the extent to which detailed operational policies were incorporated into the design guidance used, and finally the extent to which the operational policies incorporated into the guidance have been implemented in these hospitals. The assessment and comparisons will establish if and to what extent these variables have been taken into account in the design the four hospital concepts. The example are discussed in the order in which they were built. The private hospitals will be discussed under the same variables.

3.2. The Four Main Hospitals Developed in the United Kingdom by the DHSS

3.2.1 The Greenwich Concept

3.2.1.1 Background

The Greenwich District Hospital Development project was

carried out jointly by the DHSS and the South East Metropolitan Regional Hospital Board (now South-East Thames Regional Health Authority).(1) Starting in 1960, a multi-professional approach to design development was adopted. Teams composed of doctors, nurses, architects, engineers, quantity surveyors and administrators in the DHSS, but no patient representatives, undertook two smaller development projects which investigated the feasibility of various pieces of research in the field of 'live' hospital planning. The hospitals in which these ideas were tried out were the outpatients department at Walton Hospital, Liverpool,(2) and a kitchen department and stores block at Kingston Hospital in Surrey.(3) The findings about the effectiveness in use of these hospital departments, especially that at Kingston, was satisfactory in a number of ways.(4)

In 1962, using the findings from these projects, the R & D group in the Architects' Division of the DHSS prepared to undertake the design of a complete district general hospital. This hospital was the third Research and Development project by the DHSS but it was the first on a whole hospital scale.(5) The immediate problem facing the R&D group was that most of the new post-war hospitals had been built on large sites on the outskirts of towns, whereas the problem facing the National Health Service in 1962 was the need to replace a large number of obsolescent,(6,7) sub-standard hospitals in densely populated, built-up, central urban areas. It was argued that the

relationships between the location of these hospitals and the communities they served were such that any scheme for re-development which involved an appreciable interruption of hospital services to the communities was unacceptable. As a result, several existing hospitals in the London area were examined as possible cases for a phased building redevelopment. Subsequently the Regional Hospital Board and DHSS agreed that St. Alfege's Hospital in East Greenwich, should be chosen as representative of a typical form of the problem.
A new hospital was to be built on the existing site by phased development.(8)

3.2.1.2 Design Objectives

The main design objectives set up at the beginning of this project were to build a new 800 bed hospital, to develop a building which allowed for maximum flexibility in order to cater for future changes, and to adopt a phased building development in order that the services provided by the existing hospital should, as far as possible, continue uninterrupted.(9) The hospital was expected to satisfy the requirements of HBN 3 or less. (10,11) In addition to this it was to be built within the existing health services and costed within the existing DHSS cost limits. (12) At the time this hospital was planned there was no overall comprehensive design guidance or detailed operational policy for a whole hospital building.

3.2.1.3 Design Guidance

The design guidance available at the start of the project included not only the few publications existing prior to

the formation of the National Health Service but also numerous guides Hospital Building Notes,(HBN's) Hospital Technical Memoranda, and Hospital Building and Procedure Notes (Capricode) described in Chapter 2. Each of these publications dealt with one aspect of a particular department within a hospital building and contained functional relationship diagrams, accommodation schedules, and a limited quantity of detail on spaces and standards. For example, guidance for the development of whole hospitals which this hospital was expected to satisfy was contained in HBN 3, which is basically a collection of functional relationship diagrams of individual departments which are merged to form the whole hospital. Details of the disposition of these departments or of traffic between them is contained in HBN 4, which attempts to provide guidance on the possible volume of traffic between the departments. One of the criticism of HBN 4 is that although there are differences in the type of wards within a hospital , all the wards have been considered as single `departments.' However separate documents have since been provided for different types of wards, for example wards for the elderly and for day hospitals.

In this design guidance a limited quantity of operational policies were incorporated. In most cases they were vague, not detailed, and do not contain all the information required for all users. During the development process the need for comprehensive and detailed operational

policies issued by the DHSS became apparent. These policies were then prepared as separate documents and handed over to the hospital administration at the completion and commissioning of the hospital. (13)
With a lack of adequate design guidance, and an eagerness to achieve their objectives, the clients for the Greenwich Hospital, the South East Thames Regional Health Authority, and the architects from the DHSS Architect's Department led by Howard Goodman, decided to adopt the `universal and intestitial space' concepts(14). This concept was chosen because at the time of the design of this hospital, it was being developed and explored mainly in North America for the flexibility it offered and its suitability for open plan offices. It allowed for the creation of internal spaces free from internal columns, with all the internal services located in the near-room-height ceiling space. In planning terms, the `Burolandschaft' concept, which was being used in Germany also had considerable influence.(15)

It has been argued that the planning and design of the Greenwich hospital was new for two main reasons. First it was the first actual major development by the DHSS R & D group and secondly because it combined the experience gained from the smaller research and development projects at Walton and Kingston departments to create a whole hospital project on an urban built up environment. Although it was deemed to satisfy HBN 3 requirements or less, the originality of the briefing and research related to the project was unique. Whereas other briefing and design

processes often translated a set of user requirements into a physical shape or layouts, the user requirements of the Greenwich hospital were intensively investigated throughout the briefing process in relation to the predetermined overall shape of the building.(16) It was hoped that the new briefing process, which required a briefing organization, would lead to the possibility of common objectives being established between the various user groups and between users and designers.(17) This briefing process was used in the case of the Greenwich hospital. There were also other approaches in information collection, by means of statistical records, questionnaires, observations of other hospitals in use discussions, the Activity Data Sheets, Activity Data Methods,(18) other methods given in the RIBA course handbook.(19) As well a new documentation system of data and investigation was used.(20) This information was presented in and developed with drawings, models and mock-ups which helped to explore the problems and increased the understanding of information by both the designer and the user.(21)

3.2.1.4 Design Solution

With this amount of knowledge, the form of the Greenwich hospital, according to the design team, was derived after careful consideration of all the objectives for the project. The most important being were the need for continuity of treatment during the construction period, the use of precast building materials for ease of construction, and the use of the intestitial space

concept so as to enhance the flexibility of the internal spaces when the building was in use.

The form was basically a low, compact, highly-serviced four storey rectangle, measuring about 120 metres each way, with additions or subtractions where the site or other conditions dictated. Three large courtyards, one of them starting from the lower ground floor, punctuated this rectangular-shaped building. Floor to floor height was 4.8 metres, with 2.7 metres as floor to ceiling height. The remaining 2.1 metres was left for engineering services which run horizontally, These service runs were interconnected to the four main engineering service cores which were designed and constructed in relationship to the phasing programme.

The structure was based on the 600/300 centimetres planning grid which was adopted for the whole hospital. In so doing it was possible to develop a standard range of dimensionally related, prefabricated precast components which were dry erected with wet processes used for joining only. With the exception of the boiler house and the four engineering shafts, this structural arrangement was adopted for the whole building. The main structural grid of 19.5 meters allowed for floor spaces uninterrupted by columns, and smaller spans of 9.75 meters or 4.875 meters were used where necessary. It was argued that the spans of 9.75 meters or 4.875 meters would be consistent with structural efficiency and economy; this enabled corners to be created conveniently.(22)

A flat roof construction was adopted.

The structure of the Greenwich hospital was designed to last for sixty years at least (23) with the assumption that only cladding, and finishing elements would be replaced within the time.

The zoning principles adopted were to locate the ward areas and consulting rooms along the perimeter of the building or in proximity to the courtyards, in order to allow natural light into these spaces. All the other ancillary services/spaces, for example clinical, administrative, kitchen and supplies were kept between these perimeters, where there was little or no access to natural light and ventilation. As a result the main communication routes to a considerable extent lacked access to natural light, as Appendix A1 illustrates.

Another fundamental decision made to air condition the hospital throughout taking into account, first, the difficulty in controlling air movement with partial natural ventilation, second, the very high atmospheric pollution in that area of London, third, the opportunity that complete air-conditioning would offer controlled investigation of the part that air movement plays in the incidence of cross infection in hospitals and finally the need for a uniform and unobtrusive heating/cooling system.(24)

The lower ground floor accommodated the car park, changing rooms and records departments; the ground floor housed the outpatients, accidents and emergency departments, physical medicine and some wards. The first and second floors

accommodated wards, operating theatres, dining facilities, administrative offices, pathology laboratories, delivery suites and training units as shown in Appendix A.

The planning of the project started at the end of 1962. Work started on site in November 1966; phase 1 was opened in 1969, phase 2 in 1971, phase 3 in 1974, and phase 3a and the health centre (the final phase) in 1976. Phase 1 contained the central core which included the engineering ducts as well as the main means of vertical circulation, in this case three lifts (2 passenger, 1 goods), a staircase, an elevator, an entrance hall and a visitors waiting area. The central core, which had an area of 252.75M2 was common to all the four floors. On the ground floor this floor merged with the main entrance and was linked to a radial form of communication pattern. This radial form of communication connected all the phases and allowed the departments to flow into each other.

The hospital has 800 beds and occupied a site area of 3 hectares. The gross floor area was 42,910m2 and the total cost £2,138,072 (£12,988,787, 1989 prices) giving the cost per square meter of floor area as £ 49.82, (£ 302.65, 1989 prices) and the cost per bed £2672.59, (£ 16,235.98, 1989 prices). The number of beds per gross floor area was 0.018. The area of the main reception is 1752m2. The ratio of the main reception area to the total area of the hospital was 0.04.(25)

3.2.1.5 <u>Criticism of the Greenwich Hospital</u>

Research has claimed that the advantages of the design are

its compact development, and that use of maximum spans are compatible with economy. The universal and intestitial space concept allowed for maximum flexibility for non-structural elements such as doors and sanitary facilities. Floor and ceiling slabs were designed to allow for easy penetration. Easy control of internal conditions was possible due to the reliance on mechanical ventilation.(26) Reduction in traffic noise from the busy adjoining roads was obtained through fixed windows and double glazing. A smaller site area was required for this multi-storey structure than for a lower building. Concentration of vertical traffic for users, suppliers and services, minimized the amount of horizontal traffic. The grouping of all the outpatient facilities on the ground floor was an advantage, and so was the difference in the widths of the communication and circulation routes to cope with the varying amount of traffic within the hospital. There was a good departmental functional relationship.

On the other hand, a number of disadvantages have been identified. These include the fact that over forty percent of the building space had to be allocated for services to cater for this flexibility. Running costs are high. Fixed glazing has resulted in high window cleaning costs. Lack of daylight to most of the diagnostic and treatment areas is one of the main sources of complaints by most of the users. Split level construction and the difficulty in identifying routes to the various departments is another. The lack of adequate demarcation of departments has resulted in one

department merging into another. Inadequate signposting, while readily improvable, can be expensive in time and money if staff have to continuously direct people within the hospital. (27)

The success of the Greenwich hospital has been claimed in a number of publications. (28) Because of the nature of the design guidance available at the beginning of the project, it is difficult to assess directly or indirectly the level of conformity to the design guidance except in general, except perhaps by comparing it with the departmental requirements of District General Hospitals. However from studies of individual departments and its relationship to the available design guidance it is possible to argue that generally, the building conformed to the departmental requirements and standards for a general hospital in HBN 3, although in some cases the latter were higher. Although this guidance was not comprehensive and not detailed, it provided the basis upon which future guidance was based.(29)

Anecdotal evidence from the architects and members of the commissioning team suggest that the degree to which the operational policies set out in the document handed over to the administration were implemented varied. One person included commented, 'From the very first day of opening the hospital these policies were not adhered to.' Preliminary visits to this hospital seem to confirm this observation and comment.

Unfortunately for its value as a research and development

scheme it was the only example which was built, and even as it was being built the DHSS were developing an alternative scheme because it was too expensive and unique for the objectives which were set, operational policies at the national level were changing, and new thinking was being infused into hospital design.(30,31)

3.2.2 Best Buy Hospitals

3.2.2.1 Background

The alternative approach being developed by the DHSS as the Greenwich hospital was being built, was the Best Buy concept.(32) This was started in 1967 when the Minister of Health set up a multidisciplinary project team which comprised the DHSS architects headed by John Ward, together with a small project team of representatives of hospital staff, a doctor, a nurse, and a hospital administrator as well as the design team of the non DHSS architects, (headed by Paul James in association with Hospital Design Partnership) engineers, and a quantity surveyor all of whom worked in a joint venture with two regional hospital boards. However the multidisciplinary team set up to design the project, like that for the Greenwich hospital did not contain a representative of one of the potential groups of users, the patients. The team was charged with the responsibility of making a single design to serve the new hospital needs of two different districts of Britain (Bury St. Edmunds, Suffolk, and Frimley Park, Surrey) and for other areas in future. The hospitals were to have approximately 560 beds and a full

range of diagnostic and therapeutic services, including an accidents and emergency department(33).

3.2.2.2 Design Objectives

The objectives of the project team were carefully defined. First, in terms of function, they were to provide a basic hospital service which complimented integrated community health services in the area, which was the national operational policy at the time. Second, for economy, the hospitals were to be built as economically as possible without high maintenance and revenue costs. Third, for efficiency, the hospitals were to be designed as complete units, placing individual departments in good functional relationship with one another. A critical aspect of this was to ensure that when patients had to receive hospital attention, it should be possible by the maximum use of outpatient, diagnostic and treatment facilities, including day beds, to treat more of them as outpatients. Fourth, in terms of quality, the hospitals should meet standards no higher than those required by clinical and amenities needs. Fifth, in terms of environment, the hospitals should engender a sense of well being for the patients and staff. Sixth, for speed, the design and building of the hospitals was to be as rapid as possible in order to make the optimum use of planners and designers.

The underlying planning principles were first, that as many patients as possible should be investigated and treated in the community by family doctors, helped by local authority nurses and health visitors and second, that when hospital

admissions were essential, the stay should be as short as possible, by good management and planned early discharge. (34) Although hospital planners prior to this project had appreciated that closer co-ordination between the hospital and the community services was desirable, there had not really been any detailed feasibility study of such co-ordination on these concepts. The Best Buy Hospital was designed on this approach wherever practicable. (35)

The Best Buy hospital in the real sense was one of the first to be designed and actually built by the DHSS.(36) It was not intended to be a building system, but represented a new school of thought for the provision of hospitals.

3.2.2.3 Design Guidance

Although there was all the design guidance which had been available for the Greenwich concept and the brief for and information about the latter, no limitations were placed on the Best Buy design team with regard to previous practice or official guidance. Rather the project team was to adopt the most forward looking design solutions in order to meet the objectives of the project. (37) The operational policies and schedules of accommodation were seen as quite separate from the architectural solution.(38) However to judge from the operational policy document obtained from the hospital administration, the Best Buy was designed to satisfy the requirements of the Scottish Home and Health Design Guide No 6. The hospitals were

called ' Best Buy ' because they were to be exceedingly cheap compared to 'Race Track' (39) or 'Spine and Pavilion' types (40) which were among the 'modern' hospital forms built in Britain during the interwar era.

3.2.2.4 Design Solution

For the purpose of this study the Best Buy Hospital at Bury St. Edmunds will be discussed in detail, since that at Frimley Park is similar. The clients for the Best Buy Hospital at Bury St. Edmunds were the East Anglian Health Authority and together with the DHSS Architects Department team led by Howard Goodman and John Ward in association with Paul James of the Hospital Design Partnership, They, attempted to design a hospital which would meet the objectives stated. Extensive studies and experience on other projects carried out by the DHSS indicated the influence of building shape on capital costs,(41) invariably dictated the shape of the building.(42)

Further studies confirmed that the most economical plan width was between 12 and 15 metres and indicated that additional costs were incurred when ward floors were stacked vertically one above another in a multi-storey building. This type of building not only tended to be inflexible in accommodating its clinical function, but also made it difficult to deploy available staff to best advantage for the patients' care. The horizontal 'finger plan' appeared to be much cheaper, but this too failed to give an economical functional layout with optimal departmental relationships.

In addition a low rise, widespread building shape

seemed likely to involve extended lines of communication between the wards and their supporting services. (43) On the basis of this knowledge, the project team, eventually decided on a horizontal, compact, square layout on two floors, penetrated by a matrix of courtyards , which would provide natural light and ventilation to the areas overlooking them. After having considered alternatives the form selected was basically a combination of two shapes which formed a square shaped building measuring about 150 metres.

As a further measure to reduce running costs and promote economy, wherever practicable the core section was designed to accommodate not only those therapeutic and diagnostic departments but also the operating theatres, which tend to require higher levels of engineering service to meet clinical conditions.(44) Another achievement was the limited requirement in the hospital to cope with steam, because of the location elsewhere of the laundry and other high steam-producing services. This approach also meant economies in thermal demand. Such demands were met by four units of low pressure hot water boilers located one at each corner on the roof of the building. Each was integrated with hot and cold water storage. All engineering services were located and distributed in the ceiling of the ground floor, feeding up to the first floor and down to the ground floor.

In an appraisal of the Best Buy hospital at Bury St. Edmunds in 1983 , Stone, argued that the reduction of

space and cost to a minimum did not in any way prejudice medical standards and that the design was to a degree capable of a high degree of standardization for use throughout Britain, both in terms of organizational policies and physical form. Among the many other decisions which helped to limit costs were, first, the rejection of pipe tunnels and undercrofts. Second, the horizontal banding of functions, resulting in a two storey development serviced by ramps from a mezzanine service zone, thus reducing the number of lifts to two. Third, a low window to wall ratio to conserve heat. Fourth, the reliance upon natural ventilation whenever medically possible. Fifth, the possible use of thick, light weight concrete cladding panels to conserve heat. Sixth, a reinforced concrete framed structure with spans not exceeding 7.31m. (45)

The structure of the building consisted of a precast concrete two storey frame down the centre of the block, linked by spine beams, with concrete trough floor units spanning to outer ring beams and resting on load bearing aerated concrete wall units. Cantilevered bay windows in wards provided sitting-out areas for patients, and the use of courtyards and clerestory lights have resulted in the reduction of mechanical ventilation, air conditioning and artificial lighting which compared to Greenwich were low. The need for adequate lighting was highlighted and achieved by the incorporation of a clerestory, an integral part of the structure of the building.

The ground floor, as illustrated in Appendix A comprise mainly of the outpatients facilities, accidents and emergency department, supplies departments, the administration, staff and education departments which have been arranged along the periphery of the building to ensure adequate lighting for inpatients and consulting rooms. Most of the wards were located on the first floor, which has been planned on a similar basis. On the first floor, the wards form a continuous band on three sides of the building which gave them a closer relationship to the therapeutic and diagnostic department in the core of the hospital form.

The building process commenced on site in 1969 and was completed in 1974. The hospital has 736 beds, 176 more than the stated objectives of 560 beds. It occupies a site area of 10.5 hectares. The gross floor area is 33,200m2 and the total cost £ 3,100,000,(£ 18,996,210, 1989 prices) giving the cost per m2 of floor area as £ 93.37 (£ 572.15, 1989 prices) and the cost per bed as £ 4211.00 (£25,804.21, 1989 prices). The number of beds/gross floor area is 0.02. (46)

One of the successes of the Best Buy Hospital can be measured by the fact that it anticipated the re-organization of the National Health Service when the bed/population ratio was reduced from 3.3 to 2 per thousand. This increased the burden of after care to be borne by the community services, which was among the main objectives which the Best Buy Hospital had set out to facilitate and achieve.(47) Most of the studies undertaken especially by the DHSS, comparing the actual

provision with the design guidance suggests that in most of the spaces provided the actual provision did not match the design guidance requirements.(48)

During the time that these Best Buy building programme were implemented, the systems approach to building incorporating a high level of standardization was becoming popular, especially for educational buildings (49) and housing. (50) This had a great influence on the further development of the Best Buy hospitals, since this approach seemed to provide a universal solution to most of the architectural problems and concepts. As a result in 1972/73 the central government spent £1 million (51) in the development of a new hospital system, the Harness system. This was based on this system approach, and discussed below. It replaced the Best Buy hospitals.

3.2.3 Harness System

3.2.3.1 Background

The Harness system was the first developed by the DHSS using the systems and standards approach.(52,53) Based on their research and development and experience particularly at Greenwich and the Best Buy hospitals at Bury St. Edmunds and Frimely Park, hospital planners in the DHSS conceived the idea of a universal envelope, enclosing a space of standard dimensions as a basis for standard designs backed up by a rationalized briefing and production methodology. It was an attempt to standardize hospital planning on a national scale.(54,55) The standardization was at

departmental level whereas that of the Best Buy was at the whole hospital level.

3.2.3.2 Design Objectives

The objectives and design criteria were to design a hospital building system which would first, allow foreseeable growth and an ebb and flow of functions between departments throughout the life of the building. Second, meet the normal requirements of phasing and decanting. Third, be flexible enough to form extensions to existing hospitals. Fourth, provide a unique whole hospital solution out of parts standard in shape and content which would satisfy the special requirements of each situation, including heavily sloping sites, and fifth, meet the environmental requirements of maximum natural lighting and ventilation.(56)

The concept which evolved to meet these objectives was referred to as 'Harness' It was developed in theory as a design analogy with the electrical harness prepared for the manufacture of cars and aircrafts. (57, 58, 59) Harness hospitals were comprised of three basic components.
First, standard accommodation in the form of predesigned standard departments based on a 15m structural grid, with a master structural grid or tartan zone of 1.2m.
The design of the departments were identical to a number of generic hospital shapes.
Second, the 'Harness' zone, which provided an effective communication and service zone in both vertical and horizontal directions, and to which the departments were clipped on. This allowed for maximum interchangeability.

Third, special nonstandard accommodation to meet the particular needs of individual schemes but designed within the same planning grids.

3.2.3.3 Design Guidance

The design guidance for Harness hospitals has been briefly described in Chapter 2. However it will not be discussed in detail in this section since a complete Harness hospital has not been built.(60) Nevertheless for the purpose of this research the design of the Stafford District General Hospital which utilizes most of the Harness concepts will be briefly discussed.

3.2.3.4 Design Solution

The planning and zoning principles adopted were to locate the standardised departments along the hospital street, with the departments with overlapping functions in proximity to one another.(61) On-site parking facilities were provided some distance away from the building to ensure that noise from the vehicles would not be a nuisance to other hospital users. An interesting aspect was the decision by the designers to keep most of the existing landscape, in the attempt to create a countryside atmosphere around the hospital.

The overall hypothetical form of the hospital, was rectangular, the example at Stafford measures about 15750 square metres. It was arranged in a chequerboard layout to form the departments and was punctuated by a number of courtyards which allowed for natural light and ventilation, but within this arrangement were

individually standardised departments. The structure adopted was reinforced concrete in situ columns in a 15m x 15m grid, with partially prestressed posts tensioned in situ troughed concrete slabs on precast concrete T beams.

Concrete pads and ground beams have been used for the substructure. Four engineering cores have been located along the hospital street and were connected to the primary core at the end of the street. Services are distributed through the ceiling.

The ground floor illustrated Appendix A comprised the Main Entrance/Reception, Rehabilitation department, the ADC, Administration, Medical Records, X-Ray, Accidents and Emergency, HSDU, Obsetrics, Outpatients, Adult Acute Ward, Childrens Wards, Geriatric Wards, Pharmacy, Chemical Pathology Central Treatment and the Main Waiting Area. The first floor comprised the Kitchen/Dining Areas, Wards 3, 4 and 5, ITU, HSDU, Wards 6, 7, Physio-Administration, Theatres and the Post Graduate Centre.

The second floor, shown in Appendix A3 , comprised the Ante-Natal/Isolation Ward, the Isolation Ward, the Post Natal Wards, the Gynaecology Wards, the Special Care Baby Unit, the Computer Centre, the Delivery and GP unit and the Midwife School.

The client was the West Midlands Health Authority. The architect was the Building Design partnership led by J Chapman. The inception of the building programme was in

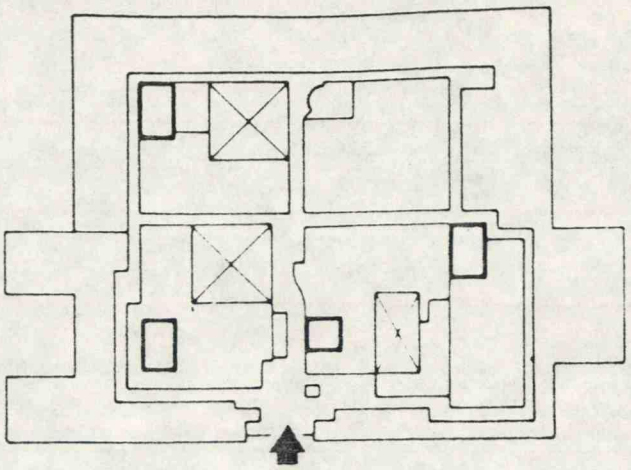

Fig 3.1 Greenwich Hospital
London.
DHSS Architects

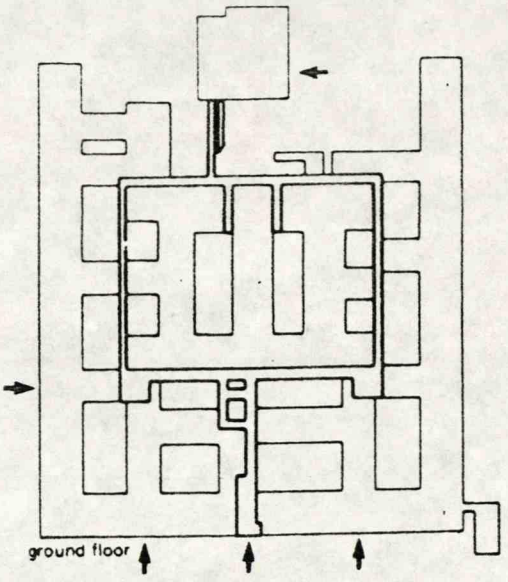

Fig 3.2 Best Buy Hospital
Bury St. Edmunds
DHSS and Hospital
Design Partnership

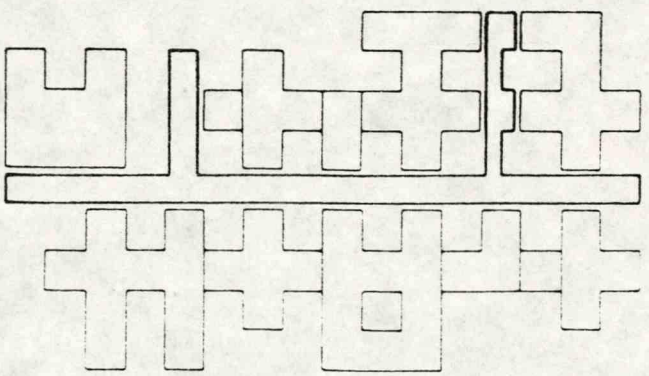

Fig 3.3 Harness Hospital
DHSS and Hospital
Design Partnership

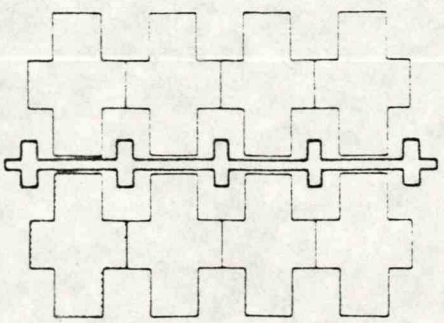

Fig 3.4 Nucleus Hospital
DHSS Architects

mid 1971 and actual building was started on site in 1977 and completed in 1982. It has 736 beds and occupies a site area of 12 hectares. The gross floor area is 26,635m2 and the total cost was £ 11,375,782(£ 63,982,970, 1989 prices) giving costs per square meters of floor area as £ 360.92 (£ 2.030.00, 1989 prices) and the cost per bed as £ 32.19 (£ 181.05, 1989 prices). The number of beds per gross floor area is 0.01. The area of the main reception is 492m2, the ratio to the total area of the hospitalis 0.017.(62)

There has been very little appraisal of the Harness hospitals. However there have been considerable studies of the system in theory.(63) In 1973, Cruickshank greatly encouraged the use of the Harness system and argued for a tighter and more rigid approach to hospital design in order to speed up the previous process which had been laboriously slow and tedious. (64)

3.2.4. Nucleus Hospitals

3.2.4.1 Introduction

The Nucleus system is the DHSS current system recommended for the design of large hospitals(65,66). Sir Phillip Powell,in 1984, argued that Nucleus hospitals were a natural evolution from the Harness and the Best Buy designs. It combines the principles of standardization of Harness with the attitudes to expenditure and economics adopted for the Best Buy system. 'It is similar to Harness in some aspects but is scaled down to suit the reduced capital investment programme'.(67) The system was born out of necessity due to financial constraints in the 1970's.

First in 1973/74 there was the oil

crisis, and the subsequent adverse financial situation brought about a radical revision of the DHSS spending programme. (68) In addition, there was a high level of inflation in the United Kingdom,(69) and one of the government's measures to counter this was to slow down the rate of expansion of public expenditure.(70) The implications for the provision of hospitals were considerable. Less resources were available nationally for new hospitals, and regional health authorities were unable to afford the capital and revenue for hospital developments. The policy which evolved was based on integrated planning of Health and Social Services resources, making maximum use of the existing building stock. However it was expected that in some locations new buildings would be necessary either because of their deficiencies in service or because old buildings had reached the end of their economic life. (71,72)

3.2.4.2 Design Objectives

The specific aims and objectives for the Nucleus system were, first, to produce designs for a first phase Nucleus hospital of about 300 beds with capability for growth and expansion up to 600-900 beds. (New policies may suggest a lower maximum figure of about 600 beds). Second, to provide sufficient but limited choice of content so that first phases might be tailored to different service planning priorities. Third, to seek the utmost economy in capital and running costs consistent with acceptable clinical and service standards. (73) Fourth, to keep the

works costs of the Nucleus Hospital below £ 6,000,000 price level and Capricode costs limits as at May 1975, (this equates to about £10,500,000 at January 1980 price levels.

Fifth, to achieve multi-use of space by good functional relationships and clustering departments; avoiding fixed specific equipment wherever possible; avoiding provision for exceptional demand, occurrences and procedures. Sixth, to limit provision in the first phase to that needed to sustain the service provided in that phase (based on the premise that the next phase was not expected for perhaps ten or more years) and finally, to cater for a reasonable range of sites, including sloping sites, to plan for two storeys preferably, but with the maximum of three, to make maximum use of natural light and ventilation, and to meet new fire regulations and means of escape requirements. (72,73)

3.2.4.3 Design Guides and Operational Policies

The policies and briefs on which the Nucleus designs have been based reflect these aims and objectives. However a major difference from the three previous types of hospital discussed is the amount and type of guidance produced for this system and its relationship with the operational policies. This guidance, which has been discussed in detail in chapter 2, is specific to Nucleus hospitals but acknowledgement is made to the existing hospital building notes and other research and studies which have been undertaken in the specific department/cluster either by the DHSS, MARU or other research or professional bodies.

Guidance for the Nucleus system or was contained in a series of publications which has been discussed in chapter 1, with each standardised department extensively detailed and incorporated with comprehensive operational policies. Details for the development of completely standard Nucleus district general hospitals based on the cruciform templates is contained in the DHSS publications. (76,77) In these publications it is recommended that a standard Nucleus hospital of about 300 beds and associated departments should comprise twelve of these cruciform templates, probably on two floors with a two storey service zone.

These departments are expected to be linked horizontally by a 3m wide hospital street and vertically by lifts and staircases.

3.2.4.4 Design Solutions

A) Whole Hospitals

Phasing and expansion can be achieved in the following ways, either by planned misuse of similar spaces e.g. bed areas, reception areas, etc., until a second phase is built (78) or by change of use of simple low cost accommodation, e.g. offices, or by straightforward addition of more accommodation in new templates.

As the requirements of the hospital grow, Nucleus hospitals can be expanded in a number of ways, depending on the site and the development planning strategy adopted. A number of these growth strategies have emerged with the development of Nucleus whole hospitals because of

the flexibility of the system in terms of layout.

These strategies are:

a) the linear pattern.

This arrangement has the advantage of being very compact and appropriate for narrow sites. The disadvantage is that it can only be expanded in one direction if an established entrance is not to be displaced. A good example of this linear pattern is the Newham District General Hospital. (79)

b) The L pattern with an Entrance Node.

This approach, like the previous example, is very compact and is achieved by establishing a main entrance between the clinical and the service blocks. In so doing, two linear patterns can be made to radiate from the hub or node of the entrance,The disadvantage of this approach is that all service traffic at ground floor level to clinical departments has to pass through the entrance node or hub, with obvious drawbacks. An example is the Maidstone District Hospital.(80)

c) L-Pattern with a Service Node

The third approach is a variation of the second approach with linear patterns radiating from a service node/hub rather than from an entrance node/hub, and with the main entrance and the accidents and emergency entrances on the same elevation, using a common external vehicular traffic route. The advantage of this design approach is that it allows two directions for expansion without disturbing the established phase and if the entrance is

placed along the outpatients department, traffic (pedestrian) can be directly admitted without passing through the main hospital street. (81)

d) the L-Pattern with Service and Entrance Nodes

This design strategy, allows for expansion in three directions from a central main entrance and service node/hub. A ramp can be introduced into the central core of the hospital as part of a co-ordinated materials handling and possibly pedestrian movement system.

A good example is the Bournemouth District General Hospital.(82)

e) Angular Pattern

There are exceptions to the linear and L patterns of Nucleus hospital development. This is best illustrated in the Nucleus hospital of St Marys Hospital on the Isle of Wight, designed by Ahrends, Burton and Korolorek. According to the architects, the advantages of this design approach are first, that the angular pattern reduces the perception of distance along the main hospital street, and second, the adoption of the intestitial space concept, similar to that adopted in the Greenwich hospital, was part of the energy - saving requirement for the hospital. This energy - saving concept which is achieved by the intestitial space concept runs in the ceiling and second floor level, has proved very effective (83). The architectural effect of the exaggeration of the fragmentation of the building into a set of discrete elements inherent in the Nucleus system has also been very successful especially in this

example. (84)

f) Other Patterns

Several other patterns have emerged over the years from using the cruciform templates. An example is the Wrexham Hospital where the a 'V' pattern has been adopted for the hospital street. (85)

3.2.4.5 Criticism of Nucleus hospitals

There are a number of advantages and disadvantages with the Nucleus System. In 1984, Powell and Moya, summarised the advantages of the Nucleus system as follows:-

i) it leaves the architect more time to develop the design in its broader aspects. He can consider how to relate the economic and aesthetic aspects.

ii) The two/three storey building with its cruciform-shaped templates is broken up into wings and courtyards of a modest scale in a visually pleasing manner so that only part of the building can be seen at a time.

iii) The cruciform template allows for a proportionate area of courtyards, admitting daylight into most parts of the building.

iv) The assembly of the templates allows unlimited choices for future linear growth in several directions radiating from a central hub such as Maidstone.

v) Upper floors do not necessarily coincide with the use and character of those below them. For example it is possible to have a ward or theatre above the administration or the main entrance.

vi) There is the potential to modify individual accommodation to suit the local needs.

vii) Speeding up of planning work and the earlier provision of hospitals is achieved,

viii) The time required for local consultation and detailed design is reduced, thus saving time. money and effort.

ix) Standard cruciform building designs make the best use of scarce resources, especially skilled planners of all disciplines who are in short supply in many health authorities,

x) Fees for design consultants are considerably reduced,

xi) Health Authorities can cope more easily with fluctuations in available capital, thus enabling those receiving funds under RAWP for re-allocation to achieve target dates which otherwise might have slipped.

xii) Reception and waiting areas are located close to the courtyards and so have natural light and possible access to the courtyards, most of which are landscaped and used during the warmer weather.

xiii) Location of the nurses' stations and reception areas in the central part of the templates reduces the distance to the ends of the departments.

xiv) Engineering services are made to run along the main spine, thus reducing costs.

xv) Staircases and lifts are located along the hospital street, allowing for easier identification.

xvi) Compartmentalisation of the departments allows for easy control during fire emergencies, and xvii) greater scope of choice and use of external materials is permitted. (86)

On the other hand the disadvantages of the Nucleus system are:-

i) it does not have the flexibility of Harness because all the departments conform to a standard cruciform template.

ii) It is often suitable for large unrestricted sites and

iii) in cases where Nucleus templates have been used as an extension to existing hospitals not built to Nucleus standards or templates, they often seem to have a good functional relationship with the other buildings.(87)

An initial study of literature and a study of plans and visits to some Nucleus hospitals, indicated a high level of conformity to the Nucleus Design Guidance. Some modifications and variations from the standard guidance were made within individual departments by the architects in order to satisfy the requirements of some individual hospitals. (88,89)

In the case studies selected, Newham and Maidstone, the changes were not restricted to individual departments only but were in the hospital street as well, especially at the main entrance. At the Newham hospital 11 out of the 19 clusters have been modified whereas at Maidstone 11 out of the 27 clusters have been modified. Most of these changes, with the exception of those affecting the Outpatients Departments cluster and the main entrance, do not have any direct effect on the design of the reception and waiting areas. These changes which affect the reception and waiting areas are discussed in detail in

Chapter 4. See Table 3.1

Although preliminary research showed that there has been close conformity to the design guidance, it also indicated that in a number of Nucleus hospitals, including the two case study hospitals, Newham and Maidstone, the degree of implementation of the Nucleus operational policies differs quite considerably from hospital to hospital. Among the reasons given for the variations are:

i) the lack of understanding of these policies by the administrative staff within the hospital,
ii) the unawareness of the existence of the policies to be implemented,
iii) the regular modification and or variations in the use of spaces within individual departments,
iv) the various changes and differences in these policies at the national, regional, area, district and hospital levels, and communication of these policies a these levels,
v) the lack of funds and its effects on staffing levels,
vi) a lack of transfer of knowledge of these policies to newly appointed staff, most staff seem to rely on experience rather than knowledge of the policies.

Others, for example, the reviews in the Architects Journal argue that, the Nucleus briefing and information system leads to good hospitals but poor architecture. (91)

STANDARD DEPARTMENTS AVAILABLE																																NO CURRENT STANDARD											
HOSPITAL / DEPARTMENT	REHABILITATION	PHARMACY	MAIN WAIT	STAFF CHANGE	O P D	MEDICAL RECORDS	LAB + PATHOLOGY	A & E	FRACTURE CLINIC	X-RAY	ADMINISTRATION	LIBRARY MEETING	ADULT ACUTE	THEATRES	J.M.S.	I.T.U.	A.D.C.	ON CALL	CENTRAL TREAT	CHILDRENS	C.D.S.	S.C.B.U.	ANTE NATAL	POST NATAL	OBSTETRICS	MATERNITY ADMIN	MATERNITY EDUC.	GERIATRIC	CORONARY CARE	POST GRAD M.S.	NEUROSURGERY	DERMATOLOGY	ISOLATION	PORTER & CHAPEL TEAM CLEANERS	DINING	RADIOGRAPHY	STERILISING UNIT	GYNAECOLOGY
1 Newham	•	•		•	•	•	76	16	16	22	22	22	•	•	•	54	54	54	54	76																			
2 Redhill	1	1	1	1	8	8	8	17	17	23	23	23	32	44	44	55	55	55	55																			
3 Croydon													33	28		56	56	56	56																			
4 West Cheshire	•	•	•	•				•	•	24	24	24	•	•	•	•	•	•	•	•																			
5 Macclesfield	•	•	9	•	9	9	•	•	•	•	•	•	•	•	•	•	•	•	•	•																			
6 Maidstone	•	•	•	•	10			•	•	25	25	25	13	•	•	•	•	•	•	•	•	•	71	•	10	10	10	73							10			
7 Bournemouth	2			84									36			57	57	57										74						84				
8 Antrim	3 4	87		85	5 11	11	11	18	18	28 61			36	47	47	58	58	58	58	61									81	88						87			
9 Nuneaton						27	77 78			27			37																									
10 Winchester	5			86				19	19	28			36	48		59	59	59	59	66														89			48	
11 Wrexham	6		6	6	12	12		•	•	29		29	•	49	49	60	60	60	60																			
12 Lister																					66	66	72	70	72													
13 Halton													82			61												75	82									
14 Altnagelvin			14		13 14			•	•	30			41	60	60	62	62	62	62										83			90	90					
15 Ipswich													63			63																					
16 Morriston	7							20	20				43	65		64															91							64
17 Bridgend			15				79 80	21	21	31	18 31		•	53	53	•	•			79	•	•	75	69														
* Nucleus Standard Dept.																					•																

NUCLEUS COMPARISON: combinations of departments occur within single templates; this schedule identifies the index numbers of the templates in which specific departments are located.

Table 3.1 Nucleus Guidance : Standard Departments Available

Over the years a study of a number of Nucleus projects have identified two critical requirements not provided for in the original design, namely, the need for some additional space for whole hospital functions in association with the standard templates, for example storage spaces, and the need for flexibility in the design system, particularly at the hospital street/standard template interface to accommodate varying space requirements generated by individual projects. To meet these requirements, the nucleus design system has been updated in a bulletin provided by the DHSS. (92)

3.3. Private Health Care

3.3.1 Background

According to Nightingale, private hospitals are an emotive subject and it is difficult to be very objective when these emotional and political feelings and expectations are as close to the surface as with private health care.(93)
The creation of the National Health Service deliberately contained a niche for private practice in a hard fought deal whereby senior consultants could treat private patients in `pay beds' within the National Health Service hospitals. `Pay beds,' date back to before the formation of the National Health Service and the nationalization of most hospitals (95%) in 1948. Insurance cover was provided for patients by provident associations to stay in these `pay beds' in the municipal and voluntary hospitals which were combined under the National Health Service Act.(94,95)
After 1948, the system continued, albeit on a reduced scale

initially, but has grown ever since with the gradual emergence of the post-war managerial and professional classes.(96) According to Nightingale, immediately after the war, most people in Britain were only too glad to accept health care offered freely by the then Labour government. (97)

Two landmarks in the growth of the private health care sector is evident in the literature. These landmarks were i) the launching by BUPA of its charitable chain of nursing homes, the Nuffield Nursing Homes Trust, in 1957. In addition to this 'Arab' money and steady growth in this sector led to substantial foreign investment in the British economy in the early seventies with the takeover of the Harley Street Clinic by the American Medical International, (AMI) and ii) the phasing out of pay beds, which ironically, by implementing the controversial policy of the Labour Governments Health Service Act, of 1976, (98) provided a tremendous boost to private health care. (99) Private health care therefore developed at a break neck speed with the legitimisation of private health care independent of the National Health Service.(100)

In 1982 there were about 4million people in UK covered by private health insurance, 3 million of whom subscribe to BUPA, of the remainder, 19% are help by the Private Patient Plan (PPP) and 6% by the Western Provident Association (WPA). Although BUPA estimated an overall growth of 19% per annum in 1984, it was evident from earlier figures to the contrary. For example BUPA estimates of a 30% growth in 1980 became 13% in 1981 and the forecast for 1982 was only

10%. (101)

Several arguments have been developed including those which suggest that the `profiteers,' could cause a slump in the `medical-business' since too much competition could lead to empty beds. They argue that the entire viability of private medicine depends upon intensive occupancy of expensive facilities. The evidence from the literature suggests that the more responsible private hospital developers assesses the demand on a carefully computed provision per capita of the population, based on the experience of likely markets for medical care assessed over several years. This demand can certainly fluctuate, depending on shortages or queues in the public sector, however, the likelihood of a saturation point cannot be ignored.(102)

3.3.2 Design Objectives

Unlike the NHS, the private sector must make a profit to `survive'. according to Hemmings. (103)
Although this argument is the gist of the political objection to private health care, it is the prime motivator of efficiency. ` This also explains why the private sector does not seek to provide comprehensive health care, but prefers on the other hand `short-stay, non acute surgery'. (104) A wider range of issues emerge from this argument by the developers to the problem of providing profitable hospitals, some of which ranges from blatant profiteering to a sincere desire to provide the paying patients with the best conditions possible within the financial constraints. Another of the developers principal preoccupation at the moment is to ensure the speedy implementation and

maximization of their profits before any political changes alters the current favourable climate for private health care. `The earlier the hospital is open, the sooner the subscribers can profit.' The implications of this approach to the design of `for-profit' hospitals, will involve extreme flexibility and good judgement by most designers. (105)

An interesting argument is this recent TV advert `BUPA takes nothing for profit - Not a penny in profit, (106) making it appear more philanthropic than the NHS, although the latter is seeking to make profit.

According to Nightingale, some experienced clients in this sector can offer some useful pointers as to how things can be successfully managed in this competitive market, and the lessons learnt from them are just as relevant to the public sector hospitals as to the private hospitals.(107)

3.3.3 Design Guidance

There are several methods employed by these private health sector developers to achieve their objectives. Two of these the BHL and the AMI(Europe) emerge as examples of Anglo-American ventures responding sensitively to the problem of achieving the balance between patient care and profit.. The BHL for example have particularly evolved a useful briefing philosophy which allows commercial objectives to be achieved alongside the continual refinement of the brief. Most of its hospitals have similar functional contents which are based on what is regarded as the ideal private hospital which concentrates on elective

surgery. The major selling point of private hospitals are their maintenance of maximum flexibility for a variety of admissions catered for by the high proportion of single rooms.(108) Most of these hospitals contain 40 to 56 patient beds including two four-bed bays and two mother and child rooms. The remainder of the accommodation are often taken by single rooms with en-suite bathrooms and wc's. The four bed bays are the only areas which are overlooked by the nurses' station so that they can serve one of the three functions depending on demand: short stay ward for the some operations, childrens ward or intensive care wards. (109)

It has been argued that the most highly serviced and complex areas of any hospital is usually the operating theatres. The agreement of the detailed requirements is often a major stumbling block in trying to achieve a rapid programme.(110) BHL's answer to this is to use a popular operating theatre package similar to that developed by Rodgers (111) with a clearly defined, standardised brief. Because one of the two competing companies are always used for this element, teething problems have been ironed out and these theatres can be programmed into the building at an early stage during the construction. Other specific requirements for specific projects such as a laminar flow ventilation systems for orthopaedic surgery can be added to the standard package.

BHL claims to have standard DHSS briefing material and adjusted it to its own needs, cutting out the bureaucracy. Its computerized data sheets, according to Nightingale,

much easier to use than most equivalent DHSS material. (112) According to Goodman, describing the BUPA Hospital in Harpenden, 'once past the post modernistish [sic] entrance hall, ... we are back in the world of the NHS spatial and environmental standards.' (113)

In most private hospitals attention to detail achieved by means of interior design becomes a prime criterion to attract patients to spend money while staying there.(114) Since the most important space in the private hospital in this respect is the bedroom with its en-suite bathroom, a lot of research has been undertaken in order to refine the bedroom/bathroom design to achieve the best possible balance between the medical needs and a 'domestic and welcoming atmosphere'.(115) These studies involved the study of every functional element in this space including items such as the optimum position, size and height of the television, etc. (116)

Although there are examples of this commitment to detail in most NHS hospitals,(eg. Nucleus Wards at Pinderfields.) the BHL exercise has the advantage of being very quick and immediately relevant to current work. (117)

3.3.4 Design Solutions

3.3.4.1 Description of the BUPA Hospital in Harpenden

Unlike the NHS hospitals described, the BUPA hospital in Harpenden is a private hospital, very small compared in physical size and number of beds, more the size of a cottage hospital. A case study of a private hospital and a public hospital of similar size revealed that although the private hospital costed three times that of the public

hospital, it took one third of he time to build due to the adoption of the management fee contract adopted.(118)

The Harpenden Hospital is located on an elevated site although the well landscaped surroundings appear to mask this elevation. Several reasons were given by the management of BUPA for locating this hospital in this. Among the reasons were:

i) the affluent nature of this part of Hertfordshire and

ii) it is within the catchment area of three health authorities, namely, Luton/Dunstable, St. Albans and Welwyn Garden City. (119)

The hospital is a two storey structure which has a seemingly domestic rather than an institutional atmosphere. This is achieved by the materials selected, which include the brick walls, the rolled brown roof tiles, the red stained timber surrounds which are enhanced by the well landscaped site.

An early decision was made by the design team to place the operating theatre accommodation over the diagnostic accommodation, as both required deep plan spaces. The use of a steel frame allowed the contractors to make the zone weathertight at an early date to commence the time consuming process of equipping the medical areas. Economy of stair locations suggested the single-bed ward accommodation be disposed in two wings of two floors each, with the possible option of a third wing if ever required. Several options were tested to allow bedrooms the best possible views over the northern aspect before the final decision was made to orientate the public rooms around a

courtyard with the ward wings 'pinwheeling' from this fulcrum.

The fall of the site allowed the greater floor heights to be accommodated at the south end of the site and yet maintain a constant first floor level to ease the transport of trolleys and theatre patients. The grater plan depth of the theatre block allowed the plant rooms to be located within the roof structure above, and this produced a constant ridge line to the pitched roof. (120)

A notable aspect of the briefing stage is that parallel with the development of the plan form, the architects and interior designers were investigating an idealized single-bed ward with an integral bathroom, and a full scale mock - up of this allowed early assessment of services co-ordination and decoration. (121) The ward windows were developed as seating bays, although economy restricted the use of these to the first floor.

The interiors have been designed to the standards of a quality hotel with an emphasis on warm colours and familiar timber joinery. Rich geometric fabrics have been chosen by the interior designers and these are augmented by the low domestic lighting to convey an impression of domestic calm and reassurance. The major public spaces, the reception area, the coffee lounge, and the restaurant are planned as a sequence of offset spaces which link front entrance through the courtyard towards the new lake on the south side.

This project showed that through the good interaction of an experienced project team working an parallel on briefing, design, production and construction aspects, a

building which is rich in design terms, comfortable to inhabit and complete at an impressive speed is achievable.(122) The architect was the Percy Thomas Partnership. The inception of the building programme was in April 1981 and actual building was started on site in September 1981 and completed in January 1983 thirteen months later. It has 53 beds and occupies a site area of 1.9 hectares. The gross floor area is 4177 square meters and the total cost was £ 2,837,000 (£ 4,681,050,1989 price levels) giving costs per square meters of floor area as £ 615.57 (£ 1015.69,1989 price levels) and the cost per bed as £ 45,108.00. (£ 74,428.20, 1989 price levels) The number of beds per gross floor area is 0.01. The area of the main reception is 70 square meters, giving a ratio to the total of the hospital area of 0.017.(123)

3.5.5 Criticism of the Harpenden Hospital/Other Private Hospitals

Very little criticism is often levelled against the design of private hospitals. The advantages according to Williams on the BUPA hospital in Harpenden is that the size itself leads to a very domestic atmosphere, and the approach to the Harpenden apostles is more of a domestic than an institution scale and for many people who are sick or under stress, this domestic scale will be comforting. (124)

3.6 Summary and Conclusions

The four main hospital types developed by the DHSS, since 1960, have all been based to varying extents on the officially produced design guides developed by the DHSS, however the design guides produced for the Nucleus hospitals is much

more comprehensive and detailed than that available for the earlier types of hospitals. The Nucleus guides contained specific standards in terms of form, spaces, sizes, equipment, fittings and facilities to be provided, according to Powell, ` Even to the last thermometer that must be put in '.(125) In addition although the Nucleus guides incorporated detailed whole and departmental operational policies, and indicates the need to refer to the regional, area and district operational policies for hospitals as well. Compared with this guidance for Nucleus hospitals that provided for the Greenwich hospitals in the form of Hospital Building Notes, Technical Memoranda for example, were much less comprehensive, specific standards for room sizes in all cases or details of furniture and fittings were limited. The size of spaces were to be calculated, for example, by taking into account a number of variables, including the number of users or the number of consulting rooms for example. Standards for equipment and fittings were less clearly defined, and the positioning of facilities and fittings were left to the discretion of the individual designer. In the case of the Best Buy hospitals, the designers were not bound to use the existing guidance for the Greenwich and the other previous hospitals existed, but rather they were asked to seek the most forward-looking design solutions.

The strict adherence to the Nucleus guidance therefore allows very little degree of freedom for the architect whereas the Hospital Building Notes allowed for areas

where the designer could explore various possibilities. The exploration of these other possibilities are evident especially in the design of reception and waiting areas where the designers are not bound by any strict adherence to the guidance or medical requirements There has there fore been very little adherence to the design guides requirements of reception and waiting areas in most hospitals especially Nucleus hospitals.

In the private health care, several other variables are considered in addition to the building in order to provide a friendly and welcoming atmosphere to the patients. These include the availability of parking space, the appropriateness of signposting or the lack of them, the attitude of the receptionist when the patient enter the hospital and the length of time it take the patient to see a consultant. Coupled with this is the hotel image that the reception and the corridors are made to appear.

Several arguments now emerge as the trend of future NHS hospitals in view of the current development. Private Medicine in hospitals in hospitals is likely to be encouraged so as to reduce the time the consultants have to travel between hospitals. the management fee contract approach and the fast track development is going to be adopted or has been adopted for most hospitals in the NHS. The image of the traditional reception and waiting area within the NHS hospitals is also changing with the inclusion of income generating activities at all levels within them. Finally commercial sponsorship of departments

and wards are being considered by some Health Authorities such as Derbyshire so that eventually it is possible to have some wards named after high street/commercial enterprises.

However it has been suggested by Marsden-Smedley that it will not be fair to compare the building of private hospitals with NHS hospitals (126)

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CHAPTER FOUR

ASSESSMENT OF THE METHODS USED IN THE DESIGN OF HOSPITAL MAIN RECEPTION AND WAITING AREAS

4.1 Introduction

Having discussed design guidance and its impact on the development of the four generic forms of hospitals in Britain in Chapter 3, the main aims of this chapter are i) to assess the design guides provided for hospital main reception and waiting areas, focusing on those for Nucleus hospitals main reception and waiting areas, ii) to identify the design variables for main reception and waiting areas in general, and to develop a system of measurements for the three design variables selected.

The reason for identifying the design variables is to further refine them in order that they can be put in a more measurable context. As argued in the previous two chapters, there has been a sequential development of the four main hospital types and design guides in the United Kingdom, culminating in the development of the Nucleus hospital and the associated guidance. The development of the design for reception and waiting areas it can be argued, follow a similar pattern. Since design guidance affects design, and subsequently design variables of the main reception and waiting areas, this chapter therefore discusses and assesses design guidance for hospital reception and waiting areas, namely, Hospital Building Note 12, Health Building Note 12 (Draft), Scottish Home Building Note 6 and Nucleus Cluster No 1 - The Main Entrance Cluster, as well as other publications which might have had an impact on the design of main reception and waiting areas.

4.1 The Main Reception and Waiting Areas - Definitions

No specific definition has been given for the main reception and waiting area in the literature. The main reception and waiting areas in hospitals are often referred to as the eye,(1) the shop window (2) or the main entrance point (3) of the hospital. As Redstone argues, 'it tell a lot about how the hospital thinks about its patients.'(4) The assumption by most of the users is that, this area is often referred to as the main outpatients entrance,(5) or the main entrance. However in hospitals where other entrances are located on the same facade, such definitions are often confusing to patients and visitors.

4.2 Design Guides for Main Reception and Waiting Areas

Until the publication of the Draft Health Building Note 12, very little design guidance was written specifically for this area either in the form of specific standards and or operational policies. The early Hospital Building Note 12 which dealt with the outpatients department considered these areas as an integral part of the requirements for the calculations for the total waiting space required in the outpatients department. No specific sizes were provided as quoted from HBN 12 are,

> "a) the waiting space should be planned with the entrance and reception counters.
> b) sanitary facilities; lavatory accommodation for both male and female patients should be easily accessible.
> c) snack and tea bar; a tea bar should be provided adjoining this area
> d) subwaiting space; subsidiary or sub waiting spaces should normally be provided outside groups of consulting rooms and almoners office etc. A counter or table should be provided

outside groups of consulting rooms where patients notes can be assembled and messages for clinics received. It is usually convenient if this is planned in the subwaiting areas.

Area required; It is suggested that the total number of patients and their companions for whom waiting space will be required at one time will be about half the total estimated attendance for patients for the maximum morning or afternoon session at the department. An area of 15 square feet per person is a reasonable allowance and this should be divided into the main and subwaiting space according to the planning considerations. This recommended area is for actual waiting space and a further allowance should be made in the main waiting area or tea bar.
The general circulation space is not included in this area."

This guidance also did not consider user requirements for the main reception and waiting area in any detail. These requirements had to be extracted from another design guide the Scottish Home and Health Department Guidance No 6.(6) However this anomaly seem to have been rectified in the Draft Health Building Notes which are replacing the original Hospital Building Notes. In them an attempt has been made to state the user and functional requirements very clearly, as well as specific space standards. In spite of the lack of definition and guidance, the origins of the design of this area can be traced from the hospital type often referred to as the traditional hospital (7) as shown in Figure 4.1.

As illustrated in figure 4.1, the main entrance and main reception and waiting area with consulting rooms and their respective subwaiting areas are arranged around the main reception and waiting area. One side of the reception desk overlooks the entrance and the other the main waiting

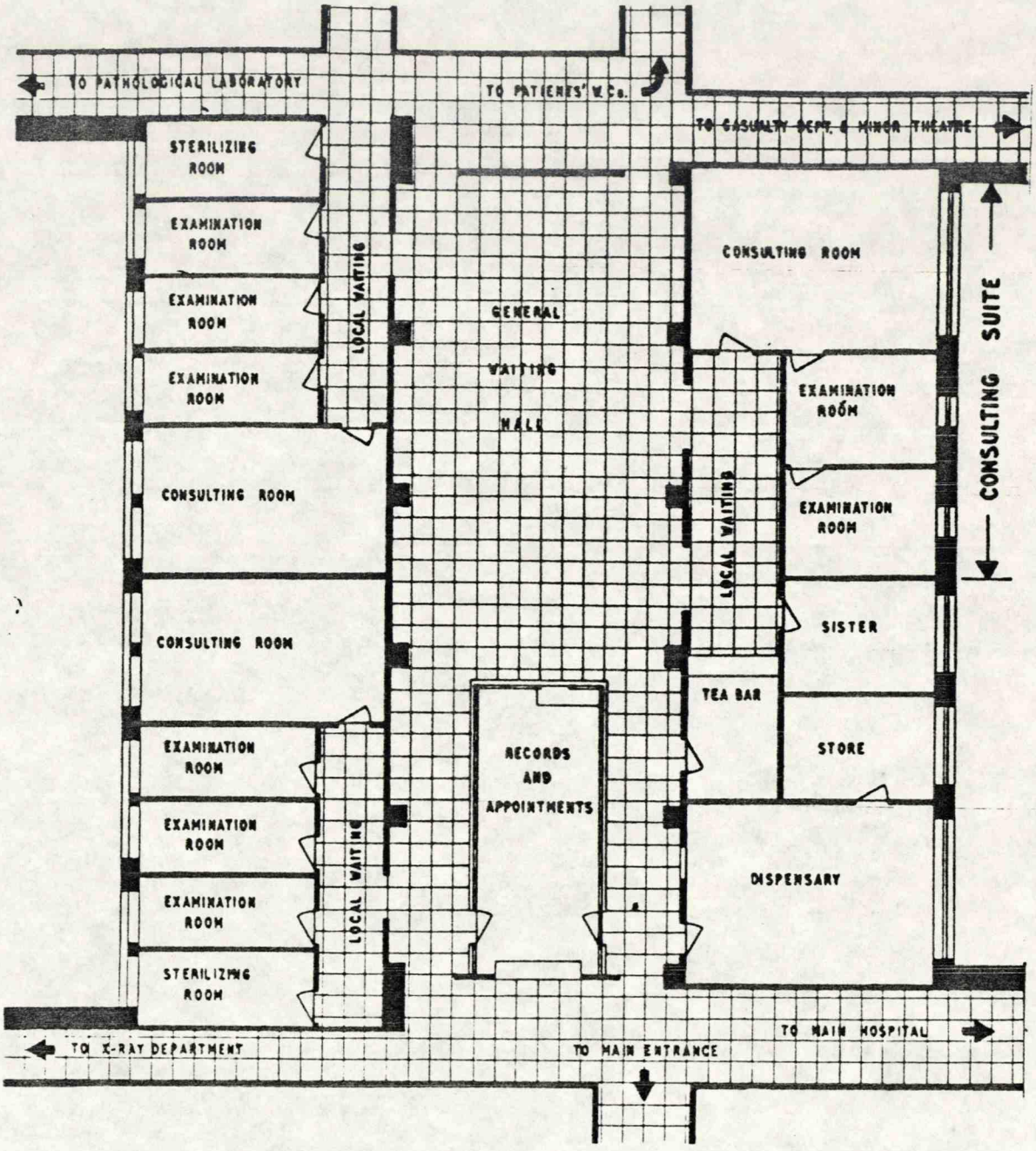

Figure 4.1 The Traditional Type of Layout

area. This reception desk also serves for records storage and admissions and there is also a tea bar. What is obviously missing however are sanitary facilities which in most cases are located quite a distance from this area since most of these type of reception and waiting area design were associated with the Nightingale Hospitals. This approach is often referred to as the centralized approach, appears to be the basis upon which the first design guide, HBN12, was developed. The spatial requirements in this guidance were as follows: a waiting area, a reception desk, a tea bar, a waiting area for transport and toilet facilities.(8) In this guidance, with the exception of the reception desk where some standards were provided, no amenities had any specific standards in terms of specific sizes upon which these requirements could be based. Very little information was provided upon which the specific sizes either of the whole reception and waiting area or specific areas within the reception and waiting area could be calculated. The spatial requirements thus provided were imaginative or pure guesswork and had no empirical basis. Current studies by the DHSS are being undertaken to test the effectiveness of this centralized approach to that of the decentralised approach in the design of reception and waiting areas. (9) The very few studies, however, which have been undertaken in this area confirms that the design guidance recommendations are 'totally inadequate' ....., in some cases physical sizes of more than twice the design guidance recommendations will be required'. (10)

In order to understand the design of these areas in detail, some existing examples will be reviewed.

4.2.1 Design Guidance for Nucleus Hospitals

No separate guidance has been provided for the design of reception and waiting areas in the Nucleus design guides. The design guides which exists is contained as an integral part of the template referred to in the Green Pack as the Main Entrance - 'cluster No 1'. Amenities which are to be provided comprise some of those associated with reception and waiting areas identified in the earlier guides especially HBN 12 as Figure 4.2 indicates. The planning requirements in this guidance states that, 'it is assumed that the Main Entrance - Cluster No 1, will be placed directly opposite the Outpatients Department - Cluster No 2,' as Figure 4.3 illustrates. The amenities which have been provided in Cluster No 1 are a combined waiting area/snack bar with an adjoining shop, sanitary facilities, telephone facilities. Those in Cluster No 2 are the Head Porters office, and porters room, sanitary facilities, reception office. The amenities are to be provided on the hospital street, the entrance lobby, the trolley area, the wheelchair area, a subwaiting area, reception and enquiries desk, mother and babies room.

However this planning requirement has not always been met in most of the existing Nucleus hospitals visited and that substantial modifications have been made to the guidance requirements in order that the basic user requirements and individual projects would be satisfied. See Fig. 4.4 (Redhill), Fig. 4.5 (Bridgend) Fig. 4.6 (Macclesfield).

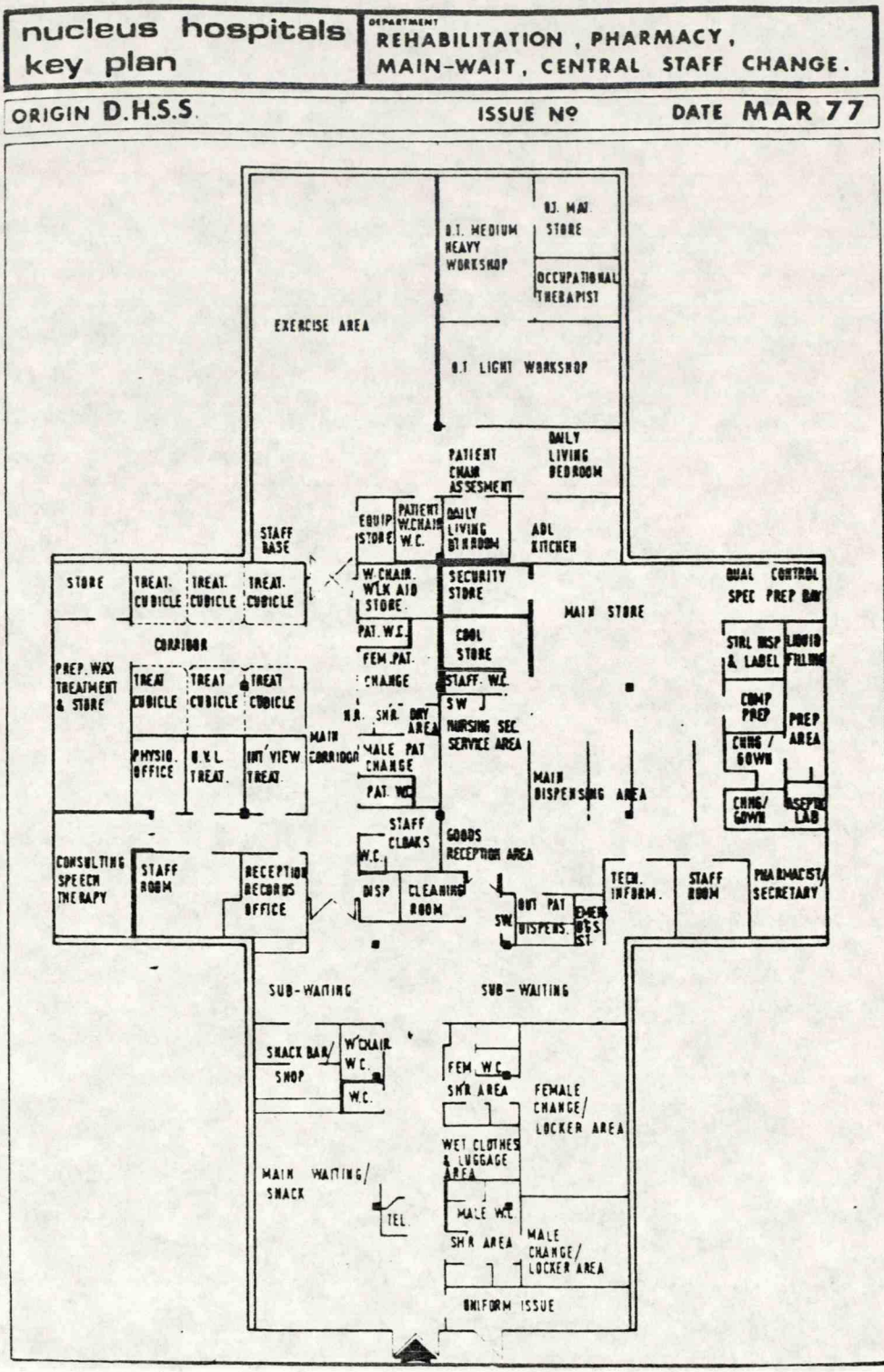

Figure 4.2 . Nucleus Guidance : Cluster No. 1

4.2.2 Criticism of Design Guidance for Reception and Waiting Areas

The Nucleus guidance attempts to provide a standardised format but none of the hospitals built so far conform entirely to this guidance. The Hospital Building Notes which the Nucleus guidance refers to in the appendices, does not do much justice to this provision either, since they are not specific in any way. For example, one of the user requirements stated in the guidance, is that, 'the reception desk should be easily visible'.(11) What is perceived to be easily visible by the designer might not necessarily be perceived to be easily visible by the users especially when there are other visual elements which diffuse this focal point. The space organization also has to conform to the necessary fire regulations which also creates problems with the alignment of the entrance lobby doors to the main street.

In the context of congestion in a hospital main reception area, the study of the nature of the relationship between the users, the reception and waiting area and operational policy, space is also very important.

4.2.2.1 Effect of Operational Policy on the Design and Use of Main Reception and Waiting Areas

Operational policy, as defined and described in Chapter 2, has a significant impact on the various categories of users within a hospital reception and waiting area. Since the operational policies differ from hospital to hospital, only

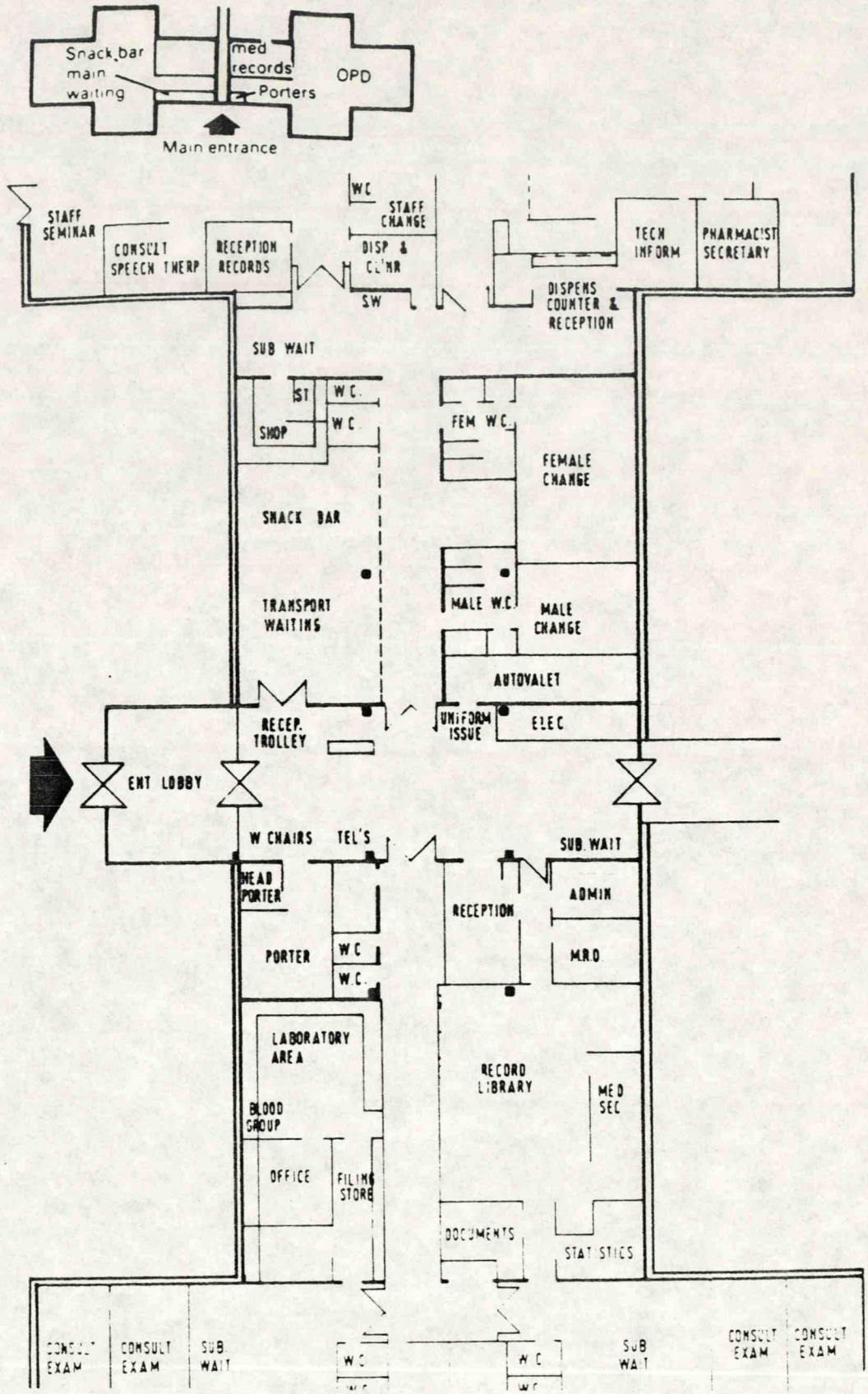

Figure 4.3 . Nucleus Guidance : Cluster No. 1 and No. 2

the main operational policies which appear to be similar to the hospitals visited will be evaluated. Two forms of operational policies were identified in this study namely

i) hospital operational policy related to the outpatients and staff

ii) those related to commercial activities ran either by ;

the voluntary organizations who work within the hospital such as shop, restaurants etc., or by private and commercial entrepreneurs - bank, florists, hairdressers, newsagents etc.

The relationships between these two forms of operational policies also play an important role in the provision a non medical atmosphere within hospital.(12) For example, the time the outpatients departments or the main entrance door is opened, the length of time the reception counter is manned and the type of staff who man the reception counter and whether they are trained or untrained.(13) The same factors also relate to the other amenities such as the shop and restaurant, bank

Most of these spaces are shared by all or some of the categories of the user groups; bottlenecks do occur and the potential bottlenecks were observed and noted.

A detailed study of the relationship between the users and the reception and waiting areas within the framework of congestion, or the degree of crowdiness and availability of amenities, distances between the main reception area and the other departmental reception areas and size was undertaken.

There is ample evidence from literature that the arrangement of spaces within an interior has an effect on the users who use them (14)

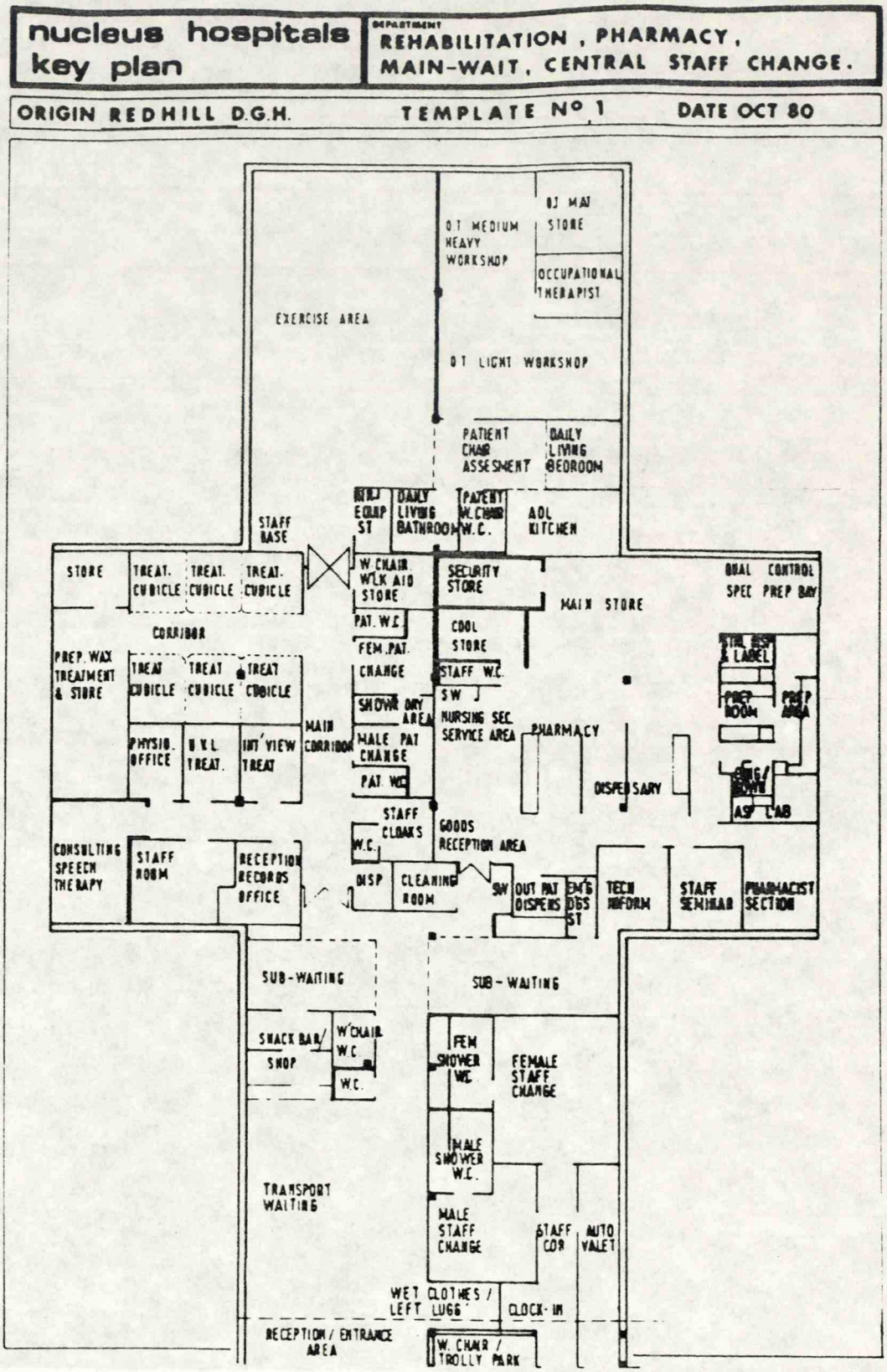

Figure 4.4. Redhill District General Hospital : Cluster No. 1

In terms of traffic flow there are two types of users which can be identified in relationship to the design of a building. These types are habitual and exploratory (15) The exploratory, according to Betchel, is where the person is not familiar within the environment or building. In the case of hospital reception and waiting areas, these are to patients and visitors who are using the building for the first time. In such a situation, the building should provide the necessary visual information. This information, he argues, is as important for those who are familiar with the design of the building. In the habitual circumstances, the building acts as a perceptual reminder of space.(16)

Since the hospital is a complex building, the first time user or even habitual users if confused, anxious, disorientated, dehumanised will invariably encounter a whole range of problems.(17) In such a situation user movement patterns might be affected, resulting in a longer time spent within the reception and waiting areas mixing with other users and thus worsening congestion and crowdiness. Several remedial theories have been promulgated in relationship to this concept of worsening congestion and crowdiness. Two theories, the density intensity (18) and queuing (19) theories could be examined to assess how they relate to these concepts within the context of reception and waiting area. The queuing theory 'although laudable',(20) was not applicable in this case, the Density Intensity Theory would be examined in the latter arguments.

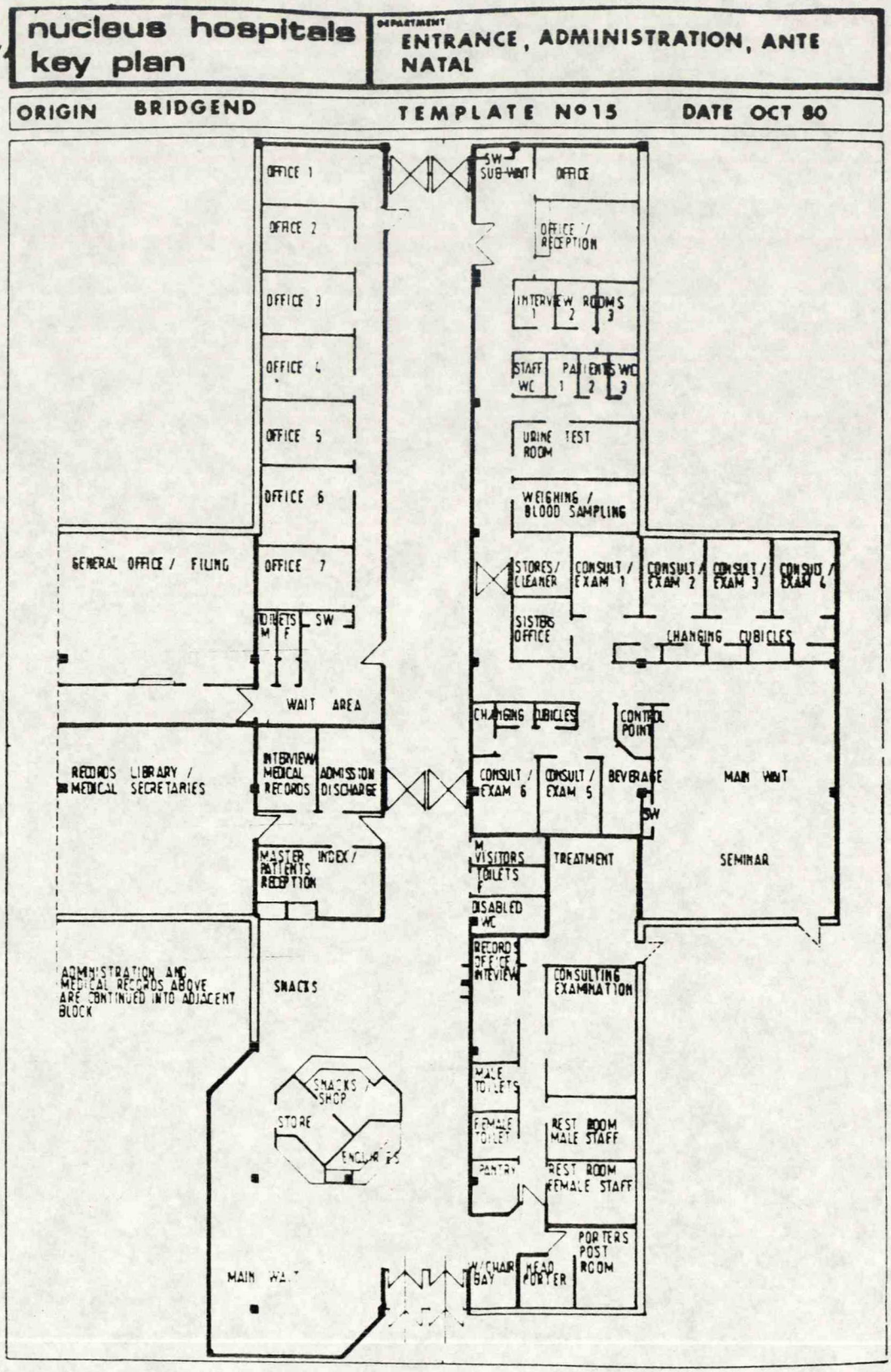

Figure 4.5. Bridgend District General Hospital :
Cluster No. 1

The actual causes of congestion in these areas will now be discussed.

A) Congestions and the Users

There are many functional spaces in main hospital reception and waiting areas. Although these spaces are necessary for people waiting, they provide for a mix between office activities, socialization and relaxation. In terms of the office activities - reception counter etc.- and in terms of relaxation and socialization - restaurants, banks and shops.

B) Who waits

In terms of waiting there are three categories of patients; i) those waiting for transport to go home, ii) those waiting to be moved to the departments, iii) those people waiting for a snack or having a snack while they are attending a clinic especially when the clinic is running late. The others in the last group will mingle with visitors, salesmen, and those waiting to be interviewed for jobs at the hospital.

There are various effects of the assorted categories of users on the hospital reception area which is discussed below.

4.2.2.2 Effects of the Various Categories of Users on the Hospital Reception Area.

The users of the hospital reception area which will be considered here are outpatients, and the staff who work there.

- the effect of the outpatients

- the effect of staff who work there

- the effect of other users

Although there are present of other users such as inpatients, visitors and other members of staff in the main reception and waiting area, it is difficult to establish their real numbers, their movements and activities within the main reception and waiting area. These have not been studied, theoretically or empirically. From the interviews and questionnaires and in the literature, it seems that the assumption of two visitors for each patient in the guidance is not adequate as a basis for any calculation.

4.2.2.3 The Users and Space Arrangement in Hospital Main Reception and Waiting Area.

It is difficult to establish the criteria by which spaces in hospital main reception and waiting area are allocated. No study has been made into where and how and the specific sizes of space are allocated. The design of reception and waiting areas therefore must be attributed to the discretion and experience of the individual designer.

4.3 Hospital Reception and Waiting Areas- Existing Examples

The main criteria in the DHSS first attempt at main reception and waiting area design at the Greenwich District General Hospital, discussed in Chapter 3, was to provide an area with a 'non-institutional atmosphere which was to be the focal point not only for the users

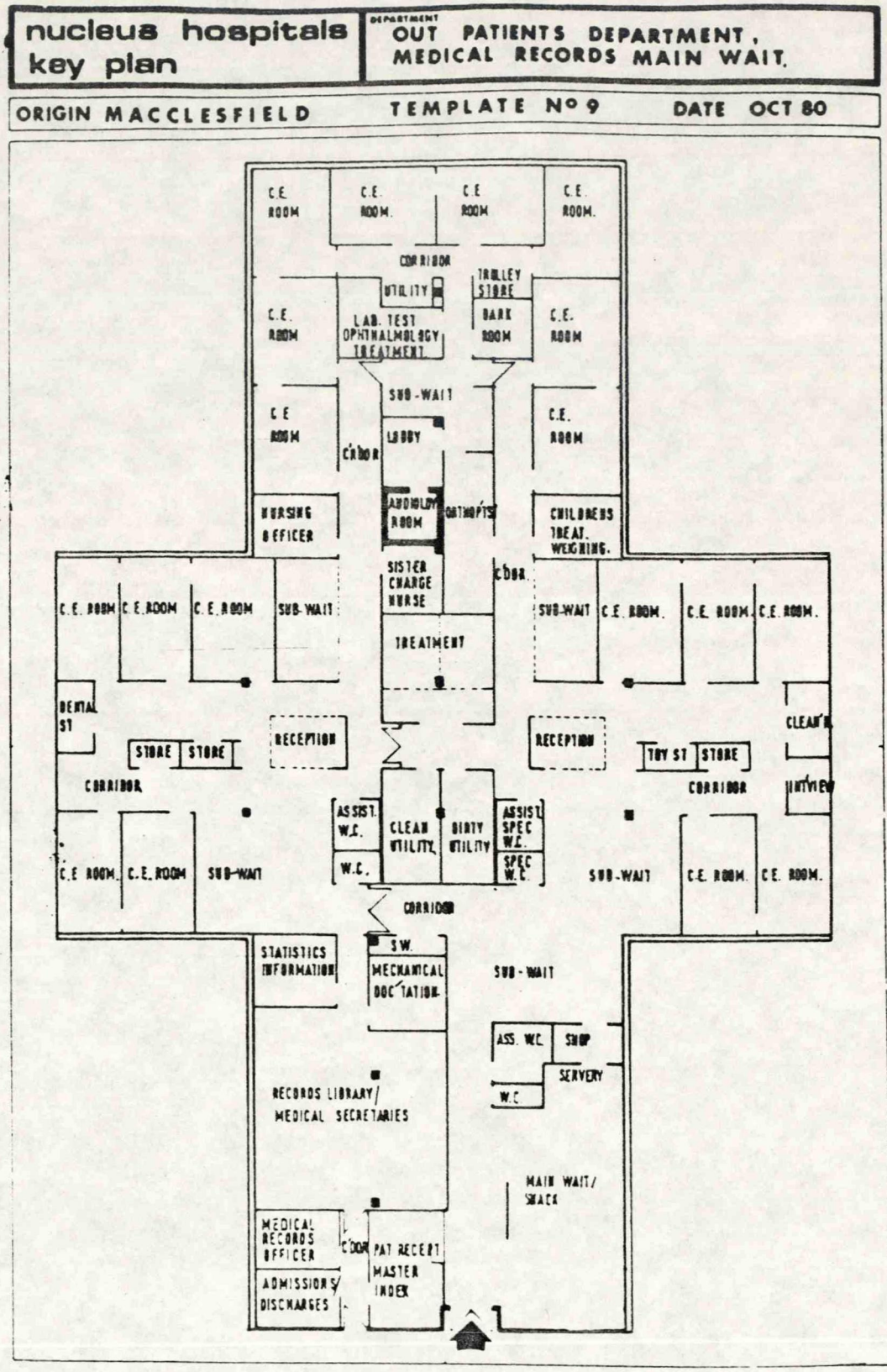

Figure 4.6 Macclesfield District general Hospital :
Cluster No. 1

of the hospital but also for the community for which it served'. It was to be for example, 'an area where whenever possible any member of the community could decide to go into the hospital main reception and waiting area to have a cup of tea or a good meal at the restaurant, ... a hotel reception and waiting area providing an image of a hotel to the hospital main entrance.'(21)

This concept of the users including members of the community which the hospital served, seems to agree with Rubin et al., who argued that the requirements for such areas should not be restricted only to those who actually use the hospital building, but also include casual users, tourists and passers by. (22)

The Greenwich hospital seemed to have achieved this objective initially. The design created a 'multipurpose atmosphere', where the medical needs of the outpatients such as the reception point,the pharmacy and the outpatients reception were arranged in a manner such that they shared a common concourse with other non-medical facilities. The latter included the shop, the cafeteria and other administrative activities such as the social services department. This concourse also contained the enquiries desk (which was to act as a filter, especially for first time visitors and those requiring direction) and an ornamental pond (which was intended to help the patient relax). These were located on the main concourse and were directly linked to the main core of the building, which was referred to as the visitors waiting

area. However, over the years, owing to gradual government cutbacks, increased caseloads, changes in operational policies, and modern technology, these spaces within the main reception and waiting area have been modified or relocated for other purposes.

In addition these modifications were done according to the hospital staff interviewed, ' to improve the overall image of the hospitals.(23)

Later examples, especially the Best Buy hospital at Bury St. Edmunds had a similar approach although the size was greatly reduced. The difference between the Best Buy and the Greenwich hospital is that in addition the space allocated for the main reception and waiting area, Best Buy hospitals, either Mark 1 or Mark 2, had the lifts and staircases separated from the main reception and waiting area They did not have a common concourse as it was in the case of the Greenwich hospital. In fact the shop and the bank are located behind the restaurant and snack bar, which does not allow them to be easily identifiable from the entrance by those who have no idea that the area exists in the hospital, and do not intend to use that section of the main reception and waiting area.

The hospitals developed with the 'systems and standards' approach, the Harness and Nucleus, had a slightly different style to the design of their main reception and waiting areas. In the Harness hospital at Stafford, for example, although it had an approach similar to the Greenwich and Best Buy hospitals in terms of the provision of amenities, other areas within it also had amenities similar to those in the main reception and waiting area.

For example, in addition to the shop in the main reception and waiting area, the Women's Royal Volunteer Service (WRVS) has a 'table top shop' within the main outpatients department. This ensures that the majority of outpatient users do not have to come to the main reception and waiting area while waiting in the outpatients department in order to obtain refreshment or snack. The facilities in the main reception and waiting area caters only for waiting visitors or patients awaiting transport. This approach ensures that the likelihood of a patient losing his turn in the queue is greatly reduced. The reception and waiting areas in the Nucleus hospitals, although on a smaller scale, have these requirements for reception and waiting areas contained in two clusters, cluster No 1;- The Main Entrance Cluster, (24) and cluster No 2;- The Outpatients Cluster.(25) These two clusters are expected to be placed opposite each other in order to provide all the facilities which are required for the space to be defined as the main reception and waiting area, as in the examples of the other four generic types of hospitals. Classification of reception and waiting areas is therefore extremely difficult. An attempt will be made in this study to provide a classification for this area for further future study.

4.3.1 Main Reception and Waiting Areas Classification

No classification exists in the literature for main reception and waiting areas. The classification presented in this study can be claimed to be the first

attempt. This classification is related to i) the layout, ii) the amenities provided, iii) the disposition of the amenities, iv) the location of the main reception and waiting area (the extent of its integration within the whole hospital), iv) the communication and circulation pattern within it v) the length of the communication routes with other departments within the hospital.

This classification has been culled from literature (26) and the study of the plans of several of these hospitals. During the visits to some of these hospitals the lack of understanding of the actual user requirements was highlighted. In order to comprehend these requirements, the users and the activity types within the main reception and waiting areas, and to draw up a list of actual user requirements in terms of amenities, the hospitals studied initially, which showed substantial differences, formed the basis from which the comprehensive list of amenities were drawn up.

These amenities can be classified into five namely;

a) the main reception and waiting area; reception counter(s) for reception and transport, creche /children play area, waiting area, sanitary facilities, pram and wheelchair area.

b) the portering service; the head porters office, the porters room, and sanitary facilities.

c) the commercial services; shops, restaurant snack bar, bank newsagent, florist chemist/dispensary, post office, grocery/food shop, optician hairdressers, etc.

d) other outpatient department services; outpatients

reception, pharmacy reception, admissions office, medical records office etc.

e) other; meditation room, exhibition room chapel, library etc.

Providing for all these amenities in a hospital though achievable, requires a considerable amount of space. However the space requirements can be minimized through understanding the type of user and their respective activities within this area as discussed in Section 4.3.2

4.3.1.2 Main Reception and Waiting Areas Classification - Management/Organization

This classification has been culled from the literature and a study of the available plans of several hospital. The classification involves the type of management/organization of the main reception and waiting area. Three groups can be identified. These are the reception and waiting areas which are entirely managed within the NHS, the wholly privately manages reception and waiting areas, and a combination of the NHS and private enterprise. One of the hospitals which fall into this category is the Adenbrookes hospital in Cambridge.

4.3.2 The Users - Identification and Classification of User Groups in the Main Reception and Waiting Areas

The user groups within the main reception and waiting areas are as varied as the activities which happen within them. The main groups identified, primarily from detailed observation of the selected hospitals in use and through interviews were i) patients in patients and outpatients ii) visitors, who included salesmen, candidates attending

interviews, patients, companions, friends or relatives, newspapermen and postmen etc. iii) staff - medical staff (nurses doctors and technicians) and non medical staff (administrative, portering, service and supply, reception and ambulancepersons). The ambulancepersons, however, are not directly employed by the hospital.

Two groups, the outpatients and the non-medical staff who work directly in the main reception and waiting area, were chosen for this study. Emphasis however will be on the outpatients. The reasons for the selection are that i) they are the main users of the main reception and waiting area, (27, 28, 29 30) and

ii) that the guidance for the main reception and waiting areas is surmised in the guidance as an integral part of the requirements for the overall calculations for the sub reception/subwaiting areas in the outpatients department. (31)

The reason for the selection of non-medical personnel rather than the medical personnel is because they have the direct and initial contact with the outpatients. (32) According to Redstone, the reception and waiting areas are the areas where the community and the hospital meet. He argues that 'they say a great deal about what the hospital thinks about its patients and visitors'.(33) The classification of the outpatients is as below.

4.3.2.1 <u>Classification of Outpatients</u>

In general, outpatients include all patients who have either been referred by their general practitioners for

specialist treatment within the General Hospital and also those who are attending a follow up to consultation or treatment. They can be classified as follows.

4.3.2.2 <u>According to the Clinic which they are Attending</u>

Each of the clinics associated with the outpatients as indicated in the design guidance (34) have particular patient characteristics and spatial requirements.

4.3.2.3 <u>According to Disability</u>

Certain levels of disability can be associated with the type of clinic the outpatient is attending. For example, day patients mostly the elderly, are most likely to be wheelchair bound.

4.3.2.4 <u>According to Familiarity with the Hospital</u>

This classification depends upon outpatient familiarity with the hospital. It allows for the identification of patients requiring assistance and directions, especially during their first visit when it appears that the majority, out of anxiety, are unable to understand the directions given, or read the signs or generally require some form of assurance from the staff. (35) The psychological well being of patients has been given relatively more consideration as investigations reveal the psychological effect that stress and anxiety can have on patients recovery. (36)

4.3.2.5 <u>According to the Means of Transport to Hospital</u>

The mode of transport and the place of parking it will provide indicators of some or all the activities that are

likely to happen at the entrance with respect to the walking distances from the point of entry to the main reception and waiting area, or other departmental reception and waiting areas. (37)

4.3.2.6 Classification of Staff

Two main categories will be used for the classification of staff within the main reception and waiting area. They are the staff who are based there and the staff who are not. (38) Although some of the staff in the second category use the facilities in the main reception and waiting area, it is most often those who actually work in or are based in that area who encounter a high degree of interaction with the outpatients. A breakdown of this classification is as follows.

4.3.2.7 Staff who are based the Main Reception and Waiting Area

The staff who are based in the main reception and waiting area can be classified into four main groups. i) Reception staff; receptionist and ambulance liaison officers ii) Portering Staff; porters and ambulancemen iii) Voluntary and commercial staff; Cafeteria, snack bar, shop florists, Bank Clerks newsagent etc. iv) Administrative Staff; Admissions Office Staff, Social Workers, Outpatients, cashiers, Medical Records Staff.

4.3.2.8 Staff who are not based in the Main Reception and Waiting Area

Although the members of staff who are not based in the main reception and waiting areas often use some of the

facilities within the main reception and waiting area, their relationship and activities with respect to the overall outpatient reception can be considered very minimal.

The attitudes towards the use of the spaces by these two groups thus selected for this study will highlight directly or indirectly some of the shortcomings in the design. In addition, the role of the ambulancepersons who although not employed directly by the hospital perform certain activities within the main reception and waiting area, and their spatial requirements, will be considered. These are discussed in detail in Chapter 5.

It has been argued that there a need to identify the user requirements. They are important, since they have implications for the spaces to be provided; and understanding them should create a better understanding of the activities which take place within the area. However there are several problems in identifying these user requirements, some of which are discussed below and others discussed in Chapter 5

4.3.2.9 Criticism of the User / User Requirements

Several criticisms of user/user requirements have been identified. These are namely,

i) The identification of the user requirements.

A problem identified at this stage was the difficulty of separating the various user groups purely from observation. It was necessary, therefore to consider the main reception and waiting area as a transit zone for all the users. The separation of these users only began once

they left the main reception and waiting area. Among the problems encountered in identifying actual user requirements was that of the differences in the operational policies between members of staff resulting in some cases those overlapping with others within the same space. For example the portering staff requirements have not been categorically stated in the guidance or in the literature. However, from the interviews and reviews of the operational policy documents for the selected hospitals it is clear that the porters relationships with the ambulance staff invariably affects the porters activities within the main reception and waiting area. In this example three forms of relationships between these the porters and the ambulancepersons were identified;

a) where the ambulanceperson leaves patients at the entrance for the porters to take the patients to the various areas as at Greenwich.

b) where the ambulancepersons take patients to the various departments within the hospital, in which case it is the responsibility of the porters to bring the patient back to the entrance as at Maidstone.

c) where the activities of the ambulancemen and the porters are blurred in which case no particular pattern seem to be evident.

ii) The other problem was with the staffing level, especially in the cases where only one person has been appointed as both the ambulance liaison officer and receptionist. These are problems often associated

with operational policy rather than design. The effect of operational policy on the design of the main reception and waiting area has been discussed in 4.2.1.1

4.3.3 The Activity Types

The type of activities which take place within the main reception and waiting area is varied relative to the type of users. Although most of these activities are non medical and does not involve diagnosis or treatment, they are as diversified as those often associated with the high street activities except that their spatial requirements are related to the sick with their various levels of disability and anxiety and those who care for their well being.

The patient requirements have been discussed in detail in Section 5.6.1

Once in a hospital, most patients, it has been argued want to be seen and leave as soon as possible.

However although the average national waiting time is 11 minutes,(39) with an appointment, some patients complain of waiting sometimes for hours. Then there is the added problem of having to cater for the patients companions/visitors, 'accompaniers'. A considerable percentage are accompanied by children, or when children are sick by parents.

During consultation or waiting these visitors and or 'accompaniers' invariably would prefer to while away the time by performing some activities. For the children toys etc., for adults magazines, However most of the magazines which were found in the main reception and

waiting areas were outdated.

4.3.3.1 The Activity Types - Examples

There is ample literature on the effect of arrangements of spaces within a built environment and the type of activities have on the user. (40) A description of the type of activities identified in the hospitals visited is given.

The entry to the hospital through the outpatients department is not a 24 hour affair. The doors are opened in the morning, usually at 6am and closed at 10pm, when the visiting time is over and very few visitors are left in the wards or other parts of the hospital. The only entrance which is available after this time is the Accidents and Emergency entrance which is manned 24 hours a day. There are normally two sessions of clinics, one in the morning and one in the afternoon during the week, and in some hospitals one on Saturday mornings.

In the morning most of hospital staff come into the hospital. starting from about 7.30. It is about after 8.30 when some of the patients begin to arrive. It is also during this period that members of staff, especially the nurses who have been on night duty, leave the hospital.

From about 9am onwards, most patients begin to arrive. Two categories were identified; those patients who arrive earlier than the appointed time. This group often use the cafeteria/snack bar to wait or for a cup of tea after confirming appointment with the reception. The second group, who are often in the majority go straight

either to the outpatients department or the day wards and are either aided by their companions, porters and or the other members of staff. This majority of patients in this group are often in wheelchairs. Most 'accompaniers' often wait in the main reception and waiting area.

In two of the hospitals, private entrepreneurs selling newspapers or acting as newsagents use the entrance to the main reception area to sell the daily papers and other magazines as the members of staff and patients enter the hospital. This activity at the entrance often ends between 8-8.30am, when the Newsagent goes round the wards and other departments with a trolley to sell these items the inpatients and other members of staff. It is also at this time that most of the other members of staff such as the porters, receptionists and ambulancemen begin to arrive and their activities seem to conflict with that of the newsagent with the trolley.

4.3.4 Existing Examples of Reception and Waiting Areas

This section outlines the differences in the design of reception and waiting areas in the four hospitals initially selected for the study. These hospitals are the Greenwich, Best Buy Hospital at Bury St. Edmunds, the Harness hospital at Stafford and the Nucleus hospital at Newham. The data for the comparison is based on the observations during the preliminary visits, interviews and from available plans. The comparison is based on the following;

a) their relationship to the overall form of the building

b) their relationship to other entrances

c) their sizes

d) their design/layout

e) the amenities provided; location, distribution and distances between the facilities

f) the relationship to other departmental reception and waiting areas

i) the location to other departmental reception and waiting areas

ii) the distances between the departmental reception areas and the type of communication patterns between them.

4.3.4.1 The Relationship to the overall form of the Building

The main reception and waiting area is centrally located along one side of the building in relation to the overall form of the building in the Greenwich and Best Buy hospitals. However in the case of the Harness and Nucleus hospitals the main reception and waiting area is located at one end of the street. There is also differences in the location of this area in relationship to the hospital street in the Harness and Nucleus hospitals. The main difference is that whereas in the Nucleus hospitals the reception and waiting area is located along the main axis of the street, that of the Harness hospital has been located slightly offset from the main street and has another entrance to the outpatients department. In so doing most of the outpatient traffic is taken away from the main hospital street.

4.3.4.2 The Relationship to Other Entrances

4.3.4.2.1 Location.

At the Greenwich hospital, although the main entrance is central in the building the centrality of the main reception and waiting area in relationship to the overall form of the building is lost to the accidents and emergency department entrance. This is due to the fact that the Physical Medicine entrance is located adjacent to the accidents and emergency entrance. The distance between the main entrance and the accidents and emergency entrance is about 58.0 metres while that between the main entrance is 78.0 metres and are in the same direction. the staff, supply and services entrance are separate and have been located on the ground floor which also serves the entrance for the patients and visitors using the Car Park located on the lower ground floor.

In the Best Buy hospital, the main reception and waiting area is located centrally in its relationship to the accidents and emergency department and the Physical Medicine Departments entrances. The distances between the main entrance and the accidents is 30.0 meters while that of the physical medicine entrance and the accidents and emergency entrance is 45.0 meters. In addition to these three entrances are the supply and services entrances, these are located on the side of the building respectively The Harness hospital as illustrated in Appendix A has two entrances leading to the main reception and waiting area. These are the main entrance, and the side entrance. The side entrance is often used by the patients, visitors who use the car park located some distance away. the accidents and Emergency department is located about 145 meters away from the main entrance. The staff, supply and services

entrances are located along the main hospital street close to the other end of the building. Similar to the Harness hospitals, the main reception area in the Nucleus hospital is located at one end of the hospital, this area in the Nucleus hospital is located at one end of the building, but unlike the Harness Hospital this area is an integral part of the hospital street. The entrance is thus along the same axis as the main hospital street. The other entrances, are the Accidents and Emergency entrance, the Staff entrance and the supply and services entrances. The Accidents and emergency entrance is located about 135.0 meters away from the main entrance.

4.3.4.3 <u>The Size</u>

The sizes of the main reception and waiting area differ quite considerably. As shown in Appendix A, the difference in the size of the Nucleus hospital main reception and waiting area is about 77% less than that of the Greenwich hospital. The overall sizes of the main reception areas are, in square meters Greenwich hospital (1130) Best Buy (650), Harness (492), Nucleus (260)

4.3.4.4 The Form

The form of the Greenwich hospital reception and waiting area is roughly U shaped with the entrance lobby partially recessed in relation to the facade of the building. Within the main reception and waiting area, this is crossed by the main primary communication route through the entrance lobby and the circulation route through the outpatients department and the Accidents and Emergency

Departments. The form of the Best Buy hospital is basically rectangular, measuring about 13.0 metres by 45.0 metres. the entrance lobby projects about 2.0 meters outwards along the shorter section. This entrance lobby has an entrance canopy which is of similar design to that of the other entrances on the same facade namely the accidents and emergency departments entrance and the physical medicine entrances. The primary communication route through the entrance lobby leads to the main radial hospital street. Within the main reception area, this primary route is crossed by two of the secondary communication routes. The nearest to the entrance lobby of these communication routes leads to the outpatients department on one side and the accidents and emergency departments on the other. the other secondary communication route leads to the Gynaecology and the Ante Natal and Fracture clinics.

The sides of this rectangular shaped reception and waiting area have access to natural lighting which is achieved by full height glazing openable to the landscaped courtyards. These courtyards serve as extensions to the cafeteria during the warmer months.

The shape of the Harness hospital reception and waiting area is basically rectangular, measuring about 14m by 29m approximately 492 square meters. It is a single storey structure, separated in form from the main three storey structure of the hospital but linked to it by two corridors. One of the corridors lead to the main hospital street, the other leads to the outpatients department. The main communication route naturally follows an L pattern from the main entrance to the main hospital street.

In the Nucleus hospitals, the main reception and waiting area has an L shaped form with an entrance lobby projecting about 2.7 metres along the vertical side of the L shape.

Given the difference in the size, shape, distances and form it seems likely that there will be differences in the other aspects of the reception area. for example, the number and type of facilities provided and in the patterns of access and the overall layout. These aspects are discussed below.

4.3.4.5 Amenities Provided

A total of twenty five amenities have been provided overall. However the number of facilities provided in terms of numbers varies considerably; some are common all, others are common only in three, two or one hospital type. Classification of these amenities can made on the basis in terms of 'commonality', and type. The classification can be expanded as follows. See Appendix E.

4.3.4.5.1 Amenities common to all the four types of Hospitals.

There are nine amenities which are common to all types of the reception and waiting areas in all the hospitals. These amenities are the enquiries desk, the reception counter, the main waiting area, tea bar and cafeteria, porters/ambulancepersons room, sanitary facilities for both sexes, wheelchair storage area, shopping and banking facilities.

4.3.4.5.2 Amenities common to three hospitals.

With the exception of the Harness hospitals, all three hospitals have entrance lobbies. Pram storage areas are

common to all the hospitals except Nucleus. All the other hospitals have trolley storage areas except the Best Buy Hospital.

4.3.4.5.3 Amenities Common to Two Hospitals.

Creche facilities are available only in the Greenwich and Best Buy Hospitals

4.3.4.5.4 Amenities Common to one Hospital.

The visitors waiting areas, the staircase. the lifts(passenger and goods) the escalator, the cleaners room and the social services offices are found only in the Greenwich hospital.

4.3.5 'Proximity' Between Amenities and Departmental Reception and Waiting Areas.

The distances between the facilities provided in the four types of hospitals differ considerably.

However there appear to be a number of relationships between them. The first of these relationships is between the size of the reception and waiting area and the distances between the facilities located in that area. It is evident that the larger the reception and waiting area, the longer the distances between the amenities. The longest distance is that between the reception counter and the Bank in the Best Buy hospital at Bury St. Edmunds.

The second relationship involves the distances between the main reception counter and the amenities. It is evident from the plans that the average distance in the Greenwich hospital is on the whole greater than that of the other

hospitals

4.3.6 Measurements of Communication Routes

The distances between the main reception counter in the main reception and waiting area and other departmental reception and waiting areas.

4.3.6.1 Difficulties in Selecting the Department

There was some difficulty in selecting the departments for this type of study. The difficulty was based on a number of factors. These factors are namely, the hospitals selected did not have the same number and type of departments, in cases where they had similar departments they were not located on the same floor. In addition the departments with external entrances differed from hospital to hospital. It was therefore necessary to adopt a criteria for the selection of the departments to be studied. The methodology adopted was based on the criteria developed for the study which formed the basis for Hospital Building Bulletin 5. In this design guide, the emphasis was on the overall traffic movements and the interrelationships of the departments from the point of communications of the main departments which go to make a district general hospital. Based on the numerical scale obtained in this bulletin, the distances from the main enquiries desk in the departments which were common to all the hospitals and located on the ground floor were selected and the distances measured. The assumption was that since the computation adopted in the Hospital Building Bulletin 5 was based on the assumption of all the wards being considered as one department, the likelihood of bias was inevitable. This

method was also identified as no being very suitable for a comparative study of hospitals with different generic forms. It was therefore decided that the Nucleus hospital should be selected for the study at this stage.

From the tables and the comparisons, the following facts and were identified.

a) that the distances between the departments in the standardised hospitals, Harness and Nucleus were greater than those in the Non Standard hospitals Greenwich and Best Buy

b) that the distances in the Harness hospital were the greatest followed by the Nucleus, Greenwich and the Best Buy respectively

c) that the distances from the enquiry desk to the accidents and emergency department is the greatest in the standardised hospitals whereas the distances to the X-ray department is the maximum in the non standardised hospitals

These facts can best be explained by the type of communication and circulation patterns adopted in the hospital selected for the study. The differences in the type of communication are remarkable, for example in the Greenwich hospital, a race track pattern has been adopted for the circulation and communication. This pattern appear to be similar to that of the Best Buy hospital. The only difference is that it is possible to get round the whole hospital via both the communication and circulation patterns while in the Best Buy hospital this the circulation pattern is not well defined. These two examples

are in extreme contrast to the Harness and Nucleus Hospitals where a linear communication pattern has been adopted with the staircases and lifts alternatively located between the template or the departments along the main street. In addition in the Harness hospital along the main communication routes curves have been introduced to make it appear short. This approach however increases the walking distances considerably.

The facts which emerged, namely, differences in size, amenities, proximity, location, communication/circulation routes enabled a number of propositions and subpropositions to be formulated based on the general hypothesis that differences in design produce differences in user attitudes towards them.The propositions and subpropositions thus formulated are;

i) that difference in sizes will produce differences in user attitudes

ii) that difference in amenities will produce differences in user attitudes

iii) that difference in 'proximity' will produce differences in user attitudes

iv) that difference in location will produce differences in user attitudes

v) that difference in communication and circulation routes will produce differences in user attitudes

vi) the larger the reception and waiting area the greater the flexibility in the use of space.

vii) the larger the reception and waiting area, the larger the running costs.

4.4 The Reception and Waiting Areas Design Variables - Introduction

Having discussed methods of designing reception and waiting areas in hospitals in Britain as well as the design guidance, it has been argued that the appropriateness in use of the main reception and waiting area is not only influenced by the design variables but also by other important variables, notably the operational policies which also and inevitably have an influence on the type of activities undertaken in this area.

Other studies in buildings, and especially other hospitals departments, especially wards, which has been extensively researched were used in order that the specific reception and waiting area design variables could be formulated and measured.

This sub-section aims therefore to identify the main design variables by investigating in detail the design variables of reception and waiting areas in order to develop and propose a system of measurements for these variables. Whole hospital design variables were investigated which highlighted those for the reception and waiting areas. It was identified that compared to the reception and waiting area design variables, the nature of the whole hospital design variables were general.

The whole hospital design variables often related to the generic form, (41) the circulation and communication network, (42) the size, (43) the height (44), the physical area of the hospital, (45) and to a greater extent the location and integration of the main

component of the hospital, the ward, within the hospital.(46)

Studies in wards by Seelye, (47) Dornblaser et al., (48) Ann Noble, (49) Trites, (50) Dixon and Ann Noble, (51) Freeman (52) and Pelletier, (53) Steadman (54) Jaco (55) and others were investigated.

Some of these studies in ward design used the physical features of the design to represent one group of dependent variables which had an impact on independent variables running costs (56), traffic flow costs (57) and the degree of care. (58) These were noted A few studies such as those by Weeks and Beattie,(59) used mean distances between spaces as the basis for their studies. These distances were measured on plans and confirmed in the actual building. Other studies such as Thompsons, (60) used pedometers to measure the actual distances travelled. These studies however, although using the design as an independent variable did not use specific indicators which allowed the differences in the design to be objectively measured.(61)

It has however been argued in most studies that in addition to the design variables, the operational (or organizational) policies also influenced the use of these hospital departments.(62) Some studies in the literature maintained that user satisfaction is affected by the layout and shape of the design, (63) but the lack of specific indicators in these studies were apparent. It was evident in wards and other hospital

departments for example there are numerous contradictory assertions as to which shapes or layouts was the most appropriate in use. To date the location of subwaiting areas in outpatient departments are still the subject of study.

From these studies, three key design variables which affected user satisfaction were consequently identified and selected for the study. These variables were, the size, the number of amenities, and then 'proximity' of the main reception and waiting area to other departmental reception and waiting areas.

4.4.1 The Reception and Waiting Area Design Variables

The reception and waiting area variables this study argues based on the other studies could thus be the

i) shape, (64)

ii) existence of physical barriers such as walls, partitions etc.(65) that often prevent the observation of waiting patients by the staff (receptionists, the transport liaison officers, the ambulancepersons and the porters)

iii) physical size of the reception and waiting area and their related amenities such as shops etc.

iv) ease of identification of these amenities,

v) distances between the reception desk and the amenities, between the amenities, between the reception desk and departmental reception and waiting areas, and between the other departmental reception desks and the amenities within the main reception and waiting areas. In a similar study by Jajo,

the term 'proximity' has been used to define similar measurements. (66) This term will be adopted for the measurement of the distances in this study.

vi) environmental aspects, and

vii) equipment and furniture.

The reception and waiting area location and integration within the whole hospital has been based on most of the previous studies on the evolution of the integration of the ward, related to the evolution of the hospital generic forms and layouts, especially in British Hospitals.(67)

As the generic forms of hospitals were being evolved, from Nightingale to Nucleus, it was necessary to integrate and locate the reception and waiting area within the whole hospital to suit the other areas of hospitals. In the case of the Greenwich hospital, the core of the design was the services, in the case of the Best Buy hospitals, the core was the diagnostic services, with the wards arranged around the core. The evaluation of reception and waiting area design in this study uses some original and more objective indicators than most of the previous studies , especially those related to wards which tended to be rather general.

Very few studies from the literature have been made in reception and waiting areas. One by Roberts and Moss where the central waiting and peripheral waiting in relationship to costs is being investigated (68) no conclusions have as yet been drawn. Others are by

Rawlinson, (69) who confirmed that if the design guidance requirements were to be met then twice or more of the existing size of the outpatients department in most hospitals must be provided. The study of the of the other buildings and other hospital departments especially the wards, thus provided the basis from which those of the reception and waiting areas were evolved.

4.4.2 Measurement of the Selected Design Variables

The amenities provided will be measured in terms of those

i) within the main reception and waiting area,

ii) within other departments.

The size of the amenities in the main reception and waiting area will be measured in square meters in terms of the physical size of the reception and waiting areas. Where a specific space has not been allocated or defined for an amenity, for example the telephones, the recommended spaces in the design guides will be used. While the 'proximity' will be measured and discussed in terms of the distances;

i) between the main reception counter and amenities,

ii) between amenities,

iii) between the main reception counter and other departmental reception and waiting areas,

iv) between ever reception counter and the rest of the reception counters.

This study considers these three variables as being more appropriate indicators of appropriateness in use of a reception and waiting area than most of the existing

terms used in studies in other hospital departments or buildings in general. It will be argued that many of the design variables used in previous studies have been descriptive and have been difficult to identify, and most of them have not been evaluated.

4.5 Summary and Conclusions

This chapter has indicated that no specific definition has been given for the main reception and waiting areas. The area is often defined in terms of its relationship to the out-patients department. However in other hospitals where other entrances exist on the same facade or elevation, such definitions are often confusing.

The chapter also identified that until the publication of of the Draft HBN12 (Out-patients Department) very little and specific design guides had been written for this area either in the form of specific standards and or operational policies. However the Nucleus guidance treats this separately by creating a 'main entrance template which in design terms is to be integrated or related to other subclusters or clusters along the hospital street to form what might be regarded as satisfying the main entrance requirements specified in the original Hospital Building Note. The user requirements have not been stated and the architects have to use another guidance in order to extract this information. Design guidance for reception and waiting areas have been criticized in several ways. As a result it was necessary to adopt and devise means by which the appropriateness in use of the reception and waiting areas could be measured.

In spite of these, the study identified and selected three key design variables whose measurements were devised. The criteria that the evaluation of the characteristics of the independent and dependent variables of design and appropriateness in use were to meet, namely, validity (which is concerned with the soundness, the effectiveness of the measuring instrument), reliability (which deals with accuracy) and sensitivity (whether or not the device is sensitive enough to obtain results about the phenomenon under consideration), as defined by Tuckman,(70,71) Leedy,(72) van Dalen, (73) were also considered.

The next chapter therefore focuses on the appropriateness in use of the design of the main reception and waiting area in relationship to these three key variables.

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CHAPTER 5

THE APPROPRIATENESS IN USE OF MAIN RECEPTION AND WAITING AREAS

5.1 Introduction

The previous chapters dealt with various facets of the study. Chapter 2 was concerned with the development of design guidance, Chapter 3 was concerned with the impact of design guidance on the four main generic forms of hospitals developed in Britain and Chapter 4 was concerned with the definition of reception and waiting areas, the identification of the design variables, the development of a classification system for reception and waiting areas and the development of objective measurements for main reception and waiting area design variables in hospitals. This chapter aims to devise a method for measuring the appropriateness in use.

In the literature, a number of proposals have been suggested from which the appropriateness in use of whole hospitals or the various departments which are put together to create whole hospitals can be measured. These proposals can be divided into two. There are those which are specific and specialized and those which are the opposite, general and unspecified. The distinction between these two types, it can be argued, also depends on two factors. The first is the appropriateness -in-use indicators and second the facet of the building in use being studied. These assessment of appropriateness in use can either be made by subjective judgements by 'experts' in the field, often

referred to as 'walkabout appraisals', or can be the result of empirically verifiable and objective studies.

A considerable number of indicators of appropriateness in use has been highlighted in the literature as being adequate and applicable for the evaluation of buildings in general, these are, in a sense, consequently applicable for whole hospitals or specific hospital departments. This study's approach will be to review several of these appropriateness in use studies in order to extrapolate and extract the specific indicators of appropriateness in use which are applicable to main reception and waiting areas in hospitals. The indicators identified and selected will then be outlined in detail in this chapter, but the methods of collecting data for subsequent analysis will be discussed in Chapter 6. It is an argued premise that most of the criteria for the measurement of the appropriateness in use in buildings have been developed already. This chapter will identify and discuss some of the variables and the factors which in conjunction with the complexity of the use of the reception and waiting area make it difficult to establish a static criteria for the measurement of the appropriateness in use and data collection in such a transitional area in any building is often very difficult. In a hospital there is the added pressures of anxiety exhibited by some of the patients.

5.2. Appropriateness in Use - Introduction

The dependent variable in this study is the appropriateness

in use of reception and waiting areas and the design of the reception and waiting area is the independent variable. In the literature, several studies with similar variables have been developed but there are considerable differences in the methodologies and the limitations of these studies. The method for the appropriateness in use measurement, devised by this study cannot be claimed to be entirely new, however it does adopt and subsequently develop several characteristics which are similar to those used in other studies in the literature. Some studies especially those by Rawlinson, and Jajo described aspects of the two main variables and also incorporated other variables especially those of the briefing process.(1,2,3,4,5,6)

The method of measurement devised by this study is in a sense similar to those in most of these studies. Jajo (7) devised a system of measurement similar to that of Rawlinson's,(8) although Jajo's study was concerned with wards, a specific section of a hospital. In this study, several of the measurements used have been adopted and modified to suit the measurement of the appropriateness in use of reception and waiting areas.

It is therefore important in this section to show the importance of assessing the reception and waiting area appropriateness in use and to propose the most suitable measurements of such a concept.

5.2.1 The importance of Assessing the Appropriateness in Use of Main Reception and Waiting Areas

The term appropriateness in use has different meanings and definitions, which depend on which criteria or which

group or 'body' or institution undertakes the study. For example, the DHSS will use the feedback obtained from evaluating hospitals in use for the improvement of the design guidance, with the main objective being the improvement of the design guidance upon which future hospitals will be built, in order to increase their appropriateness in use. (9) Other groups, such as the building works professionals will calculate the improvement of the appropriateness in use by assessing whether the hospital building does what the building was supposed to do (10) and assume that the majority of users would be satisfied with the improvement so achieved. (11) The following reasons have been given for the difficulties in assessing appropriateness in use at the whole hospital and the departmental levels. At the whole hospital level;

i) these studies will take a very long time.

ii) will be very expensive in resources,

iii) there are too many criteria upon which the appropriateness in use can be assessed.

It has been argued in the literature that the criteria will include variables such as the physical size of the hospital or hospital department and the different types of functions and activities that are undertaken in the hospitals or hospital department. Where a criteria has been established, it will often be difficult or inadequate due to the dynamic nature of the characteristics of the whole hospital. (12) A similar argument can be made though to a lesser extent, for main reception and waiting areas.

In spite of this definite criteria to most of the appropriateness-in-use studies could be specified. Although in hospitals most of these studies have been concentrated on wards, until recently the Accident and Emergency Departments, (13) this study will adopt the appropriateness in use of reception and waiting areas as an adequate measure or representation of the appropriateness in use. Although reception and waiting areas compared to wards or the outpatients department does not appear to be totally representative of all the activities that happen in a hospital, since they occupy only 0.01% of the whole hospital area whereas wards, for example, often take up as much as 50%, the reception and waiting areas represent a satisfactory indicator of the overall appropriateness in use. Among the reasons why reception and waiting areas can be considered a significant indicator of the appropriateness in use of the hospital are that

i) they are of prime importance in a hospital since they are considered as the 'eye' or 'shop window' of the hospital and they tell a lot about how a hospital thinks about its patients,(14) and they command more attention.

ii) very little interest has been shown in their design until recently due to the current government policy enshrined in the Health And Medicine Act 1988 which is likely to result in a number of hospitals becoming National Health Service Trust and competing with the private sector for patients.

iii) unlike other departments such as wards, and

the outpatient department, which have been extensively researched, this study can claim to be the first in these areas in hospital design,

iv) the cost of other members of staff having to direct patients although not immediately visible can be quite enormous and it is affected by the design of the main reception and waiting area

v) the space implications of other associated departments such as the medical records departments have a significant impact on the design of the main reception and waiting area.

5.3 Appropriateness in Use - Definitions

Several definitions have been attached to the term, 'appropriateness in use' in the evaluation of buildings. Words such as efficiency, effectiveness in use, efficacy, successfulness, quality, and performance are used in various studies of the briefing, design construction and commissioning of buildings and their performance as tools of evaluation.(15)

Although very few attempts have been made in the literature to identify the meaning of the terms with specific reference to whole hospital buildings or specific hospital departments or other buildings, a general meaning can be inferred. From the literature it is evident that the words for assessing appropriateness in use have been used interchangeably in most recent studies. Maher, (16) for example, argues that efficiency, when applied to a machine is a function of the amount of

work done by the machine in relation to the energy put into it. Depending upon the design of the machine more or less energy is lost in non productive effort, for example in overcoming friction. Thus efficiency is also the inverse of the amount of energy wasted by the system. Biological systems might be assessed for efficiency in terms of the amount of effort expended by the system to achieve a given goal or end product. Such assessment requires of course that we know what the end goal is. (17) Wright et al argue that it is in the last sentence that 'lies the rub', and that 'either the behavioural criteria or the degree to which the person considers himself efficient may be used, and indeed, these may often clash'. (18)

Algie also defines effectiveness as productive intervention between an agency and its community.(19) The SSBRT(20) considers effectiveness as the 'evaluation of building'. Evaluation of a building assesses whether it meets the administrative objectives to the highest possible standards with the minimum resources.(21) Some of these administrative objectives in the case of a hospital will be the healing of patients, or the care of patients or the processing of patients; in a sense, sick patients in, treated patients out.(22)

The meaning of effectiveness in use as employed by the SSBRT will be paramount in this study, since this research team distinguishes explicitly between the meanings of effectiveness and efficiency, because in the SSBRT's opinion there have been many studies which

have shared the idea of improving building efficiency. The SSBRT argues that 'the studies in efficiency throw very little light on the quality of the provision and it is difficult to 'quantify' the benefits received by clients.(23)

The impact of a building on its users and the outcomes for the clients benefit if the effectiveness of buildings in relation to the objectives of providing these buildings was tested by. (24)

The concept of appropriateness in use relates to the impact of the building on the users in relation to the objectives or the intentions of the client in providing the building. These include the objectives or the outcome that they hope to achieve while all intended users are using the building.

The problem identified in the literature is that most studies in evaluation concentrate on the assessment and improvement of the effectiveness of the building in use, but their disadvantage is that the buildings or their organizations may be cost-effective to run or manage, but less satisfactory to those who use them. The literature also highlights the fact that the basic objectives of the users and those who provide the hospitals are numerous which invariably affects the overall building development process.

However the meaning of appropriateness in use for whole hospitals or hospital departments will be clearer if the

facet of the building in use and the criteria of the evaluation of the building in use are clarified. The main variables of the building in use range from :

1) whole hospital operational policies, which refer to the supply and disposal, catering, domestic services, staff changing facilities, maintenance, planned staffing levels and clerical support and individual departments within a hospital.

2) design features which include space provision, space utilization, layout, room relationships, departmental relationships,, travel distances, size and shape of individual spaces compared to the actual intended usage, the degree of flexibility for growth and change, success of design in accommodating planning policies, and the features which are liked or not liked.

3) environmental aspects

4) equipment and furniture

5) finishes

6) engineering services

7) cost/time

Rawlinson, has classified the criteria for the evaluation of hospitals into two broad types. The implicit and the explicit criteria. Each of the criteria is used for a different aspect of the evaluation. For example the implicit criteria is used by the professionals in the field to form their own assessment of a building in use whereas the explicit criteria which are stated in advance Rawlinson argues, are more appropriate to be consistently applied to a building type and increase

the possibility of comparative evaluations. The explicit criteria will therefore include two sub criteria one for the reception and waiting area, and another for the outpatients department. These are the caseload, and the ideal/normative criteria which 'good practice ' is expected to describe.(26)

5.4 The Means of Achieving Appropriateness in Use

According to Rawlinson, three broad areas hospital evaluation can be identified.(27) These are the evaluation of the hospital in use, the evaluation of the briefing and its impact on design procedures and the evaluation of hospital design options. These three broad areas of hospital evaluation will now be discussed.

5.4.1 The Evaluation of Hospital in Use

The evaluation of hospital in use has had a considerable impact on both the evaluation of the briefing and design process as well the design options because of the feedback that such studies provided. These studies have dealt with many aspects of the design of hospitals and particular attention has been paid to the emerging problems of the hospitals. (28) One of the means of achieving appropriateness in use is by identifying the problems of mismatch between the design and operational policies and by attempting to provide solutions tactically or strategically. The strategic outcomes of these studies, Rawlinson argues attempts to identify problems which might have been caused by the design variables, organizational and or operational policies and their

changes so as to provide a remedy for future designs. Their tactical outcomes are the usual suggestions of possible solutions for these problems in the hospitals in use. These remedies have often resulted in either the changes in the design and or organizational and operational policies. (29)

5.4.2 The Evaluation of the Briefing Process

The evaluation of the briefing process although not the core of this study, evaluates the procedure of briefing and the design of a hospital by their integration with other hospital project development stages such as construction. Most of these studies concentrated on the information techniques and procedural considerations in designing a hospital project.(30)

Most of these studies investigated the user requirements as well as the contribution of a multidisciplinary team, the increase of user participation in the stages, operational and organizational policies and the adoption of new technology in these procedures.

These studies claimed that appropriateness in use would be achieved by careful evaluation of these aspects during the development of a hospital project. It is often argued that one of the means of achieving the appropriateness in use for future hospital design is to have a rational and systematic approach to the briefing and design. (31)

5.4.3 The Evaluation of the Options

With the advent of computers it is now possible to propose more than one design for a hospital project. (32) The

evaluation of the options could be based on criteria before the erection of a hospital. These criteria could include for example the impact of the environment, costs (maintenance or travel) circulation costs, minimum wasted area, traffic load or energy saving measures. (33)

Among the advantages of these studies is the the freedom they give designers to choose from a number of options which could be based on different criteria rather than accept an immediate solution. Some of such data has been used to predict and shape the design of future hospitals. (34) The disadvantages are however that most of these studies have not concentrated on or cannot possibly evaluate these options while in use. Other criticisms include the inhuman (35) approach for the design of hospitals by machines which simply converts input into output. (36) The crux of the problem is that the patients primary and immediate concern on entering a hospital is not necessarily the physical domain of the spaces within the hospital but the attention and care received. (37)

5.5 The Appropriateness in Use Studies of Reception and Waiting Areas

The measurement of the appropriateness in use can be achieved by the measurement of a wide range of characteristics. These characteristics could include the capital costs, the running costs, the patients attitudes and or reaction to the building, the building's environments and other special functional requirements of

the building type. (38) For reception areas, some of the few studies focused on specific characteristics which could represent the appropriateness in use.(39) In spite of the lack of studies of the main reception and waiting area , the methodology adopted in the studies of other hospital departments or spaces which have been extensively researched, (40) could be used as the basis for this study.

5.6. User Objectives and Requirements - Definitions

Consideration of the needs and preferences of the people who use a building space is important to good design. (41) Rubin and Elder refer to the users as the occupants of the building; they are seen in terms of the activities performed in the building. (42) The needs of the users in the hospital environment can be difficult to establish. Whilst some of the differences among the users, for example the degree of disability, are obvious, other factors - psychological, social and cultural factors exist, which are extremely important for the designer to consider but may not be easily identified. (43)

A number of definitions have been provided for user requirements. Some are related to the psychological requirements which are consistent with health and safety,(44) others with an improved quality of life.(45) The user requirements relevant to the reception and waiting areas as stated in the guidance is not very precise, and have not been stated specifically to the user group, say doctors/ patients etc. This is different in the Scottish

Home and Health guidance where the user requirements have been clearly stated in terms of the user groups. (46) User requirements are also referred to by Zeisel as user needs and user wants.(47)

Markus on the other hand identifies the interrelations in building design as comprising a human system which includes user requirements in the terms of the following needs,

a) organic - hunger, thirst, respiration rest etc.,

b) spatial functional and territorial based on personal space studies,

c) locational ; static and dynamic,

d) sensory- sight, hearing, heat and cold, smell, kinaesthetic, equilibrium,

e) social - privacy and contact.(48)

Maslow however views human needs as an ever-changing process rather than as a fixed set of requirements that applies to all people, and argues that complete satisfaction of peoples needs cannot be achieved because of the evolutionary nature of such needs. When one set of needs is satisfied another set of needs emerges.(49) He includes self esteem, belonging, and safety, among psychological needs.

5.6.1 The User Attitudes Criteria

The importance of patients welfare is central to the provision of a hospital although the quality or level may differ from department. However since the relationship between the design of reception and waiting areas and the

appropriateness in use is central to this study, then it is necessary to quantify and define this concept as a basis for the measurement of the extent to which the users needs are met in the main reception and waiting area. In spite of the advantages and disadvantages and even rejection, The issue of users satisfaction of a building is about what the users think about a building in order to ascertain the extent to which a building is meeting the users needs. what the users think about a building is a concept which has been used in many studies to measure the appropriateness of the building in use. This concept is termed variously as users satisfaction, users attitudes, users reaction, users perception, or users opinions of a building.

Some of the criticisms are;

i) that a building is a relatively minor factor in determining users opinion on reaction to or satisfaction with the use of that building. (50)

ii) that the core of the knowledge available on the interaction between the users and the building is insufficient and naive. (51)

iii) that the users are different in perceiving their environment and opinion or reaction or satisfaction is highly influenced by the psychological nature of the human being which is variable (52)

iv)that the personal variation is bound to occur in response to the building from time to time.(53)

In spite of these criticisms, no viable alternative have been introduced or developed and according to Gutman, (54)

the inclusion of users attitudes is important in any building evaluation.

The basic requirements of the various user groups in the hospital reception and waiting area will not be very different from those identified in the literature described. After all most of the users require similar quality of care in the design of the buildings they use. However the hospital setting provides for a set of activities different from users everyday life coupled with different forms of psychological need when they enter the hospital. It is apparent from the literature and interviews that all user requirements have not been met.

User requirements in the two main groups selected for the study will now be considered. These user requirements have been extracted from observations, literature and the especially design guides, HBN 12 Scottish Home and Health Department Building Note 22 and Nucleus Cluster 1

5.6.1.1 <u>The Outpatients Requirements</u>

These are

a) to be able to identify the entrance to the outpatients department from the outside without any difficulty

b) to be able to park temporarily under an entrance canopy

c) to be able to have easy access from the outside of the hospital to the inside

d) to be able to ask and receive assistance in terms of directions on entry into the hospital if necessary, especially during the first visit

e) to have an adequate and satisfactory level of amenity

f) to have easy access to these amenities

g) to be able to identify the amenities easily.

h) to have access to the entrances leading to the outpatient departments

i) to have easy access to other entrances to the other departments associated with the outpatients department

j) to be able to identify the departments associated with the outpatients department easily.

k) to be able to understand clearly the directions and advice given by the receptionists

l) to be presumably satisfied emotionally and psychologically on entering the hospital.

m) to have a quiet atmosphere within the hospital.

n) to have a relaxed atmosphere

o) to have a visually acceptable atmosphere

p) to have an acceptable level of visual privacy

q) to have as acceptable level of acoustic privacy

r) to have as acceptable level of environmental comfort.

s) to have a sense of security within the main reception and waiting area

5.6.1.2 The Porters Requirements

The portering staff requirements are,

a) to be able to identify patients with immediate portering needs when they enter the hospital

b) to be able to have adequate equipment on hand to use for patients in need

c) to have easy access to the various departments

d) to be able to communicate effectively with other

portering staff

e) to be able to have direct communication with the transport liaison officer

f) to be able to overlook waiting patients

g) to be able to direct patients without any difficulty

h) to have as acceptable level of environmental comfort.

5.6.1.3 The Receptionists' Requirements

a) to be able to oversee the activities at the entrance

b) to be able to see waiting patients

c) to be able to provide easily understandable instructions to patients

d)to be able to have some degree of privacy while talking to patients

e) to have adequate shelving and worktops for clerical duties

f) to have a satisfactory level of amenity

g) to have a satisfactory level of environmental comfort.

h) to have an easily audible call system.

5.6.1.4 Problems in Identifying the User Requirements

Among the problems encountered in identifying actual user requirements was the differences in the operational policies in the different hospitals resulting in some cases overlapping with others within the same space. These operational policies have already been outlined in Chapter 2. The portering staffs requirements have not been categorically stated in the guidance or in the literature. But from the interviews and reviews of the operational policy documents for the selected hospitals it is clear that their relationships

with the ambulance staff invariably affect their activities within the main reception and waiting area. In this example three forms of relationships between these two groups were identified from observation and interviews. These are

a) where the ambulancepersons leaves the patient at the entrance for the porters to take the patients to the various areas as at Greenwich.

b) where the ambulancepersons take the patients to the various departments within the hospital, in which case it is the responsibility of the porters to bring the patient back to the entrance, as at Maidstone

c) where the activities of the ambulancepersons and the porters are blurred in which case no particular pattern seem to be evident.

The other problem was with the staffing level, especially in cases where only one person has been appointed as both ambulance liaison officer and receptionist. However in listing these objectives and requirements in relation to each user, a closer look will reveal that these objectives are interrelated to a certain extent. That is, the objectives of one group of users are related with other similar objectives of another group of users. It is also difficult to investigate the use of reception and waiting areas by assessing the setting and the activities separately, since they are also highly interrelated. The activities are carried out by the users within a given setting in order to achieve their objectives and fulfil their needs. These activities and the setting have

been discussed in detail in Chapter 4.

5.7 The Model for Measuring Appropriateness in Use

Appropriateness in use emerges as a concept which involves many characteristics of reception and waiting area. Most importantly these characteristics are related to the reception and waiting area in use, and they differ in the extent to which they are affected or influenced by the design of the area.

In the reception and waiting area, since they are planned to provide a transitional zone between the hospital and patients, the important characteristics of their appropriateness in use add up to the extent to which the patients is cared for. Two main issues have been identified for evaluation while the reception and waiting areas are in use. The first are the people who provide for and ensure that the quality of care for the patients is high and that the patients are well catered for. The patterns of activities within which this form of 'transitional patient care' is provided and accepted are the main issues to be evaluated. The second is the extent to which the layouts of reception and waiting area facilitate or hinder the provision of patient care.
Devising simple measures for these two issues is extremely difficult, however, it has been argued in the literature that the incorporation of users' attitudes may be an adequate indication of both, especially if the users' intentions and requirements for which a reception and waiting area should cater for are

established. Once established, certain indicators to measure the appropriateness in use as a dependent variable should be set up. Comparison between reception and waiting areas in different hospitals should then be possible.

The model that this study will use for measuring the appropriateness in use involves the two issues indicated. This model includes seven main indicators, and each indicator includes specific sub-indicators, and these in turn have other sub-sub-indicators.

5.7.1 The Indication of the Appropriateness In Use

The seven indicators are related to general and specific aspects of a reception and waiting area in use. Five of these indicators encompass user attitudes towards the use of the reception and waiting area, one indicator focuses on users movements in the reception and waiting area, and the other is concerned with the design guidance requirements of other variables which affect the appropriateness in use of this area.

These indicators are as follows;

INDICATOR A measures the user (porters, receptionists, ambulancepersons and patients) satisfaction with the aspects related to their different activities in various areas of a reception waiting area which is indicative of its daily use. This indicator incorporates four main sub-indicators for each of the user groups.

i) The first is the users satisfaction with carrying out general activities, for example, the receptionists receive and direct patients; the

porters move, care and comfort patients; and patients find their way, eat, relax, use amenities in the reception and waiting area.

ii) The Users satisfaction with the characteristics of the reception and waiting area that help in using the reception and waiting area for delivering or receiving patient care, for example the suitability and the friendliness of the atmosphere in the reception and waiting area,

iii) The Users satisfaction with the organizational and managerial aspects, such as patient call, and transport arrangements and procedures, and

iv) User satisfaction with the use of specific spaces adequately related to each of the user group.

INDICATOR B, measures the perception of the users with reference to the problems that emerge from the use of the reception and waiting areas or specific amenities. The users while using or working in the main reception and waiting area encounter a number of problems which may occur in the reception and waiting area or in one of the amenities or rooms.

INDICATOR C, measures the users perception of the good and bad features of reception and waiting area design: these features are the characteristics which the users think are good/bad or liked/disliked in the reception and waiting area they are using or working in.

INDICATOR D, measures is the users satisfaction with the building (design) characteristics of the main reception and waiting area in general and some amenities. These

include the physical, environmental and spatial, and some specific rooms while using or working in the reception and waiting areas. The users' satisfaction with these characteristics is indicated by three main sub-indicators; the degree of satisfaction with:

i) the physical area of the specific rooms, e.g. children play area, w.c.'s, shop etc.

ii) the environmental characteristics such as heating/cooling, ventilation, and day lighting of the reception and waiting area in general and specific rooms (amenities) in particular; and

iii)the spatial characteristics of the reception and waiting area which are represented by the degree of satisfaction with

a) access to these amenities from any part of the reception and waiting area or the outside,

b) access between rooms,

c) the location of rooms that are mostly related to a given user group, and

d) the optimization of the walking distance.

INDICATOR E, measures the users' perception of problems that emerge from the building (design) characteristics of the reception and waiting area or specific amenities they encounter while using the reception and waiting area. The users' perception of problems related to the physical, environmental, and spatial building characteristics of both the reception and waiting area in general and amenities in particular. These problems could be considered the factors which hinder user activities while users are in reception

and waiting areas.

INDICATOR F measures the distances travelled daily by all users within the hospital but especially the main reception and waiting areas. For the patient three, out of the six basic distances travelled daily are calculated; the distances between the entrance and the reception desk, between amenities and between the departmental reception areas. These three distances are calculated for each user group to assess the distances the hospital user has to walk.

The destinations and origins of these distances have been culled from previous studies of traffic patterns within hospitals in general and from interviews with the hospital users. For example, the portering staff have been questioned about the number of journeys or trips they make daily to the department reception and waiting area while the receptionists have been questioned about trips to other departments while undertaking their work. From these journeys and distances, known from plans, the daily walking distances can be calculated. These length of these distances to a considerable extent indicate the appropriateness in use of these reception and waiting areas. These distances have also been used to compute the effectiveness in use in studies where cost is the dependent variable.(55)

INDICATOR G consists of other factors stated in the design guidance which have an impact on the appropriateness in use of this area.

5.8 The Appropriateness in Use of Reception and Waiting Area - Summary

The aim of this chapter was to propose measurements by which the extent of the effectiveness in use of the reception and waiting could be assessed, though it has been argued that establishing such a measurement is a complicated task. However, to propose measurements for the appropriateness in use, it was necessary to discuss and investigate the meaning of the appropriateness in use. The criteria often used in health building evaluation g which related to reception and waiting area, have been identified. The 'care and patients' welfare were considered as the prime aspects of reception and waiting area in use, and the objectives and requirements that reception should fulfil while they are being used have been considered to be the focus around which the indicators of appropriateness in use of the reception and waiting area could be identified. A simple model of measurements which was devised centred on users' achievement of these objectives as well as the extent of the reception design in facilitating for these objectives was devised.

The model developed involved seven main indicators which included many other sub-indicators and sub-sub indicators. Five of these indicators related to users' attitudes to the reception and waiting in use, problems of use, the extent to which the design of reception and waiting area, and consequently the extent of the appropriateness of reception and waiting area in use. The other indicator was to identify the movement of the users in reception and waiting areas. The other was the design guidance

identification of other factors which had an impact on the appropriateness in use of reception and waiting areas. The following chapters will explore the relationship between the design of two nucleus hospital reception and waiting area and their appropriateness in use. Chapter 6 sets out the research design within which this relationship is investigated. Chapter 7 discusses the findings of the study with reference to the design variables of the hospitals in general and the reception and waiting area in particular. Chapters 8 and 9 explore the findings from the questionnaire, with reference to the effectiveness of the main reception and waiting area in use.
Chapter 10 explores this relationship in detail. Chapter 11 concludes and establishes some tentative generalizations with reference to this relationship.

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CHAPTER 6

RESEARCH METHODOLOGY AND TESTING OF HYPOTHESES

6.1 Introduction

The aim of this chapter is to outline the research methodologies adopted in order to test the hypotheses identified and discussed in the previous chapter, as well as the criteria for selecting the case studies. The use of established techniques in a number of building evaluations such as;

i) observation of daily life, within the building,

ii) interviews both structured and unstructured, with members of staff (doctors and nurses), as well as with patients

iii) questionnaires about user reactions

and satisfaction which were found to be the most appropriate means of studying the two variables under investigation. The data collected by this method cover a wide range of issues.(1) This study adopts the questionnaire as the main method of gathering the empirical data to indicate the appropriateness in use. This chapter illustrates how the final questionnaire used in this study was developed. The rationale involved in the methodological stages, and the mechanical processes which were involved, are discussed in detail. The general principle adopted in this developmental approach was a progression from an unstructured stage of the study in which the identification of the key areas of the research took place to a structured and crystalised technique and a well specified problem. This helped

articulate the variables required within the key areas of the research. The stages adopted can be conceptualized into three, namely, the pre pilot, pilot and final stages. After the formulation of the research hypothesis and propositions,tThe chapter will describe and discuss what was actually done at each stage, how the research was carried out, and most importantly how each methodological process influenced the formation and the administration of the next stage.

6.1.1. Hypothesis Formulation

The key variables of this study are :

a) The number of amenities of the main reception and waiting area

b) The size of amenities of the main reception and waiting area

c) The proximity of the main reception and waiting area to other departmental reception and waiting areas

d) The appropriateness in use of the main reception and waiting area.

These key variables were incorporated into two hypotheses.

i) The main hypothesis : that there is a relationship between the design of the main reception and waiting area and its appropraiteness in use.

ii) The null hypothesis : that there is no relationship between the design of the main reception and waiting area and its appropriateness in use. In other words differences in design produce no differences in the appropriateness in use.

In order to test the main hypothesis, it is necessary to test the following three methodological propositions :

a) The higher the number of amenities in the main reception and

waiting area, the higher the appropriateness in use.

b) The greater the size of amenities of the main reception and waiting area, the higher the appropriateness in use.

c) The more proximate is the main reception and waiting area to other departmental reception and waiting areas, the higher the appropriateness in use.

6.2 The Pre-Pilot Stage

6.2.1 Preliminary Stage

The pre-pilot stage consisted of unstructured interviews with a wide range of the users of a number of hospitals, (see Appendix B2) in order that the key areas of the research could be identified, and refined. The general nature of the questions at this stage was generated from the general theoretical propositions of user attitudes towards the overall design and their appropriateness in use. The purpose of these unstructured interviews was to generate not only pertinent areas of research for assessment of appropriateness in use and user attitudes towards design in general, but also towards the three variables in particular. A wide range of users of the main reception and waiting area were interviewed. These included the patients, medical and non medical staff within the hospital, as well as architects, designers, and DHSS officials. The broad brush approach as outlined in Rawlinsons publication, 'Health Building Evaluation Manual', was used in each case. This approach was chosen as being distinct from the more structured interviews, (2) for several reasons; the purpose of the pre-pilot interviews were exploratory and explanatory

rather than the definitive; in depth interviews create a better rapport between the interviewer and the interviewee.(3)

The broad brush survey, although not extensively tested in practice, has been described by Rawlinson as a method of obtaining early rapid feedback about the functioning of a new hospital in use in order to identify the positive and negative features, and to highlight particular facets for detailed study.(4) This was done in the pre-pilot studies by modifying the operational policy documents of the Nucleus hospitals and asking the staff individually about the requirements stated in the document and the guidance. The greatest advantage of the unstructured interview is its flexibility: interesting issues that arise during the interview can be probed, giving richness and spontaneity of information. (5) A lengthy, exploratory, pilot interview requires a preconceived format - that is a list of topics that the interviewer has in mind for the interviewee to talk about. This semi-structured interview format was modified with respect to the user group being interviewed, so that, for example, the interview with the patient, about appropriateness in use was weighted towards the theoretical and methodological issues of the patients' attitudes, whereas the interview with the members of staff emphasized their expectations of their user attitudes towards the patients. Using the analysis from the pre-pilot interviews, the conceptual analysis that emerged from the literature review was formalized into

more direct questions, and the scope of the answers to be expected were made more specific within the pilot questionnaire which is discussed below.

6.3. The Pilot Stage

6.3.1 Preliminary

The pilot stage represented the first stage of the imposition of a structure on the study. That is the conversion of significant topics into operational questions in order to search for the key discriminants could be made. A very open-ended (unstructured) questionnaire - based on the findings obtained from the broad brush approach was used. The essential feature of the pilot stage was to test the adequacy of the questionnaire design, in terms of the following order, content, and wording of the questions. At this stage it was also necessary to select the case for this study. The difficulties in the selection of case studies for evaluating health buildings have been identified by Rawlinson and Moss and highlighted by the DHSS and the MARU in two important publications namely 'The Selection of Case Studies for Health Buildings.'(6) and the 'Hospital Buildings Evaluation Manual.'(7) Using the recommendations of these publications, a comparative approach, although difficult to undertake (8) was selected as the basis for the study since remarkable differences in the design of the main reception and waiting areas were apparent in the design of most of the hospitals visited at the pre-pilot stage. Two different planning layouts of the Nucleus

hospitals, discussed in Chapters 2 and 3 were selected in addition to the Greenwich and a Best Buy hospital. From the plans of the reception and waiting areas in these hospitals, they exhibited remarkable differences in most of the design variables being studied. The most obvious were,

i) their location in relationship to the overall form of the building,

ii) their size,

iii) facilities provided,

iv) the layout ('multipurpose' and 'nucleated' approach or the 'degree of openness' adopted in the design), the circulation within the main reception and waiting area and the relationship with the communication, with respect to the distances with the other departmental reception and waiting areas.

The other reasons for the initial selection of the four case studies were, namely, the Greenwich District General Hospital and the Best Buy Hospital at Bury St. Edmunds, were designed based on the non comprehensive guidance, and the Newham and Maidstone District General Hospitals which were designed on the comprehensive Nucleus Guidance. The two Nucleus hospitals selected also represented a different facet of the problem. This was that whereas Newham represented the standard Nucleus linear hospitals, Maidstone, although a standard L-shaped hospital, has a non-standard main reception area not based primarily on any of the guidance for the Nucleus Hospitals. This main reception area at Maidstone is regarded as the hub which will link the existing phase

with the final phase.

In addition to these considerations, a detailed study of the design guides also indicated that no specific guidance has been written for the main entrance. It is considered an integral part of the outpatient department whose guidance is contained in HBN 12. However in the Nucleus guidance, the components which make up the main reception and waiting area in HBN 12 is found in three clusters, namely the main entrance cluster, cluster No 1, the outpatients department cluster, cluster No. 2 and there is a diagram in cluster No 1 which indicates the planning relationships between these two clusters. It states, 'that they should be placed opposite each other in order that the main entrance requirements will be completed',(9) which suggests that their appropriateness in use will invariably be affected if these planning requirements are not met. The design guides for this study will therefore concentrate on HBN12 and The Nucleus Clusters 1 and 2.

Having selected the case studies, the most appropriate and effective methods were selected from a very large number of alternatives proposed by the different studies, including those of the DHSS (10) and then modified where appropriate to suit the scope of the study. These methods can be classified into the

i) broad brush survey

ii) the physical study,

iii) activity studies,

iv) environmental and

v) interviews and questionnaires.

6.3.1.1 Physical Studies

The physical studies were carried out in order to provide a detailed data bank on space provision and servicing.(11) According to Rawlinson, the physical studies are often used to identify and establish the possible patterns of usage at the preliminary stage and provide the basis for activity studies to be tested against the available guidance. The physical measurements comprise

i) size; length, breadth and ceiling heights

ii) fixed and moveable furniture (to test flexibility)

iii) fixed and moveable equipment

iv) doors and their opening size dimensions (size measured and checked against disabled requirements

v) doors and escape exists counted and compared with the recommendations

vi) window sizes

vii) floor finishes

viii) wall colours and finishes

ix) the ease of access and parking facilities which were measured physically by measuring the distance and time taken to arrive at the main reception area from the parking areas (the car park, the ambulance bay, the bus stop, other possible entrances, bicycle park and the disabled parking areas).

In relationship to the ease of access for disabled people, the parking facilities, size, the distance, ramps and other aids provided were measured and checked against the guidance set out in the Disabled

Act and other recommendations. (12) The existence of other entrances was noted namely the staff, accidents and emergency, physical medicine, supply and services and other entrances. Subjective and objective methods were used to make these measurements. These methods were then compared so that the data obtained could be crosschecked in order that the weakness of one method might to some extent be covered by the strength of the other. This theme was carried out through the whole thesis.

The available plans were also studied, and any modifications or changes which had been made to the main reception and waiting area since commissioning, the year in which the alterations were done and the reasons for the modifications were noted.

The other study was of signposting. This involved the identification, the provision, the recording of the types of the signs within the hospital, and from the car park to the entrance to and within the main reception and waiting area as well as to the outpatient department. These were noted and compared with the recommendations in the existing guidance, Health Technical Memorandum (HTM) 65.(13)

6.3.1.2 Activity Studies

A number of methods have been proposed by a number of studies in order to identify the activity and space usage within the reception areas. These methods includes.

a) Flow count of traffic into and out from a space (14) The number of people entering and leaving the main

reception area from the entrances to the main reception area were noted on the on the plans.

b) Tracking; This was done in order to identify the main direction of movement within the space and to identify the possible areas of conflict. Depending on the volume of traffic, every fifth or tenth person who came through the entrance which was being studied at the time was noted and the individual was followed through the activities undertaken within the main reception area till the time that he/she left.

c) Occupancy Count; this was done in order to measure the occupancy and space usage of the accessible spaces within a hospital.(15) At 30 minute intervals, the number, the location and the type of activities by the users in the main reception areas of the case study hospitals were counted

6.3.1.3 Environmental Studies

The environmental measurements were carried out to test whether the existing environmental conditions, temperature and airconditioning matched the recommendations and whether there was visual, sound or smell intrusion.

The environmental measurements undertaken included measurements of heat temperature, air conditioning and ventilation, location of air conditioning vents, lighting for each of the spaces.

Two methods were used for the environmental measurements.

a) Observation; to identify whether the guidance

recommendations had been carried out or not within the individual spaces such as automatic temperature controls rather than controls exercised from the central plant rooms, and whether additional means such as fans and heaters were being used and the consequences of such use

b) Special instruments; to measure through devices and specific methods such as the illumination levels and type of lighting, internal temperature and air conditioning.

In terms of internal temperature and air conditioning, Givonni argues that a person's feeling of warmth depends on four variables, air temperature, radiant temperature, air movement and humidity;temperature alone is not a convenient measure of warmth in a number of cases.(16) For example, air temperature alone is an inadequate guide when there is a combination of extreme temperature and a high air speed, or when there is a strong interchange of either radiant or convective heat between the users and their environment or under conditions where the environment is warm enough to cause perspiration (17) but in Europe, the resultant temperature, RT, is more widely used. (18) This method was selected rather than the other two methods because of the location of the study in Britain. With this method up to four measurements are sometimes required. These measurements are the air temperature, the mean radiant temperature (or globe temperature) wet bulb temperature and the air speed. The RT combines the effect of two or more of these variables and the RT index is regarded as satisfactory in predicting the responses of people at

rest or engaged in sedentary activities.(Raid) This index covers these ranges, air temperature 20-45 degrees centigrade, wet bulb temperature, 18-40 degrees centigrade and wind speed, still air - m/sec (600ft/minute)

The Dry Resultant Temperature, (Tres)

$$Tres = (Tr + 3.17\ TaV) - (1 - 3.17V)$$

Where Tres - Dry resultant Temperature, Ta - Air Temperature, Tr - Radiant Temperature and V - Air Speed

The results obtained from these measurements were checked against the guidance in order to identify whether these results in the existing buildings were based on the RT or other means.

c) Air conditioning; The number of air changes was checked against the recommended criteria i.e. 3-4 air changes per hour.

The other subjective measurements such as noise levels and unpleasant/pleasant odours from some clinics were also noted.

6.3.1.4 Noise Levels

Impact noises such as occasional noises from doors, equipment,(cleaning, treatment, computer print-outs, patient call systems), external noise from ambulances and traffic noise were also noted. Noises from sanitary facilities, footwear,repair and remedial works etc. were likewise recorded. From the preliminary studies it appears that in the hospital context, no recommendations have been given for acceptable noise levels, although this aspect is acknowledged and most of

the reception and waiting areas, the wards and other departments, most of these area have been carpeted in an attempt to reduce the noise levels although the type of carpeting has cleaning, trolley and wheelchair implications in the hospital.

6.3.1.5 Visual

Unpleasant and pleasant sights within the main reception area were also noted.

6.3.1.6 Smell

Unpleasant and pleasant smell within the main reception areas were noted.

6.4 Interviews and Questionnaires

Structured and Non-Structured Interviews were undertaken and questionnaires were piloted in the four case study hospitals. Prior to the final questionnaires, these pilot studies were undertaken to pretest the questionnaires and to ensure that they were comprehensible and short enough for most of the users to be able to answer them during the time they might have to spend in the hospital. An opportunity was provided for the respondents who wanted to be contacted for further discussions on the subject.

The questionnaires devised were for the main reception and waiting area, and the respondents covered the majority of the main users, patients and staff. Questions on user satisfaction and attitudes were ingeniously incorporated into the questionnaires. This was done because, according to research to date, successful evaluation should take

into consideration user opinions about the building and how satisfied the users find the building. (19)

The development of the pilot questionnaire can be discussed within three broad parameters, namely, i) its rationale, a) question content, wording, and order and ii) questionnaire administration. The implications of the pilot questionnaire; which helped in the construction and administration of the final questionnaire, will be discussed.

The general rationale behind the use of the pilot surveys has been described by Moser and Kalton as,

> 'exceedingly difficult to plan a survey without a great deal of knowledge of its subject matter, the population it is to cover, the way people react to the questions and paradoxical though it sounds, even the answers they are likely to give .... Common sense suggests the necessity of doing a few test interviews or sending out trial forms by way of preparing the main survey, and such informal trial and error is as much part of the preliminary study as are talks with experts and study of the literature.'(20)

Moser and Kalton go on to describe the various purposes of pilot questionnaires. (21) The specific purposes for which the pilot questionnaires were used to give guidance were to analyse

a) the adequacy of the sampling framework from which the selected sample was proposed.

b) the variability (with regard to the subject under investigation) within the population to be surveyed. The decision on the eventual sample size required some knowledge of how variable the population was.

c) the non response rate to be expected. The

probable number of refusals can be roughly estimated from the pilot study.

d) this suitability of the method of data collection. Since it had already been decided that the questionnaire would be the main method of assessing the appropriateness in use for this study, the pilot questionnaire was used for assessing the initial patient and staff responses before being modified for the final study.

e) the adequacy of the questionnaire. Although the questionnaire was previously given to colleagues and staff for comments, the pilot survey offered a way of trying it out on some other respondents similar to those to be used in the main survey. The aspects of the questionnaire which were scrutinized were; i) efficiency of layout ii) clarity of the terms, iii) adequacy of questions iv) presence or absence of simple, clear, unambiguous, non technical, question wording.

6.4.1 Question Content

The content of the pilot questionnaire was directed towards establishing user attitudes to a number of design variables namely, size amenity and communication distances.etc. which were proposed as the determinants of user satisfaction.

Specifically, the questions asked about different facets of each of the determinants.

An analysis of question content in this form is somewhat redundant as the issues emerge quite clearly from a study of the questionnaire. Thus the content of the pilot questionnaire will be discussed in terms of the type

of question (e.g. factual or attitudinal)

The categorization of question content types devised by Selltiz et al., will be used.(22)

According to Selltiz et al, firstly, there is the content aimed at ascertaining 'facts'. Questions that come under this category can be seen in the section labelled Personal Details, where the respondents were asked to state their sex, age etc. Another section that contained factual questions asked how often they had used the hospital and whether they were disabled or not. Checks for internal consistency could be made by crosstabulating the appropriate variables.

The second question type utilized in the questionnaire was `content aimed at ascertaining beliefs or their perception about what they thought the facts are.' A questions from the pilot questionnaire that fitted this description was, How would you describe the size of the reception and waiting area ? The purpose of asking these questions was not to establish the objective facts, but to get the respondents perception of the issue in question.

The third question type was these questions whose content was `aimed mainly at ascertaining feelings'. These questions were central to the pilot study because the topic of appropriateness in use was being investigated. Questions aimed at ascertaining feelings were evident in every section. For example the respondents were asked, How would you describe the atmosphere in the main reception and waiting area ?

The fourth question content type encompassed questions whose content is 'aimed at discovering standard of action'.

The fifth type that Sellitz et al describe has ' content aimed mainly at present or past behaviour.' As this could be classified as a sub category of factual questions, Sellitz et al., justify its independent status in the following way;

> 'We single out this type of "fact" for special notice because the value of knowledge of the past or present behaviour. How a person has behaved in the past in a certain type of situation, is in the absence of contradictory evidence, an indication of what his future behaviour will be in similar situations'. (23)

An example of this question type used in the pilot questionnaire is, How many times have you used this hospital?

The final question content type is that 'aimed mainly at conscious reasons for beliefs, feelings, policies or behaviour'. For example; What do you like or dislike most about the main reception and waiting area?

This analysis of question content types has attempted to explain the rationale behind the questions in the pilot questionnaire in terms of what was being sought, (i.e. what a person knows, believes or expects, feels or wants,intends or does or has done, and his explanations or reasons for any of the preceding.) (24) It was felt that the specific content of the question was evident from the reading of the questionnaire.

Having discussed the content of the questionnaire, the rationale behind the sequence of the questions will be discussed.

6.4.2 Question Order

Before any respondent answers a question, it is necessary to inform the respondent why he is doing the questionnaire and how it should be filled in. Thus the first page of the questionnaire contained this information- introduction and instruction.

The introduction was a brief paragraph informing the respondents that by filling in the questionnaire they would be participating in a research project. It was hoped that this would encourage those given the questionnaire to fill it in and return it. The name of the researcher and the contact at the hospital were given.

The instructions tried to put their respondents at ease and make them aware that the questionnaire was design-based rather than medical and that their answers were to be treated in strict confidence.

The sequence of the questions in the pilot questionnaire can be considered in terms of the sequence of the sections and the sequence of the questions within each section.

The principles for choosing this order are given by Moser and Kalton, who in addition to describing the rationale behind the formulation of a question order for the interview provide advice also applicable to

questionnaires.

> 'At the start of the interview, the respondent is unsure of himself and so opening questions should be the ones to put him at ease and build up a rapport between him and the interviewer. They should be interesting questions which he should have no difficulty in answering, and they should not be on sensitive topics, for otherwise, he may refuse to continue with the interview. The questions should then proceed in a logical manner, moving from topic to topic in a way that indicates to the respondent the relationship between the questions; where an obvious break in the subject matter occurs, it is usually advisable to give a sentence or two explaining the break and the relevance of the new set of questions. Since questions on highly sensitive topics may lead to the respondent refusing the interview, they may be left until last; then if a refusal is met, relatively little information is lost'. (25)

Thus the questions on personal details were placed first because they are relatively easy to answer and build a rapport. The sections after these were regarded as fairly interesting to answer. The argument in the literature about open-ended question coming before the close-ended questions, the reversal of which could have introduced bias to the latter were ignored. Moser and Kalton argues that when a respondent fills in a questionnaire, especially a mail questionnaire, he can see all the questions before answering any of them. (26)

The second of Sellitz et al factors concerns the natural progression of the questions. Respondents find it easier to formulate their motives and attitudes after the situation or the behaviour has been clearly defined.

The third factor in the question sequence was maintaining interest. Questions should be asked at the right time in

order to arouse interest and receive sufficient attention. This aspect was the most difficult to control. It was hoped that by putting the factual and attitudinal dimensions of the questions in every particular section that attention and interest would be held.

The consideration for the question wording was the next to be considered.

6.4.3 Question Wording

Seelitz et al., Oppenheim, Moser and Kalton and others (27) writing on question wording tends to list the pitfalls that a researcher is likely to meet when designing questions for interviews or questionnaires. The caveats that these methodologies put forward include

a) questions should not be insufficiently specific

b) simple language, not jargon, should be used

c) ambiguous questions should be avoided

d) vague words should be omitted

e) no leading questions

f) questions should not presume knowledge

g) answers to hypothetical questions are difficult to interpret

h) care should be taken over the choice of personalised and non personalised questions

i) attempts should be made to reduce the threatening nature of embarrassing questions

j) questions on periodical behaviour need to be carefully worded

k) care should be taken over questions involving memory.

All these factors were borne in mind when the pilot questionnaire was constructed; one of the main purposes of the pilot questionnaires was to highlight ambiguous questions, misunderstandings etc., so that they could be eliminated in the final questionnaire. Thus the discussion of the question wording for particular questions in the pilot questionnaire will be dealt with when the results of the pilot questionnaire are analysed. It is also important to remember that the framework in which the respondent answers the question is part of question construction. Thus the results of the pilot questionnaire will show a) the ease with which the open ended questions can subsequently be closed (structured), whether the categories in the already closed questions were comprehensive,(too broad or narrow in range), and whether enough space had been left for the respondent to reply. Having discussed the rationale behind the use of the pilot questionnaire and the rationale behind it and shown how certain principles were adhered to in constructing it, the actual procedure in administering the questionnaire will now be discussed.

6.4.4 The Administration of the Pilot Questionnaire

Thirty five questionnaires were each given to the staff and patients of the randomly selected hospitals.

6.5 Findings

6.5.1 The Quantification of Questionnaire Data

Because the nature of the pilot questionnaire was mainly exploratory, and therefore contained many open ended questions, it was decided that the coding of all the

questions be made after the return of all the questionnaires or at least a substantial number had been received from each of the respondents, before analysing it. In the case of the closed questions, it was relatively easy to assign numerical symbols to the various categories of answers. With the Likert scales, a simple scoring procedure had to be carried out but essentially the process of analysis was routine. It was decided not to code the answers of the open ended questionnaires but to list them, impose a classification on them, and then use this classification for designing specifically, precoded answers in the final questionnaire and survey.

6.5.2 The Analysis of the Data

The computer was used to analyse the data using the programmes available in the SPSSX. (28) The decision to use the computer had two main reasons, namely the quantity of data and enabling the researcher to become conversant with the use of computers for analysing statistical data. The statistical procedures used were

i) Frequencies and crosstabulations - Frequencies give a measure in terms of absolute numbers or percentages of how many of the respondents fall into a certain category or a coded variable, whereas cross tabulations give a measure of how many respondents fall into a response category when two or more variables are considered. For each crosstabulation, the statistic, Chi- square - an index of association was obtained

ii) Non parametric Test - correlations were used to

test for relationships between the dependent and independent variables under study.

The results of the pilot questionnaire, their interpretation and analysis and had implication for the final questionnaire design.

Questionnaires have been subjected to many criticisms, for example,

i) they provide soft rather than hard data for the majority of the question types listed, (29)

ii) they are dependent on sample size yet one seeks reliable and representative findings, (30)

iii) some questions can be unintentionally subjective, and are affected by personal bias. (31)

In spite of these criticisms, there are many advantages of questionnaires which can be summarised as:

i) they are a quick took for obtaining the data, (32)

ii) they can cover a wide range of data, (33)

iii) if correctly compiled they are generally suitable for computer statistical analyses. (34)

6.5.3 Review and Appraisal

In this section the results of the pilot questionnaire are not treated question by question but in terms of their implications for the construction and administration of the final questionnaire, which was in a sense the final questionnaire. What was learnt from the pilot questionnaire will be discussed as it affected the choice of sample for the final questionnaire, the question content, the question sequence, the question wording, the administration of the final questionnaire.

6.5.4 The Choice of Sample for the Final Study

It was identified at this stage that restricting the case studies to two Nucleus hospitals would provide enough data for the confirmation or rejection of the hypothesis

6.6 The Final Stage

6.6.1 Methodology and Refinement

The final stage used the reconstructed questionnaire which represented the final imposition of a structure on the study. The respondents choices were limited in terms of the topics and choice within these topics. The transition from the unstructured interviews through the semi - structured interviews to the final structured interviews showed the conceptual and methodological refinement thus producing quantitative rather than qualitative data.

6.6.1.1 The Content of The Questions for the Final Questionnaire

There was significant differences between the the question content of the pilot questionnaire and the final questionnaire. The most significant change was the exclusion of some questions, the elaboration or minimisation of others, and the inclusion of others in order that those questions intended to ascertain facts, (or what the respondents believed to be facts), feelings and explanations for feelings etc. could be rectified. For example redundant questions were excluded, and questions which were directly related to the three variables under study, namely size, amenity, and

communication distances were modified. Some open-ended questions were closed, and some closed questions were opened. The final major change was the inclusion of new questions. The pilot questionnaire did not elicit any major determinant on user attitude but the respondents highlighted specific facets of particular determinants which needed elaboration. Thus the final questionnaire included a question on the use of and attitudes towards certain variables which were not considered in the pilot questionnaire.

Although these changes in the question content invariably affected the question sequence the same set of principles used in pilot study were used for the sequential construction of the final questionnaire, in the final questionnaire however sectionalisation and explanation of the sections were introduced.

6.6.1.2 Distribution of the Final Questionnaires

An approach similar to that adopted in the pilot questionnaire was used. However in this case the respondents were those actually using the main reception Forty five questionnaires were given out to selected individuals in each hospital. Thirty eight (38) respondents answered or were helped to answer the questionnaires in the Newham hospital, (NH), and forty (40) at the Maidstone Hospital, (MH).

6.6.1.3 Problems encountered During the Fieldwork

The problems which were encountered during the fieldwork albeit minimal could be classified as those which

involved the staff and those which involved the patients. Most of the problems which were encountered among the members of staff who were away and had not been informed officially of the study taking part in their department and had to seek clearance from the next above in authority.

The problems involving the patients were partly due to the author not being able to identify at first hand instances in which the patient was either blind or had impaired hearing or could not read, write or understand the English language sufficiently to be able to answer the questionnaire. These problems were in greater evidence at the Newham hospital due arguably the higher level of ethnic minorities in that area.

6.6.1.4 Support of Project by Hospital Administration

The support of the hospital staff was phenomenal in both hospitals. Their co-operation was unquestionable at all levels. In the second set of questionnaires, a different strategy was adopted in order that the possibility of response bias, was minimised. The approach adopted was that the questionnaires were left on the tables and chairs in the main reception and waiting area or were given out to the patients by the receptionists or the porters on duty. The respondents then returned them to the reception desk or left them on the tables. These questionnaires were then picked up at intervals and new ones put in their place.

6.6.1.5 **The Covering Letters**

Letters were sent to the various administrators of the respective hospitals before permission was granted for the study. The aim of the letters was to give the following information: who was conducting the survey, why it was being done, and what was hoped to be gained from it. (35,36) The response to some of these letters and other memoranda sent to the author during the course of this study has been included in Appendix 6B.

6.6.1.6 Anonymity During the Survey

A number of researchers have indicated how responses to questionnaires in Britain can be influenced by the colour/race of the interviewer (37) the type of dress and other factors such whether the questionnaire was completed before, during, or after the patients visit to the hospital. All these factors were taken into consideration and the receptionists in the hospitals were used to distribute the questionnaires as much as possible. There were instances where some of the respondents actually volunteered to answer the questionnaires with the author.

The results of the fieldwork, the above studies and the subsequent analysis of the data are in Chapters 8 and 9 and 10.

6.7 **Summary**

It is argued here that as appropriateness in use of the reception and waiting areas is measured in part by eliciting users' attitudes, questionnaires are probably the

most suitable method to use. However, these questionnaires were supplemented by interviews with porters, ambulancepersons, receptionists and patients, so that the shortcoming of one would be compensated by the other methods. Interviews were conducted in both the pilot and the main case studies. The interviews were used so that general data about the reception and waiting areas could be gathered, and the author helped some respondents to fill their questionnaires in some instances. The questionnaire was designed to collect the data necessary for the main appropriateness in use indicators. Both factual data and opinion was sought. The factual data includes the nature of the users; porters, ambulancemen, receptionist, and patients, and their movements while they are using (working and/or going through) the reception and waiting area. Opinional data included information about the users' satisfaction with the use of the reception and waiting areas and the users' perception of the different aspects of use which have been discussed in relation to the indicators of effectiveness in use. There were two separate questionnaires to collect these types of data from, (i) the patients, and ii)staff(Appendix B)

As this study aimed to evaluate some selected reception and waiting areas in nucleus hospitals and a private hospital, familiarisation with the methods that this study had to adopt was necessary for the author. In order to test their usefulness and effectiveness in the gathering of data questionnaires were utilized in a

pilot study. This exercise helped the identification of some problems of in using questionnaire as a method of data collection, for example it showed the obscurity of some questions.

As a result, considerable modifications were made to the initial format of the questionnaire.The pilot study was intended only as a test of the questionnaire, and to gain experience in its use, and familiarisation with its application. This was helped by discussions with fellow post graduate students. Notwithstanding, the findings of the pilot study were useful and proved that the appropriateness in use of the reception and waiting areas could be measured by the seven main indicators, (See Chapter 5) and that the reception and waiting areas differed in their appropriateness in use. Additionally, there was a relationship between the design characteristics of the reception and waiting areas which were investigated in the pilot study and their appropriateness in use. The users in the reception and waiting areas investigated in the pilot study showed they had many many problems in use that were mainly due not only to the design features of the reception and waiting areas but also with the operational policies as well.

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CHAPTER 7

GENERAL FINDINGS : USER RESPONSE TO THE SUBJECTIVE FACTORS WHICH AFFECT USER SATISFACTION IN THE MAIN RECEPTION AND WAITING AREA

7.1 Introduction

Although the primary purpose of this study was to explore the basic relationships between the three main design variables, the number and size of amenities and the proximity of the main reception and waiting area to other departmental reception and waiting areas and their appropriateness in use, it was necessary to uncover and enable a deeper understanding of other detailed relationships involved especially with other subjective factors. These subjective factors include the users perception of the distances, sizes, signing and routing of reception and waiting areas and of the adequacy, functionality and design characteristics of both the amenities and the reception areas.

These other subjective factors were investigated by means of observations, interviews and questionnaires in four hospitals, namely the Greenwich, Bury St. Edmunds representing the Best Buy, Newham and Maidstone hospitals, representing the Nucleus linear and the L-Shape respectively.

Although substantial knowledge of the more detailed relationships was gained from the study in the Greenwich and Best Buy hospitals this chapter will focus primarily on those which were investigated at the Nucleus hospitals at Newham and Maidstone. The reason for not discussing the first two hospitals in detail is the fact that the two

Nucleus hospitals were used for the detailed study involving the three key variables which were thoroughly investigated in Chapters 8, 9, and 10.

The chapter will summarise by means of condescriptive (frequencies) and associational (crosstabulations and correlations) statistical techniques (1) the results obtained from the respondents answers to the questionnaires. The development of the questionnaires were based primarily on the assumptions made in the design guidance from which the standards for the design of the main reception and waiting areas were evolved.

From these assumptions, a number of propositions and or relationships were identified. Some of these were that the user attitudes to the design of the main reception and waiting area could be related to the

i) atmosphere,

ii) the perception of the distances, and

iii) privacy.

The relationship of the user perception of the atmosphere in the main reception and waiting area to the following variables was also considered;

i) the number of times the hospital has been visited,

ii) the type and number of accompaniment,

iii) the location and ease of identification of the reception counter,

iv) the length of time the user has to wait either to see the receptionists in the main reception and waiting area or to see the consultant in any of the subreception areas

v) attitude of staff towards the patients.

vi) the signage adopted. (The hospitals signs were measured of their clarity, readability, understandability, colour contrast between the letters and the background, size of the letters, number of signs in one area etc.)

vii) unwanted sights, smell and noise,

ix) environmental comfort, measured in terms of the lighting level, temperature, and stuffiness.

The semantics used in the literature and the guidance to describe the user perception of the atmosphere within the main reception and waiting area such as welcoming, helpful, prompt, cheerful, quiet, clean, relaxed, formal, and institutional, were used as the basis for the measurement.

In terms of the distances the guidance assumes that a relationship between the degree of disability and the user perception of access and distances within the hospital existed.

In terms of privacy, the guidance assumes that the design of the reception counter and the degree of privacy and or the patients perception of privacy of conversation with the receptionists are related.

In order to test the relationships between these variables, and the patient perception of the atmosphere in the main reception and waiting areas, crosstabulations with its Chi-square and significance level were used as the first means to test any association. (1) The method adopted were that crosstabulations of the variables

to be tested were calculated for all the four hospitals together, then the two nucleus hospitals together, then the two hospitals separately.

Although these were some of the possible relationships which could be developed from the general findings many other areas of interest were also identified. For example, the variables such as the patient characteristics and its relationship to the age, sex, the level of disability, were also investigated. On the other hand, some of the external factors which emerged as being the possible causes of patient dissatisfaction not only with the design of the hospital as a whole but with the design of the main reception and waiting areas in particular would be considered. These factors include,

i) means of getting into the hospital
ii) parking area used (disabled car park)
iii) entrance used
iv) difficulty from parking area to the entrance used
v) identification of the main entrance

One of the reasons for considering these external factors relates especially to the means of getting into the hospital. It was observed that there was a relationship between means of getting into the hospital and the length of time the entrance lobby doors were opened. In most hospitals where the majority of the patients came by public transport, it was evident that there was a periodic increase in patient traffic through the entrance lobby

which was directly related to the time when these buses or the other means of public transport arrived near or on the hospital site. During these times due to the volume of pedestrian traffic, the entrance lobby doors appear to be permanently opened causing draughty conditions within the main reception and waiting areas as well as the hospital street. In the Nucleus hospital, a wind tunnel is created along the hospital street and the draughty conditions increases as the number of doors and windows along the street increases.

7.2 Access through the entrance lobby

On arriving at the hospital doors, the difficulty with access through the entrance lobby either with the opening of the doors or with the floor mat often set within the entrance lobby often caused some dissatisfaction. The patients were therefore asked whether they had any problems with access through the entrance lobby, opening the main entrance door, or going over the floor mat. The results showed that the majority of the patients in both hospitals did not find any access problems through either the door to the lobby or the door to the main reception and waiting areas.

7.3 Patients Perception of the Atmosphere in the Main Reception and Waiting Area

With regards to the patients perception of the atmosphere in the main reception and waiting area, the patients were asked to describe how they perceived the atmosphere in the main reception and waiting area. Their perception was

measured by choosing the highest rank on a five point Likert scale which described the atmosphere in terms of being welcoming, helpful, friendly, prompt, clean, cheerful, relaxed, quiet, tidy, formal, and homely. This study assumes that some of these rather general subjective measurements can be correlated to the objective ones stated in 7.1, such as the number of times the patient had visited the hospital, in order to identify whether any relationships existed. The results obtained from the crosstabulations are as shown in Fig 7.6.

In connection with the patient perception of the atmosphere in the reception area the findings were as follows, 81.3% (13 out of 16) of the patients in the Newham hospital and 90.9% (10 out of 11) in the Maidstone hospital, indicated that they had a very welcoming reception. 16 out of 19 (84.2%) patients in the Newham hospital and 12 out of 13 (92.3 %) in the Maidstone hospital had a very helpful reception. 14 out of 17 (82.4%) patients in the Newham hospital and 8 out of 9 (88.9%) patients in the Maidstone hospital had a very friendly reception and 12 out of 15 (80.0%) patients in the Newham hospital and 8 out of 9 (88.9%) in the Maidstone hospital had a very prompt reception. 13 out of 16 (81.3%) patients in the Newham hospital and 8 out of 10 (80.0%) in the Maidstone hospital had a very cheerful reception,

In connection with the description of the atmosphere in the reception area, 13 out of 21 (61.9%) patients in the Newham

hospital and 21 out of 25 (84.0 %) in the Maidstone hospital, indicated that it was quiet. 20 out of 21 (95.2%) patients in the Newham hospital and 25 out of 28 (89.3%) in the Maidstone hospital said it was clean. 17 out of 20 (85.0%) in the Newham hospital and 19 out of 24 (79.2%) in the Maidstone hospital said it was friendly 19 out of 22 (86.4%) patients in the Newham hospital and 19 out of 22 (86.4%) in the Maidstone sad it was relaxed. 13 out of 16 (81.3%) patients in the Newham hospital and 8 out of 10 (80%) in the Maidstone hospital said they had a very cheerful reception. 12 out of 15 (80%) in the Newham hospital and 8 out of 9 (88.9%) in the Maidstone hospital said they had a very prompt reception. 11 out of 19 (57.9%) of the patients in the Newham hospital 6 out of 15 (40%) in the Maidstone hospital said it had a very formal atmosphere and 4 out of 19 (21.1%) patients in the Newham hospital and 7 out of 16 (43.8 %) in the Maidstone hospital said it had a very homely atmosphere.

These results seem to suggest that the majority of the patients perceived the Maidstone hospital as being more welcoming, friendly, quiet, clean, relaxed, tidy, and homely than the Newham hospital. Whereas they perceived the Newham hospital as being more formal and cheerful than the Maidstone hospital.

These variables were then crosstabulated with other variables which are indicated in Section 7.1 in order to identify whether any relationships existed. The results obtained are now described.

7.4 Times Hospital Visited

The patients were asked to indicate the number of times they had visited the hospital. This variable, the number of times the patient had visited the hospital, invariably has been suggested in the literature and the guidance as being a possible indicator of the user perception of the familiarity and the atmosphere within the hospital. The assumption is that the more times that the patient had visited the hospital, the more the patient is likely to be familiar with the building with the possibility of reducing the the time the patient has to ask and possibly wait for directions from the receptionists.

From the results obtained, in terms of the number of times the hospital had been visited, 69.6% (16 out of 23) of the patients in the Newham hospital and 38.7% (12 out of 31) in the Maidstone hospital had visited the hospital more than three times. Only 16.1% (5 out of 31) of the patients were first time users of the hospital in the Maidstone hospital. 13.0% (3 out of 23)of the patients in the Newham hospital and 16.1% (5 out of 31) in the Maidstone hospital had visited their respective hospitals twice. 17.4% (4 out of 23) in the Newham hospital and 29% (9 out of 31) in the Maidstone hospital had visited their respective hospitals more than three times.

From the results obtained by crosstabulating this variable with the variables which were used to describe the user perception of the atmosphere in the main reception and waiting area as discussed in section 7.3, it was evident

that there was no association between these variables

7.5 Accompaniment

The patients were asked to indicate the number and type of people who accompanied the patient to the hospital. The results showed that, the majority of the patients were accompanied by their relatives 63.6% (14 out of 22) of the patients in the Newham hospital and 76..9% (20 out of 26) the Maidstone hospital. 84.6% (11 out of 13) patients were accompanied by one relative in the Newham hospital whereas there were 57.9% (11 out of 19) in the Maidstone postal.

The crosstabulation results showed that there was no association between the number and the type of accompaniment and the variables which were used to describe the user perception of the atmosphere in the main reception and waiting area in section 7.2.

7.6 Asking for Directions

One of the assumptions in the literature is that most first time patients will ask for directions from the receptionists or the other members of staff especially those in uniform. The patients were therefore questioned whether they went to ask for directions from the receptionists. The results obtained showed that the number of patients who went to ask for directions from the receptionists was smaller in the Maidstone hospital than in the Newham hospital so was the number of patients who indicated that the reception counter was easy to identify and they were not necessarily first time visitors which could be the possible explanation why a smaller percentage

of people want and asked for directions in the Maidstone hospital.

In addition the location of the reception desk in the Maidstone hospital, induces the users, at the first instance, to rely on the signs rather than possibly go the receptionists to ask for directions.

These number of times a patient asked for directions from the receptionists were crosstabulated with the variables which were used to describe the patients perception of the atmosphere in the main reception and waiting area as discussed in section 7.2. From the results obtained, it was evident that there was no association between these variables, that is patients who went to ask for directions from the receptionists or the patients who said it was easy to identify the reception counter and the user perception of the atmosphere in the main reception and waiting area.

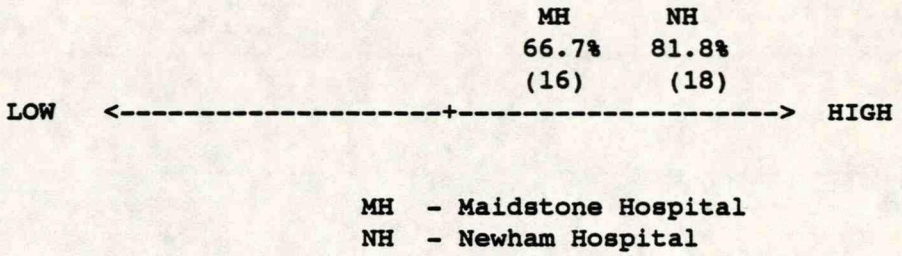
7.7 Length of Wait to see receptionists

One of the main causes of patient dissatisfaction is the length of time they have to wait to see either the receptionists or the consultant. These have space implications due to the fact that the longer the patients wait either at the reception counter or at in the waiting areas, the longer the queues and the greater the impingement of the circulation and other spaces. The results obtained by questioning the patients how long they waited either to see the receptionists or to see the consultant showed that 94.1% (16 out 17) of the patients in the Newham hospital and 88.9% (8 out 9) in the

Maidstone hospital, waited less than fifteen minutes as to see the receptionists.

7.7.1 Length of Waiting Time to see Consultants

With respect to the consultants, the results showed that 81.8% (18 out of 22)of the patients in the Newham hospital and 66.7% (16 out of 24) in the Maidstone hospital of the respondents indicated that they had to wait for over thirty minutes in the out-patients department to see the consultants. While waiting to see the consultant less than 40% in both hospitals came to main reception and waiting area and purposely to use the facilities and amenities.



MH - Maidstone Hospital
NH - Newham Hospital

Figure 7.5 The patients who waited less than fifteen minutes to see the consultants

The reason for the fewer percentage of patients who came to use the amenities in the main reception and waiting area was the fact that they were concerned about losing their turn in the queue and as such preferred to wait in the subwaiting area.

These variables were crosstabulated with the variables which were used to describe the patients perception of the atmosphere in the main reception and waiting area as discussed in section 7.3. From the results obtained, it

was evident that there was an association between the length of wait in the clinic and the user perception of a cheerful reception (Chi-square = 16.62, significance = 0.05) These variables as already mentioned were not subjected to the nonparametric tests.

To resolve the problem of the length of waiting in the clinic in order to improve the user perception of a cheerful reception, one hospital the Harness hospital at Stafford has provided a table top display of goods in the out-patients sub-waiting area. Other hospitals also allow the trolleys to go round periodically with these items to serve the patients waiting in such areas in order that they do not necessary have to come to the main reception and waiting area for a snack.

7.8 **Attention given by the receptionists**

The patients were asked whether they were given a hurried attention by the receptionist showed that the number of patients who indicated that they were given a hurried attention by the receptionists was higher in the Maidstone hospital than in the Newham hospital. On of the reasons which could be given is the fact that it is easier to direct the patients to the various departments in the Maidstone hospital than in the Newham hospital because of the colour coding adopted. This colour coding, makes it easier for the various sections of the department to be easily identified by the patients and their visitors after receiving the directions from the receptionists.

7.9 Privacy of Conversation

With regards to the privacy of the conversation, the patients were asked whether they thought they had a private conversation with the receptionists. The results obtained showed that 40% (4 out of 10) patients in the Newham hospital and 60% (6 out of 10) patients in the Maidstone hospital of the patients said that they had a private conversation with the receptionists.

The explanation which can be given for this discrepancy can be related to the location of the reception desk in the hospitals. Whereas the Newham hospitals reception counter is located on the street and open the Maidstone hospital reception counter has been located in the entrance hub and is enclosed.

This response was confirmed when the patients were specifically asked whether they thought the conversation was overheard, 13 out of 15 (86.7%) in the Newham hospital and 7 out of 9 (77.8%) in the Maidstone hospital confirmed the affirmative. Although the patients were not specifically asked whether they thought that their conversation being overheard was an invasion of privacy, this evidence seem to to suggest such a possibility. In fact at the Newham hospital where the reception desk is on the hospital street, it was observed and from the interview with the receptionist that most of the patients who had an appointment with the renal unit which is an extension at the front of the hospital found it very embarrassing to ask for the directions.

7.10 Finding Ones Way in the Hospital

Several methods were used by the patients in finding their way in the hospital from the main reception and waiting area. These methods included asking for directions from the receptionists or the other members of staff, or by following the hospital signs, or the combination of both methods. Others who knew their way from the previous visits did neither of the two methods. The findings obtained though significant will not be discussed in detail with the exception of those who found their way by the signs. However the understandability of the language used in directing the patients is of considerable importance. There were occasions when some of the patients asked the researcher for directions. Their importance is related to whether they were easily understandable and allowed the patients to get to their destination without having to ask further direction along the route to the department or clinic which they are attending or whether the was any relationship with the patient perception of the atmosphere in the main reception and waiting area. The patients description of these hospital signs are in Section 7.11.1 and the results of the crosstabulations are in Section 7.10.1.

7.10.1 Description of Hospital Signs

The importance of hospital signs have been discussed in this study. The questions asked related specific aspects of the signs. The results obtained were as follows; 10 out of 14 (71.4%) of the patients in the Newham hospital and all the patients who answered this

question, eighteen of them, in the Maidstone hospital found their way by the signs.

Out of this group it was necessary to identify their responses to the description of the hospital signs. The percentages of the respondents who indicated that the hospital signs was clear were 87.5% (14 out of 16) of the patients in the Newham hospital and 95.7% (22 out of 23) in the Maidstone hospital. 78.6% (11 out of 14) of the patients in the Newham hospital and 87.5% (7 out of 8) in the Maidstone hospital said the signs were simple. 6 out of 8 (75%) of the patients in the Newham hospital and all (5 out of 5) the patients in the Maidstone hospital indicated that the hospital signs were not difficult to read not difficult to read. Only 3 out of 8 (37.5%) patients in the Newham hospital and no one in the Maidstone hospital indicated that the hospital signs were not difficult to understand .

42.9% (3 out of 7) of the patients in the Newham hospital and 100% (5 out of 5) in the Maidstone hospital indicated that the letters on the signs were not poor in contrast to the background. 4 out of 8 (50%) of the patients in the Newham hospital and 4 out of 5 (80%) in the Maidstone Hospital indicated that the signs were not too small. 4 out of 10 (60%) in the Newham hospital and 4 out of 4 (100%) in the Maidstone hospital mentioned that there were not too many signs in one area. 5 out of 9 (55.6%) of the patients in the Newham hospital and 4 out 4 (100%) in the Maidstone hospital said they were not poorly lighted.

From the results it was evident that there was an association between the the following variables, friendly reception and clear hospital signs (Chi - square = 13.97, significance = 0.02), the user perception formal atmosphere and hospital signs poorly lighted (Chi - square = 8.75, significance = 0.06), cheerful reception and clear hospital signs (Chi - square = 9.63, significance = 0.00). These variables as already mentioned were not subjected to the nonparametric tests.

7.11 **Unwanted Sights, Noises and Smells**

These questions were asked in order to find out whether the users were aware of any sights, noises or smells in the main reception and waiting area which were likely to affect their perception of the atmosphere in the main reception and waiting area.

Although a small percentage of the respondents indicated that they saw patients in distress, patients on stretchers and trolleys, or heard children playing, office equipment, toilets, the air-conditioning and light fittings as well as smelling disinfectants, medicines, floor polish and the toilets (in the Newham hospital) the majority were not upset by any of these since they accepted them as being part of the whole hospital environment.

Although the findings will not be indicated in detail, the following associations which were identified from the crosstabulation results it was evident that there was an association between the the following variables.

Friendly reception and the smell of medicines, (Chi -

square = 6.85, significance = 0.07), friendly reception and those who were upset by the smells in the hospital, (Chi - square = 8.52, significance = 0.03).

Welcoming reception and the smell of medicines, (Chi - square = 10.79, significance = 0.01).

Tidy atmosphere and the smell of floor polish, (Chi - square = 17.61, significance = 0.00), tidy atmosphere and see patients on stretchers or trolleys (Chi - square = 15.89, significance = 0.00), tidy atmosphere and hear patients in distress (Chi - square = 11.58, significance = 0.02).

Relaxed atmosphere and hear patients in distress (Chi - square = 40.16, significance = 0.00), relaxed atmosphere and smell medicines (Chi - square = 10.34, significance = 0.03), relaxed atmosphere and seeing patients in distress (Chi - square = 9.35, significance = 0.00).

Clean atmosphere and smell of floor polish (Chi - square = 14.37, significance = 0.00), clean atmosphere and seeing patients on stretchers and trolleys, (Chi - square = 17.68, significance = 0.00). Formal atmosphere and see patients on stretchers and trolleys (Chi - square = 8.50, significance = 0.07).

Cheerful atmosphere and the hearing of patients in distress (Chi - square = 16.57, significance = 0.00).

7.12 Environmental Comfort

7.12.1 Temperature

In terms of temperature, the majority, that is 16 out of 22 (72.7%) of the patients in the Newham hospital and 20 out of 28 (71.4%) in the Maidstone hospital considered

the internal temperature as being warm. Considering the fact that the study was undertaken in the winter and that the temperatures recorded during the day of the questionnaires fluctuated between 15 degrees and 18 degrees Centigrade. From the crosstabulations, there seemed to be an association between the patients perception of a welcoming reception (Chi - square = 26.11, significance 0.00).

7.12.2 Lighting Level

In terms of the lighting level, the majority, that is 15 out of 22 (68.2%) of the patients in the Newham hospital and 24 out of 27 (88.9%) in the Maidstone hospital considered the internal lighting level which was a combination of artificial lighting and natural lighting, as being just right. Considering the fact that the study was undertaken in the winter and the lighting levels recorded during the day of the questionnaires ranged in intensity in relation to the distance from the windows. From the crosstabulation results, there seemed to be an association between the lighting level and the following variables. The user perception of a relaxed atmosphere (Chi - square =34.11, significance 0.00), quiet atmosphere (Chi - square =27.05, significance 0.04), homely atmosphere (Chi - square =46.52, significance 0.01), welcoming reception (Chi - square =15.94, significance 0.06).

7.12.3 Stuffiness

With respect to stuffiness, 3 out of 28 (10.7%) of the patients in the Maidstone hospital and 10 out of 20 (50%)

in the Newham hospital indicated that the main reception and waiting areas was not stuffy.

Due to the non smoking policy adopted in the Maidstone Hospital as opposed to to the Newham hospital where the main reception and waiting area is designated smoking area. One of the problems identified with the no smoking policy is that most of the patients choose to finish off their smoke just at the entrance to the hospital often leaving an eyesore of cigarette butts

7.13 Likes and Dislikes

With respect to the patients likes and dislikes no general trend seem to have emerged. The evidence which emerged were as follows; With respect to their likes only 1 out of 11 (9.1%) in the Newham hospital expressed their likeness for the size of the main reception and waiting area. Only 1 out 15 (6.7%) of the patients in the Maidstone hospital liked the layout. 3 out of 11 (27.3%) of the patients in the Newham, hospitals and 6 out of 15 (40%) in the Maidstone hospital liked the atmosphere. 4 out of 11 (36.4%) in the Newham hospital and 7 out of 15 (46.7%) in the Maidstone hospital liked the amenities provided.

3 out of 9 (33.3%) of the patients in the Newham hospital disliked the size, 4 out of 9 (44.4%) disliked the atmosphere in the Newham hospital whereas only 1 out 9 (11.1%) disliked it in the Maidstone hospital. 4 out of 9 (44.4%) of the patients disliked other aspects not indicated in the questionnaire.

7.14 Provision of Amenities

The users were asked to respond to the type of amenities they would want to see provided in the main reception and waiting area and the degree of importance which they attached to it. The amenities listed comprised not only of the commercial facilities but other amenities which has been provided in other reception and waiting areas in other hospitals which were studied.

These amenities were the reception counter, a waiting area, a bank, a shop, a restaurant, a snack bar, a chapel, a post office, lift, escalator, pram storage area, porters lodge, creche, toilet facilities, newsagents, chemists, grocery/food shop, florist, meditation/quiet room, exhibition space, a staircase, a wheelchair area, a stretcher area, an ambulancepersons rooms. Although the telephones were purposely left out, some of the respondents indicated that they must be provided.

With respect to the these amenities over fifty percent in the Newham hospital wanted the following amenities to be provided, namely, reception counter, shop, snack bar, creche, toilet facilities newsagents, chemists and chemists. Whereas in the Maidstone hospital, the snack bar and the toilet facilities were the amenities which over fifty percent expected to be provided although most of the other amenities such as the reception counter, the waiting area, the shop, the lift the creche the newsagents and the florist had more than over forty percent of the response.

7.15 Importance of Amenities

With respect to the the importance of the facilities, the creche was indicated by 6 out of 19 (31.6%) of the patients in the Newham hospital as the most important amenity whereas reception counter was indicated by 10 out of 20 (50%) of the patients as the first most important amenity in the Maidstone hospital. It is not surprising that the creche was the most important amenity in the Newham hospital, this might be due to the location of the antenatal clinic close to the main reception and waiting area. In addition there amenities provided for children in this hospital is very minimal. See Appendix E.

The waiting area and the snack bar were the second most important amenity required in the Newham hospital whereas the toilet facility was indicated by 7 out of 19 (36.6%) of the patients as the second most important amenity in the Maidstone hospital. The toilets were indicated by 6 out of 18 (33.3%) as the third most important amenity in the Newham hospital whereas the creche was indicated by 3 out of 18 (16.7%) of the patients as the third most important amenity in the Maidstone hospital.

The Newsagents was indicated by 5 out of 17 (29.4%) of the patients as the fourth most important amenity in the Newham hospital whereas the snack bar, the lift and the florists were indicated by 3 out of 17 (22.4%) of the patients as the fourth in the Maidstone

hospital. The chemists was indicated by 3 out of 16 (18.8%) of the patients in the Newham hospital and by 3 out of 17 (17.6%) in the Maidstone hospital as the fifth most important as well as the creche. The sixth most important amenity was the wheelchair area and the newsagents which were indicated by 3 out of 15 (20%) of the patients in the Newham hospital. In the Maidstone hospital, the exhibition space, the meditation room, the escalator, the wheelchair area, and the newsagents were indicated by 2 out of the 16 (12.5%)of the patients as the sixth most important amenity.

7.16 Summary

This chapter has shown that there are other factors apart from the main variables under test which affect the user satisfaction with the design of the reception and waiting area.

Some of these factors are subjective whereas others can be objectively measured. Some of the assumptions in the design guidance have been based on the possible relationships between these factors most of which have not been empirically verified. For example the type and number of people who would accompany the patients, the type of amenities which these patients really require in order that the non institutional atmosphere will be created. This chapter has basically provided the empirical basis from which these relationships can be tested. However this is beyond the scope of this study at this stage and can be used as material for further study.

7.17 References

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CHAPTER EIGHT

SPECIFIC FINDINGS : COMPARISON OF THE DESIGN CHARACTERISTICS OF THE RECEPTION AND WAITING AREAS IN THE CASE STUDY HOSPITALS

8.1 Introduction

The comparison of two Nucleus hospitals was proposed at the outset of this study, the purpose of this chapter therefore is to assess their design characteristics.

The assessment of these design characteristics will be at the general and specific levels. The general level will involve the whole hospital design characteristics whereas the specific level will involve the main reception and waiting areas.

The whole hospital design characteristics are generally descriptive and include;

i) the differences in the interdepartmental relationships,

ii) the differences in the physical size.

The reception and waiting area design characteristics can be either descriptive or measurable. The descriptive characteristics of the reception and waiting area design include;

a) the general shape, form or layout and

b) the degree of compartmentalisation or the indicated by the existence of physical barriers between the amenities and/or the extent to which two functions share the same space as well as the extent to which these amenities are grouped around a common space which in most cases happen to be the waiting areas. It can also be of the extent to which similar amenities (such as the snack bar, shop and toilet facilities) exists in other departments which are accessible to patients, especially in the Accidents and

Emergency Departments.

The measurable characteristics include

a) the number and type of amenities

b) the physical area (square meters),

c) proximity, indicated by the measurement of two sets of distances, namely, between

i) the main reception counter and other departmental reception counters (proximity indicator 1) See Appendices D1/D3 for the matrices of these distances, and

ii) any departmental reception counter (the main reception counter inclusive) and all other departmental reception counters (proximity indicator 2). See appendix 8B for the matrices of these distances.

The reasons for these proximity measurements have been given in Chapter 4.

An indication of the degree of modification of the main reception and waiting areas from the standard Nucleus template will also be made where appropriate.

The whole hospital design characteristics are now briefly discussed.

8.2 The Whole Hospital Design

8.2.1 The Layout

The two Nucleus hospitals selected are the Newham District General Hospital, shown in Figs. 8.1 and 8.2, and the Maidstone District General Hospital, shown in Fig.8.3 and 8.4, which represent the linear and the L-types respectively as recommended in the standard guidance for the overall planning of the layouts of Nucleus hospitals.

Although only the first two phases of these hospitals have been built to date, the final layouts as proposed will be achieved after the completion of all the three phases, as shown in Figs 8.1 - 8.4.
The design of their reception and waiting areas however show considerable differences which are adequate for the purpose of this study.

8.2.2. The Interdepartmental Relationship

The basic differences in the whole hospital departmental relationships are governed by the juxtaposition of the standard cruciform departments (templates) to suit the accommodation required at the two hospitals.
These relationships can be discussed in terms of their horizontality and verticality with the emphasis on their horizontality since the main reception and waiting area activities are often confined to the ground level.

The basis for the development of the horizontal relationships is often those relationships between the cruciform clusters which are placed on the opposite side of the hospital street and the connections between individual clusters.
This study however focuses principally on the horizontal relationships between the clusters which are placed on the opposite sides of the street. A study of the plans of most of the Nucleus hospitals designed and/or built to date show very little circulation routes between individual clusters not on the hospital street. Where they occur, they are basically doorways which link the

cruciforms in order to satisfy the necessary fire regulations, and in very few cases these two cruciforms have had to be expanded along this axis in order to form a single department.

A description of the horizontal relationships on the ground floor two hospitals are as follows.

8.2.2.1 The Horizontal Interdepartmental Relationships - Newham Hospital

On the ground floor of this hospital as shown in Fig 8.1 beginning from the entrance in the first set of clusters are the Entrance Lobby, Main Entrance, the Head Porters' Office, part of the Outpatients clinics and the Antenatal Department on one side of the hospital street. On the opposite side are the Main Porters Lodge, Laboratory Services, Medical Records, Special Treatment Unit and the other Outpatients clinics.

In the second set of clusters are the Children's ward on one side of the hospital street and the Fracture and the Accidents and Emergency Clinic on the other side. In the third set of clusters from the entrance are the Children's Ward and the Pharmacy on one side of the hospital street, and the X-ray, JMC (Junior Medical Centre) and the Administration on the other side. One side of the fourth set of clusters have not been built but the opposite side are the Stores and Supplies Department. In the fifth cluster is the Maternity Department on one side of the hospital street and the stores and supplies on the other. In the sixth set of clusters is the Central Staff Changing Area and the Rehabilitation Department on one side of the

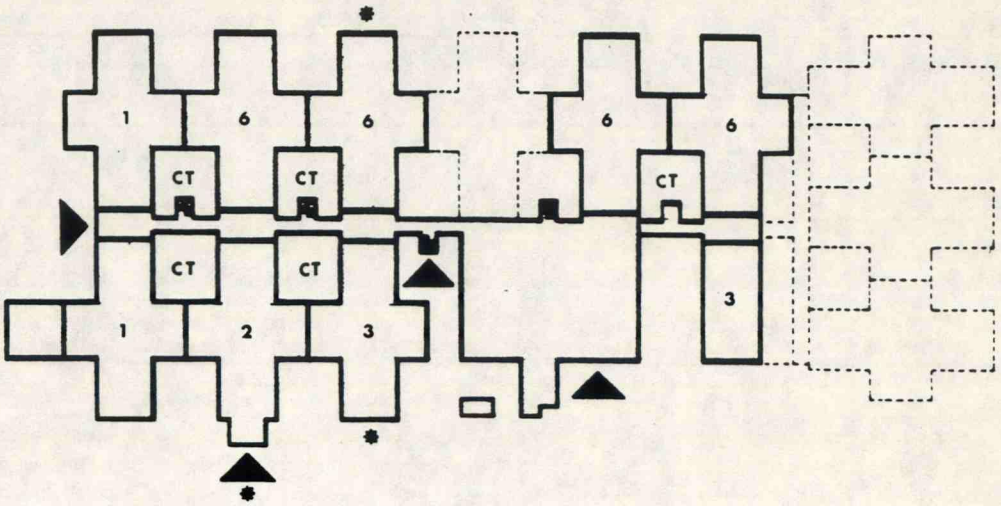


Figure 8.1 Newham District General Hospital : Ground Floor Plan.

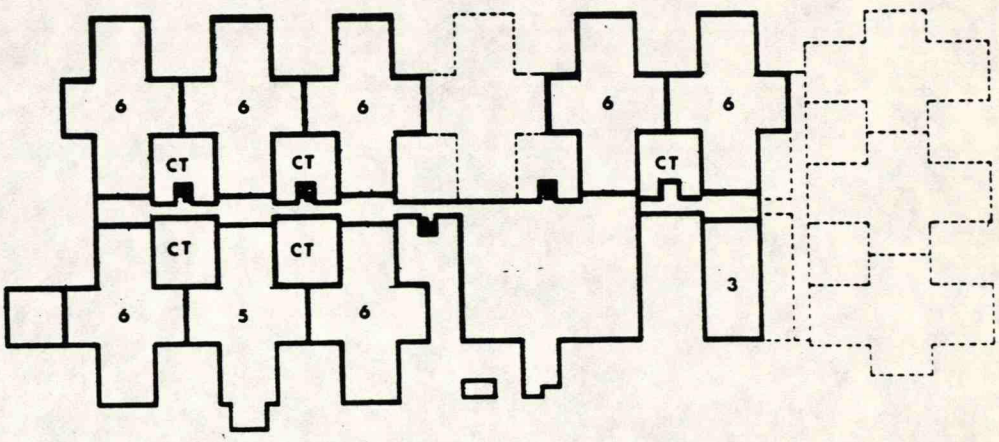
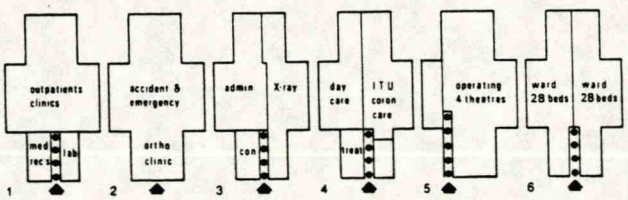


Figure 8.2 Newham District General Hospital : First Floor Plan



hospital Street and the Education Department on the other side.

8.2.2.2 The Horizontal Interdepartmental Relationships - The Maidstone Hospital

On the ground floor of the Maidstone Hospital, compared to the Newham hospital, the non-standard main entrance separates the service area from the other set of clusters. The main entrance, discussed in detail in Section 8.3.1.6 in addition to the office accommodation and the exhibition hall above the main entrance it has most of the amenities associated with the main reception and waiting area required in the guidance.

On the service side of the entrance shown in Fig 8.3 and on the ground floor are the Chemical Pathology department on one side of the hospital street and the Medical Records, and the Mortuary on the other side.

On the other side of the non-standard main entrance, and similar to the Newham hospital are, starting from the main entrance, and in the first set of clusters are the Main Waiting, Staff Change, Pharmacy, and Rehabilitation departments on one side of the hospital street and on the opposite side, the Obstetrics, the Outpatients and Medical Records Department. (See Fig. 8.1)

In the second set of clusters are the X-ray Department and the Administration on one side of the hospital street and the Adult Acute and the Geriatric Wards on the other. In the third set of clusters from the entrance are the Fracture Clinic and the Accidents and Emergency departments on one side of the hospital street and the

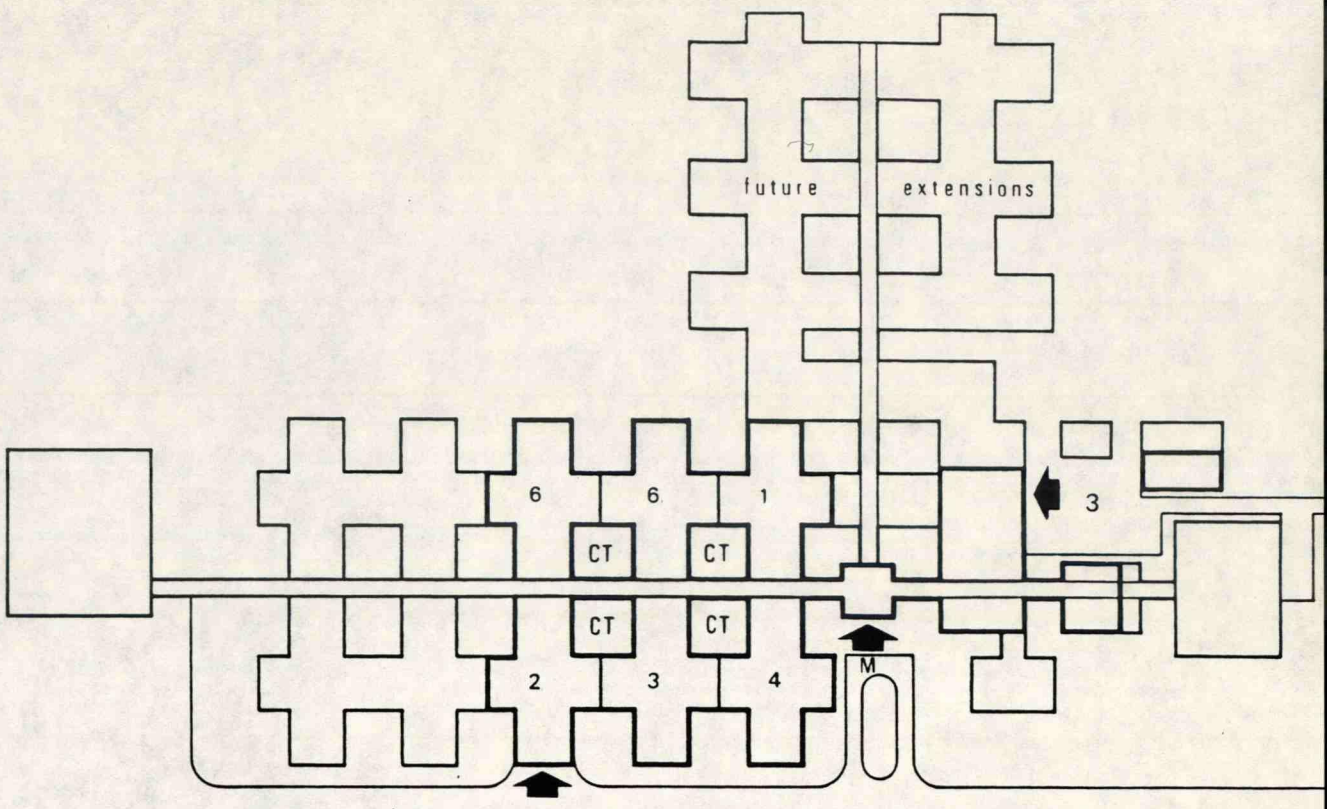


Figure 8.3 Maidstone District General Hospital Ground Floor Plan.

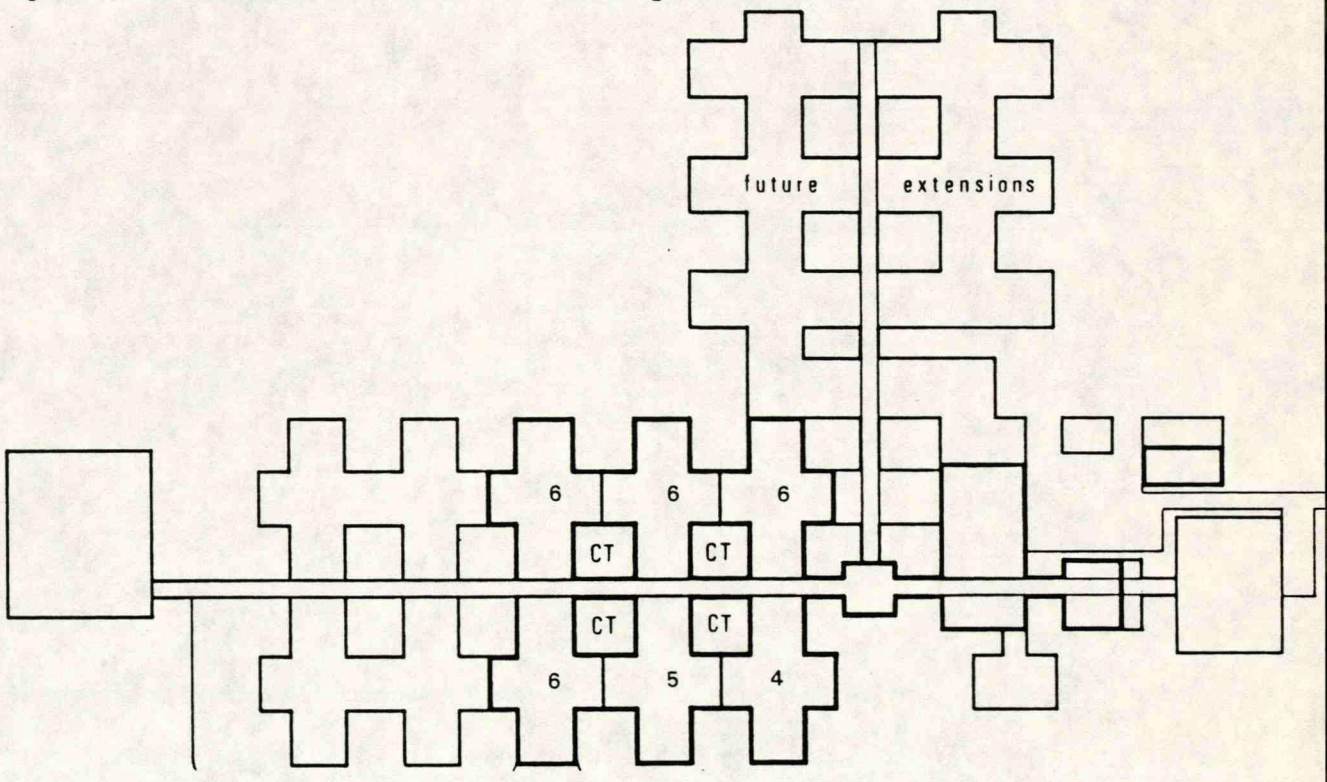
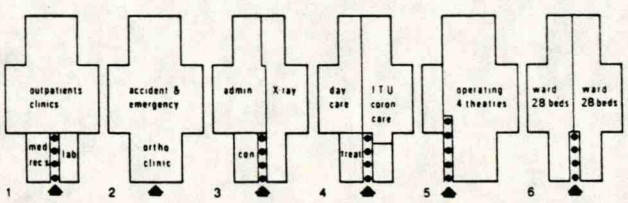


Figure 8.4 Maidstone District General Hospital First Floor Plan



Children's Ward on the other side. On one side of the fourth set of clusters is the Female Staff Changing Area the other side contains another Children's Ward.

8.2.2.3 The Vertical Interdepartmental Relationships

Although the departments above are similar in plan form to those on the ground floor they do not necessarily have functional relationship to the accommodation below them. Vertical communication between the accomodation above and those below are achieved via the lifts located on the hospital street. For example, in the case of the Newham hospital, the Maternity Ward is located about 192.2 metres away from the Antenatal clinic which is located at the main entrance end of the hospital. From anecdotal interviews with the portering staff the distance between these two related activities often causes considerable distress to pregnant mothers who have to walk between them to attend clinics.

This study however will not discuss the vertical relationship in such detail as the horizontal relationships since they have very little bearing on the ground floor accommodation.

8.2.2.4 Interdepartmental Relationships - Effects on the Reception and Waiting Area

The impact of how the interrelationships between the departments affects the main reception and waiting area can best be identified in three areas, namely,

i) the distances from the main reception and waiting area to these departments,

ii) the dispersion of the volume of pedestrian (patient) vehicular and equipment traffic at the entrance and within the hospital and

iii) the location of the main vertical communication routes, that is by means of the staircases and lifts to the departments above.

8.3 Design Characteristics - Reception and Waiting Areas

The two kinds of classification for the reception and waiting area characteristics namely, i) the descriptive and ii) the measurable as discussed in Section 8.1 are now outlined.

8.3.1 The Descriptive Characteristics

The descriptive characteristics include,

i) the general shape, form or layout and

ii) the degree of compartmentalisation indicated by the existence of physical barriers between the amenities, and/or the extent to which two functions share the same space as well as the extent to which these amenities are grouped around a common space, in most cases the waiting area. The existence of similar amenities in other departments are also significant.

8.3.1.1 The Shape and Layout

The accommodation which makes up the main entrance is contained in two clusters in the standard guidance. These two clusters, are designed to be placed opposite each other in the first phase of a hospital development, with the remainder of the accommodation required located on the section of the hospital street between them. This arrangement, shown in Fig

8.5, is intended to give good access to the Rehabilitation and Pharmacy departments, which in turn have subwaiting areas close to the snack bar. (1)

However as shown in Fig 8.5 the shape of the main reception and waiting area in the linear type is rectangular with the entrance lobby projecting along the longer side of the axis of the rectangle so formed.

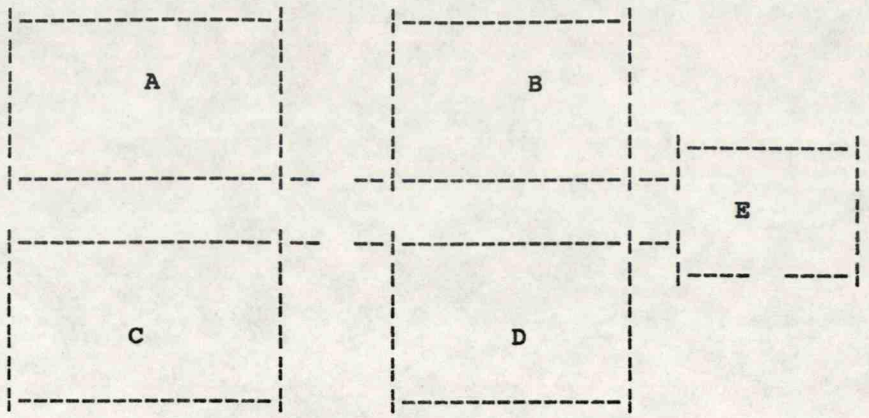
The Newham District General Hospital which is 'linear', conforms to a greater extent to the guidance recommendations in terms if its shape.

On the other hand, while maintaining the location of the snack bar and waiting area in the linear-type, in the L-type, (the Maidstone District General Hospital), some of the amenities have been located in the `hub' of the hospital, making it appear much more of a T-layout crisscrossed by the main communication route, the hospital street and the circulation routes linking the outpatients and the Elderly Day Wards, shown in Fig 8.6.

Due to the differences in the design of this area, it was necessary for this study to develop a further classification of the main reception and waiting area into subclusters in order to help simplify their description.

This classification into subclusters A - E developed for the purpose of this study is shown in Figure 8.5 and Appendix 8.2.

The detailed schedule of accommodation in each of these subclusters, an analysis will be undertaken of their differences, similarities and modifications from the standard guidance.



Schematic Diagram of the Main Reception and Waiting area

KEY

	NEWHAM	MAIDSTONE
A	Medical Records	Medical Records
B	Haematology	Outpatients Administration
C	Toilets/ Outpatients Administration	Staff Change/ Medical Records
D	Main Snack Waiting/ Shop	Main Snack Waiting/ Shop
E	Not Available	Main Entrance

Figure 8.5. Classification of Subclusters

8.3.1.2 Subcluster A

In the Newham hospital, Subcluster A accommodates the Medical Records Department, which is the same accommodation provided in the Maidstone Hospital, albeit with some modifications.

The location of this subcluster in the two hospitals conforms to the design guidance requirements.

The differences, similarities and the modifications from the standard can be extracted as follows. Although they both accommodate the main Medical Records Department, the type of functions within the individual rooms. As a result some rooms are different in the hospitals. The only room which has not been altered from the standard guidance is the administrative section of the Medical Records Departments. All the other spaces have different functions in the two hospitals. Another substantial modification which made to the standard in the Maidstone Hospital is the removal of the Admissions and Discharge office to subcluster E.

8.3.1.3 Subcluster B

Subcluster B in the Newham hospital is the Haematology department, with the General Porters and Staff Toilets and Rest Rooms used for the preparation of tea by the Medical Records Staff.

In the Maidstone Hospital, Subcluster B accommodates the Outpatients Administration and as such it is more similar to subcluster C in the Newham hospital than to subcluster B in the standard guidance.

Newham subcluster B has only been slightly modified from the standard. As a result detailed comparison between these subclusters in the two hospitals is difficult, since they basically accommodate different functions.

8.3.1.4 Subcluster C

In the Newham Hospital, Subcluster C is located in the place of accommodation for Staff Change in the Standard guidance. This accommodation, in Newham, has been substantially modified to contain the Medical Records Storage Area, the Bank Till and the Cleaners Storage Area as well as part of the Outpatients administration. Part of the Medical Records Storage space has taken over the space which used to be the Female Staff Change Area. This Staff Changing Area has now been moved to the other end of the hospital street about 115.0 metres away.

8.3.1.5 Subcluster D

Subcluster D in the Newham, Maidstone as well as the standard hospitals contains the accommodation for the main waiting and snack bar (which includes the stores and the reception counter). In the Maidstone Hospital however, there has been a reduction in the size of the waiting area and the storage accommodation has been altered as well. The Outpatients waiting area conforms to the standard requirements. However in the Newham hospital, some modifications from the standard have been made. These modifications include part of the storage accommodation for the snack bar/shop and the assisted WC being located to the accommodation expected to be the Outpatients subwaiting area in the standard Nucleus

guidance.

8.3.1.6 Subcluster E

In the case of Subcluster E, although an outline has been provided in the overall planning layout the actual accommodation has not been specified in the guidance. As a result, this subcluster does not exist in the Newham hospital, and it forms the Main Entrance in the Maidstone Hospital. This subcluster in a sense can be argued to be the primary difference between the two hospitals in terms of the overall layout.

The detailed accommodation of this subcluster was decided by the architect and the hospital management and as such has no standard guidance. One of its advantages however is the location of a staircase to the upper floor near the entrance lobby which removes a substantial percentage of foot traffic from the hospital street thus reducing congestion from the main entrance section of the hospital street.

Another advantage is the location of the entrance lobby, which is no longer aligned with the hospital street as recommended in the standard guidance and built in the Newham hospital. The draughty conditions experienced in most Nucleus hospitals with such an alignment is thus reduced considerably.

On the other hand, there is not an entrance canopy as exists in the Newham hospital or has been recommended in the standard guidance since this would have contradicted the whole hospital operational policy. This policy was to

allow only hospital vehicles (ambulances) to be parked at the entrance to the hospital.

8.3.1.7 Hospital Street

The hospital street according to the guidance should also accommodate some of the amenities for the main reception and waiting area. In the case of the Newham hospital, this accommodation comprise the Reception Counter, which is similar to the standard guidance recommendations, and telephones have been located at the side of this hospital street.

One of the locker spaces has been taken over for the storage of goods for the trolleys which serve the hospitals. These are run by a different charity from that which runs the snack bar/shop.

8.3.1.8 Summary of the Description of Subclusters

A study of the functional relationships diagrams indicates that the standard guidance requirements have not been met either at the whole hospital or the main reception area level in either hospital. The differences are that in the Newham hospital, the Staff Changing Area in the guidance has been modified to accommodate the Public WCs, Senior Porters Office and part of the Ante Natal clinics accommodation.

The space for the Pharmacy and Rehabilitation departments now accommodates the Out-Patients departments which includes the Antenatal Clinic. Cluster No. 2 in the standard guidance remains unchanged with the exception of internal modifications. In the Maidstone hospital cluster No. 1 remains unchanged from the guidance requirements.

The layout station space in Cluster No. 2 is however taken over by the extension of the Out-patients department in Cluster No. 2. The most significant change is the transfer of all the accommodation on the hospital street required in the standard guidance which are now contained in the non-standard entrance `node/hub'.

In terms of numbers, this study by virtue of the classification adopted in Chapter 4, argues that whereas there are six (6) amenities which the study argues are basically for the use of the patients in the Newham hospital, namely, the Reception Counter, Waiting Area, Toilet Facilities, Snack Bar, Admissions Office and Telephones, there are nine (9) amenities in the Maidstone hospital, the additional amenities being the Florist, the Natwest Banktill and staircase
About five years ago, there used to be a florist who had an open stand located at the entrance to the hospital but this service has been terminated. At the beginning of the study, there was no fresh flowers being sold at the hospital, but during the final study, it was observed that trolleys have been placed in front of the shop with a display of flowers for sale to the users of the hospital.
The study expands this argument in terms of the advantages of the location of the other set of amenities, especially the location of the staircase at the entrance lobby in the Maidstone hospital. By virtue of its location a substantial amount of "first floor foot traffic" from the entrance, thus reducing congestion at the

		NEWHAM	MAIDSTONE
1. Reception Counter	- Main	1	1
	- Admissions		1
2. Waiting	Transport	1	1
	Snack		1
3. Toilets	Male	3	1
	Female	3	1
	Unisex	0	2
4. Snack Bar		1	1
		1	
5. Admissions Office		1	1
6. Telephones		5	3
7. Florist		0	1
8. Bank Till		0	1
9. Staircase		0	1

Table 8.1 The Number of Amenities

beginning of the hospital street where the main outpatient circulation routes are located. (See also Section 8.3.1.6) In other hospitals, not necessarily Nucleus hospitals, other amenities such as the lifts and escalators also contribute immensely to the reduction of such traffic especially where they are easily identifiable from the entrance.

In some hospitals there are also more than one entrance lobby which leads to the main reception and waiting area. However for the purpose of this study, this aspect will only be considered in terms of its size.

The inter-departmental relationships also and the number of clusters in each hospital also differ from the standard as well as from each other in the two hospitals which invariably affects the proximity of the reception counters to each other.

8.4 The Sizes of the Amenities

The sizes of the amenities will be discussed at two levels, namely the overall size (considering every functional space within the main reception and waiting area) and secondly those specific to the type of amenity selected for this study. The reason for adopting this approach is due to the fact that there is a functional relationship between most of the amenities within the main reception and waiting area.

The sizes of all the spaces will be indicated but only those related to the specific ones will be discussed in detail.

8.4.1 Size of Subcluster A

In this subcluster, the accommodation which is accessible to the patients are the Admissions Reception Counter. However the location of this Reception Counter in the Newham hospital is along the circulation route to the outpatients department and clinics and is not easily identifiable from the entrance unlike the Maidstone hospital. The total size of the admissions office is 15.36 square meters.

8.4.2 Size of Subcluster B

In this subcluster, the specific accommodation selected for this study are the Toilet Facilities which comprise basically the Unisex toilets for the disabled patients. Those facilities for the staff are included since they are used by the patients in the evenings when those near the main waiting area are closed in the Newham hospital.

8.4.3 Size of Subcluster C

In this subcluster, the specific accommodation selected for the study are the Toilet Facilities. The bank till is included in the Maidstone hospital. The space which this till was located had no designation in the standard design.

8.4.4 Size of Subcluster D

In this subcluster, all the accommodation will be considered since they are all related specifically to the study area with the exception of the Rehabilitation department subwaiting area. The design have been altered from the standard in both hospitals.

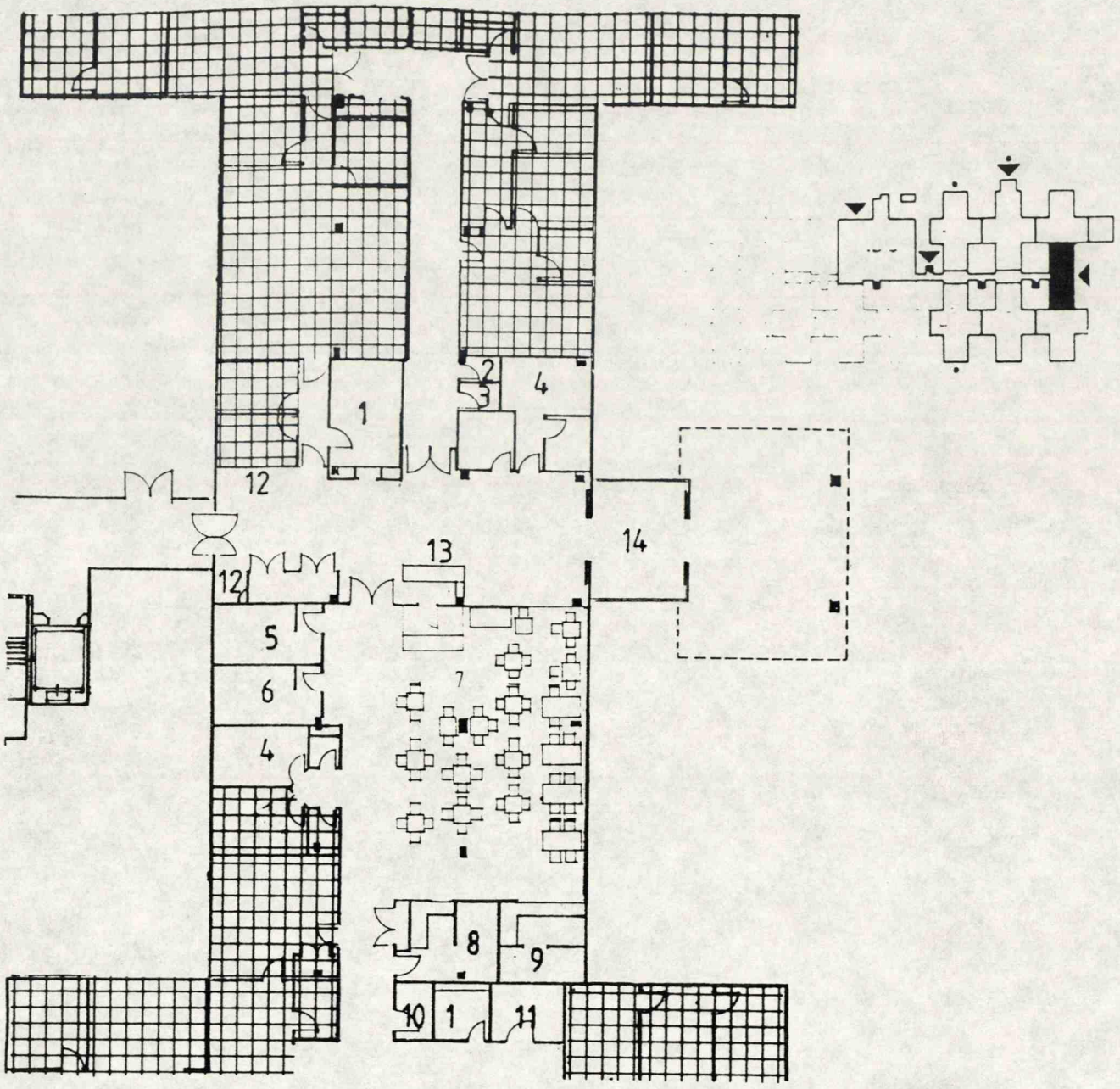


Figure 8.6 Newham District General Hospital : Plan - Main Reception and Waiting Area

Key.

1. Admissions
2. Staff W.C - Male
3. Staff W.C - Female
4. Porters Lodge
5. Male W.C. - Patients
6. Female W.C - Patients
7. Snack Waiting
8. Snack Shop - Cards
9. Snack Shop
10. Disabled W.C
11. Snack Shop (Store)
12. Telephones
13. Main Reception Counter
14. Entrance Lobby
15. Wheelchair Storage
16. Florist
17. Waiting Transport
18. Staircase
19. Bank Till
20. Mothers & Babies Room

8.4.5 Size of Subcluster E

In this subcluster, all the accommodation can be considered as being specifically related to the study with the exception of the Head Cleaners Office, The Coroners office, The General Porters Office, and the Equipment and trolley park. The arrangement and spaces in this subcluster, although they fit into the outline of the standard guidance for the L - shape is an original concept by the architects.

8.4.6 Summary of the Sizes; Ratio of the Areas.

The comparison of the areas is made at two levels, namely, at the subcluster level and at the individual amenities level.

At the subcluster level, the ratio between the areas of the Newham and the Maidstone hospital is 2:3, whereas at the individual amenity level the total ratio between the areas of the Newham and the Maidstone hospital is 1:2.

For individual amenities, the ratio of areas is as follows; reception counter 3:5, waiting (transport and snack), 2:1, toilets-male, 3:1, toilets-female, 7:2 , toilets-unisex, 3:2, snack bar, 2:1, admissions, 1:1, florist, telephones, in terms of numbers, 4:3.

See Table 8.2 which is a list of all the amenities selected for the study.

The reason why there seem to be differences between the ratios is that the circulation spaces have not been included in the calculation for the individual amenities, whereas the circulation spaces have been considered in the calculations for the areas subclusters as one entity.

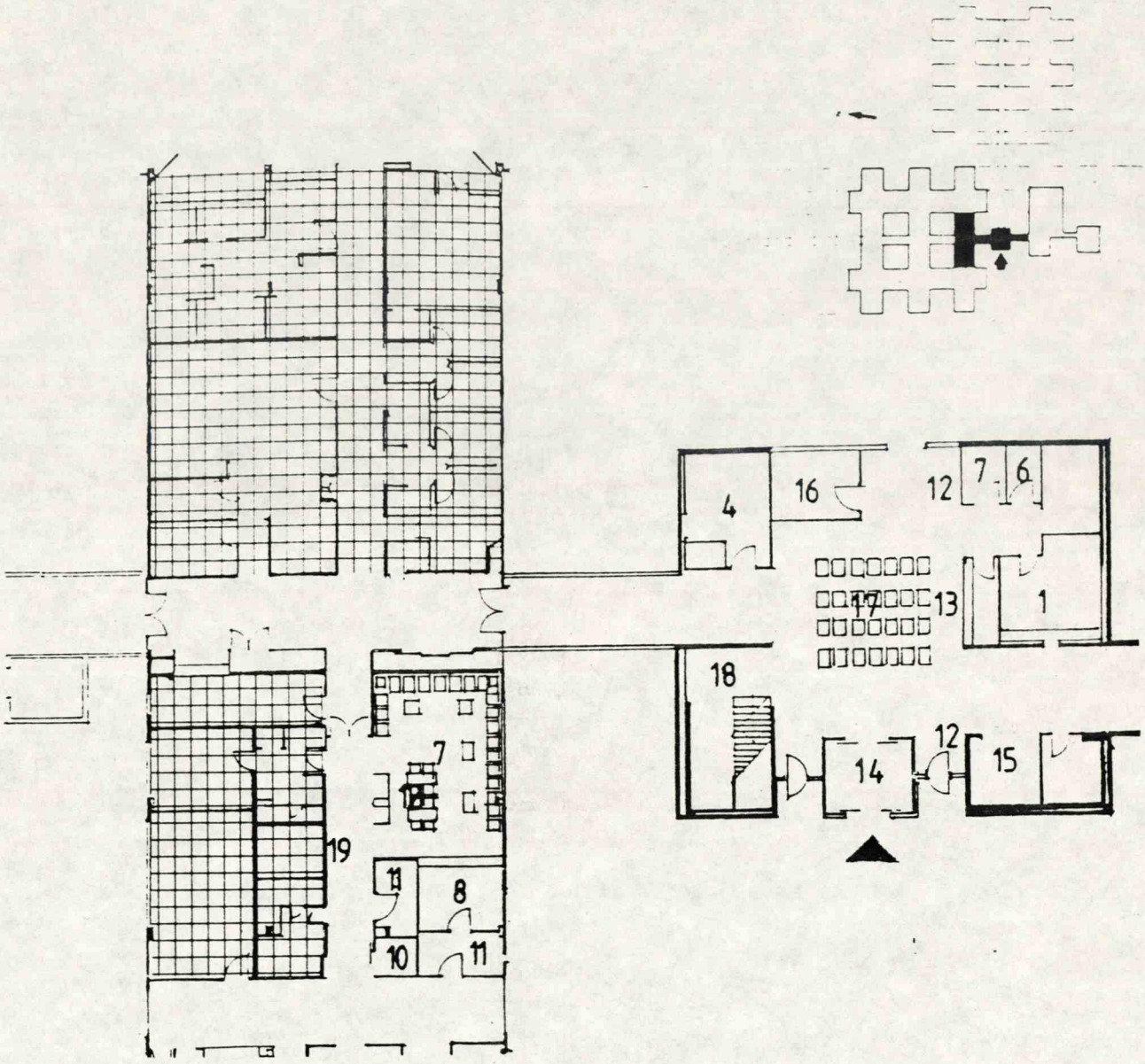


Figure 8.7 Maidstone District General Hospital :
Plan - Main Reception and Waiting Area

Key.

1. Admissions
2. Staff W.C - Male
3. Staff W.C - Female
4. Porters Lodge
5. Male W.C. - Patients
6. Female W.C - Patients
7. Snack Waiting
8. Snack Shop - Cards
9. Snack Shop
10. Disabled W.C
11. Snack Shop (Store)
12. Telephones
13. Main Reception Counter
14. Entrance Lobby
15. Wheelchair Storage
16. Florist
17. Waiting Transport
18. Staircase
19. Bank Till
20. Mothers & Babies Room

This study therefore argues that with respect to size, the Maidstone hospital is greater than the Newham hospital, if all the amenities for the patients as well as those associated with the staff contained in the clusters are considered.

8.5 The Proximity Measurements

Proximity is a general term which was adopted from an earlier study by Jajo of hospital wards and has been modified to suit the measurements of appropriateness in use in this study.

Two types of measurement which have been developed, related to this study are those distances between:

a) the main reception counter and other departmental reception counters, referred to in this study as proximity indicator 1. See appendix 8B for the matrices of these distances.

b) any departmental reception counter (the main reception counter inclusive) and all other departmental reception counters, referred to in this study as proximity indicator 2. See appendix 8B for the matrices of these distances.

By use of a basic statistical computers package, in this case the Minitab (2), two types of statistics, descriptive and dispersive statistics were devised.

8.5.1 The Descriptive Statistics

The statistics were used to describe the distances between

i) the main reception counter and other departmental reception counters, and

ii) any departmental reception counter (the main reception

		NEWHAM	MAIDSTONE
1. Reception Counter		3.20	5.10
2. Waiting	Transport		10.20
	Snack	100.80	37.68
3. Toilets	Male	11.04	3.20
	Female	11.96	3.60
	Unisex	4.80	2.80
4. Snack Bar		25.16	11.56
5. Admissions Office		15.36	16.36
6. Telephones		7.4	3.6
7. Florist		NA	9.36
8. Bank Till		NA	7.20
9. Staircase		NA	20.40
10. Entrance Lobbies		25.92	10.44

Table 8.2 The Area of the Amenities in Square Meters

counter inclusive) and all other departmental reception counters.

The mean distances represented the main indicator which summed up and measured the extent of proximity.

These results, namely,

i) the mean between the main reception counter and all other reception counters, and

ii) the mean of the means between any reception counter and all other reception counters were calculated.

8.5.2 The Dispersive Statistics

These statistics show how typical or similar the distances between entities are. In this case , the entities are the reception counters.

The dispersive statistics provided an indication of the how similar and/or typical are the distances between

i) the main reception counter and all other reception counters, and

ii) every reception counter and the rest of the reception counters.

The measurements used for the dispersive statistics were the standard deviation, the mean deviation and the standard error mean. (3) Thus for this study, the standard deviation, the mean deviation and the standard error mean will be computed from the distances between

i) the main reception counter and other departmental reception counters and

ii) every reception counter and the rest of the reception counters for every reception counter from which the mean of distances between every reception

counter and the rest of the reception counters were obtained. (See Appendix 8B)

8.6 **Main Reception Area Proximity - Proximity Indicator 1**

The distances between the main reception counters and all other departmental reception areas and their extent of proximity is measured by this indicator.

8.6.1 **Descriptive Statistics**

From Table 8.16, and by means of descriptive statistics of the distances, it emerged that the Newham District General Hospital has the maximum value of the main descriptive indicator; that is the mean of the distances between the main reception counter and all other reception counters, 97.3metres whereas in the Maidstone hospital this was 83.39 metres.

The other set of descriptive statistics, were consistent with the conclusions of the main proximity indicator, that is the mean of the distances between the main reception counter and all other reception counters, with Newham being the highest. These statistics were;

i) the maximum distance between main reception counter and other departmental reception counters, this was 200.2 metres in the Newham hospital whereas that of the Maidstone Hospital was 147.20 meters.

ii) the minimum distance between main reception counter and other departmental reception counters, which was 38.0 metres in the Newham hospital whereas that of the Maidstone Hospital was 32.0 meters, and

	NEWHAM	MAIDSTONE
MAIN INDICATOR		
The mean distance between main reception counter and other departmental reception counters	97.3m	83.39m
THE OTHER SET OF STATISTICS		
The maximum distance between main reception counter and other departmental reception counters	200.2m	147.2m
The minimum distance between main reception counter and other departmental reception counters	38.0m	32.0m
The median of the distances between main reception counter and other departmental reception counters	94.5m	79.5m

See appendix C for the matrices and the 'description'(2) (that is the mean, standard deviation and median of the distances between every reception counter and the rest of the reception counters for every reception counter) of these distances.

Table 8.3 The Main Proximity Indicator and the Set of Descriptive Statistics of the Distances Between the Main Reception Counter and Other Departmental Reception Counters.

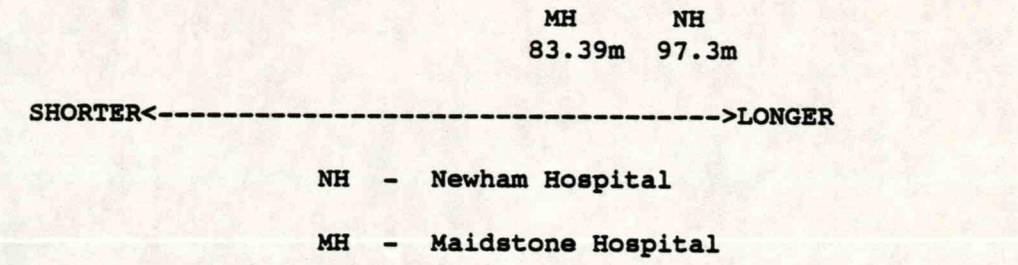


Figure 8.8 Figure showing the mean of the distance between the main reception and other departmental reception counters

iii) the median of the distances between main reception counter and other departmental reception counters, which was, 94.5 metres in the Newham hospital whereas that of the Maidstone Hospital was 79.50 meters.

The extent of reception counter proximity as indicated by the mean of the distance between the main reception and other departmental reception counters is shown in Fig. 8.8. This means patients on the average are expected to walk longer distances in the Newham hospital than in the Maidstone hospital.

8.6.2 Dispersive Statistics

From Table 8.4, with respect to the dispersive statistics, the standard deviation, the mean deviation and the standard error mean have a higher value in the Newham hospital than in the Maidstone hospital. Since the main dispersive indicator, the standard deviation, measures the typicality or the similarity of the distances between the main reception counter and other departmental reception counters, the significance of this finding is that distances in the Maidstone hospital appear to be more similar and or typical than that in the Newham hospital, in a sense the distances are more dispersed about the mean.

8.7 Reception Counters Proximity - Proximity Indicator 2

The statistical description of this indicator of the proximity of reception and waiting areas is as shown in Table 8.5.

	NEWHAM	MAIDSTONE
DISPERSIVE STATISTICS		
The standard deviation of distances between main reception counter and other departmental reception counters	59.5m	40.78m
The mean deviation of distances between main reception counter and other departmental reception counters	5.86m	4.38m
The standard error mean of distances between main reception counter and other departmental reception counters	13.3m	9.35m

Table 8.4 The Main Proximity Indicator and the Set of Dispersive Statistics of the Distances Between the Main Reception Counter and Other Departmental Reception Counters.

	MH	NH
SD	40.78	59.15
MD	4.38	5.86
SEM	9.35	13.30

SHORTER<---------->LONGER

MH - Maidstone Hospital
NH - Newham Hospital
SD - Standard Deviation
MD - Mean Deviation
SEM - Standard Error Mean

Figure 8.9 Figure showing the descriptive measurements of the distance between the main reception and other departmental reception counters

8.7.1 Descriptive Statistics

From Table 8.5 and by means of descriptive statistics of these distances, the Newham District General Hospital has the maximum value of the main descriptive indicator; that is the mean of the means of the distances between reception counters, 110.11 metres in the Newham hospital that of the Maidstone Hospital was 89.74 meters. In the other single statistics of distances, this hospital also had the maximum value. In these single statistics, the following results were obtained;

i) the maximum distance from one reception counter to any other reception counter was 225.8 meters in the Newham hospital that of the Maidstone Hospital was 179.20 meters.

ii) the maximum sum of distances from one reception counter to all other reception counters was 2926.00 meters in the Newham hospital that of the Maidstone Hospital was 2217.00 meters.

iii) the maximum mean of distances from one reception counter to all other reception counters was 146.30 meters in the Newham hospital that of the Maidstone Hospital was 116.30 meters.

iv) the minimum sum of distances from one reception counter to all other reception counters was 1744.0 meters in the Newham hospital that of the Maidstone Hospital was 1412.27 meters.

v) the minimum mean of distances from one reception counter to all other reception counters was 87.2 meters in the Newham hospital that of the Maidstone Hospital was 74.33 meters.

	NEWHAM	MAIDSTONE
MAIN INDICATOR		
The mean of the means of the distances between reception counters	110.11m	89.74m
THE OTHER SET OF STATISTICS		
i) The maximum distance from one reception counter to any other reception counter	147.00m	179.20m
ii) The maximum mean of distances from one reception counter to all other reception counters	146.30m	116.90m
iii) The minimum mean of distances from one reception counter to all other reception counters	87.20m	74.33m
iv) The median of the mean distances between every reception counter and the rest of the reception counters	110.50m	84.55m

Table 8.5 The Main Proximity Indicator and the Set of Descriptive Statistics of the Distances Between the Every Reception Counter to the Rest of Other Departmental Reception Counters.

See appendix C for the matrices and the 'description'(3) (that is the mean, standard deviation and median of the distances between every reception counter and the rest of the reception counters for every reception counter) of these distances.

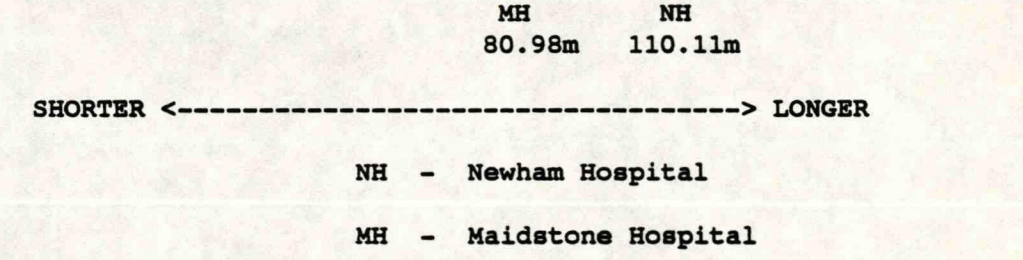


Figure 8.10 The mean of the Distances Between the Every Reception Counter to the Rest of Other Departmental Reception Counters.

vi) the median of the mean distances between every reception counter and the rest of the reception counters was 110.50 meters in the Newham hospital that of the Maidstone Hospital was 84.55 meters.

The extent therefore of reception counter proximity, as indicated by the mean of the means of the distances between reception counters is as illustrated in Figure 8.10.

There is an important argument with the relevance to the way the reception counters are ranked on the scale of the extent of proximity. This argument is that the extent of reception counter proximity cannot be equal to naught since it is impossible to get this value when more than one reception counter exists in a hospital. Hence it is expected that the greater the number of reception counters the greater the values of the descriptive indicators since the location of these reception counters are directly related to the number of clusters provided in each hospital.

8.7.2 Dispersive Statistics

In the case of the dispersive statistics, the Newham hospital had higher values than the Maidstone hospital as shown in Table 8.5 and Figure 8.10.

The standard deviation and the standard error mean can be applied to the distances measured from each reception counter to the rest of the reception counters and to the mean of these distances. This application was then applied the two hospitals.

	NEWHAM	MAIDSTONE
MAIN INDICATOR		
The standard deviation of the mean of the means of the distances between the main reception counter and every other reception counter	17.17m	11.94m
The mean deviation of the mean of the means of the distances between the main reception counter and every other reception counter	5.50m	4.25m
The standard error mean of the mean of the means of the distances between the main reception counter and every other reception counter	3.84m	2.74m

Table 8.6 The Main Proximity Indicator and the Set of Dispersive Statistics of the Distances Between the Every Reception Counter to the Rest of Other Departmental Reception Counters.

	MH	NH
SD	11.94	17.17
MD	4.25	5.50
SEM	2.74	3.84

SHORTER <----------> LONGER

MH - Maidstone Hospital
NH - Newham Hospital
SD - Standard Deviation
MD - Mean Deviation
SEM - Standard Error Mean

Figure 8.11 Figure showing the standard deviation, the mean deviation and the standard error mean of the mean distances between the main reception and other departmental reception counters

8.8 Summary

This chapter has shown that there are differences in the design characteristics of the two case study hospitals Newham and Maidstone, at two levels, namely the whole hospital level and main reception and waiting area level. The chapter has also shown that the design characteristics at the two levels have been significantly modified in the two hospitals to suit individual hospital requirements.

With respect to the specific design variables, identified as being the main causes for user dissatisfaction, namely the number of amenities, the size, and `proximity' of reception counters, this chapter has indicated that, Maidstone has a greater number of amenities than the Newham hospital in the ratio of 9:6.

With respect to the overall size, measured in meters, and considering all the subclusters, the ratio of 3:2 was obtained between the Maidstone and Newham hospitals. However the ratio of the sizes of individual amenities between the Maidstone and Newham hospitals was not consistent with this overall ratio of 3:2.

With respect to the third design variable, that is `proximity' of the reception counters, the distances measured were greater in the Newham hospital than in the Maidstone hospital. The consequence of this is that the both the descriptive (the mean and the median) and the dispersive (the standard deviation, the mean deviation and the standard error mean) measurements followed this trend with respect to the two proximity indicators (the distances between the main reception counter and other

reception counters, and the distances between every reception counter and the rest of the reception counters).

From these measurements, one would expect that the user satisfaction with the number of amenities and the size would be greater in the Maidstone than in the Newham hospital, whereas users would be less satisfied with the distances they would have to walk in the Newham hospital.

Chapter 9 therefore discusses the survey findings about user attitudes towards these variables, number of amenities, size and 'proximity', in addition to the other factors which affect user satisfaction.

Chapter 10 discusses, the relationship between the dependent variables and the independent variables.

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CHAPTER NINE

USER RESPONSE : SPECIFIC FINDINGS IN THE MAIDSTONE AND NEWHAM HOSPITALS RELATED TO THE THREE MAIN PROPOSITIONS

9.1 Introduction

The aim of this chapter is to discuss by means of condescriptive statistics, (1) the results obtained from the questionnaires which were given out to the patients during the final study at the two hospitals at Newham and Maidstone. Questions were asked specifically to obtain subjective data (user opinion and attitudes) on appropriateness in use, that enables the test of the main research hypothesis and its propositions. The subjective data includes measures of,

i) the user attitudes to the number of amenities,

ii) the user attitudes to the size of the amenities and

iii) the user attitudes to the 'proximity' of the main reception counter to other departmental reception counters.

The results of other subjective factors which affect user attitudes to the design of the reception and waiting areas have been already been discussed in Chapter 7.

9.2 Questionnaire Administration and Response

Forty five questionnaires were given out to selected patients individuals in each of the hospitals.
Thirty eight (38) respondents answered or were helped to answer the questionnaires in the Newham hospital, (NH), and forty (40) at the Maidstone Hospital, (MH).

9.3. Method of Analysing the Subjective Measurements

The results obtained from the questionnaires were analysed in the following manner. Each of the propositions will be stated, as well as the questions which were asked related to the specific proposition and explained where necessary. The subpropositions formulated will relate to each of the objective measurements discussed in Chapter 8.
Where an association between the variables appears to occur, the existence of a correlation of the variables would be explored in Chapter 10 where the appropriate statistical tests will be applied.

9.4 Proposition 1 - Subjective Measurements : User Attitudes Towards the Number of Amenities.

The main proposition stated in Chapter 5 is that differences in the number of amenities could produce differences in user satisfaction (an indicator of the appropriateness in use).
The questions which were asked about the user attitudes to the number of amenities were concerned with specific amenities provided for the patients in the main reception and waiting area of both hospitals. The amenities which were common to both hospitals were the reception counter, the waiting areas, the toilet facilities, the shop and or the snack bar and the telephones. The amenities which were present only to the Maidstone hospital were the florists, the bank till (cash dispensing machine). The staircase was included for its relationship to the overall communication pattern within hospitals.
Subpropositions were formulated which related to each of

the amenities in both hospitals and the results have been discussed in relation to the objective measurements, discussed in Chapter 8.

The degree of patients attitudes which was obtained by their response on a five point scale of their satisfaction of the number of each of the amenities.

The subpropositions are discussed in terms of the design and the user attitudes. The design will involve the the discussion of the three main variables, the number, the size and proximity discussed in detail in Chapter 8. The user attitudes will involve the measurements of the user attitudes obtained by means of the questionnaires.

The measurement of the user attitudes to the number of reception counters was obtained by the sum of the frequencies of the user response to the values, very satisfied and satisfied in order that the general trend would be obtained.

The underlying trend was also investigated in order to identify the degree of user attitudes so that where discrepancies or deviations from the general trends, that is the differences in whether the users were very satisfied or satisfied, with the number of the amenity could be identified and discussed.

9.4.1 Subproposition 1A - Subjective Measurements : User Attitudes Towards the Number of Reception Counters

The subproposition formulated was that differences in the number of reception counters should produce differences in user satisfaction.

9.4.1.1 Design - The Number of Reception Counters

From the critical examination of plans, as illustrated in Figures 8.6 and 8.9 well as a study of the actual building at the time of the fieldwork and discussed in detail in Chapter 8, Newham hospital has one reception counter located on the hospital street, compared with the Maidstone hospital which has two reception counters which is located within the 'entrance hub'.

As illustrated in Figure 9.1, this study argues that the number of reception counters within the main reception and waiting area in the Maidstone hospital is higher than that within the Newham hospital.

9.4.1.2 User Attitudes Towards the Number of Reception Counters

As illustrated in Figure 9.2, the user attitude to the number of reception counters were high in both hospitals. However the users in the Maidstone hospital expressed a higher degree of satisfaction than in the Newham hospital.

However by analysing the degree of user satisfaction, that is the user response to being 'very satisfied' and 'satisfied' separately, the users response to being 'very satisfied' in Maidstone hospital was greater than in the Newham hospital.

As shown in Table 9.1, twelve out of thirty eight users, representing 29.7% of the respondents indicated that

NH - Newham Hospital

MH - Maidstone Hospital

Figure 9.1 The number of reception counters in the two hospitals

NH - Newham Hospital

MH - Maidstone Hospital

Figure 9.2 The user attitude (Very Satisfied + Satisfied) with the number of reception counters.

	NEWHAM (NH)	MAIDSTONE (MH)
VERY SATISFIED	12 29.7	13 42.5
SATISFIED	17 45.9	24 42.5

Table 9.1. The user attitude with the number of reception counters.

they were 'very satisfied' with the number of reception counters in the Newham Hospital whereas there were thirteen out of forty users, representing 42.5% of the respondents in the Maidstone hospital.

On the other hand, the users response to being 'satisfied' in the Maidstone hospital was lower than in the Newham hospital. As shown in Table 9.1 seventeen out of 38 users, representing 45.9% of the respondents indicated that they were very satisfied with the number of amenities in the Newham Hospital whereas there were, twenty four out of forty respondents, representing 42.5% in the Maidstone hospital.

From these findings, although there were differences in the response to being 'satisfied' is opposite to the general trend of user satisfaction in the Maidstone hospital being higher than the Newham hospital as shown in Figures 9.2 and Table 9.1, it appears that there could be some association with the overall satisfaction, that is higher the number of reception counters available in the main reception and waiting area the greater the user satisfaction. However this correlation will be explored in detail in Chapter 10 where the appropriate statistical tests will be applied.

9.4.2 Subproposition 1B - Subjective Measurements : User Attitudes Towards the Number of Waiting Areas

The subproposition formulated was that differences in the

number of waiting areas should produce differences in user satisfaction.

9.4.2.1 Design - The Number of Waiting Areas

From the critical examination of plans, as illustrated in Figure 8.6 and 8.7, as well as a study of the actual building at the time of the fieldwork and discussed in detail in Chapter 8, Newham hospital has one waiting area compared with the Maidstone hospital which has two waiting areas. One is located within the 'entrance hub' and the other near the shop/snack bar.
As illustrated in Figure 9.3, this study argues that the number of waiting areas within the main reception and waiting area in the Maidstone hospital is higher than that within the Newham hospital.

9.4.2.2 User Attitudes Towards The Number Of Waiting Areas

The measurement of the user attitudes to the number of waiting areas was obtained by the sum of the frequencies of the user response to the values, very satisfied and satisfied in order that the general trend would be obtained.
The underlying trend was also investigated in order to identify the degree of user attitudes, that is whether the users were very satisfied or simply satisfied with the number of waiting areas
The reasons for any discrepancies or deviations from the general trends are also discussed.
As illustrated in Figure 9.4, the user attitude to the number of waiting areas were high in both hospitals. However the users in the Maidstone hospital

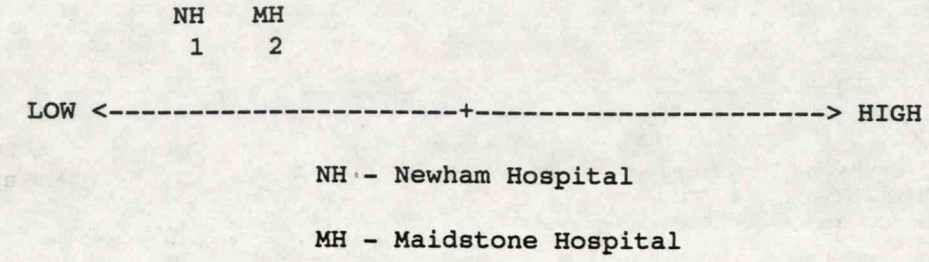


Figure 9.3 Figure showing the number of waiting areas in the two hospitals

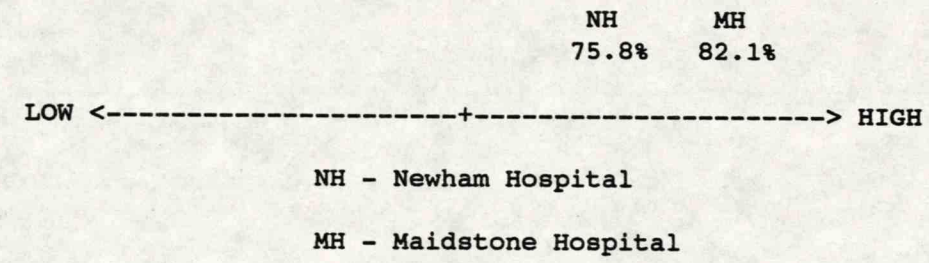


Figure 9.4 The user attitude (Very Satisfied + Satisfied) with the number of waiting areas

	NEWHAM (NH)	MAIDSTONE (MH)
VERY SATISFIED	16 18.2	9 23.1
SATISFIED	19 57.6	23 59.0

Table 9.2 The user attitude with the number of waiting areas

expressed a higher degree of satisfaction than in the Newham hospital, 82.1% compared with 75.8%.

However by analysing the degree of user satisfaction, that is the user response to being 'very satisfied' and 'satisfied' separately, the users response to being 'very satisfied' with the number of waiting areas in Maidstone hospital was greater than in the Newham hospital.
As shown in Table 9.2, six out of the thirty eight users, representing 18.2% of the respondents indicated that they were 'very satisfied' with the number of waiting areas in the Newham Hospital whereas there were nine out of the forty users, representing 23.1% of the respondents in the Maidstone hospital.
The users response to being 'satisfied' with the number of waiting areas in the Maidstone hospital was also higher than in the Newham hospital.

As shown in figure, nineteen out of the thirty eight users, representing 57.6% of the respondents indicated that they were very satisfied with the number of amenities in the Newham hospital whereas there were, twenty three out of the forty respondents, representing 42.5% in the Maidstone hospital.

From the findings, as shown in Figures 9.4 and Table 9.2, it appears that there could be some association with the overall satisfaction, that is higher the number of waiting areas available in the main reception and waiting area

the greater the user satisfaction. However this correlation will be explored in detail in Chapter 10 where the statistical tests will be applied.

9.4.3 Subproposition 1B - Subjective Measurements : User Attitudes Towards the Number of Toilet Facilities

The subproposition formulated was that differences in the number of toilet facilities would produce differences in user satisfaction.

9.4.3.1 Design - The Number of Toilet Facilities

From the critical examination of plans, as illustrated in Figure 8.6 and 8.7, as well as a study of the actual building at the time of the fieldwork and discussed in detail in Chapter 8, the number of toilet facilities measured in terms of the number of WC's in the two hospitals.

In the Newham hospital, the following have been provided;

a) 1 male toilet area with three water closets provided near the snack bar and

b) 1 female toilet facility with three water closets also near the snack bar.

In the Maidstone hospital there are three toilets.

a) 1 Unisex disabled toilet facility, with one water closet located near the snack bar.

b) 1 Female toilet facility, with one water closet, located in the entrance hub and has been designed to be used by physically disabled people.

c) 1 Male toilet facility, with one water closet, located in the entrance hub and has been made suitable to be used

by disabled people.

This study therefore argues that the number of toilet facilities measured in terms of the number of WC's within the main reception and waiting area, as shown in Figure 9.5, is higher in the Newham hospital.

9.4.3.2 User Attitudes Towards the Number of Toilet Facilities

The measurement of the user attitudes to the number of toilet facilities was obtained by the sum of the frequencies of the user response to the values, very satisfied and satisfied in order that the general trend would be obtained.
The underlying trend was also investigated in order to identify the degree of user attitudes, that is whether the users were very satisfied or simply satisfied with the number of toilet facilities
The reasons for any discrepancies or deviations from the general trends are also discussed.

As illustrated in Figure 9.6, the user attitude to the number of toilet facilities were high in both hospitals. However the users in the Maidstone hospital expressed a higher degree of satisfaction than in the Newham hospital, 68.4% compared with 57.1%.

From the findings as shown in Figures 9.5 and 9.6, it appears that there could be some association with the overall satisfaction, albeit negatively, that is higher the number of toilet facilities available in the main

reception and waiting area the lower the user satisfaction. This could be due to the location.

It was expected that the users in the Maidstone hospital would be less satisfied than those of the Newham hospital, but the empirical evidence showed the opposite. However this association will be explored in detail in Chapter 10 where the statistical tests will be applied.

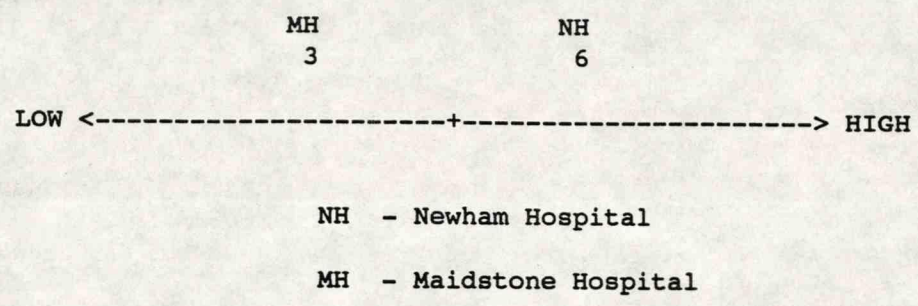


Figure 9.5 Figure showing the number of toilet facilities in the two hospitals

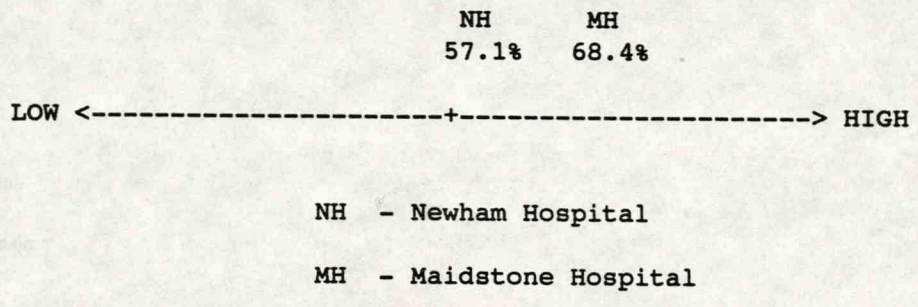


Figure 9.6 The user attitude (Very Satisfied + Satisfied) with the number of toilet facilities.

Several reasons can be found for this response the most important of which are,

a) The size of the out-patient population in the Newham hospital.

b) The attitude of the patient population towards the use

of the toilet facilities and public facilities in general in this inner city area of London.

c) The location of the toilets in relationship to the snack bar and the maternity department and the other amenities within the main reception and waiting area.

d) The operational policies adopted for the opening and closing of toilet facilities. At Newham the toilets are closed at 5.30p.m. for cleaning. The users have to use the toilet facilities located opposite the admissions office.

e) the smoking policy in the hospital, so that most of the users use the toilets for the purpose of finishing off their cigarettes and using the walls or the pvc cisterns as ash trays.

9.4.4 Subproposition 1B - Subjective Measurements : User Attitudes Towards the Number of Shop/Snack Bars

The subproposition formulated was that differences in the number of shop/snack bars should produce differences in user satisfaction.

9.4.4.1 Design - The Number of Shop/Snack Bars

From the critical examination of plans, as illustrated in Figure 8.6 and 8.7, as well as a study of the actual building at the time of the fieldwork and discussed in detail in Chapter 8, the number of shop/snack bar in the two hospitals as illustrated in Figure 9.7 show that the number of shop/snack bars in the Newham hospital is higher than in the Maidstone hospital.

Maidstone hospital this study argues has one shop/snack bar compared with the Newham hospital which has two. It can be argued the shop and snack bar are separated although they share the same entrance door and face the same waiting area the activities in both areas are clearly defined.

9.4.4.2 User Attitudes Towards the Number of Shop/Snack Bar

The measurement of the user attitudes to the number of shop/snack bars was obtained by the sum of the frequencies of the user response to the values, very satisfied and satisfied in order that the general trend would be obtained.

The underlying trend was also investigated in order to identify the degree of user attitudes, that is whether the users were very satisfied or simply satisfied with the number of the shop/snack bar.

The reasons for any discrepancies or deviations from the general trends are also discussed.

The user attitude, as illustrated in Figure 9.8 to the number of shop/snack bars were high in both hospitals. However the users in the Newham hospital expressed a higher degree of satisfaction than in the Maidstone hospital.

However by analysing the degree of user satisfaction, that is the user response to being 'very satisfied' and 'satisfied' separately, the users response to being 'very satisfied' with the number of shop/snack bar in Maidstone hospital was lower than in the Newham hospital, 89.0% compared with the 100.0%

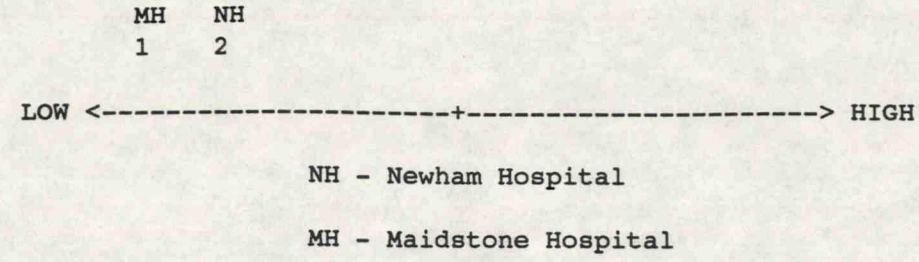


Figure 9.7 Figure showing the number of shop/snack bars in the main reception and waiting areas.

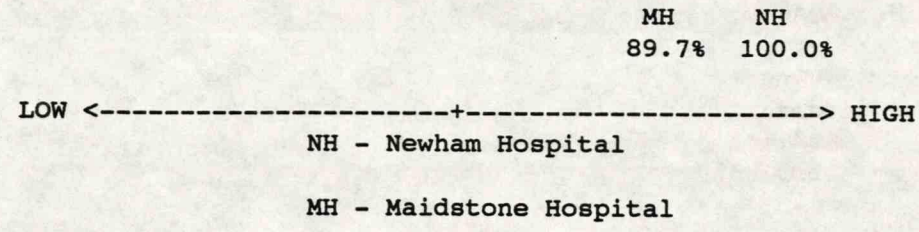


Figure 9.8 The user attitude (Very Satisfied +Satisfied) with the number of shop/snack bar.

	NEWHAM (NH)	MAIDSTONE (MH)
VERY SATISFIED	17 48.6	21 53.8
SATISFIED	18 51.4	14 35.9

Table 9.3 The user attitude with the number of shop/snack bars

As shown in Table 9.3, seventeen out of thirty eight users, representing 48.6% of the respondents indicated that they were 'very satisfied' with the number of shop/snack bars in the Newham Hospital whereas there were twenty one out of forty users, representing 53.8% of the respondents in the Maidstone hospital.

On the other hand, the users response to being 'satisfied' in the Maidstone hospital was lower than in the Newham hospital as shown in Table 9.3.
As shown in figure, eighteen out of thirty eight users, representing 51.4% of the respondents indicated that they were very satisfied with the number of shop/snack bars in the Newham Hospital whereas there were, fourteen out of forty respondents, representing 35.9% in the Maidstone hospital.

From the findings, although there were differences in the response to being 'satisfied' is opposite to the general trend as shown in Figures 9.8 and Table 9.3, it appears that there could be some association with the overall satisfaction, that is higher the number of shop/snack bars available in the main reception and waiting area the greater the user satisfaction.

9.4.5 Subproposition 1C - Subjective Measurements : User Attitudes Towards the Number of Telephones

The subproposition formulated was that differences in the number of telephones should produce differences in user satisfaction.

9.4.5.1 Design - The Number of Telephones

From the critical examination of plans, as illustrated in Figure 8.6 and 8.7, as well as a study of the actual building at the time of the fieldwork and discussed in detail in Chapter 8, the number of telephones in the two hospitals as shown in Figure 9.9, indicate that the number of telephones in the Newham hospital is higher than the Maidstone hospital Newham hospital has five telephones compared with the three in the Maidstone hospital which are located within the 'entrance hub'.

9.4.5.2 User Attitudes Towards the Number of Telephones

The measurement of the user attitudes to the number of telephones was obtained by the sum of the frequencies of the user response to the values, very satisfied and satisfied in order that the general trend would be obtained.

The underlying trend was also investigated in order to identify the degree of user attitudes, that is whether the users were very satisfied or simply satisfied with the number of the amenity being considered.
The reasons for any discrepancies or deviations from the general trends are also discussed.
As illustrated in Figure 9.10, the user attitude to the number of telephones were high in both hospitals. However the users in the Newham hospital expressed a higher degree of satisfaction with the number of telephones than in the Maidstone hospital.

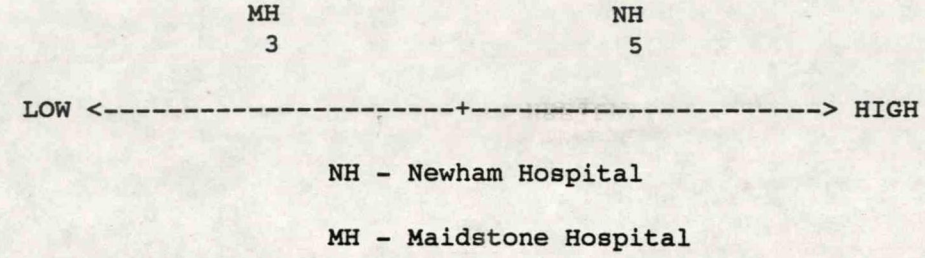


Figure 9.9 Figure showing the number of telephones in the two hospitals

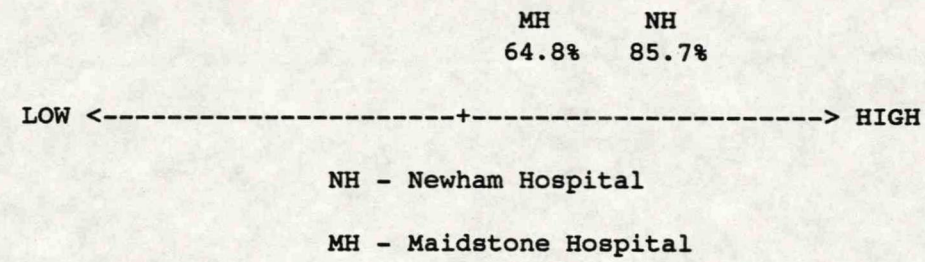


Figure 9.10 The user attitude (Very Satisfied + Satisfied) with the number of telephones

	NEWHAM (NH)	MAIDSTONE (MH)
VERY SATISFIED	7 18.9	12 34.3
SATISFIED	18 51.4	17 45.9

Table 9.4 The user attitude with the number of telephones.

However by analysing the degree of user satisfaction, that is the user response to being 'very satisfied' and 'satisfied' separately, the users response to being 'very satisfied' in Newham hospital was lower than in the Maidstone hospital, 85.7% compared with the 64.8%. As shown in figure 9.14, twelve out of forty users, representing 34.3% of the respondents indicated that they were 'very satisfied' with the number of reception counters in the Maidstone hospital whereas there were seven out of thirty eight users, representing 18.9% of the respondents in the Newham hospital.

On the other hand, the users response to being 'satisfied' in the Maidstone hospital was lower than in the Newham hospital as shown in Table 9.4. As shown in figure, seventeen out of forty users, representing 45.9% of the respondents indicated that they were very satisfied with the number of telephones in the Maidstone Hospital whereas there were, eighteen out of thirty eight respondents, representing 51.4% in the Newham hospital.

From these findings, although there differences in the response to being 'satisfied' is opposite to the general trend as shown in Figures 9.10 and Table 9.4, it appears that there could be some association with the overall satisfaction, that is higher the number of telephones available in the main reception and waiting area the greater the user satisfaction. Further statistical tests will be explored in detail in Chapter 10 to identify

whether any correlations exists.

Among the reasons given by the patients for their dissatisfaction was the lack of privacy, the lack of money changing or telephone card machines. The disabled patients complained that it was virtually impossible to use the telephones which have been designed for them in the Newham hospital.

9.4.6 The Number of Other Amenities

With respect to the number of other amenities which were provided only in the Maidstone hospital, namely the florists, the bank till and the staircase the majority of the users over 75% of the forty respondents indicated their degree of satisfaction as described below.

9.4.6.1 Florists

With respect to the number of florists, the degree of patients satisfaction were 11 (28.9%) being very satisfied and 21 (55.3%) being satisfied.

9.4.6.2 Banking Facilities

With respect to the number of banking facilities, the degree of patients satisfaction was high in the Maidstone hospital indicated that they were very satisfied. The majority, 17(44.7%) and 17(44.7%) indicated that they were very satisfied and satisfied respectively.

One patient in the Maidstone Hospital asked for the

provision of a Barclays Bank Till in addition to the Natwest Till.

9.4.6.3 Staircase

With respect to the number of staircases, the degree of patient satisfaction was high in the Maidstone hospital indicated that they were very satisfied. The majority, 11 (28.9%) and 21(53.0%) indicated that they were very satisfied and satisfied respectively as shown in figure 8F One patient asked for a middle rail on the balustrade of the staircase.

9.4.7 Summary - Patient Attitudes to Number of Amenities

In general, the degree of user satisfaction, that is being very satisfied and satisfied, in both the Newham and Maidstone hospitals were high with respect to the number of amenities provided.

The five subpropositions showed that there appeared to be an association between the number of amenities provided in the main reception and waiting area and appropriateness in use.

The subpropositions formulated related to

i) the patients satisfaction with the number of reception counters, that is the higher the number of reception counters the greater the user satisfaction.

ii) the patients satisfaction with the number of waiting areas, that is the higher the number of waiting areas the greater the user satisfaction.

iii) the patients satisfaction with the number of shop/snack bar, that is the higher the number of shop/snack bar, the greater the user satisfaction.

iv) the patients satisfaction with the number of telephones, that is the higher the number of telephones, the greater the user satisfaction.

iv) the patients satisfaction with the number of toilet facilities, that is the higher the number of toilet facilities the greater the user satisfaction.

However these correlations will be explored in detail in Chapter 10 where the appropriate statistical tests will be applied.

In terms of the classification of the amenities, the ratio of the number of amenities in the Maidstone hospital was greater that the Newham hospital.

This study argues that there were six amenities in the Newham hospital whereas there were nine amenities in the Maidstone hospital, the additional amenity being the florists, the bank till and the staircase.

However since it was difficult for most of the patients to identify most of these amenities or to have used them, the measurement of their overall satisfaction would have been biased and difficult.

However their users preference for these amenities in reception and waiting areas have already been discussed in Chapter 7.

9.5 **Proposition 2 - Subjective Measurements : User Attitudes Towards the Size(s) of/or Space(s) Allocated for Amenities.**

This proposition stated that differences in the sizes of/or spaces allocated for the amenities should produce differences in user satisfaction.

The questions which were asked were concerned with the user attitudes to the sizes of/or spaces allocated were concerned with specific amenities provided for the patients in the main reception and waiting area of both hospitals which were common to both hospitals.
These amenities were the reception counter,
the waiting areas, the toilet facilities, the shop and or the snack bar and the telephones. The amenities which were present only to the Maidstone hospital were the florists. the bank till (cash dispensing machine) . The staircase has been added to this category as well as the entrance lobbies. The reasons for the inclusion of the staircase is due to its location close to the entrance.
The entrance lobby has been included for several reasons. The main reasons being the fact that
i) there are some examples in the earlier hospital such as that at the Greenwich hospital where there are two entrance lobbies which lead to the main reception and waiting area
ii) the Harness hospital at Stafford where there is no entrance lobby to the main reception and waiting area.
iii) the impact in the environmental control of this area especially in the Nucleus hospital in relation to the

hospital street has not been fully investigated.

The subpropositions were formulated which related to each of the amenities in both hospitals and the results have been discussed in relation in relation to the objective measurements, discussed in Chapter 8.

The measurement of patients' approval was obtained by their response measured on a five point scale of the user response the suitability of the sizes of/or spaces of each of the amenities.

9.5.1 Subproposition 2A - Subjective Measurements : User Attitudes Towards the Sizes of/or Spaces Allocated for the Reception Counters

The subproposition formulated was that differences in the size(s) of/or space(s) allocated for the reception counters should produce differences in user satisfaction.

9.5.1.1 Design - The Size(s) of/or Space(s) of Allocated for the Reception Counters.

A detail comparison of the measurements from the plans, as illustrated in Figure 8.6 and 8.7, as well as the measurements of the actual building at the time of the fieldwork and discussed in detail in Chapter 8, size(s) of/or space(s) allocated for the Newham hospital reception counter was 3.20 square meters whereas that of the Maidstone hospital which had the main reception counter as well as the admissions reception counters located in the entrance hub were 5.10 square meters and 1.5 square meters respectively.

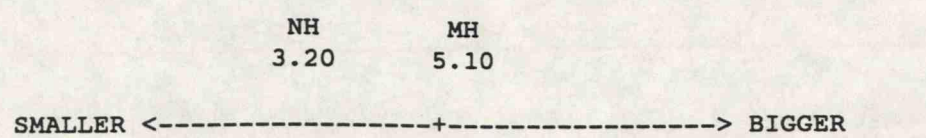
As illustrated in Figure 9.11, this study argues that the size(s) of/or space(s) of allocated for reception counter

within the Maidstone hospital is bigger than that within the Newham hospital.

9.5.1.2 User Attitudes Towards the Size(s) of/or Space(s) of Allocated for the Reception Counters.

The measurement of the user attitudes to the size(s) of/or space(s) of allocated for the reception counters was obtained by the sum of the frequencies of the user response to the values, `very suitable' and `suitable' in order that the general trend would be obtained.
The underlying trend was also investigated in order to identify the degree of user attitudes, that is whether the users found the size(s) of/or space(s) of allocated for the reception counter in the main reception and waiting area `very suitable' or simply `suitable.
The reasons for any discrepancies or deviations from the general trend are also discussed as was done in the previous section.
As illustrated in Figure 9.12, the user attitude to the size(s) of/or space(s) of allocated for the reception counters were high in both hospitals the Maidstone hospital being higher than in the Newham hospital, 87.5% compared with 67.6%

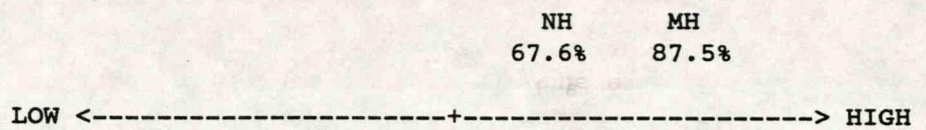
However by analysing the degree of user satisfaction, that is the user response to whether the size(s) of/or space(s) of allocated for the reception counters were 'very suitable' and 'suitable' separately, the users response confirmed this trend.



NH - Newham Hospital

MH - Maidstone Hospital

Figure 9.11 The size(s) of/or space(s) of allocated for the reception counters.



NH - Newham Hospital

MH - Maidstone Hospital

Figure 9.12 The user attitude (Very Suitable + Suitable) with the size(s) of/or space(s) of allocated for the reception counters.

From these findings, it appears that there could be some association between the design and the overall satisfaction, that is bigger the size(s) of/or space(s) of allocated for the reception counters the greater the user satisfaction. However this association will be explored in detail in Chapter 10 where the appropriate statistical tests will be applied.

9.5.2 Subproposition 2B - Subjective Measurements : User Attitudes Towards the Sizes of/or Spaces Allocated for the Waiting Areas

The subproposition formulated was that differences in the

size(s) of/or space(s) allocated for the waiting areas should produce differences in user satisfaction.

9.5.2.1 Design - The Size(s) of/or Space(s) Allocated for the Waiting Areas.

A detail comparison of the measurements from the plans, as illustrated in Figure 8.6 and 8.7, as well as the measurements of the actual building at the time of the fieldwork and discussed in detail in Chapter 8, size(s) of/or space(s) allocated for the Newham hospital waiting area was 100.80 square meters whereas that of the Maidstone hospital which has waiting areas.

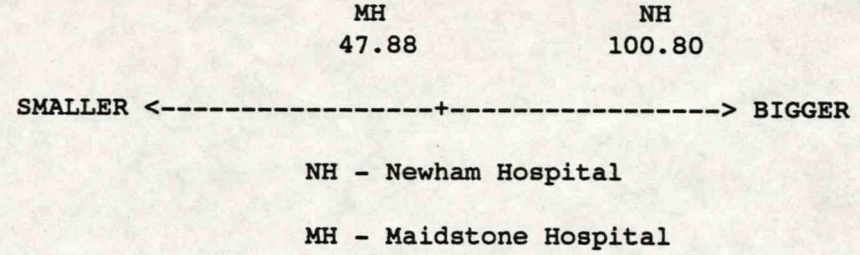


Figure 9.13 Figure showing the size(s) of/or space(s) of allocated for the waiting areas.

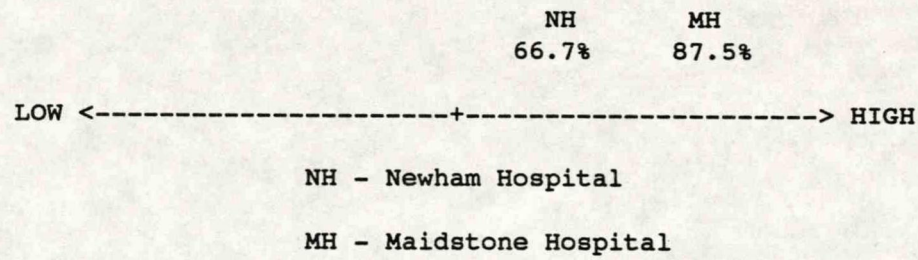


Figure 9.14 The user attitude (Very Suitable + Suitable) with the size(s) of/or space(s) of allocated for the waiting areas.

The areas were, the main reception waiting area purposely

for patients waiting for transport and the shop/snack bar waiting area were 10.20 square meters and 37.68 square meters respectively.

As illustrated in Figure 9.13, this study argues that the size(s) of/or space(s) of allocated for waiting areas within the Maidstone hospital is bigger than that within the Newham hospital.

9.5.2.2 User Attitudes Towards the Size(s) of/or Space(s) Allocated for the Waiting areas.

The measurement of the user attitudes to the size(s) of/or space(s) of allocated for the reception counters was obtained by the sum of the frequencies of the user response to the values, 'very suitable' and 'suitable' in order that the general trend would be obtained.

The underlying trend was also investigated in order to identify the degree of user attitudes, that is whether the users found the size(s) of/or space(s) of allocated for the waiting area in the main reception and waiting area 'very suitable' or simply 'suitable.

The reasons for any discrepancies or deviations from the general trend are also discussed.

As illustrated in Figure 9.14, the user attitude to the size(s) of/or space(s) of allocated for the waiting areas were high in both hospitals with the Maidstone hospital being higher than in the Newham hospital, 87.5% of the respondents compared with 66.7%

The analysis of the degree of user satisfaction, that

is the user response to whether the size(s) of/or space(s) of allocated for the waiting areas were 'very suitable' and 'suitable' separately, the trend of Maidstone hospital being higher than the Newham hospital was evident. It appears that there could be some association with the overall satisfaction, that is bigger the size(s) of/or space(s) of allocated for the waiting areas the greater the user satisfaction. This association will be explored in detail in Chapter 10 where the appropriate statistical tests will be applied.

9.5.3 Subproposition 2C - Subjective Measurements : User Attitudes Towards the Sizes of/or Spaces Allocated for the Toilet Facilities

The subproposition formulated was that differences in the size(s) of/or space(s) allocated for the toilet facilities could produce differences in user satisfaction.

9.5.3.1 Design - The Size(s) of/or Space(s) Allocated for the Toilet Facilities.

A detail comparison of the measurements from the plans, as illustrated in Figure 8.6 and 8.7, as well as the measurements of the actual building at the time of the fieldwork and discussed in detail in Chapter 8, show that the total size(s) of/or space(s) allocated for the Newham hospital toilet facilities was 27.80 square meters whereas that of the Maidstone hospital is 9.60 square meters

As illustrated in Figure 9.15, this study argues that the size(s) of/or space(s) of allocated for toilet facilities

within the Maidstone hospital is bigger than that of the Newham hospital.

9.5.3.2 User Attitudes Towards the Size(s) of/or Space(s) Allocated for the Toilet Facilities.

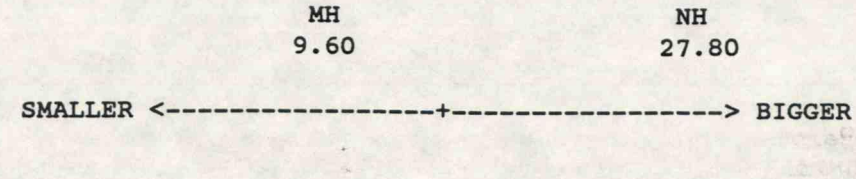
The measurement of the user attitudes to the size(s) of/or space(s) of allocated for the toilet facilities was obtained by the sum of the frequencies of the user response to the values, `very suitable' and `suitable' in order that the general trend would be obtained.

The underlying trend was also investigated in order to identify the degree of user attitudes, that is whether the users found the size(s) of/or space(s) of allocated for the toilet facilities in the main reception and waiting area `very suitable' or simply `suitable.

The reasons for any discrepancies or deviations from the general trend are also discussed.

As illustrated in Figure 9.16, the user attitude to the size(s) of/or space(s) of allocated for the waiting areas were high in both hospitals with the Maidstone hospital being higher than in the Newham hospital, 71.0% compared width 63.6%.

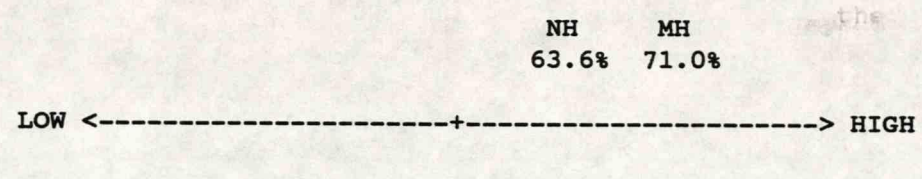
By analysing the degree of user satisfaction, that is the user response to whether the size(s) of/or space(s) of allocated for the toilet facilities were 'very suitable' and 'suitable' separately, the users response to being 'very suitable' in Maidstone hospital was higher than in



NH - Newham Hospital

MH - Maidstone Hospital

Figure 9.15 Figure showing the size(s) of/or space(s) of allocated for the toilet facilities.



NH - Newham Hospital

MH - Maidstone Hospital

Figure 9.16 The user attitude (Very Suitable + Suitable) with the size(s) of/or space(s) of allocated for the toilet facilities.

	NEWHAM (NH)	MAIDSTONE (MH)
VERY SUITABLE	3 9.1	7 18.4
SUITABLE	18 54.5	14 52.6

Table 9.5 The user attitude with the size(s) of/or space(s) of allocated for the toilet facilities

the Newham hospital as shown in Table 9.5, thus supporting this trend.

However the percentage of users who responded that the of/or space(s) of allocated for the toilet facilities were 'suitable' in the Newham hospital was higher than that of the Maidstone hospital. In spite of this difference from the general trend, it appears that there could be some association with the overall satisfaction, that is bigger the size(s) of/or space(s) of allocated for the toilet facilities the lower the user satisfaction.

9.5.4 Subproposition 2D - Subjective Measurements : User Attitudes Towards the Sizes of/or Spaces Allocated for the Shop/Snack Bar

The subproposition formulated was that differences in the size(s) of/or space(s) allocated for the Shop/Snack bars should produce differences in user satisfaction.

9.5.4.1 Design - The Size(s) of/or Space(s) Allocated for the Shop/Snack Bar.

A detail comparison of the measurements from the plans, as illustrated in Figure 8.6 and 8.7, as well as the measurements of the actual building at the time of the fieldwork and discussed in detail in Chapter 8, size(s) of/or space(s) allocated for the Newham hospital Shop/Snack bar was 25.16 square meters whereas that of the Maidstone hospital, 11.56 square meters.

As illustrated in Figure 9.17, this study argues that the size(s) of/or space(s) of allocated for Shop/Snack bar within the Maidstone hospital is smaller than that within the Newham hospital.

9.5.4.2 User Attitudes Towards the Size(s) of/or Space(s) Allocated for the Shop/Snack Bar.

The measurement of the user attitudes to the size(s) of/or space(s) of allocated for the shop/snack bar was obtained by the sum of the frequencies of the user response to the values, `very suitable' and `suitable' in order that the general trend would be obtained.

The underlying trend was also investigated in order to identify the degree of user attitudes, that is whether the users found the size(s) of/or space(s) of allocated for the shop/snack bar in the main reception and waiting area `very suitable' or simply `suitable.

The reasons for any discrepancies or deviations from the general trend are also discussed.

As illustrated in Figure 9.18, the user attitude to the size(s) of/or space(s) of allocated for the shop/snack bar were high in both hospitals with the Newham hospital being higher than in the Newham hospital, 97.1% compared with 87.5%.

The analysis of the degree of user satisfaction, that is the user response to whether the size(s) of/or space(s) of allocated for the shop/snack bar were 'very suitable' and 'suitable' separately, the trend of Maidstone hospital being lower than the Newham hospital was evident. It appears that there could be some association with the overall satisfaction, that is bigger the size(s) of/or space(s) of allocated for the waiting areas the greater the user satisfaction. However this correlation will be explored in detail in Chapter 10 where the appropriate statistical tests will be applied.

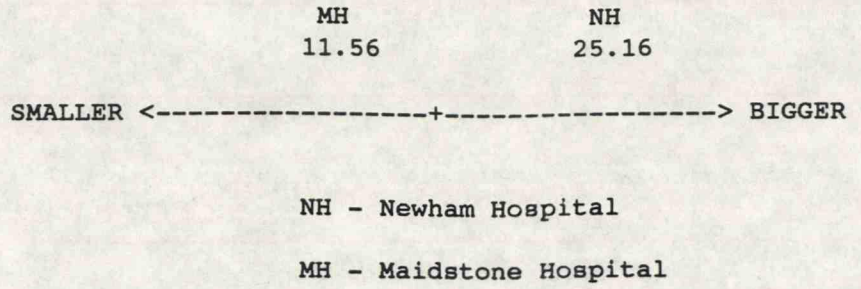


Figure 9.17 The size(s) of/or space(s) of allocated for the Shop/Snack bar.

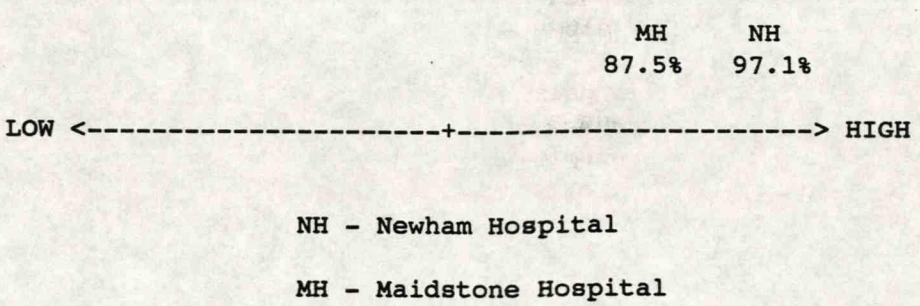


Figure 9.18 The user attitude (Very Suitable + Suitable) with the size(s) of/or space(s) of allocated for the shop/snack bar

9.5.5 Subproposition 2E - Subjective Measurements : User attitudes towards the space(s) allocated for the telephones

The subproposition formulated was that differences in the space(s) allocated for the telephones should produce differences in user satisfaction.

9.5.5.1 Design - The Size(s) of/or Space(s) Allocated for the Telephones

A detail comparison of the measurements from the plans, as illustrated in Figure 8.6 and 8.7, as well as the measurements

of the actual building at the time of the fieldwork and discussed in detail in Chapter 8, show that the space(s) allocated for the Newham hospital telephones was 7.4 square meters whereas the Maidstone hospital was 3.6 square meters.

As illustrated in Figure 9.19, this study argues that the space(s) allocated for telephones in the Maidstone hospital is smaller than that within the Newham hospital.

9.5.5.2 User Attitudes Towards the Space(s) Allocated for The telephones

The measurement of the user attitudes to the space(s) allocated for the telephones was obtained by the sum of the frequencies of the user response to the values, `very suitable' and `suitable' in order that the general trend would be obtained.

The underlying trend was also investigated in order to identify the degree of user attitudes, that is whether the users found the space(s) allocated for the waiting area in the main reception and waiting area `very suitable' or simply `suitable.

The reasons for any discrepancies or deviations from the general trend are also discussed.

As illustrated in Figure 9.20, the user attitude to the space(s) allocated for the telephones were high in both hospitals with the Maidstone hospital being lower than in the Newham hospital, 82.9% compared with 63.9%. The analysis of the degree of user satisfaction, that is the user response to whether the space(s) of allocated

for the telephones were 'very suitable' and 'suitable' separately, the trend of Maidstone hospital being higher than the Newham hospital was evident. It appears that there could be some association with the overall satisfaction, that is bigger the space(s) allocated for the telephones the greater the user satisfaction. However this correlation will be explored in detail in Chapter 10 where the appropriate statistical tests will be applied.

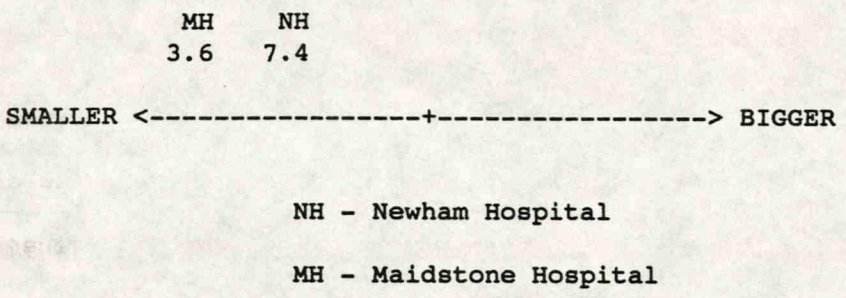


Figure 9.19 Figure showing the space(s) of allocated for the telephones.

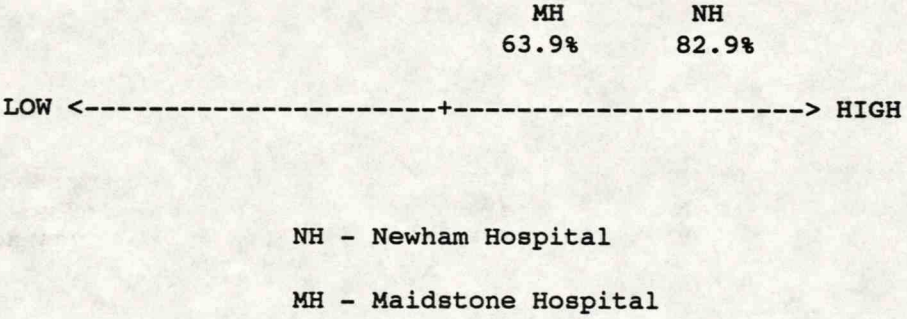


Figure 9.20 The user attitude (Very Suitable + Suitable) with the space(s) allocated for the telephones

9.5.6 Other Amenities

With respect to the size(s) of/or space(s) allocated for other amenities specific to the Maidstone hospital, namely

the florists, the bank till (cash dispensing machine) and the staircase and the entrance lobby, the majority of the users, over 60% of the forty respondents in all these cases indicated their suitability as discussed below.

9.5.6.1 Florists

With respect to the size(s) of/or space(s) allocated for the florists, the number of patients who approved they were 'very suitable' were thirteen which represented, 34.2% of the respondents and who were very satisfied and twenty three users, representing (60.5%) thought they were suitable.

9.5.6.2 Banking Facilities

With respect to the size(s) of/or space(s) allocated for the banking facilities, the degree of patients satisfaction was higher in the Maidstone hospital indicated that they were very satisfied. The majority, eleven, 29.7%, and twelve, 32.4% indicated that they were very suitable' and `suitable' respectively.

9.5.6.3 Staircase

With respect to the size(s) of/or space(s) allocated for the of staircases, the degree of patients satisfaction was higher in the Maidstone hospital indicated that they were very satisfied. Ten of the respondents representing, 25.6% and seventeen respondents representing 56.4% indicated that they were `very suitable' and `suitable' respectively.

9.5.7 Subproposition 2F - Subjective Measurements : User Attitudes Towards the Sizes of/or Spaces Allocated for the Entrance Lobbies

The subproposition formulated was that differences in the size(s) of/or space(s) allocated for the entrance lobbies should produce differences in user satisfaction.

9.5.7.1 Design - The Size(s) of/or Space(s) Allocated for the Entrance Lobbies

A detail comparison of the measurements from the plans, as illustrated in Figure 8.6 and 8.7, as well as the measurements of the actual building at the time of the fieldwork and discussed in detail in Chapter 8, show that the total size(s) of/or space(s) allocated for the Newham hospital entrance lobbies was 25.92 square meters whereas that of the Maidstone hospital is 10.44 square meters.

As illustrated in Figure 9.21, this study argues that the size(s) of/or space(s) of allocated for entrance lobbies within the Maidstone hospital is bigger than that of the Newham hospital.

9.5.7.2 User Attitudes Towards the Size(s) of/or Space(s) Allocated for the Entrance Lobbies

The measurement of the user attitudes to the size(s) of/or space(s) of allocated for the entrance lobbies was obtained by the sum of the frequencies of the user response to the values, `very suitable' and `suitable' in order that the general trend would be obtained.

The underlying trend was also investigated in order to identify the degree of user attitudes, that is whether the users found the size(s) of/or space(s) of allocated for the entrance lobbies in the main reception and waiting

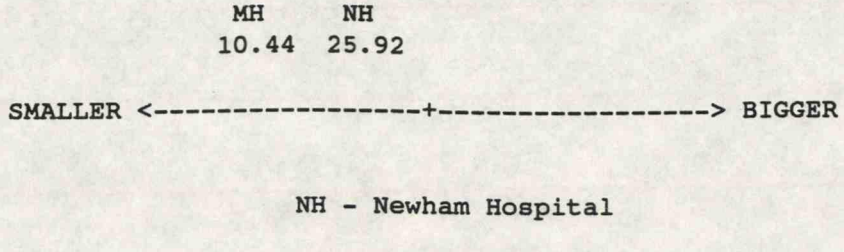


Figure 9.21 Figure showing the size(s) of/or space(s) of allocated for the entrance lobbies

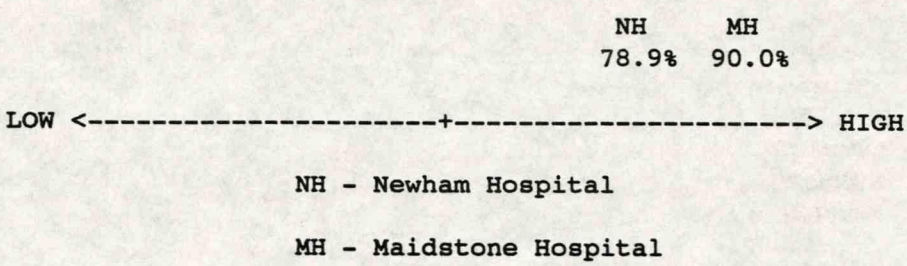


Figure 9.22 The user attitude (Very Suitable + Suitable) with the size(s) of/or space(s) of allocated for the entrance lobbies

	NEWHAM (NH)	MAIDSTONE (MH)
VERY SUITABLE	11	17
	28.9	40.0
SUITABLE	20	19
	50.0	50.0

Figure 9.6 The user attitude with the size(s) of/or space(s) of allocated for the entrance lobbies

area `very suitable' or simply `suitable.

The reasons for any discrepancies or deviations from the general trend are also discussed.

As illustrated in Figure 9.22, the user attitude to the sizes of allocated for the entrance lobbies were high in both hospitals with the Maidstone hospital being higher than in the Newham hospital, 90.26% compared with 78.9%.

By analysing the degree of user satisfaction, that is the user response to whether the size(s) of/or space(s) of allocated for the entrance lobbies were 'very suitable' and 'suitable' separately, the users response to being 'very suitable' in Maidstone hospital was higher than in the Newham hospital as shown in Table 9.6, thus supporting this trend. There seem to be an association between these variables, that is the smaller the entrance lobbies the higher the user attitudes. This association will be explored in detail in Chapter 10.

9.5.8 Summary - Patients Attitudes to the Size(s) of or Space(s) Provided for the Amenities

In general, the degree of user satisfaction, that is being very satisfied and satisfied, in both the Newham and Maidstone hospitals were higher with respect to the size(s) of/or space(s) allocated for amenities provided. Seven subpropositions were considered which related to

ii) the patients satisfaction with the size(s) of/or

space(s) allocated for reception counters, that is the higher the size(s) of/or space(s) allocated for reception counters the greater the user satisfaction.

iii) the patients satisfaction with the number of waiting areas, that is the higher the size(s) of/or space(s) allocated for waiting areas the greater the user satisfaction.

iv) the patients satisfaction with the number of shop/snack bar, that is the higher the size(s) of/or space(s) allocated for shop/snack bar, the greater the user satisfaction.

v) the higher the size(s) of/or space(s) allocated for toilet facilities, the higher the user satisfaction, and

vi) the higher the size(s) of/or space(s) allocated for telephones, the higher the user satisfaction.

vii) the patients satisfaction with the size(s) of/or space(s) allocated for entrance lobbies, that is the smaller the size(s) of/or space(s) allocated for entrance lobbies the greater the user satisfaction.

However these correlations will be explored in detail in Chapter 10 where the appropriate statistical tests will be applied.

9.6 User Attitudes Towards Proximity of Main Reception Counter to other Departmental Reception Counters

With respect to the 'proximity' of main reception counter to the departmental reception counters the question asked was concerned with the users perception of the distance they have had to walk from the main reception counter to other departmental reception counters.

The measurement of patients' perception was obtained by their response measured on a five point scale on whether they thought the distance they have had to walk from the main reception counter to the department which they were attending were convenient.

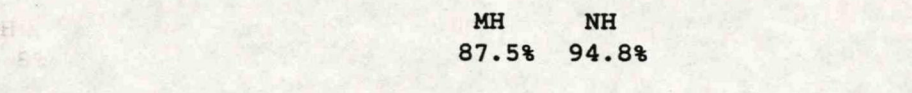
'Proximity' used in the context of this study has been discussed in detail in Chapter 8. The mean distances between the main reception counter and other departmental reception counters were considered for this measurement.

9.6.1 Design - The Mean Distances Between the Main Reception Counter and other Departmental Reception Counters

NH - Newham Hospital

MH - Maidstone Hospital

Figure 9.23 Figure showing the 'proximity' of the main reception counter to other departmental reception counters Distance measured in meters



NH - Newham Hospital

MH - Maidstone Hospital

Figure 9.24 The user attitude (Very Convenient + Convenient) with the 'proximity' of the main reception counter to other departmental reception counters

As shown in Figure 9.23 the mean distances between the main reception counter and other departmental reception

counters in the Maidstone hospital is lower than the Newham hospital.

9.6.2 User Satisfaction Towards Proximity of Main Reception Counter to Other Departmental Reception Counters.

The ranking of the user satisfaction to the distances they have had to walk from the main reception counter to other departmental reception counters in the two hospitals is indicated in Figure 9.24. In spite of the fact that the degree of patients satisfaction, measured in terms of their perception of the convenience of the distances they have had to walk from the main reception counter to the department which they were attending was high in both hospitals, the Newham hospital was greater than the Maidstone hospital, 94.8% compared with 87.5%. This evidence seem to contradict what was expected in terms of the user satisfaction in relationship to the actual distances. One expects that the users should be more satisfied with the distance they have to walk in the Maidstone hospital than in the Newham hospital. These findings will however be subjected to the appropriate statistical test in Chapter 10

9.7 Patients Overall Attitudes to the Design of the Main Reception and Waiting Area

Considering all aspects, the patients response to their overall attitude to the design of the main reception and waiting area of the two hospitals were as follows.

	NEWHAM	MAIDSTONE	ROW TOTAL
	3	4	
1 VERY SATISFIED	12	13	25
	48.0	52.0	32.1
	31.6	32.5	
2 SATISFIED	17	24	41
	41.5	58.5	52.6
	44.7	60.0	
3 DONT KNOW	1		1
	100.0		1.3
	2.6		
4 UNSATISFIED	7	1	8
	87.5	12.5	10.3
	18.4	2.5	
5 VERY UNSATISFIED	1	2	3
	33.3	66.7	3.8
	2.6	5.0	
COLUMN TOTAL	38	40	78
	48.7	51.3	100.0

Table 9.7 User overall attitude to the design of the main reception and waiting areas.

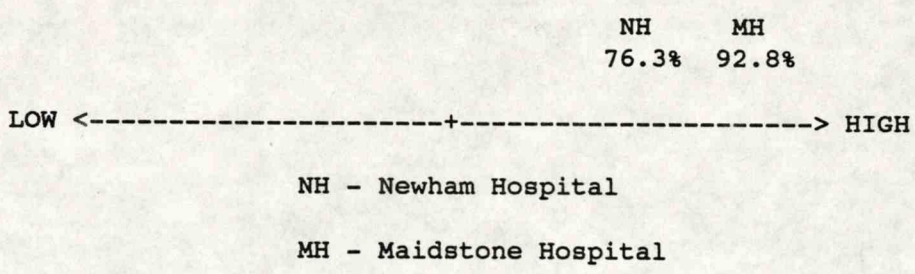


Figure 9.25 The User Overall Satisfaction with the Design of the Main Reception and Waiting Area.

The following number of patients, 31.6% (12 out of 38) of the respondents in the Newham hospital and 32.5% (13 out of 40) in the Maidstone hospital indicated that they were very satisfied with the design of the main reception and waiting area. The majority, 44.7% (17 out of 38) and 60.0% (24 out of 40) also indicated that they were satisfied with the overall design of the main reception and waiting areas in the Newham and Maidstone respectively as shown in Figure 9.25 and Table 9.7.
This evidence show that the user satisfaction with the design of the reception and waiting area in the Maidstone hospital was higher than in the Newham hospital.

9.8 Reasons Given by the Patients of Their Overall Attitude to the Design of the Main Reception and Waiting area.

Several reasons were given by the respondents for their overall satisfaction or dissatisfaction to the design of the main reception and waiting area.
The reasons which emerged was could be classified into satisfaction and dissatisfaction

i) satisfaction could be subclassified into ;

a) design factors ; which the users related to, adequate amenities, adequate size, proper layout, clean atmosphere, proper signposting and good accessibility.

b) good operational policy

c) user characteristics - the level of disability of the patient or the type of "sickness".

ii) dissatisfaction could be subclassified into

a) design factors; inadequate amenities especially toilets inadequate size, poor layout, dirty atmosphere, and

poor access,

b) user characteristics - the level of disability of the patient, especially the physically disabled.

The majority of patient satisfaction related to the good organizational the operational policy in the two hospitals.

9.9 Summary

This chapter has shown that the user attitudes towards the three design variables under study although were high they differed considerably in the two hospitals. These variables were the number of amenities, the sizes of or spaces provided for these amenities proximity of the main reception counter to other departmental reception counters.

a) On the user attitudes to number of amenities the five subpropositions showed the possibility of the existence of correlation between the design that is the differences in the number of amenities (reception counters, waiting areas, shop/snack bar, toilet facilities, telephones) and appropriateness in use. That is the higher the number of these amenities the greater the user satisfaction. Some of these suggested a positive association whereas the others were negative.

b) In terms of the user attitudes to size(s) of/space(s) provided for amenities the six subpropositions indicated the possibility of the existence of correlation between the design that is the differences in the number of amenities (reception counters, waiting areas, shop/snack bar, toilet facilities, telephones, entrance lobbies) and

appropriateness in use.

That is the higher the size(s) of/or space(s) allocated for these amenities the greater the user satisfaction. Some of these suggested a positive relationship whereas others were negative.

c) In spite of the fact that the degree of patients satisfaction, towards `proximity', measured in terms of their perception of the convenience of the distances they have had to walk from the main reception counter to the department which they were attending was high in both hospitals, the Newham hospital was greater than the Maidstone hospital.
There also seemed to be an association also in existence, albeit negatively.

The evidence also show that the users overall satisfaction with the design of the reception and waiting area in the Maidstone hospital was higher than in the Newham hospital. There seemed to be an association also in existence between these variables.
In terms of the classification of the amenities, the ratio of the number of amenities in the Maidstone hospital was greater that the Newham hospital, six in the latter compared with nine in the former.
However since it was difficult for most of the patients to identify most of these amenities or to have used them, the measurement of their overall satisfaction would have been biased and difficult.
The patients preference for these amenities in

reception and waiting areas were discussed in Chapter 7.

The next chapter will therefore discuss the relationships between the design of reception and waiting areas and the user attitudes where the associations between the variables identified in this chapter will be explored in detail with the appropriate statistical tests will be applied.

9.10 References

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CHAPTER TEN

SPECIFIC FINDINGS : THE RELATIONSHIP BETWEEN THE DESIGN OF HOSPITAL RECEPTION AND WAITING AREAS AND THEIR APPROPRIATENESS IN USE.

10.1. Introduction

The main aim of this chapter is to test empirically the hypothetical relationships between the design of main reception and waiting areas (independent variable), in two Nucleus hospitals and the appropriateness in use (the dependent variable), by examining in detail three propositions discussed in Chapter 5 amd summarised in Ch. 6. These propositions are namely, that,

i) differences in the number of amenities provided will produce differences in user attitudes, that is the higher the number of amenities provided in the main reception and waiting areas, the higher the appropriateness in use

ii) differences in the size of the amenities provided will produce differences in user attitudes, that is the larger the size of the amenities in the main reception and waiting area, the greater the appropriateness in use and

iii) differences in the distances between the main reception counters and other departmental reception counters will produce differences in the user attitudes, that is, the shorter the distances between the main reception and waiting counter to other departmental reception counters, the greater the appropriateness in use.

For each of the first two propositions, that is (i) and (ii), subpropositions were formulated which related to the individual amenities such as the reception counter, the

waiting areas, the shop/snack bar and the toilet facilities, provided in the main reception and waiting areas of the hospitals. These have been discussed in detail in Chapters 8 and 9.

This chapter after the introduction, first relates each of the propositions to the theoretical predictions of user attitudes in each of the hospitals.

The chapter then analyses i) the objective measurements of

a) the number of amenities in the main reception and waiting area,

b) the size of the amenities in the main reception and waiting area and

c) the proximity of the main reception counter to other departmental reception counters investigated in detail in Chapter 8.

ii) the subjective measurement of user satisfaction as investigated in Chapter 9.

These subjective measurements were the user attitudes towards

a) the number of amenities and

b) the size of the amenities in the main reception and waiting area, and

c) the proximity of the main reception counter to other departmental reception counters investigated in detail in Chapter 8.

The first (i) and second (ii) measurements above were general and the third, which will be outlined in this chapter, will include specific statements of the relationship between the design (independent variables)

and their appropriateness in use (dependent variables) This relationship in this study is covered by the global hypothesis that differences in design produce differences in appropriateness in use.

10.2 Independent Variables

The independent variables can be broadly classified into two, namely the hospital design variables and the main reception and waiting area design variables.

10.2.1 Hospital Design Variables

The hospital design variables are by nature general and descriptive and include, i) the generic form or layout, ii) the interdepartmental relationships and iii) the extent to which the reception and waiting area has been integrated into the generic form or layout of the hospital

Other notable characteristics of hospitals in general and include the type of specialization, the physical size, the out-patient population size and the bed size but these have not been considered in any detail in this study since the focus of this study is on the design of reception and waiting areas.

10.2.2 The Reception and Waiting Area Design Variables

With respect to the reception and waiting area design variables, two types were identified, namely i) those adopted from the literature which are related to the shape or the layout of the reception and waiting area, the number and the type of amenities the physical size

measured in square meters,

ii) those which are adopted from an earlier study in ward design (1) and modified to suit this study, that is the proximity of the main reception counter to other departmental reception counters and between every reception counter and the rest of the reception counters, (the measurements were devised in this chapter) and

iii) the degree of openess of the main reception and waiting area developed in this study.

The hospital which were selected, although both Nucleus hospitals, differed considerably on the basis of these hospital and main reception and waiting area design variables

10.3 The Dependent Variable

The appropriateness in use was initially indicated by the seven basic indicators A - G, discussed in detail in Chapter 5, and the hospitals and reception and waiting areas differed with respect to the degree of their appropriateness in use.

10.4 The Relationships

The relationship between the design variables and the appropriateness in use which is the prime objective of this chapter was hypothetical and has not been tested empirically in any study. Although it appears the DHSS have recently commissioned the Medical Architecture Research Unit to investigate this area.

Both the independent and dependent variables and the

propositions have been discussed in Chapter 9.

The relationships can be tested at the general and the specific levels. Where a specific proposition is tested the proposition is divided between one hospital design variable associated with the reception and waiting and the main indicators and some specific sub indicators of the appropriateness in use in relational statements.

At the general level, the differences between the hospital can be quantified in terms of the number of clusters and although at the specific level that of the reception and waiting areas could be quantified in terms of the number and size of the amenities. The meaning of what has been classified as `amenities' could generally be argued to be those which are generally accessible to patients and visitors which include for example the snack bar, the reception counter, the toilet facilities and the waiting area.

The analysis of the relationship between the objective and subjective measurements was achieved by means of condescriptive (frequencies), and associational (crosstabulations and correlations) statistical techniques. (2) Crosstabulations with its chi-square test of independence were used to asses the dependence or independence of an association.

Crosstabulations were used as a first step in order to detect any association or possible causal relationship between the variables under testing. In addition and in order to compute the actual strength of any association, the application of the significance levels of two non parametric correlation coefficients Spearman's Rho and

Kendall's tau-b were utilized. (3)

The results of the crosstabulations between all the design variables and the appropriateness in use are shown in Table 10.1. These findings from the crosstabulations revealed that there appeared to be a general relationship between the design of main reception and waiting areas and appropriateness in use which are now discussed in terms of the propositions which were found to be significant.

10.5 The Propositions - The Relationship Between the Design Variables and their Appropriateness in Use

From the results obtained, that is by crosstabulating the design variables by the hospital type, See Table 10.1, the design of the main reception and waiting area did not relate to the appropriateness in use in any of the variables at the 0.05 significance level (95% confidence). According to Siegel, (4) any value of a Chi- square above 9.49 with a degree of freedom of four means that there is a strong correlation between the two variables at the 0.05 level (95% confidence). The occurrence of such a correlation with this level of significance can be considered as being real and not necessarily due to the chance or possibility of sampling variation. However by reducing the significance level to 0.15 (85% confidence) the following design variables appeared to relate to the appropriateness in use, the number of waiting areas (chi - square = 8.03, significance = 0.09) number of telephones (chi-square = 7.07, significance = 0.13) size of waiting areas (chi square =7.59, significance 0.10), overall attitude (chi-square = 7.02, significance = 0.13)

Variables Crossed	NEWHAM (NH)		MAIDSTONE (MH)		NEWHAM(NH) + MAIDSTONE(MH)	
Hospital Type by					χ^2	σ
No. of Reception Counters					3.37	0.49
No. of Waiting Areas					8.03	.09
No. of Toilet Facilities					4.86	0.30
No. of Shop/Snack Bar					4.71	0.31
No. of Telephone					7.07	0.13
Size of Entrance lobbies					5.10	0.27
Size of Reception Counter					4.77	0.31
Size of Waiting Areas					7.59	0.10
Size of Toilet Facilities					3.43	0.48
Size of Shop/Snack Bar					2.62	0.62
Space for Telephones					5.26	0.26
Proximity					3.81	0.43
Overall Attitude					7.02	0.13

Table 10.1 Crosstabulations of User Attitudes by Hospital Type

Key

χ^2 - Chi-Square
σ - Significance

When these variables were subjected to the non parametric tests of Kendall's Tau-b and Spearman's Rho, (the number of - waiting areas (Kendall's Tau-b 0.10, Spearman's Rho = 0.10) number of telephones (Kendall's Tau-b = 0.22, Spearman's Rho = 0.24) size of waiting areas (Kendall's Tau-b = - 0.27, Spearman's Rho = - 0.29), it emerged that the strength of these relationships was weak. See also Table 10.2. Each of these amenities will now be considered in terms of their respective main propositions and subpropositions.

10.6 Proposition 1 - The Relationship between the Number of Amenities and their Appropriateness in Use

The patients were asked about their attitudes to the number of amenities provided in the main reception and waiting area. These amenities were the reception counter, the waiting areas, the toilet facilities, the shop/snack bar, the telephones and the staircase.

A) Proposition 1: The proposition therefore states that, differences in the number of amenities provided will produce differences in user attitudes, that is the higher the number of amenities provided in the main reception and waiting areas, the higher the appropriateness in use

The discussion of the results of the subpropositions related to number of each of the amenities provided in the main reception and waiting area are as follows;

i) Subproposition 1A - Differences in the number of reception counters could produce differences in user attitudes.

Variables Crossed Hospital Type by	NEWHAM (NH)		MAIDSTONE (MH)		NEWHAM(NH) + MAIDSTONE(MH)	
					K	S
No. of Reception Counters					-0.15	-0.16
No. of Waiting Areas					-0.10	-0.11
No. of Toilet Facilities					-0.10	-0.10
No. of Shop/Snack Bar					0.00	0.00
No. of Telephone					0.22	0.24
Size of Entrance lobbies					-0.14	-0.15
Size of Reception Counter					-0.22	-0.23
Size of Waiting Areas					-0.27	-0.29
Size of Toilet Facilities					-0.13	-0.14
Size of Shop/Snack Bar					0.11	0.11
Space for Telephones					0.15	0.16
Proximity					0.08	0.09
Overall Attitude					0.22	0.23

Table 10.2 Crosstabulations of User Attitudes by Hospital Type

Key

K - Kendall's Tau - b
S - Spearman's Rho

ii) Subproposition 1B - Differences in the number of Waiting Areas should could differences in user attitudes.

iii) Subproposition 1C - Differences in the number of Toilet Facilities could produce differences in user attitudes.

iv) Subproposition 1D - Differences in the number of Shop/Snack Bar could produce differences in user attitudes.

v) Subproposition 1E - Differences in the number of Telephones could produce differences in user attitudes.

From the results obtained from the statistical (crosstabulations) tests there was no association between these two variables in any of the subpropositions indicated above with regards to the number of amenities, See table 10.1 and 10.2. The subjective measurements in terms of the frequencies (Chapter 9) suggested such a relationship could exist between the number of reception counters, the number of waiting areas and the size of reception counters and their appropriateness in use.

10.7 Proposition 2 - The Relationship Between the Size(s) of/or Space(s) of Amenities and their Appropriateness in Use

The patients were asked about their attitudes to the size(s) of/or space(s) of amenities provided in the main reception and waiting area. These amenities were the reception counter, the waiting areas, the toilet facilities, the shop/snack bar, the telephones the staircase and the entrance lobby.

A) Proposition 2: The proposition therefore states that, differences in the size(s) of or space(s) of amenities provide will produce differences in user attitudes, that

is the higher the size(s) of or space(s) of amenities in the reception and waiting areas, the higher the appropriateness in use

The discussion of the results of the subpropostions related to each of the amenities are as follows;

i) Subproposition 2A - Differences in the size(s) of or space(s) of reception counters should produce differences in user attitudes.

ii) Subproposition 2B - Differences in the size(s) of or space(s) of Waiting Areas should produce differences in user attitudes.

iii) Subproposition 2C - Differences in the size(s) of or space(s) of Toilet Facilities should produce differences in user attitudes.

iv) Subproposition 2D - Differences in the size(s) of or space(s) of Shop/Snack Bar should produce differences in user attitudes.

vi) Subproposition 2E - Differences in the size(s) of or space(s) of Telephones should produce differences in user attitudes.

vii) Subproposition 2F - Differences in the size(s) of or space(s) of entrance lobbies should produce differences in user attitudes.

From the results obtained from the statistical tests there was no association between these two variables with regards to the sizes of/or spaces provided for the amenities.

10.8 Proposition 3 -The Relationship Between the Proximity of the Main Reception and Waiting Areas to other Departmental Reception and Waiting Areas and their Appropriateness in Use

Patients were asked about their attitudes towards the distances they have had to walk from the main reception counters to other departmental reception counters.

Proposition 3, thus states that, differences in proximity could produce differences in user attitudes, that is the shorter the distances they have had to walk from the main reception counters to other departmental reception counters the higher the appropriateness in use.

The answers obtained, (frequencies, See Fig 9.24, crosstabulations, see Table 10.1 and non parametric tests, Table 10.2) show that there was no association between these two variables.

10.9 The Relationship Between the Overall Attitude to the Design of the Hospital Main Reception and Waiting Area and the Appropriateness in Use

Patients were asked about their overall attitudes towards the design of the main reception and waiting area. Crosstabulation of the whole response, 78 patients (that is 38 in the Newham hospital and 40 in the Maidstone hospital), who answered the questionnaire was used.
From the crosstabulation tables, it was evident that there was no association between the number of waiting areas provided and the user attitudes (chi - square = 7.02, significance 0.13) The actual strength of an association computed by means of the application of the significance levels of two non parametric correlation coefficients Spearman's Rho and Kendall's Tau-b also showed that the strength of the association was weak and as such not significant.
Having established that there was no association and thus no relationship between the variables, using a

significance level of 0.05 (95%0 confidence). The study investigated whether there was any relationship between the variables and the overall satisfaction. This test was undertaken in order to identify whether any of the variables affected the patients overall satisfaction with the design of the main reception and waiting area.

10.10 The Relationship Between the Three Main Variables and Overall Satisfaction with the Design of the Main Reception and Waiting Area.

As discussed in Chapter 9 and by means of condescrptive statistics, the overall satisfaction with the main reception and waiting area was higher in the Maidstone hospital than in the Newham hospital. That is the patients in the Maidstone hospital were more satisfied with the design of the main reception and waiting area than those in the Newham hospital.

However, as was done in the previous statistical tests involving the hospital types, crosstabulations and correlation coefficients were computed for all the variables by the overall satisfaction.

The results showed that the design of the reception and waiting area related to the overall satisfaction in the following variables.

a) with respect to the number of amenities,

i) the number of reception counters,

ii) the number of waiting areas, and

iii) the number of toilet facilities,

b) with respect to the size of amenities,

i) size of entrance lobbies,

ii) size of reception counters,

iii) size of waiting areas and

iv) size of toilet facilities.

c) 'proximity' that is the distances between the main reception and waiting areas to other departmental reception and waiting areas

A significance level of 0.00 (100% certainty) was obtained from the crosstabulations for all these variables by the overall satisfaction.

The strength of these associations were subjected to the specific correlation tests of Spearman's Rho and Kendall's Tau-b which also showed the existence of a moderate correlation, less than 0.07, in all the variables indicated above.

This means that there is the possibility that a substantial proportion of the patients who were satisfied/dissatisfied with the respective variables were at the same time satisfied/dissatisfied with the overall design of the reception and waiting areas.

The strongest association, indicated by the chi-square with the highest value was that of the overall satisfaction by the number of reception counters. (chi-square = 54.26, significance = 0.00)
Each of these variables which had a significance level of less than 0.05 will now be considered in relationship to the overall satisfaction.

10.10.1 The Relationship Between the Number of Amenities and their Overall Satisfaction with the Design of the Main Reception and Waiting Area.

The patients were asked about their attitudes to the number of amenities provided in the main reception and waiting area. These amenities were the reception counter, the waiting areas, the toilet facilities, the shop/snack bar, the telephones.

The results obtained are discussed in terms of each of the subpropositions.

10.10.1.1 On the Relationship Between the Number of Reception Counters and the Overall Satisfaction with the Design of the Main Reception and Waiting Area.

The result of the crosstabulation of the response to the number of reception counters and the overall satisfaction with the Newham and Maidstone hospitals show that the user attitude to the number of reception counters and the overall satisfaction were high in the Maidstone than in the Newham hospital.

This finding questions whether there is the existence of a relationship between the two variables that is whether the number of the reception counters in the Maidstone hospital actually caused the users overall satisfaction with the main reception and waiting area.

The answer to this question is in the affirmative. The reasons which can be given for this is as follows

i) the variable, the number of reception counters correlated (Kendall's Tau - b = 0.57, Spearman's Rho = 0.61) with the overall satisfaction with both hospitals. See Tables 10.3 and 10.4.

ii) when the patients were asked to rank six of the amenities in a hierachical order of importance, (1 being the first most important and 6 being the sixth most important) the majority indicated the reception counter as being the most important.

iii) when they were asked which amenity they wanted provided in the main reception and waiting area, the majority, 98% of the respondents also indicated that the reception counter be provided in the main reception and waiting area.

In addition to this empirical evidence, this relationship can be supported by several other arguments. The prominent of which can be compared with the private hospitals. The arguments are,

i) the ease of identification of the reception counters,

ii) the quick flow of traffic - as a result there are no queues at the entrance of private hospitals

iii) the siphoning of patients and enquiries desk which is independent of any administrative duties.

iv) the number of staff at the reception desk, so that one member of staff provides cover for another for very short periods. This ensures continuity in the manning of the reception counter for the benefit of the patients.

10.10.1.2 <u>On the Relationship Between the Number of Waiting Areas and the Overall Satisfaction with the Design of Reception and Waiting Areas.</u>

The result of the crosstabulation of the response on the number of waiting areas and the overall satisfaction with the Newham and Maidstone hospitals show that the user attitude to the number of waiting areas and the overall

Variables crossed Overall Satisfaction by	NEWHAM (NH)		MAIDSTONE (MH)		NEWHAM(NH) + MAIDSTONE(MH)	
	X^2	σ	X^2	σ	X^2	σ
No. of Reception Counters	54.26	0.00	43.12	0.00	74.37	0.00
No. of Waiting Areas	33.72	0.00	23.27	0.00	56.67	0.00
No. of Toilet Facilities	25.34	0.06	9.30	0.41	29.41	0.02
No. of Shop/Snack Bar	12.52	0.01	9.57	0.65	17.87	0.33
No. of Telephone	14.6	0.55	9.84	0.36	12.35	0.71
Size of Entrance lobbies	35.62	0.00	41.46	0.00	66.11	0.00
Size of Reception Counter	30.04	0.01	48.88	0.00	68.32	0.00
Size of Waiting Areas	37.50	0.00	20.73	0.01	56.45	0.00
Size of Toilet Facilities	20.79	0.18	26.05	0.01	35.02	0.00
Size of Shop/Snack Bar	9.87	0.27	10.13	0.60	14.50	0.56
Space for Telephones	9.73	0.88	15.04	0.08	17.13	0.37
Proximity	12.83	0.38	17.60	0.04	33.15	0.07

Table 10.3 Crosstabulations of User Attitudes by Overall Satisfaction

Key

X^2 - Chi-Square

σ - Significance

satisfaction were high in the Maidstone than in the Newham hospital and also questions whether there is the existence of relationship between the two variables. That is whether the number of waiting areas in the Maidstone hospital actually affected the users overall satisfaction with the main reception and waiting area.

By examining the statistical tests, (chi square = 56.67 , significance = 0.00) and the non - parametric tests, the answer to this question is likely to be in the affirmative. The reasons which can be given for this could be as follows

i) the variable, the number waiting areas correlated (Kendall's Tau-b = 0.57, Spearman's Rho = 0.61) with the overall satisfaction with both hospitals. See Tables 10.3 and 10.4.

ii) where the waiting areas were separated, it was generally easier to predict the waiting characteristics of the patients and as such provide adequate and appropriate seating.

iii) separated snackbar waiting often allowed for the other waiting areas to be free of `snack litter'

iv) separated smoking areas also reduced the degree of stuffiness in the main reception and waiting areas, although this often caused most patients to smoke directly outside the entrance doors.

10.10.1.3 <u>On the Relationship Between the Number of Toilet Facilities and the Overall Satisfaction with the Design of the Main Reception and Waiting Area.</u>

The result of the crosstabulation of the response on the number of toilet facilities and the overall satisfaction with the Newham and Maidstone hospitals show that the user

Variables Crossed Overall Satisfaction by	NEWHAM (NH)		MAIDSTONE (MH)		NEWHAM(NH) + MAIDSTONE(MH)	
	K	S	K	S	K	S
No. of Reception Counters	0.59	0.64	0.53	0.55	0.57	0.61
No. of Waiting Areas	0.60	0.65	0.54	0.58	0.57	0.61
No. of Toilet Facilities	0.38	0.42	0.10	0.11	0.26	0.29
No. of Shop/Snack Bar	0.33	0.35	0.21	0.23	0.25	0.28
No. of Telephone	0.20	0.24	0.14	0.16	0.13	0.15
Size of Entrance lobbies	0.54	0.59	0.65	0.68	0.58	0.52
Size of Reception Counter	0.58	0.64	0.55	0.58	0.56	0.61
Size of Waiting Areas	0.63	0.69	0.58	0.63	0.59	0.64
Size of Toilet Facilities	0.39	0.43	0.33	0.35	0.36	0.39
Size of Shop/Snack Bar	0.10	0.11	0.17	0.19	0.12	0.13
Space for Telephones	0.17	0.19	0.32	0.35	0.20	0.22
Proximity	0.42	0.46	0.33	0.36	0.36	0.40

Table 10.4 Correlation Coefficient of User Attitudes by Overall Satisfaction

Key

K - Kendall's Tau - b
S - Spearman's Rho

attitude to the number of toilet facilities was lower in the Maidstone hospital than in the Newham hospital whereas the overall satisfaction was the opposite.

This finding questions whether there is the existence of relationship between the two variables that is whether the number of the toilet facilities in the Maidstone hospital actually promoted the users overall satisfaction with the main reception and waiting area.

From the statistical tests undertaken, (chi - square = 29.41, significance = 0.02), it appeared that the number of the toilet facilities in the Maidstone hospital actually promoted the users overall satisfaction with the main reception and waiting area.

However the non parametric tests,(Kendall's Tau-b = 0.26, Spearman's Rho = 0.29) showed that the strength of this association was weak. See Tables 10.3 and 10.4.

The likely reasons are the location of these toilet facilities and the standard of maintenance and cleanliness which are provided.

10.10.2 The Relationship Between the Size of Amenities and their Overall Satisfaction with the Design of the Main Reception and Waiting Area.

The patients were asked about their attitudes to the size of amenities provided in the main reception and waiting area. These amenities were the reception counter, the waiting areas, the toilet facilities, the shop/snack bar, the telephones the staircase and the entrance lobby.

The results obtained are discussed in terms of each of the subpropositions.

10.10.2.1 On the Relationship Between the Size of Reception Counters and their Overall Satisfaction with the Design of the Main Reception and Waiting Area

The result of the crosstabulation of the response on the size of reception counters and the overall satisfaction with the Newham and Maidstone hospitals show that the user attitude to the size of reception counters and the overall satisfaction were higher in the Maidstone than in the Newham hospital.

This finding questions whether the size of the reception counters in the Maidstone hospital actually affected the users overall satisfaction with the design of the main reception and waiting area. The results of the statistical tests, (Chi-square = 68.32, significance = 0.00) showed an apparent association and the non parametric tests, (Kendall's Tau-b = 0.56, Spearman's Rho = 0.61) confirmed this association. See Tables 10.3 and 10.4.

10.10.2.2 On the Relationship Between the Size of Waiting Areas and their Overall Satisfaction with the Design of the Main Reception and Waiting Areas.

The result of the crosstabulation of the response on the size of waiting areas and the overall satisfaction with the Newham and Maidstone hospitals show that the user attitude to the size of waiting areas were lower in the Maidstone than in the Newham hospital whereas the overall satisfaction was the opposite. To find out whether an association existed, the results of the statistical tests, (Chi-square = 56.45, significance = 0.00) showed an apparent association between the size of waiting areas and

the overall satisfaction, and the non parametric tests, (Kendall's Tau-b = 0.56, Spearman's Rho = 0.61) confirmed the moderate strength of this association. See Tables 10.3 and 10.4.

10.10.2.3 On the Relationship Between the Size of Toilet Facilities and their Overall Satisfaction with the Design of the Main Reception and Waiting Area.

The result of the crosstabulation of the response on the size of the toilet facilities counters and the overall satisfaction with the Newham and Maidstone hospitals show that the user attitude to the size of toilet facilities were lower in the Maidstone than in the Newham hospital whereas their overall satisfaction was the opposite. This finding questions whether a relationship between the two variables existed,

The existence of such a relationship was shown from the crosstabulation results obtained (chi - square = 35.02, significance = 0.00), and the non parametric tests (Kendall's Tau-b = 0.36, Spearman's Rho = 0.39) only showed a moderate correlation. See Tables 10.3 and 10.4.

10.10.2.4 The Relationship Between the Size of Entrance Lobbies and their Overall Satisfaction with the Design of Main Reception and Waiting Areas

The result of the crosstabulation of the response on the size of entrance lobbies and the overall satisfaction with the Newham and Maidstone hospitals show that the user attitude to the size of entrance lobbies were lower in the Maidstone than in the Newham hospital whereas the overall

satisfaction with the design of the main reception and waiting area was higher.

The existence of a relationship between the two variables that is whether the size of the entrance lobbies in the Maidstone hospital actually affected the users overall satisfaction with the main reception and waiting area was obtained from the statistical tests.

These tests showed an association between the variables, crosstabulations, (chi - square = 66.11, significance = 0.00), and the non parametric tests (Kendall's Tau-b = 0.58, Spearman's Rho = 0.52) only showed a moderate correlation. See Tables 10.3 and 10.4.

10.10.3 The Relationship Between the Proximity of the Main Reception and Waiting areas to other Departmental Reception and Waiting Areas and their Overall Satisfaction with the Design of the Main Reception and Waiting Area

Patients were asked about their attitudes towards the distances they have had to walk from the main reception counters to other departmental reception counters.

The result of the crosstabulation of the response on the their attitudes towards the distances they have had to walk from the main reception counters to other departmental reception counters and the overall satisfaction with the Newham and Maidstone hospitals show that the user attitude to the distances they have had to walk from the main reception counters to other departmental reception counters were lower in the Maidstone than in the Newham hospital whereas the overall satisfaction with the design of the main reception

and waiting area was the opposite.

This finding questions whether there is the existence of relationship between the two variables that is whether the their attitudes towards the distances they have had to walk from the main reception counters to other departmental reception counters actually caused or promoted the users overall satisfaction with the main reception and waiting area.

The answer to this question is yes due to the following reason, the patients attitudes towards the distances they have had to walk from the main reception counters to other departmental reception counters. correlated (Kendall Tau - b = 0.36, Spearman's Rho = 0.40) with the overall satisfaction with both hospitals, See Table 10.4, after the crosstabulation results, (chi - square = 66.11, significance = 0.00), see Table 10.3, which showed an apparent association was further examined.

10.11 Hypothesis Testing

10.11.1 The Relationship Between the Number of Amenities Areas and their Appropriateness in Use

Proposition 1 - differences in the number of amenities provide will produce differences in user attitudes, that is the higher the number of amenities in the reception and waiting areas, the higher the appropriateness in use

Null Proposition 1 - differences in the number of amenities provide will produce no differences in user attitudes.

Having examined the proposition and its sub-proposition in terms of the individual amenities in the main reception and waiting area, Proposition 1 with respect to the number of amenities, which is that differences in the number of amenities provided will produce differences in user attitudes, that is the higher the number of amenities in the reception and waiting areas, the higher the appropriateness in use can be rejected in favour of the null proposition.

10.11.2 The Relationship Between the Size of Amenities Areas and their Appropriateness in Use

Proposition 2 - differences in the size of amenities provide will produce differences in user attitudes, that is the higher the size of amenities in the reception and waiting areas, the higher the appropriateness in use

Null Proposition 2 - differences in the size of amenities provide will produce no difference in user attitudes.

Having examined the proposition and its sub-propositions in terms of the individual amenities in the main reception and waiting area, Proposition 2 with respect to the number of amenities, which is that differences in the number of amenities provided will produce differences in user attitudes, that is the higher the number of amenities in the reception and waiting areas, the higher the appropriateness in use can be rejected in favour of the null proposition.

10.11.3 The Relationship Between the Proximity of the Main Reception and Waiting Areas to Other Departmental Reception and Waiting Areas and Their Appropriateness in Use

Patients were asked about their attitudes towards the distances they have had to walk from the main reception counters to other departmental reception counters.

Proposition 3 - differences in the distances they have had to walk from the main reception counters to other departmental reception counters will produce differences in user attitudes, that is the shorter the distances they have had to walk from the main reception counters to other departmental reception counters, the higher the appropriateness in use

Null Proposition 3 - differences in the distances they have had to walk from the main reception counters to other departmental reception counters provide will produce no differences in user attitudes.

This third Proposition that differences in the distances they have had to walk from the main reception counters to other departmental reception counters will produce differences in user attitudes, that is the higher the distances they have had to walk from the main reception counters to other departmental reception counters, the higher the appropriateness in use can be rejected in favour of the null proposition.
Therefore, the main hypothesis can be rejected in favour of the null hypothesis.

10.12 Summary

This chapter tested the hypothesis which encompassed the three main variables, the number and size of amenities and the proximity of the main reception counter to other departmental reception counters and the user attitudes towards them.

The chapter has shown that the positive hypothesis which involved these three variables namely, that,

a) differences in the number of amenities provide will produce differences in user attitudes, that is the higher the number of amenities in the reception and waiting areas, the higher the appropriateness in use

b) differences in the size of amenities provide will produce differences in user attitudes, that is the higher the size of amenities in the reception and waiting areas, the higher the appropriateness in use, and

c) differences in the distances the patients have had to walk from the main reception counters to other departmental reception counters will produce differences in user attitudes, that is the shorter the distances they have had to walk from the main reception counters to other departmental reception counters, the higher the appropriateness in use could be rejected in favour of the null hypothesis.

In addition this chapter has shown that the three key variables and the overall satisfaction with the design of the main reception and waiting area are related.

The final chapter thus outlines the general conclusions

NEWHAM HOSPITAL - STATISTICAL DESCRIPTION OF DISTANCES BETWEEN RECEPTION COUNTERS

	N	MEAN	MEDIAN	TRMEAN	STDEV	SEMEAN	MIN	MAX	Q1	Q3
C1-MRC	20	97.3	94.5	97.0	59.5	13.3	0.0	200.2	40.6	161.7
C2-OPD1	20	118.5	120.1	119.1	65.9	14.7	0.0	225.8	64.4	187.3
C3-OPD2	20	116.3	117.7	116.8	65.4	14.6	0.0	223.4	62.0	184.9
C4-OPD3	20	116.1	117.7	116.6	65.8	14.7	0.0	223.4	63.8	184.9
C5-OPD4	20	116.1	117.7	116.6	65.8	14.7	0.0	223.4	63.8	184.9
C6-CHN1	20	102.1	91.6	102.7	51.3	11.5	0.0	193.0	83.7	154.5
C7-CHN2	20	102.1	91.6	102.7	51.3	11.5	0.0	193.0	83.7	154.5
C8-FRACTURE	20	87.2	71.6	86.8	47.2	10.5	0.0	180.8	56.2	137.3
C9-AED	20	129.5	118.6	131.2	55.1	12.3	0.0	227.8	99.7	184.3
C10-CHN3	20	99.55	114.80	101.44	43.01	9.62	0.0	165.00	67.40	126.80
C11-LAB	20	89.29	103.40	90.68	40.57	9.07	0.0	153.60	56.00	115.40
C12-XRAY	20	92.20	107.00	93.99	41.20	9.21	0.0	152.20	59.60	119.00
C13-ADMIN	20	94.18	109.20	96.07	41.67	9.32	0.0	154.40	61.80	121.20
C14-MORTUARY	20	86.40	88.60	88.78	34.18	7.64	0.0	130.00	60.00	121.70
C15-PHARM	20	104.9	102.8	107.0	53.4	11.9	0.0	171.4	54.2	162.8
C16-MAT1	20	122.2	124.0	125.1	60.1	13.4	0.0	192.6	76.1	184.0
C17-MAT2	20	122.2	124.0	125.1	60.1	13.4	0.0	192.6	76.1	184.0
C18-MAT3	20	138.1	149.2	141.3	72.2	16.2	0.0	217.8	86.4	209.2
C19-REHAB	20	146.3	159.7	149.9	74.3	16.6	0.0	227.8	94.4	217.6
C20-EDUC	20	121.7	128.6	124.3	65.1	14.6	0.0	197.2	65.8	188.9

NEWHAM HOSPITAL - MEAN DISTANCES BETWEEN EVERY RECEPTION COUNTER AND THE REST OF THE RECEPTION COUNTERS FOR EVERY RECEPTION COUNTER

97.30	118.50	116.30	116.10	116.10	102.10	102.10	87.20
129.50	99.55	89.29	92.20	94.18	86.40	104.90	122.20
122.20	138.10	146.30	121.70				

that can be drawn from this study, its wider implications and mentions the areas for further research.

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CHAPTER 11

CONCLUSIONS

11.1 Introduction

The aim of this chapter is to describe the general conclusions that can be drawn from this study and its wider implications on theoretical and practical aspects. The general inference, summary and conclusions in which the general findings of the research are discussed and are related to the original problems which were identified.

The chapter summarises the problem area and its background which contributed to the definition of the problem as well as the research objectives and the conclusions drawn from the other factors which the study argued were contributory to user dissatisfaction with the design of the main reception and waiting areas. The wider and possible future implications are included in this chapter and mention has been made of the areas for further research.

11.2 Problem Background and Research Objectives

The main aim of this study was the investigation of the relationship between the design of the main reception and waiting areas in two Nucleus hospitals, the Linear, represented by the Newham hospital and the L-Types represented by the Maidstone hospital, and their appropriateness in use. Three main variables, the number of amenities, the size of the amenities and the 'proximity' of the main reception and waiting area were

tested against the user attitudes towards them.

The background to this study was prompted by the existence of considerable evidence from the literature, observation, interviews with hospital designers, administrators, other members of staff as well as the other users which suggested that hospital users were generally dissatisfied with the design of many aspects of hospitals including and especially with the main reception and waiting area where the majority of the users, especially the patients, are often first introduced into a hospital.

Although it is generally agreed that a pleasant, well designed building devoid of any institutional atmosphere will contribute to patient confidence and allay their fears, a study of the plans, observation of the building in use, in addition to interviews with hospital administrators and other members of staff as well as the designers indicated that there were very few National Health Service hospitals which apparently satisfied these conditions.

Compared to most private hospitals the reception and waiting areas in most National Health Service hospitals appeared to be unsympathetic to the patients needs.

The literature reviewed revealed that the problem is compounded by the lack of empirical studies which examined the relationship between the design of this area and their appropriateness in use. In spite of these factors the study identified that there was very little in terms

of design guides and standards which are used to design the main reception and waiting areas in hospitals.

A comparative study of the main reception and waiting area of two National Health Service Nucleus hospitals hospitals. The main hypothesis that design and appropriateness in use are related. Three key design variables were specifically examined namely, the number and the physical size of the amenities provided, and 'proximity' of the main reception and waiting area to other departmental reception and waiting areas and their appropriateness in use.

The investigation used on the out-patients for the subjective measurements of appropriateness in use. These measurements encompassed user perception and user attitudes towards the design (objective measurements) of the main reception and waiting area.

In addition a descriptive comparison of the reception and waiting areas in NHS hospitals and the private hospitals was also undertaken in order to identify why most private hospitals apparently give more emphasis to the design of their main reception and waiting areas, with the primary objective of providing a humanistic atmosphere in order to satisfy its paying customers than those within the National Health Service.

The objectives of the study can therefore be summarised as follows:

i) to investigate the relationship between the design of

the main reception and waiting areas in two Nucleus National Health Service hospitals designed with the Nucleus system and also in a private hospital and their appropriateness in use in order to confirm or deny the importance of the factors given in the literature, interviews and observation of the hospital in use as the main causes of patient dissatisfaction.

ii) to identify the impact of different approaches to the design of this area in the National Health Service and the private hospitals in order to establish why the private hospitals appear to have a more humanistic approach to the design of this area than those within the National Health Service hospitals and

iii) to provide recommendations and suggestions for the future design of this important area of hospital.

In order to achieve the objectives of the study, a detail study of the following areas were made;

i) an assessment of the general role and development of design guidance in the United Kingdom. (Chapter 2)

ii) an assessment of the impact of design guidance on hospital development in general in the United Kingdom as well as the design of the four main generic forms of hospitals, focusing in detail on those for the Nucleus hospitals. (Chapter 3)

iii) an expansion on the discussion in ii., (Chapter 4) but focuses on:

a) the assessment of the methods used in the design of main reception and waiting area,

b) the design guide for the main reception and waiting areas and

c) an analysis and critique of the design of the main reception and waiting areas especially in the hospitals visited in terms of the users, the user requirements, the type of activities, and the setting. Three of the key design variables were selected for the study and are discussed as well as the need for different design approaches.

iv) the development of a research tool within which the appropriateness in use could be measured. The appropriateness in use indicators were identified, and their measurements were discussed. An outline of the evaluation model was provided, as well as the operationalisation of the hypotheses, involving the relationship between design and appropriateness in use. (Chapter 5)

v) the adoption and development of a research methodology to test the hypotheses. The pre-pilot, pilot studies including the findings reviews and appraisals, the refinement of the methodology and how they influenced the main case studies were discussed. (Chapter 6)

vi) the discussion of other factors which the study identified as being dissatisfaction with the design of the reception and waiting areas. (Chapter 7)

vii) a comparative study of the reception and waiting area design in terms of the independent variables in the form of three subpropositions;

a) differences in the size of the amenities,

b) differences in the number of amenities and

c) differences in 'proximity' of the main reception

counter to other departmental reception counters.(Chapter 8)

viii) a comparative study of the reception and waiting area design in terms of the dependent variables, the appropriateness in use variables namely,

a) user attitudes towards the number of the amenities

b) user attitudes towards the size of the amenities and

c) user attitudes towards 'proximity' of the main reception counters to other departmental reception counters. (Chapter 9)

ix) the analysis of the relationship between the design variables in Chapter 8 and the appropriateness in use variables discussed in chapter 9 are discussed in order to the test of the hypotheses for its confirmation or denial. (Chapter 10)

After the investigation of these aspects off the study, the following conclusions were made.

11.3 On the Assessment of the General Role and Development of Design Guidance in the United Kingdom.

The study identified that there were numerous variations in the type and format of design guidance produced by the different governmental departments. The study also argued that it was difficult to differentiate between the intricately related guidance, standards and measures for cost control and the different operational policies . Although the emphasis in the design guides in terms of the standards, the measures for cost control and the operational policies varied considerably in most of the publications by the other governmental departments, it was

particularly the case for most of the hospital guides. Some of the standards in the hospital design guides were mandatory, while others were not, some of the design guides specified the maximum and minimum standards, others were related to other variables such as the number of rooms within a department or the number of activities within a space. For example the calculation of the size of the subwaiting area in the outpatients department was based on of the number of doctor sessions. Some of the design guides contained specific plans and specific interdepartmental relationships, while others contained detailed operational policies and or the brief descriptions of the required spaces.

In spite of these general variations in the design guides, the study identified a number of common underlying themes in the design guides for hospitals. The prominent of these underlying themes was the relationship between the provision of these guidance and the control of hospital buildings capital and maintenance costs. In addition there is the general assumption by most designers and hospital authorities that the objectives, aims, and user requirements set up in the guidance should be achieved in the completed building 'if these design guides were followed.

The study also identified that in addition to the DHSS design guides, other design guides have been produced by other health authorities, for example, the Oxford Method developed by the Oxford Regional Health Authority.

The study also identified that although some of the DHSS design guides are adopted in private hospitals, the operational policies and the underlying objectives making profit in these private hospitals, influences the extent of use of these DHSS design guides. Some of the underlying objectives of the private hospitals include their policies on high occupancy, short stay, hotel type accommodation which contradicts the 'health for all' concept under which the NHS was formed and under which invariably the DHSS guides were based on.

In view of the developments and contradictions in the provision of health care in the private and public sectors, most architects have argued that 'in future architects will have the best opportunity yet to offer their services to a health service hungry to exploit its commercial potential in both sectors for the benefit of the patient and staff.

These design guides had an impact on the development of a number of hospital concepts The four most prominent were the Greenwich, Best Buy, Harness and Nucleus systems which were examined in this thesis.

11.4 On the Impact of Design Guidance on Hospital Development in General in the United Kingdom

The four main hospital design concepts which have evolved since 1960, namely the Greenwich, Best Buy, Harness and Nucleus have all been based to varying extents on the officially produced guidance developed by the DHSS. The study identified and argued that the design guide

produced for the Nucleus hospitals is much more comprehensive and detailed than those available for the earlier types of hospitals. The Nucleus guides contains specific standards in terms of form, spaces, sizes, equipment, fittings and facilities to be provided 'even to the last thermometer that must be put in' has been detailed (Ch. 3). In addition the Nucleus guides incorporated detailed whole and departmental operational policies, and indicated the need to refer to the regional, area and district operational policies for individual hospitals which were invariably contained in other documents. Compared with the guidance for Nucleus hospitals that provided for the Greenwich hospitals in the form of Hospital Building Notes, Technical Memoranda for example, were much less comprehensive. Specific standards for room sizes in all cases or details of furniture and fittings were limited. The size of spaces were to be calculated, for example, by taking into account a number of variables, including the number of users or the number of consulting rooms for example. Standards for equipment and fittings were less clearly defined, and the positioning of facilities and fittings were left to the discretion of the individual designer. In the case of the Best Buy hospitals, the designers were not bound to use the existing guidance for which the Greenwich and the other previous hospitals were based, but rather the designers were asked by the clients to seek the most forward-looking design solutions.

The study identified that the strict adherence to the Nucleus guidance therefore allows a limited degree of flexibility for the architect whereas the Hospital Building Notes allowed for areas where the designer depending on his experience could explore various alternative solutions. The exploration of these alternative solutions were evident especially in the design of reception and waiting areas where the designers were not bound by any strict adherence to either the design guides or specific medical requirements. As a result there has been very little adherence to the design guides for reception and waiting areas in most hospitals the especially Nucleus hospitals.

In the private sector, the study argued that several other factors were considered in addition to the actual building in order to provide a friendly and welcoming atmosphere for the patients (Ch. 3). These included external factors such as the availability of parking space, the appropriateness of signposting or the lack of them, the attitude of the receptionist at the point of entry, the length of waiting time it either at the reception desk or to see a consultant. Coupled with these subtle considerations was the need to provide a hotel image for the reception and waiting areas an the main communication and circulation routes which linked them.

The study identified that several arguments have emerged as being the possible trend of future NHS hospitals in view of the current developments and changes in governmental policies towards financing public health.

Private medical practise in hospitals are likely to be encouraged so as to reduce the time the consultants have to travel between hospitals. The management fee contract approach and the fast track method of construction is going to be adopted or has been already adopted for most of the new NHS hospitals in order to reduce the time it take to build hospitals. In addition the image of the traditional reception and waiting area within the NHS hospitals is likely to change with the inclusion of income generating activities at all levels with the hope of making them more humanistic, more welcoming and friendly to the users. There will be the likelihood of competition for patients. Finally commercial sponsorship of departments and wards are being considered by some Health Authorities so that eventually it is possible to have some wards named after high street/commercial enterprises as is in the case of some Derbyshire hospitals.

In spite of the dynamic nature of the factors which have been briefly stated, the study identified that there was very little in terms of design guides and standards which are used to design the main reception and waiting areas in hospitals was investigated in detail as part of the study and has been discussed in Chapter 4.

11.5 On the Assessment of the Methods used in the Design of Main Reception and Waiting Areas

This study indicated that no specific definition has been given for the main reception and waiting areas. The area was often defined in terms of its relationship to the

out-patients department. However in other hospitals where other entrances exist on the same facade or elevation, such definitions are often confusing.

The study also identified that until the publication of of the Draft HBN12 (Out-patients Department) very little and specific design guides had been written for this area either in the form of specific standards band or operational policies. However the Nucleus guidance treats this separately by creating a 'main entrance template which in design terms is to be integrated or related to other subclusters or clusters along the hospital street to form what might be regarded as satisfying the main entrance requirements specified in the original Hospital Building Note. The user requirements have not been stated and the architects have to use another guidance another guidance in order to extract this information. Design guidance for reception and waiting areas have been criticized in several ways. As a result it was necessary to adopt and devise means by which the appropriateness in use of the reception and waiting areas could be measured.

11.6 On the Indication and Development of the Framework for the Measurement of Appropriateness In Use of Reception and Waiting Areas

The study identified and argued that the measurement by which the extent of the appropriateness in use of the main reception and waiting could be assessed was complicated. However, it was necessary to discuss and investigate the meaning of the appropriateness in use in order that its measurement could be proposed. The

criteria often used in health building evaluation in general for the measurement of appropriateness in use was identified but there was no criteria which related specifically to reception and waiting area. However it emerged from the study that the 'care' and 'welfare of patients' were considered by both designers and staff being the prime purpose of hospital main reception and waiting area in use. The objectives and requirements that the main reception and waiting area should fulfil while they were being used were considered as being the focus around which the indicators of the appropriateness in use could be identified and subsequently measured. A simple model of measurements which devised and was primarily centred on users' achievement of these objectives as well as the extent to which the design of the main reception and waiting area facilitated these objectives.

The model that this study will use for measuring the appropriateness in use involved the two issues of patients welfare and `care' indicated. The model developed involved seven main indicators which included their specific sub-indicators and sub-sub indicators (Ch. 5).

The seven indicators were related to general and specific aspects of a reception and waiting area in use. Five of these indicators encompass user attitudes towards the use of the reception and waiting area, one indicator focuses on users movements in the reception and waiting area, and the other is concerned with the design guidance requirements of other variables

which affect the appropriateness in use of this area.

11.7 On Research Methodology and Testing of Hypothesis

Having argued that the appropriateness in use of the reception and waiting areas could be measured in part by eliciting user attitudes, questionnaires were chosen as the most suitable method to use.
However, these questionnaires were supplemented by observations and interviews with porters, ambulancepersons, receptionists and patients, so that the shortcoming of one method of eliciting user attitudes would be compensated by the other methods.

The questionnaires were in two parts, the first was concerned with general findings related to the seven main indicators. (There were two separate questionnaires to collect these types of data from, (i) the patients, and ii) the staff). However the staff responses were not analysed in any way. The second questionnaire was concerned with the specific findings related to the three main variables which were being tested. From the results obtained in the final study, the following conclusions were made.

11.8 On the General Findings of Other Factors Which Affect User Satisfaction

This study identified that there were several other factors apart from the three main design variables which affected the user attitudes to the design of the reception and waiting area (Ch. 7).

Some of these factors were subjective whereas others were objective. Some of the assumptions in the design guidance have been based on the possible relationships between some of these other factors most of which from the literature reviewed to date have not been empirically verified.

Since this aspect of the study was basically undertaken in order to provided an empirical basis from which some of the relationships can be tested the findings are beyond the scope of this study and can be used as material for further study.

11.9 On the Specific Findings of the Objective Measurements

The study has shown that in terms of the objective measurements, there were differences in the design characteristics of the two case study hospitals Newham and Maidstone, at two levels, namely the whole hospital level and main reception and waiting area level (Ch. 8).

The study also showed that the design characteristics at the two levels had been significantly modified in the two hospitals to suit individual hospital requirements (Ch.8).

With respect to the specific design variables, identified as being the main causes for user dissatisfaction, namely the number of amenities, the size, and 'proximity' of reception counters, the study indicated that with respect to the classification of the amenities, the ratio of the number of amenities in the Maidstone hospital was greater

that the Newham hospital, six in the latter compared with nine in the former.

However since it was difficult for most of the patients to identify most of these amenities or to have used them, the measurement of their overall satisfaction would have been biased and difficult.

The patients preference for these amenities in reception and waiting areas were discussed in Chapter 7. With respect to the overall size, measured in meters, and considering all the subclusters, the ratio of 3:2 was obtained between the Maidstone and Newham hospitals. However the ratio of the sizes of individual amenities between the Maidstone and Newham hospitals was not consistent with this overall ratio of 3:2. See Section 9.3.2.

With respect to the third design variable, `proximity' of the reception counters, the distances measured (and described in terms of the mean, the standard deviation and the standard error mean) were greater in the Newham hospital than in the Maidstone hospital.

From these measurements and based on the propositions it was expected that the response obtained would show user satisfaction with the number of amenities and the size would be greater in the Maidstone than in the Newham hospital, whereas users would be less satisfied with the distances they would have to walk in the Newham hospital.

These expectations were discussed by using firstly the

condescriptive (frequencies) findings on the subjective measurements of user attitudes towards the three key variables in Chapter 9.

11.10 On the Specific Findings of the Subjective Measurements of User Attitudes.

This study showed that although the user attitudes towards the three design variables under study were high they differed considerably in the two hospitals. These variables were the number of amenities, the sizes of or spaces provided for these amenities, proximity of the main reception counter to other departmental reception counters (Chapter 9).

In terms of the user attitudes to number of amenities the five subpropositions showed the possibility of the existence of correlation between the design that is the differences in the number of amenities (reception counters, waiting areas, shop/snack bar, toilet facilities, telephones) and appropriateness in use. That is the higher the number of these amenities the greater the user satisfaction. Some of the findings suggested a positive correlation whereas the others were negative which implies that an increase or decrease in the number of amenities may not necessarily increase or decrease the user attitudes towards them.

In terms of the user attitudes to size(s) of/space(s) provided for amenities the six subpropositions indicated the possibility of the existence of correlation between the design that is the differences in the number of amenities (reception counters, waiting areas, shop/snack

bar, toilet facilities, telephones, entrance lobbies) and appropriateness in use. That is the higher the size(s) of/or space(s) allocated for these amenities the greater the user satisfaction. Some of the findings suggested a positive correlation whereas the others were negative which also implies that an increase or decrease in the number of amenities may not necessarily increase or decrease the user attitudes towards them (Chapter 10).

In spite of the fact that the degree of patients satisfaction, towards `proximity', measured in terms of their perception of the convenience of the distances they have had to walk from the main reception counter to the department which they were attending was high in both hospitals, the Newham hospital was greater than the Maidstone hospital. There seemed to be a correlation also in existence, albeit negatively. This finding however does not necessarily mean a shorter walking distance by the patients will not necessarily decrease the user attitudes.

The evidence also show that the users overall satisfaction with the design of the reception and waiting area in the Maidstone hospital was higher than in the Newham hospital and that the overall satisfaction and design were related.

11.11 <u>On the Specific Findings of the Relationship Between the Objective and Subjective Measurements, Between the Design and the Appropriateness in Use</u>

With regards to the hypothesis which encompassed the four main variables, the number and size of amenities and

the proximity of the main reception counter to other departmental reception counters and the user attitudes towards them.

The study has shown that the positive research hypothesis and its three propositions (Chapter 6) which involved involved the three design variables namely, that,

a) differences in the number of amenities provide will produce differences in user attitudes, that is the higher the number of amenities in the reception and waiting areas, the higher the appropriateness in use

b) differences in the size of amenities provide will produce differences in user attitudes, that is the higher the size of amenities in the reception and waiting areas, the higher the appropriateness in use, and

c) differences in the distances the patients have had to walk from the main reception counters to other departmental reception counters will produce differences in user attitudes, that is the shorter the distances they have had to walk from the main reception counters to other departmental reception counters, the higher the appropriateness in use could be rejected in favour of the null hypothesis.

In addition this study has shown that the three key variables and the overall satisfaction with the design of the main reception and waiting area are related.

11.12 Uncertainty Areas

This section outlines some of the uncertainty areas which

invariably creates some weaknesses in this study. The impact of these uncertainty areas could to an extent influence how objective the conclusions are and could in a sense influence and/or create limitations on any generalizations (empirically) which have been made in this study.

Among the main reasons which can be given for the creation of these uncertain areas could be attributed to the small size of the sample from which both the objective and subjective measurements were made.

Others are related to,

i) the definition of the main reception and waiting area, it was difficult to identify specifically the true definition of they main reception and waiting area in terms of the spaces and the amenities which they are expected to accommodate. These amenities covered a wide range and differed from hospital to hospital.

Most of these amenities were arranged in proximity to the main reception and waiting area.

ii) the number of amenities, having identified the uncertainties in the definition of the main reception and waiting area, the classification of the actual number of amenities provided in the main reception and waiting area created another uncertainty area. There were hospitals for example where the shop and the snack bar were clearly separated and under different management, there were others where they shared the same door but were internally separated.

There were some hospitals where the reception counter was

clearly defined and there were others where they formed part of a multipurpose office space or they were just part of an internal facade only identifiable by a hospital sign.

There were others where although the amenities were considered as an integral part of the main reception and waiting area, their location in relationship to the other amenities created difficulties in the assessment of whether they should be considered as actually being part of the main reception and waiting area.

As a result it was only possible in this study to consider the amenities which were common in both hospitals which had differences in terms of their numbers. Measurements and comparison of the total number of amenities was thus difficult.

iii) on the size of the amenities, it was difficult to identify and measure precisely for example reception counters and the which were an integral part of a other spaces.

iv) on 'proximity', since the distances measured from the plans and within the actual building were along assumed straight drawn centrally along the corridors and linking the centre of the reception counters, see Fig. , they might not represent the exact routes of these patients who have to move in a 'zig-zag' or tortuous fashion to get to their destination.

v) on the measurement of user attitudes, although comparatively the total number of patients used to measure the user attitudes was small, thirty eight in the Newham hospital and forty in the Maidstone hospital, it was

adequate for the statistical analysis adopted.

However it would be difficult to use these measurements for generalizations. What would have enhanced this study would have had been able to obtain the user responses over a longer period of time on all the days when the hospital was opened in order that all the patient categories would have been obtained.

vi) On effectiveness in use, this study reviewed hospital evaluation in general and reception and waiting areas in particular. The study that different authorities/groups interpreted the concept of appropriateness in use very differently and used various criteria which included the social, the architectural, the psychological, economical, medical, nursing, technical and environmental. The study identified that although different methods have been proposed, such as questionnaires, walkabouts, patients records among others, the appropriateness in use is clearly a complicated measure and can sometimes be unreliable. Proper definition and criteria are therefore needed in the evaluation of the reception and waiting area by all the users, staff included (although this was done in this study, the analysis could not be undertaken) However, this study has gone some way to throw some light on the design of the main reception and waiting area and its appropriateness in use.

11.13 **Wider Implications**

The wider implications of this study in general are useful not only for Nucleus hospitals but for hospitals as a whole. Three broad classifications can be identified,

these are the practical, cost and theoretical.

11.13.1 Practical Implications

The practical implications are concerned primarily with the lessons which can be learnt from this study which have a direct impact on designing better main reception and waiting areas not only in Nucleus hospital but in hospitals as a whole. It is possible to identify the following;

i) on design guidance

This study has indicated that where standardised design guidance are used for the design of hospitals, in spite of the cost benefits, there are limitations imposed on the creativity of the architects as to the extent to which the building and their respective interiors can be made to appear or be humanistic in order to satisfy the user requirements. This is very evident when the main reception and waiting areas are compared with the other spaces where, for medical reasons, those spaces could not be modified in any way. Where the designers are given the option to use their ingenuity and skills to design the nonmedical areas with limited restrictions from the design guidance, a humanistic environment is often attained.

Specifically, practising designers, planners and researchers in hospital design may also enhance the effectiveness in use of hospital reception and waiting areas by concentrating on the design process characteristics that independently may have influences on

their design characteristics and subsequently their (design) appropriateness in use.

With respect to the above arguments, the design guidance for the main reception and waiting areas for the Nucleus Hospitals Cluster No1) and HBN 12 (Draft), 1986, can incorporate the findings of this study and also state categorically that user attitudes or satisfaction does not necessarily depend on the number, size of the amenities or the proximity of these amenities to the main reception and waiting area or the proximity of the main reception and waiting area to other departmental reception and waiting areas but to other variables as well especially the operational policy adopted on the welcoming and dispersion of patients in the main reception and waiting area.

The design variables of the hospital and the main reception and waiting areas in particular which have relationships with the effectiveness in use can be considered as important aspects to be incorporated in the hospital and reception and waiting area designs in the early stages of designs. The organizational and operational policies of the hospital in general and the main reception and waiting area should be considered. The reception and waiting area design variables considered in this study and their measurement may help give a new scope and insight into reception and other hospital departments. For Nucleus hospitals, alternative locations of the main reception and waiting areas in relationship to the main entrance and if possible substantial modifications to

Cluster No 1 must be made. Designers must be encouraged to modify these spaces where necessary. Although the snack waiting area provides ancillary space to waiting patients, the relationship of this area to the main entrance must be reconsidered. For other hospitals not designed to the Nucleus system, the finding of this study should be made available especially with the provision of amenities. These amenities should not be restricted to those selected for this study but a similar approach to resolve this problem, as was undertaken at The Best Buy Hospital at Bury St. Edmunds (See Appendix B) could be useful.

11.13.2 Cost Implications

The following cost implications are envisaged

i) the cost of providing the amenities

ii) the cost of providing amenities which are appropriate for both able and disabled users.

iii) the cost of employing the right staff to manage the main reception and waiting areas

iv) the maintenance and running costs of increased size(s)

v) the cost of users, especially staff having to walk long distances to use these amenities.

11.13.3 Theoretical Implications

The theoretical implications can be argued to be those which are likely to indirectly affect the design of the main reception and waiting area although in future these theoretical implications might have direct influence on the design of the main reception and waiting area.

On the existing objective knowledge, this study has provided an alternative line of thought that seems to go against the traditional and current thinking which seem to suggest that apart from the provision of substantial income for the hospitals, the provision of these amenities will contribute entirely to the perception of a humanistic environment and subsequently improve the user satisfaction.

Such an environment it has been argued would be devoid of an institutional atmosphere, allay the patient fears and help the patient contribute positively to hospital treatment.

By providing this line of thought, a new approach to the basic problem of designing a `humanistic' hospital has been created. It also confirms the accepted view that `although a hospital may be well designed, with all the amenities, etc., other non design variables, especially the operational policies adopted as well as the overall staff attitudes towards the patients and the length of waiting time are contributory to the patients overall satisfaction.'

11.14. Areas for Further Research

Due to the lack of resources and time, this study was only able to consider a limited number of variables within a small sample size, resulting in the fact that although several uncovered topics emerged, they were not considered in detail. Some of these uncovered topics especially those discussed in Chapter 7 require further study. Others are

as follows

i) there is the need to concentrate on the actual amenities that patients require in the main reception and waiting areas.

ii) there is the need to concentrate on specific and detailed aspects such as the type of finishes, signage, routing and colour co-ordination which can improve user satisfaction. Such findings could be incorporated within the design guidance so that a standard imagery, apart from the hospital signs can be adopted for the NHS hospitals.

One can in a sense agree with a hospital porter who suggested that an approach similar to the road signs might be appropriate.

iii) due to the sample size (2 hospitals), the investigation of the impact of the relationship between the design and the appropriateness in use was to an extent limited. This possibility could be further investigated by an ordinary survey of hospital buildings which may add more credibility to the findings made.

iv) on the reception and waiting area design, this study argued that these were one of the most important spaces in the hospital building.

The design variables investigated were of two types, those borrowed from literature which are mainly descriptive (layout, shape, size, number of amenities etc.) and those measured in this study, that is the extent of the reception and waiting area proximity to other departmental reception and waiting area.

Further investigation could refine the measurements of

these variables and test them in a wider range of reception and waiting areas not only in Nucleus hospitals but also in other hospitals. Such a study could concentrate on some of the relationships which were identified.

v) In addition to these, some of the appropriateness in use indicators such as the degree of compartmentalisation of the main reception and waiting areas, privacy, patients to patient interaction, patient to staff interaction, staff to staff interaction (between hospital staff and ambulancemen for example) could be investigated. Similarly with reference to other hospital subreception and waiting areas (especially the Accidents and Emergency Departments and the Physical Medicine departments), the relationships between other design variables and adequately related indicators in these other departments appropriateness in use can be investigated. Such an investigative approach, it is hoped could create a humanistic hospital environment which would ensure that in future reception and waiting areas in Nucleus hospitals will satisfy the users, especially the patients.

APPENDIX A

HOSPITALS DEVELOPED BY THE DEPARTMENT OF HEALTH - PLANS

This appendix contains the floor plans of :

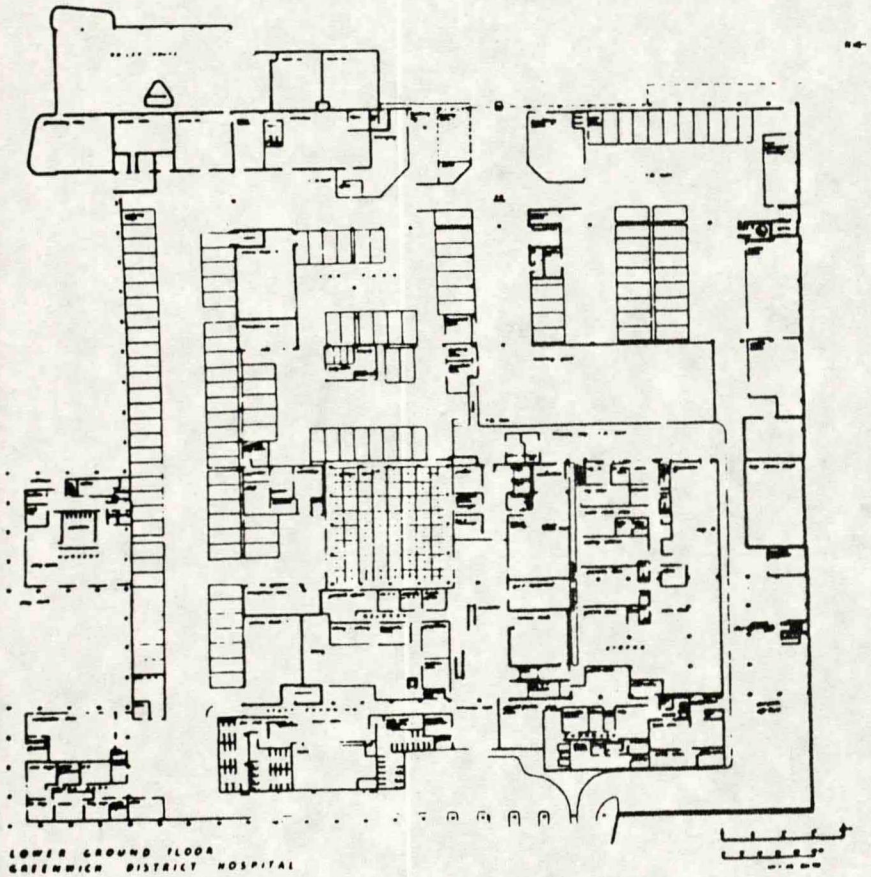
A/1. Greenwich Hospital

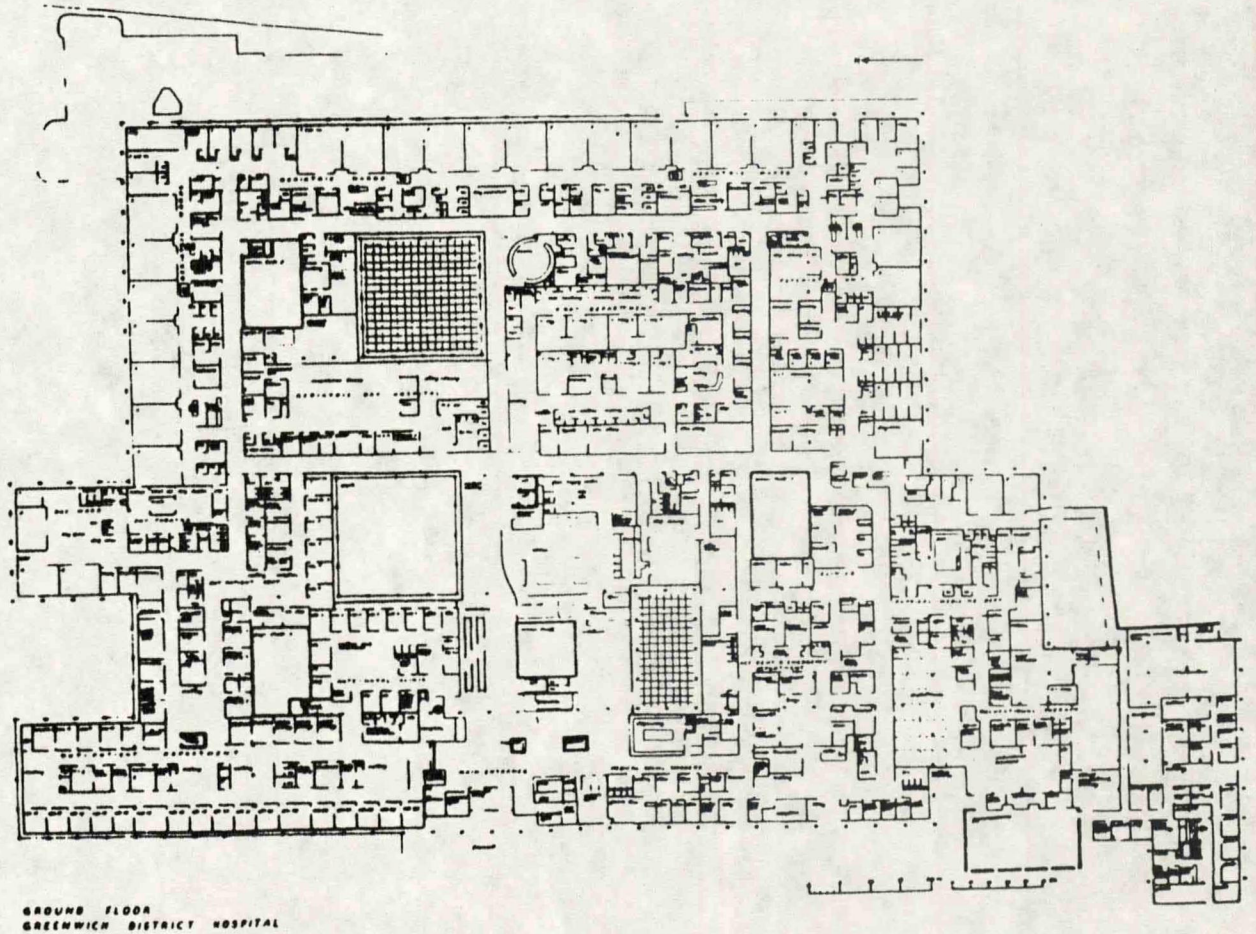
A/2. Best Buy Hospital - West Suffolk District General Bury St. Edmunds.

A/3. Harness Hospital - Stafford District General

A/4. Nucleus Hospital Departments

A/1. Greenwich Hospital - Plans





Lower Ground floor

Car parking (180 places)

Boiler House

Service access

Pharmacy

Medical Records Department

Telephone Exchange

Day Nursery

Ground Floor

The Main Hospital Entrance

Outpatients department

Accidents and Emergency

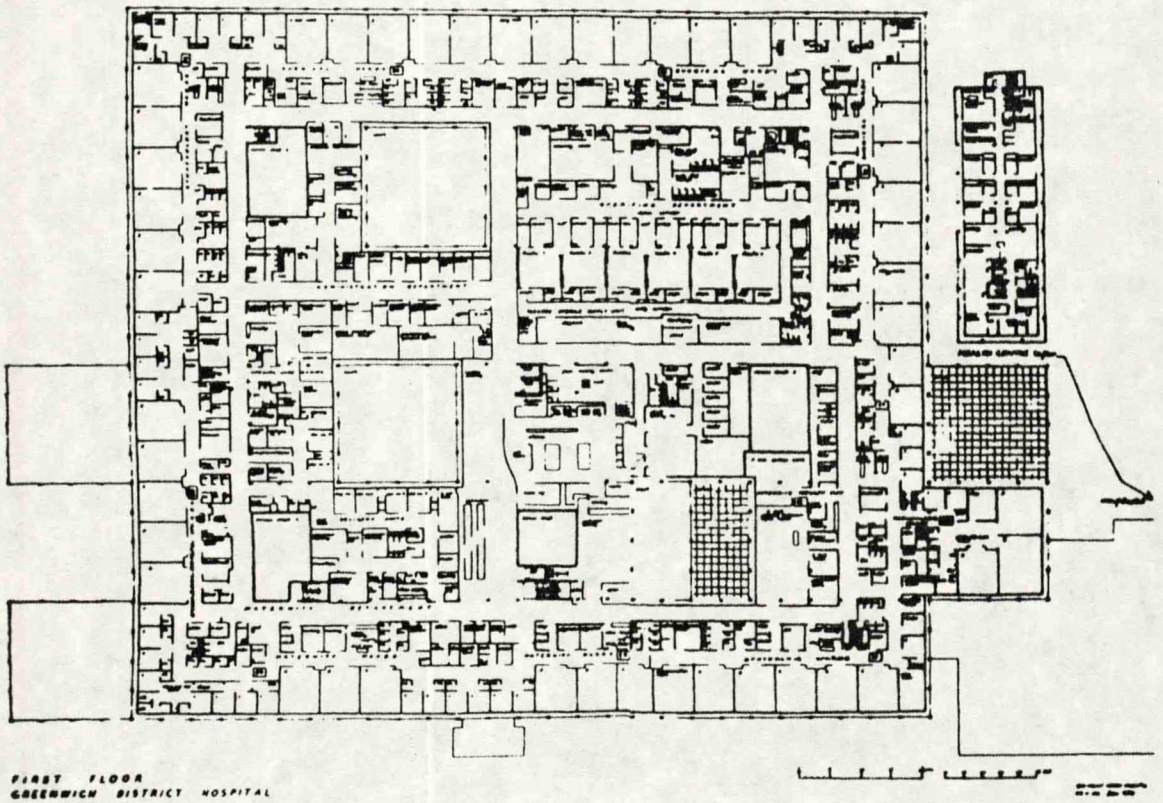
X-Ray Department

Rehabilitation and Rheumatology

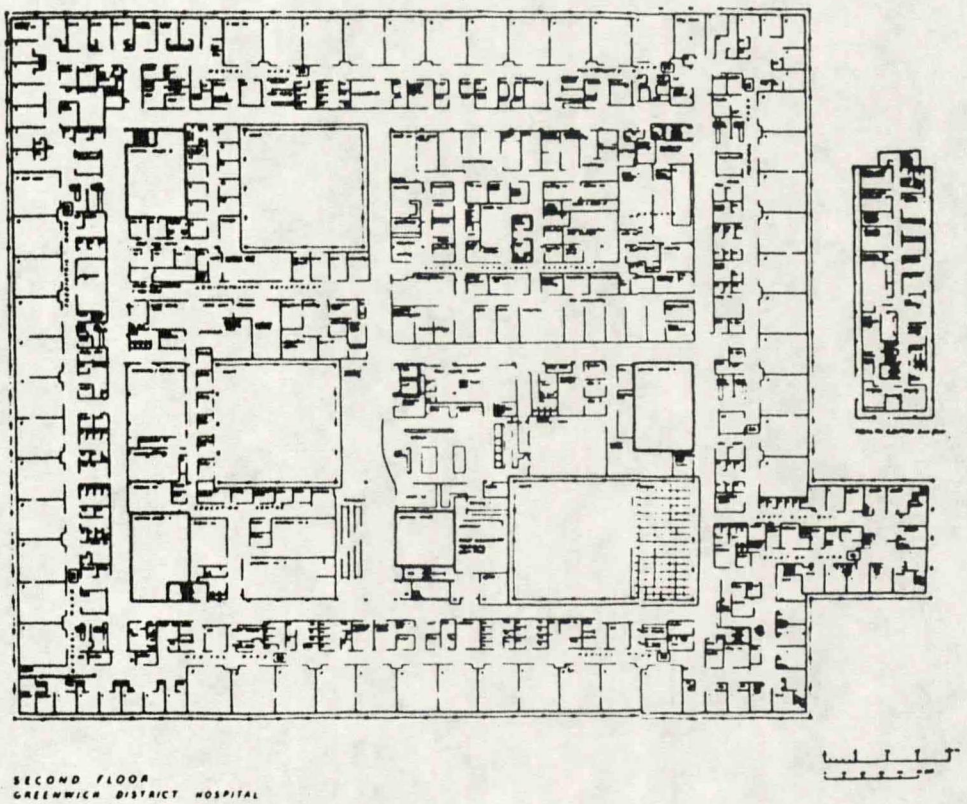
Geriatric Department

Psychiatric Department

Social Workers Offices



FIRST FLOOR
GREENWICH DISTRICT HOSPITAL



SECOND FLOOR
GREENWICH DISTRICT HOSPITAL

First Floor

Operating Department

Delivery Suite

Intensive Therapy Unit

Administration

Floor kitchen

Health Centre

Wards

Second Floor

Medical Wards

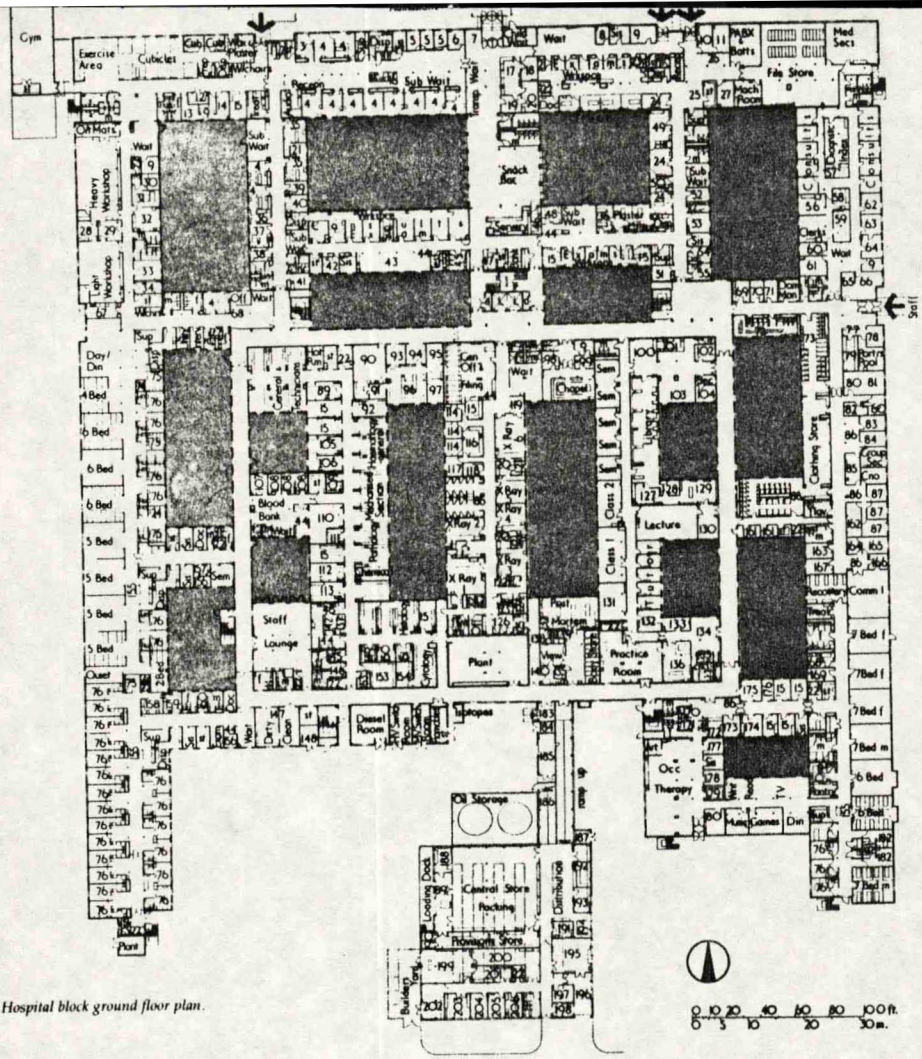
Pathology Department

Education Centre

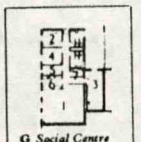
Administration

Health Centre

A/2. Best Buy Hospital - West Suffolk District General
Bury St. Edmunds - Plans



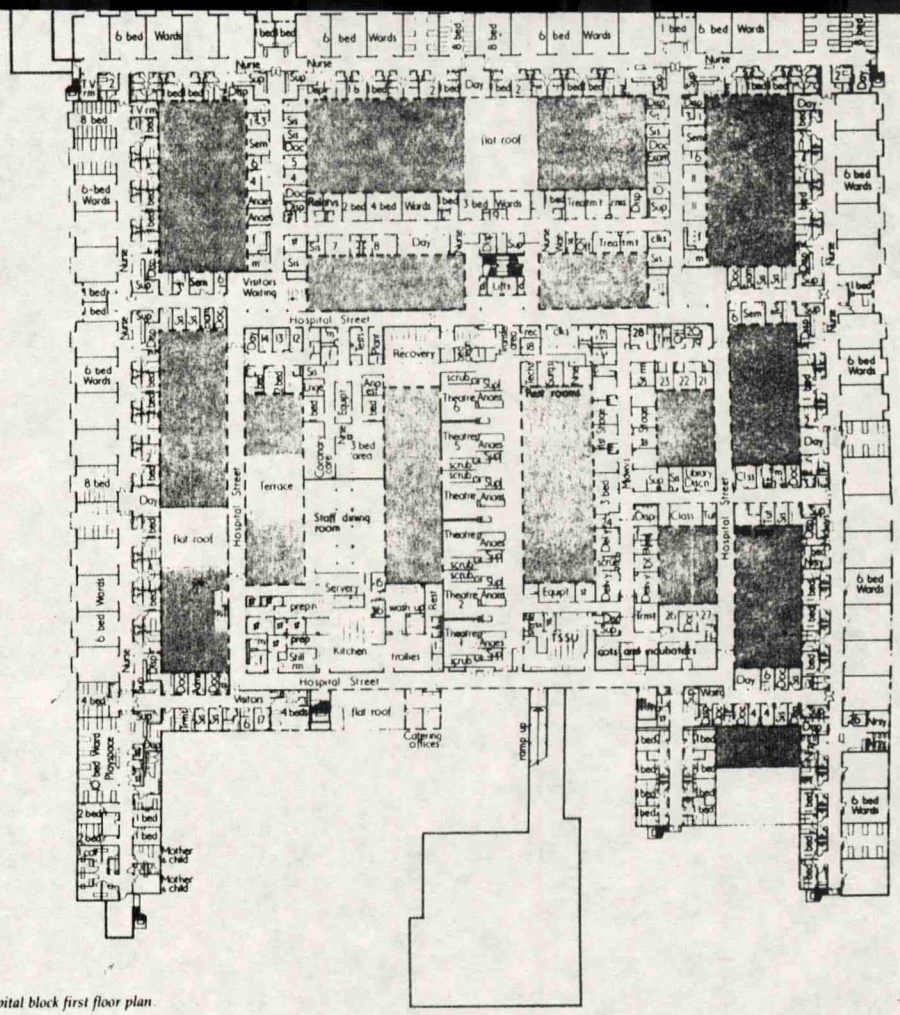
F *Hospital block ground floor plan.*



G *Social Centre (under gymnasium)*

Social centre
1 Common room
2 Lines
3 Laundry
4 Warden
5 Supply reception
6 Pantry
7 Cleaner

Ground floor
1 Specimens
2 Test
3 Clinical examination
4 Consultant examination
5 Medical social worker
6 Medical social worker clerks
7 Prams, wheelchairs
8 Child wait
9 Interview
10 Telephonists' rest room
11 Telephonists' exchange
12 Physiotherapy apparatus
13 Superintendent physiotherapist
15 Consultant
16 Clinic reception
17 Reception transport
18 Porter/drivers
19 Admission
20 Admission office
21 Child examination
22 Cleaner
23 Cleansing
24 Treatment
25 Mobile x-ray parking
26 Trolley and wheelchair parking
27 Medical records officer
28 Occupational therapist
29 Occupational therapists equipment
30 Bath (domestics)
31 Bedroom (domestics)
32 Kitchen (domestics)
33 Staff common room
34 Finished articles
35 Consultant exam ophthalmic
36 Recovery
37 Dental surgery
38 Dental workshop
39 Optician
40 Orthopaedist
41 Chiropody
42 Health visitor
43 Wait/ Mothercraft
44 Reception
45 Patients' toilets
46 Wash up
47 Shop
48 Apparatus fittings
49 Resuscitation
50 Scrub
51 Senior sister
52 Medical social worker
53 Nurses' rest room
54 Night duty (radiology)
55 Night duty (medical)
56 General secretary
57 Study bays
58 Stationery, duplicating
59 Group hospital records
60 Administration officer
61 Assistant to administration officer
62 Assistant engineers
63 Group engineers
64 Drawings officer
65 Local authorities officer
66 Local authority operator
67 Pantry/servery
68 Housekeeper reception
69 Hairdressers
70 Clerks
71 Domestic assistants
72 Non-residents' MS change
73 Non-residents' FS change
74 Shower
75 Assisted bath
76 One bed
77 Clock in
78 Head porter
79 Postal sorting
80 Voluntary organiser
81 Personnel staffing
82 Interview relatives
83 Administration trainees
84 Departmental group secretaries
85 Personal secretaries
86 Sub-waiting
87 Senior nursing officer
88 Non-resident nurses
89 Medical/ plate/pour
90 Containers/ cylinders
91 Sterile preparation
92 Assay-coagulation
93 Issue lobby
94 Outpatients' waiting
95 Officers' and technicians' reference
96 Dispensary
97 Chief pharmacist
98 Vestry RC
99 Vestry C of E
100 Junior medical common/ lounge
101 Snack bar
102 Medical cloaks
103 Senior medical common/ lounge
104 Clinical tutor
105 Serology bay
106 Transfusion bay
107 Duty room
108 Specimen room
109 Cold room and blood bank
110 General office
111 Technicians
112 Assistants
113 Isotopes

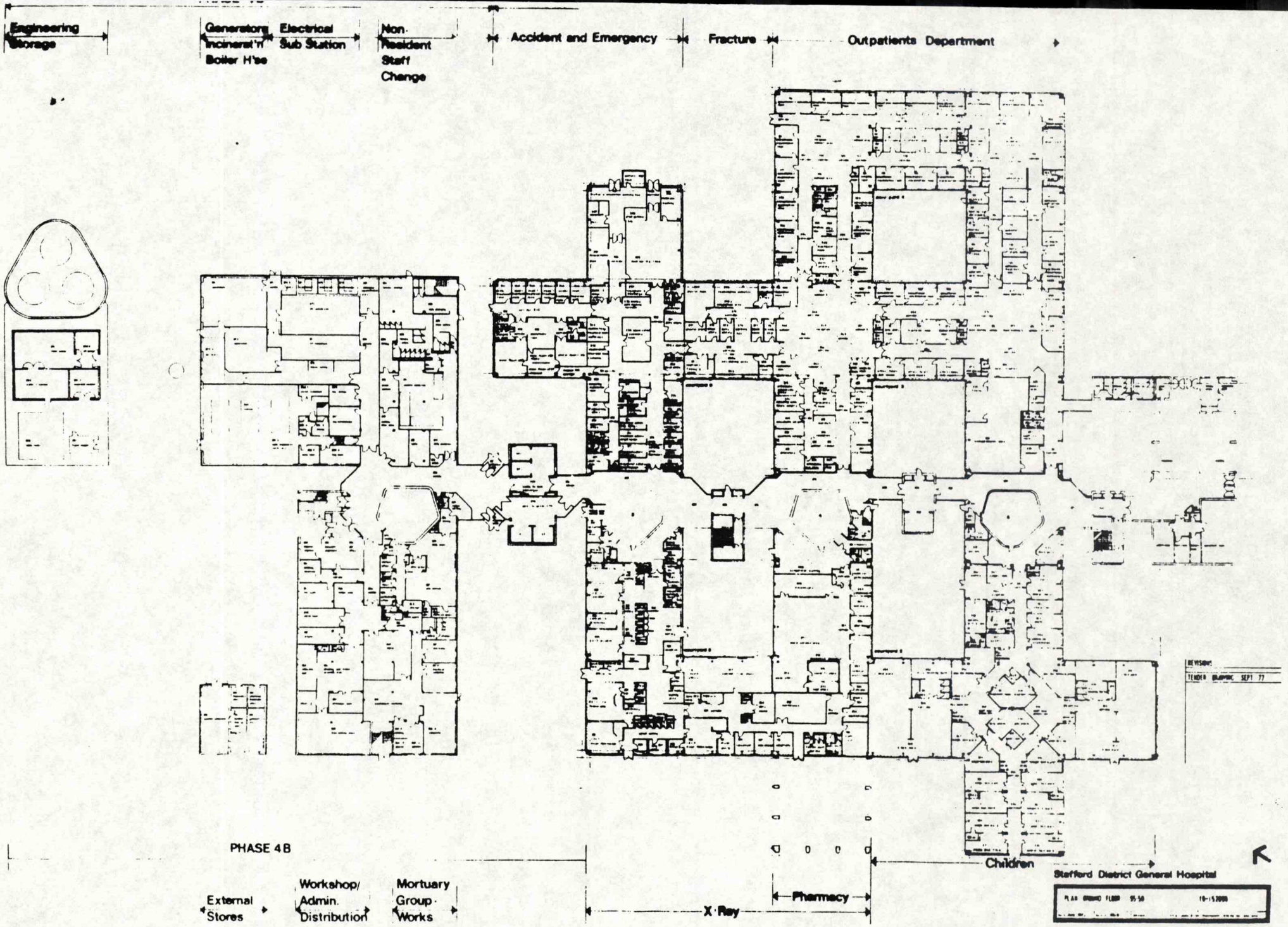


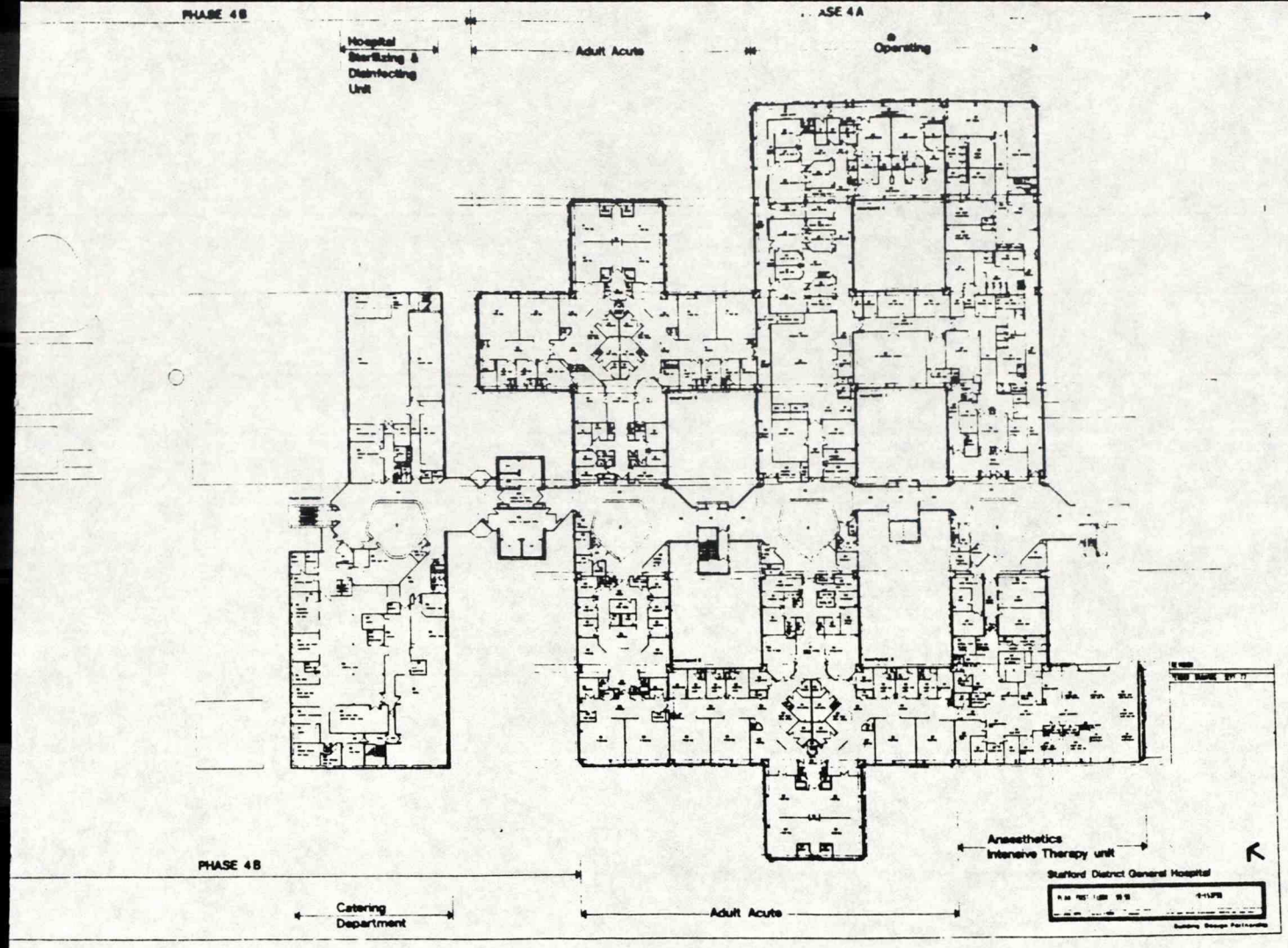
H *Hospital block first floor plan.*

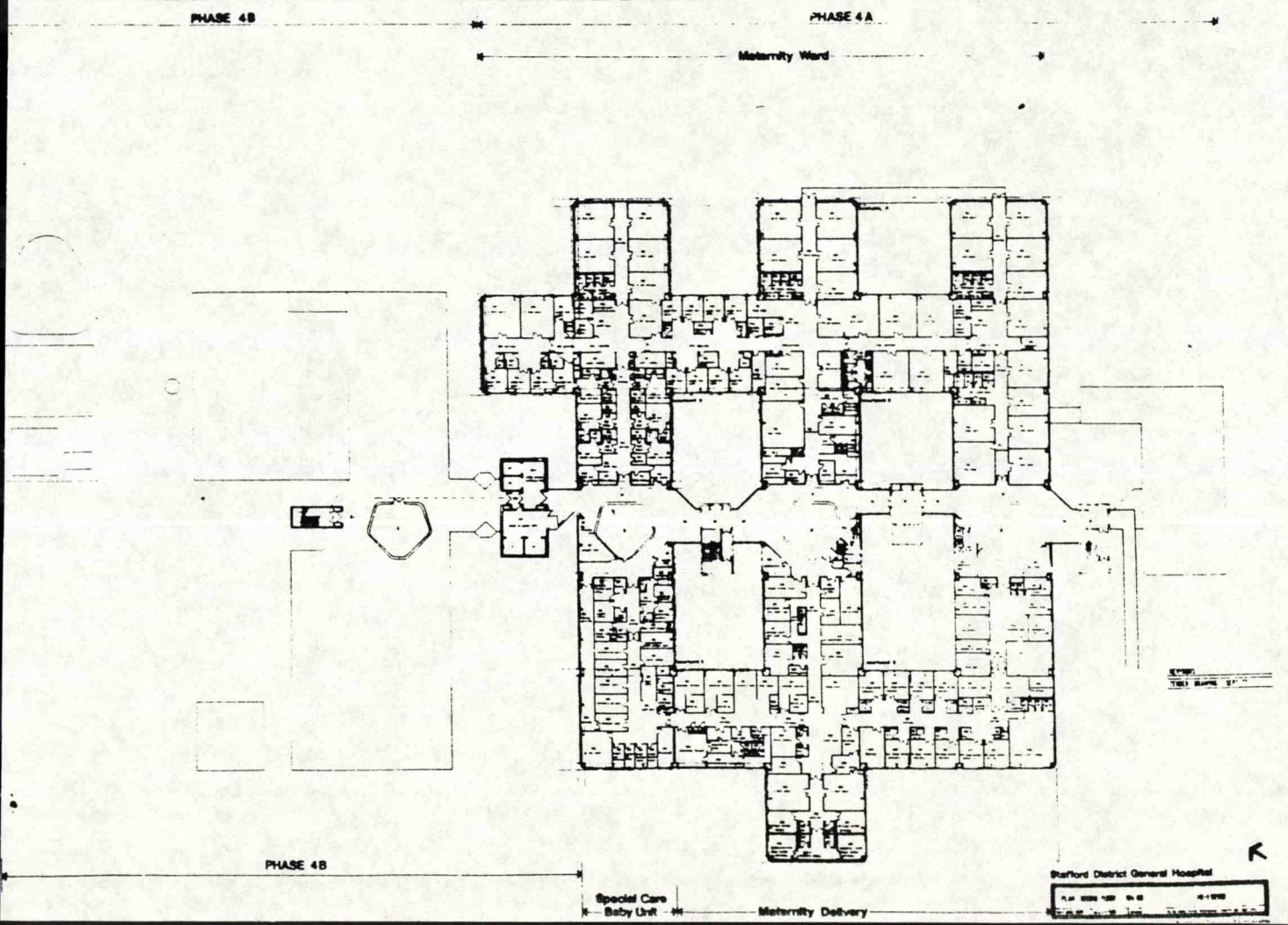
114 Consultants' officers
115 Report areas
116 Demonstration report bay
117 Staff
118 Superintendent radiographer
119 Park recovery
120 Sort view
121 Dark
122 Barium kitchen
123 Barium clean up
124 Lavage
125 Dirty utility
126 Park/ recovery
127 Library workroom
128 Librarian
129 Patients' library Patients' reading and waiting
131 Nurses' common room
132 Principal tutor
133 Clerks and records
134 Nurses' lounge
135 Nurses' servery
136 Demonstration
137 Ante-room
138 Pathology changing room
139 Attendants' changing room
140 Visitors
141 Attendants
142 Sterilising
143 Autoclave
144 Collection
145 Photo-micro darkroom
146 Staff changing room
147 Ward furniture cleansing
148 Gardener
149 Formalin
150 Technicians
151 Slide blocks
152 Workshop
153 Central store
154 Cytologist
155 Nurse
156 Housekeeper
157 Boiler
158 Kitchen disposal
159 Pantry
160 Lockers
161 Sisters' rest room
162 Nursing secretary
163 Group catering officer
164 Filing
165 Principal nursing officer
166 Chairman hospital management committee
167 Group treasury
168 Hairwash
169 Patients' utility
170 Male student changing rooms
171 Female student changing rooms
172 Rec. recep
173 Assistant matron
174 Play therapy
175 Group therapy (formal)
176 Social worker
177 Social worker
178 Occupational therapy office
179 Occupational therapy store
180 Group therapy (information)
181 Nursery
182 Mother and child
183 Mortuary exit lobby
184 Manifold room
185 Plant chamber
186 Gas meters chamber (under)
187 Gas governor housing
188 Storeman
189 Reception and dispatch
190 Refrigerator
191 Bulk equipment store
192 Emergency call store
193 Sewing room
194 Laundry and CSSD returns
195 Incinerator and crusher
196 Bins and bottles area
197 Locker room
198 Cylinder
199 Building and engineering store
200 Electricians
202 Carpenters' workshop
203 Painters
204 Building supervisor
205 Hospital engineer
206 Mess room

Hospital block first floor
1 Cleaner
2 Assisted bath
3 Boiler
4 Relatives
5 General purpose
6 Housekeeper
7 Female changing rooms
8 Male changing rooms
9 Pantry
10 Thermography
11 Clinical management
12 Bev superintendent
13 Consultant/ exam
14 Occupational health supervisor
15 Supervisor
16 Chef
17 Parents' sitting room
18 Theatre supervisor
19 Porters/ reception
20 Flying squad
21 Deputy midwives
22 Midwives
23 Visitors
24 Resus monitoring storage
25 Clean utility
26 Milk demonstration
27 Gowning
28 Assessment

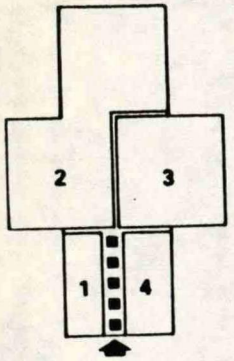
A/3. Harness Hospital - Stafford District General - Plans


Engineering Storage
Generators Incinerat'n Boiler H'se
Electrical Sub Station
Non-Resident Staff Change
Accident and Emergency
Fracture
Outpatients Department
PHASE 4B
External Stores
Workshop/ Admin. Distribution
Mortuary Group Works
X-Ray
Pharmacy
Children
Stafford District General Hospital

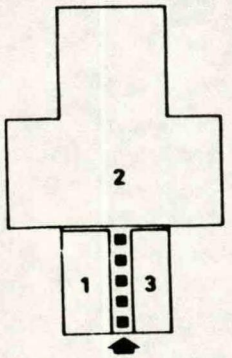

PHASE 4B
Hospital Sterilizing & Disinfecting Unit
Adult Acute
Operating
Anaesthetics Intensive Therapy unit
Stafford District General Hospital
PHASE 4B
Catering Department
Adult Acute


PHASE 4B
PHASE 4A
Maternity Ward
PHASE 4B
Special Care Baby Unit
Maternity Delivery
Stafford District General Hospital

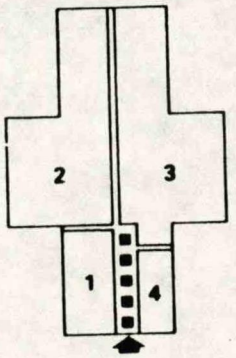
A/ 4 Nucleus Hospital Departments



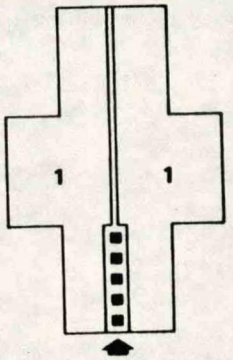
cluster no. 1
1. main entrance
2. rehabilitation
3. pharmacy
4. staff changing



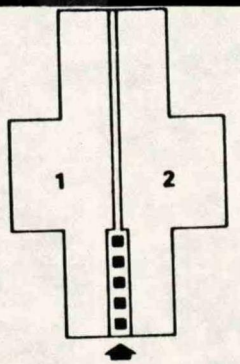
cluster no. 2
1 medical records
2 out patients
3 lab. out-station



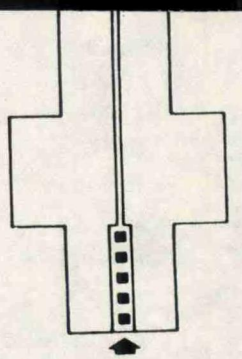
cluster no. 7
1. treatment suite
2. adult day care (15 + 20)
3. ITU/CCU (8)



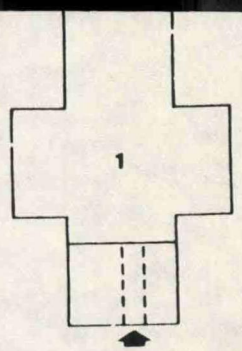
cluster no. 8
1. 2 no. childrens wards (40/46 beds/cots)



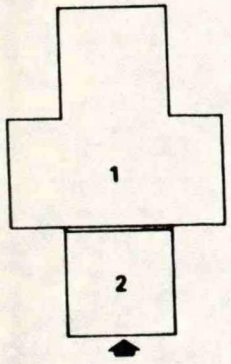
cluster no. 13
1. ante natal ward (26)
2. adult acute ward (28)



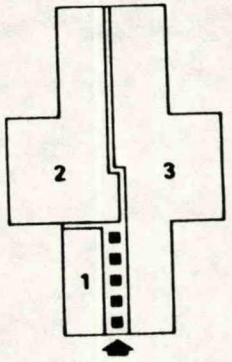
cluster no. 14
1 ante natal ward (26)
2 childrens ward (20 23)



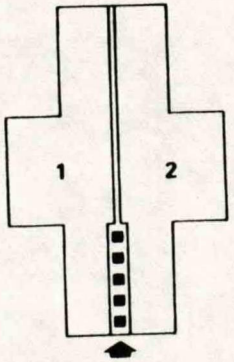
cluster no. 19
1 day hospital for the elderly (40 place)



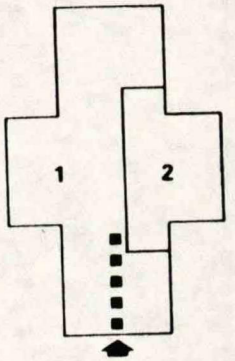
cluster no. 3
1. accident & emergency
2. fracture clinic



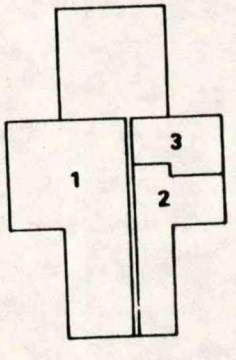
cluster no. 4
1. library meetings
2. administration
3. X-ray (4 rooms)



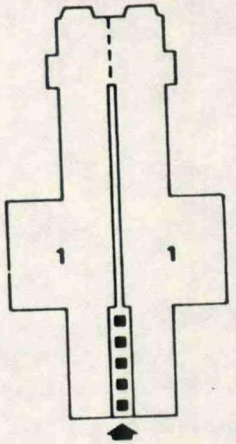
cluster no. 9
1. childrens ward (20 23)
2. adult acute ward (28)



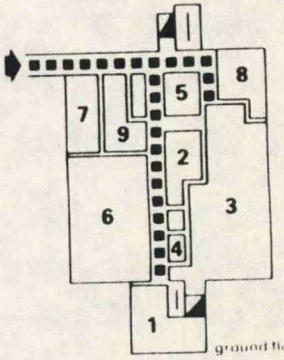
cluster no. 10
1. central delivery suite
2. special care baby unit (20)



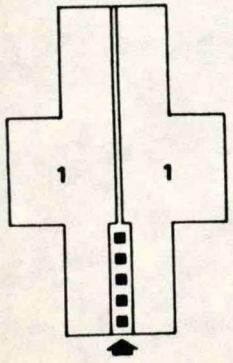
cluster no. 15
1. obstetric clinic
2. maternity admin. education
3. library meeting suite



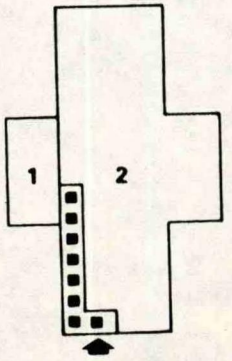
cluster no. 16
1 2 no. wards for the elderly (48)



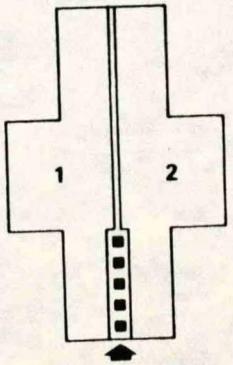
service centre
1 disposal
2 linen
3 supplies
4 trolleys
5 staff change
6 works
7 telephones
8 mortuary
9 record stor



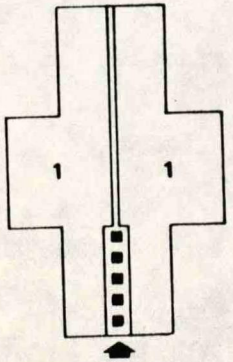
cluster no. 5
two wards
adult acute (56)



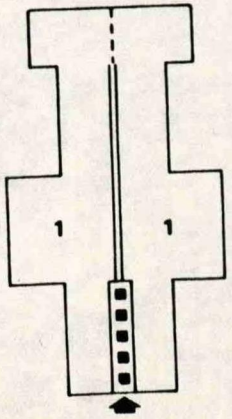
cluster no. 6
1. operating (4 theatres)
2. medical staff accom.



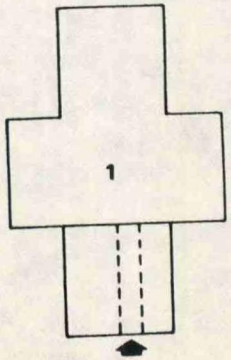
cluster no. 11
1 ante natal ward (26)
2 post natal ward (25)



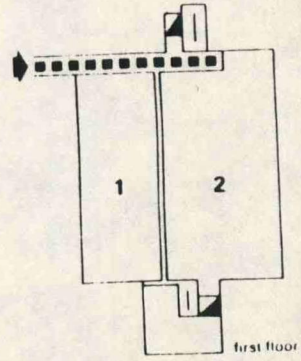
cluster no. 12
1. post natal ward (50)



cluster no. 17
1. 2 no. wards for the elderly (48)



cluster no. 18
1 day hospital for the elderly (25 place)



1 HSDU
2 kitchen & dining

NUCLEUS DEPARTMENTS

APPENDIX B

THE QUESTIONNAIRES - PILOT AND FINAL VERSIONS

This Appendix contains ;

B/1. The Final Questionnaire - Patients

B/2. The Pilot Questionnaire - Patients

B/3. The Pilot Questionnaire - Staff

B/4. The West Suffolk Hospital Retail Shop Survey

B/1. The Final Questionnaire - Patients

QUESTIONNAIRE

PATIENTS AND VISITORS

THE DESIGN OF HOSPITAL RECEPTION AND WAITING AREAS

I hope you can help by filling in this questionnaire.

The aim of the project is to find out how the design of hospital reception and waiting areas affects you and your activities within the hospital with a view to helping the planning and design of reception and waiting areas in hospitals in future which accommodate your requirements as much as possible and hence increase your satisfaction.

This questionnaire is part of a research project which is being carried out by the Post-Graduate Research School, Department of Architecture at Oxford Polytechnic with the authority and cooperation of this hospital.

Please could you try to answer all the questions briefly and on your own while in this hospital, it should not take you too long, approximately fifteen minutes and return it to the receptionists who gave it to you.

All answers will be treated in the strictest confidence and you will remain anonymous.

Please use ticks [✓] for your answers.
Thank you very much.

Hospital Number .....

Questionnaire Number ☐☐☐

Day of Interview : :

THE MAIN RECEPTION ...

1. How satisfied are you with the NUMBER of the following amenities provided in this hospital main reception and waiting area ?

	Very Satisfied	Satisfied	Dont Know	Unsatisfied	Very Unsatisfied
Reception Counter	☐	☐	☐	☐	☐
Waiting Area	☐	☐	☐	☐	☐
Toilet Facilities	☐	☐	☐	☐	☐
Shop/Snack Bar	☐	☐	☐	☐	☐
Telephones	☐	☐	☐	☐	☐
Florist	☐	☐	☐	☐	☐
Bank Till	☐	☐	☐	☐	☐
Staircase	☐	☐	☐	☐	☐

2. Do you think the SIZE(S) of/or SPACE(S) allocated for the following amenities provided in the main reception and waiting area of this hospital suitable ?

	Very Suitable	Suitable	Dont Know	Unsuitable	Very Unsuitable
Entrance Lobby	☐	☐	☐	☐	☐
Reception Counter	☐	☐	☐	☐	☐
Waiting Area	☐	☐	☐	☐	☐
Toilet Facilities	☐	☐	☐	☐	☐
Shop/Snack Bar	☐	☐	☐	☐	☐
Telephones	☐	☐	☐	☐	☐
Florist	☐	☐	☐	☐	☐
Bank Till	☐	☐	☐	☐	☐
Staircase	☐	☐	☐	☐	☐

3. Do you think the DISTANCE you have had to walk from the main reception counter to the department or clinic which you are attending today is convenient ?

Very Convenient ☐
Convenient ☐
Dont Know ☐
Inconvenient ☐
Very Inconvenient ☐

4. Please sum up your overall attitude to the design of the main reception and waiting area in this hospital?

Very Satisfied ☐
Satisfied ☐
Dont Know ☐
Unsatisfied ☐
Very Unsatisfied ☐

5. Why do you feel this way ? Please explain.

.....

.....

.....

THANK YOU VERY MUCH FOR YOUR COOPERATION

B/2. The Pilot Questionnaire - Patients

H ☐☐☐☐
N ☐☐☐
D ☐☐☐
Da ☐☐
T ☐☐

QUESTIONNAIRE

PATIENTS AND VISITORS

THE DESIGN OF HOSPITAL RECEPTION AND WAITING AREAS

I hope you can help by filling in this questionnaire.

The aim of the project is to find out how the design of hospital reception and waiting areas affects you and your activities within the hospital with a view to helping the planning and design of reception and waiting areas in hospitals in future.

This questionnaire is part of a research project which is being carried out at Oxford Polytechnic, in the Post-Graduate Research School, Department of Architecture.

Please could you try to answer all the questions briefly and on your own while in this hospital, it should not take you too long and return it to the receptionists who gave it to you. If you cannot however complete it in this hospital could you please take it home and return it in the enclosed adressed stamped envelope.

All answers will be treated in the strictest confidence.

Please use ticks ☑ for your answers.

Thank you very much.

A. ABOUT YOURSELF

1. Sex: Male ☐ Female ☐

2. Age: Under 10 ☐ 10 - 19 ☐ 20 - 29 ☐
30 - 39 ☐ 40 - 49 ☐ 50 - 59 ☐
60 - 69 ☐ 70 - 79 ☐ Over 80 ☐

3. Are you a PATIENT ☐ or VISITOR ☐

4. How many times have you used this hospital ?

1 ☐ ; 2 ☐ ; 3 ☐ ; More than 3 ☐

5. Were you accompanied by any of the following ?

Relative ☐; Friend ☐; No one ☐; Other .....State
How many ? 1 ☐ ; 2 ☐ ; More than 2 ☐

6. Did you use a wheelchair to get into this hospital ?
Yes ☐ No ☐

7. If No,
did you use a walking frame, Yes ☐ No ☐
were you supported by another person, Yes ☐ No ☐

Other..... Please State

B. COMING INTO THE HOSPITAL

8. By what means did you use to get into the hospital ?

Foot ☐ Car ☐ Ambulance ☐
Taxi ☐ Bicycle ☐ Bus ☐

Other(s) ..... Please State

9. Which of the hospital parking areas did you use ?

Front ☐ Rear ☐
Basement ☐ Side ☐
Staff ☐ None of these ☐

Other(s) ..... Please State

10. Which of the entrances did you use to get into the hospital ?

Main Entrance ☐ Accidents/Emergency ☐
Physical Medicine ☐ Back Entrance ☐

Other(s) ..... Please State

11. Did you get any difficulty getting from where you parked to the entrance you used ?
Yes ☐ No ☐

If Yes, please state below

.....

19. Do you think your conversation with the receptionists was

Private	Yes ☐	No ☐
Overheard by others	Yes ☐	No ☐

20. Did you understand the directions the receptionsist gave ?

Yes ☐ No ☐

21. How did you find your way to the department/clinic/ward that you are attending ?

by reading the hospital signs	Yes ☐	No ☐
from the directions given	Yes ☐	No ☐
knew it from previous visit	Yes ☐	No ☐
was accompanied by nurse	Yes ☐	No ☐

Other .....Please State

22. If you used the hospital signs to this department/clinic/ ward, how would describe them ?

Clear	Yes ☐	No ☐
Simple	Yes ☐	No ☐
Difficult to Read	Yes ☐	No ☐
Difficult to Understand	Yes ☐	No ☐
Poor colour contrast	Yes ☐	No ☐
Letters too small	Yes ☐	No ☐
Too many signs in one area	Yes ☐	No ☐
Poorly Lighted	Yes ☐	No ☐

23. How would you describe the distance you have had to walk to this department/clinic/ward from the main reception area ?

Too Long ☐ Long ☐ Just Right ☐ Short ☐ Too Short ☐

24. How long did you wait in this department/clinic/ward ?

Up to 15 minutes ☐ 15 - 30 minutes ☐ Over 30 minutes ☐

25. While you were waiting did you go to the main reception/ waiting area ?

Yes ☐ No ☐

26. What did you go to do ? Please state below

.....

.....

27. Did you SEE any of the following in the main reception and waiting area ?

Patients in distress	Yes ☐	No ☐
Patients on stretchers/trolleys	Yes ☐	No ☐
Patients vomiting	Yes ☐	No ☐
Patients bleeding	Yes ☐	No ☐

Other(s) ....Please State

28. Did anything you saw upset/disturb you ? Yes ☐ No ☐

If yes, please state

.....

29. Did you HEAR noises from any of the following in the main reception and waiting area ?

Patients in distress	Yes ☐	No ☐
Children	Yes ☐	No ☐
Office Equipment	Yes ☐	No ☐
Toilets	Yes ☐	No ☐
Light Fittings	Yes ☐	No ☐
Airconditioning	Yes ☐	No ☐

Other(s) ....Please State

30. Did any of these noises upset/irritate you ?

Yes ☐ No ☐

If yes, please state

.....

31. Were you aware of any of the following SMELLS in the main reception and waiting area ?

Disenfectants	Yes ☐	No ☐
Medicine	Yes ☐	No ☐
Toilets	Yes ☐	No ☐
Floor polish	Yes ☐	No ☐

Other(s) ....Please State

32. Did any of these smells upset/irritate you ?

Yes ☐ No ☐

If yes, please state

.....

33. How best would you describe the atmosphere in the main reception/waiting area ? Please Tick

	Very	Not Very	Neither Nor	Not Very	Very	
QUIET	☐	☐	☐	☐	☐	NOISY
CLEAN	☐	☐	☐	☐	☐	DIRTY
FRIENDLY	☐	☐	☐	☐	☐	UNFRIENDLY
RELAXED	☐	☐	☐	☐	☐	TENSE
CHEERFUL	☐	☐	☐	☐	☐	DEPRESSING
TIDY	☐	☐	☐	☐	☐	UNTIDY
FORMAL	☐	☐	☐	☐	☐	INFORMAL
HOMELY	☐	☐	☐	☐	☐	INSTITUTIONAL

34. How would you describe the overall size of the main reception/waiting area ?

Too small ☐ Just Right ☐ Too big ☐

35. How would you describe the temperature in the main reception/waiting area ?

Too Hot ☐ Hot ☐ Warm ☐ Cold ☐ Too cold ☐

36. Would you describe the lighting level in the main reception/waiting area as

Too Bright ☐ Bright ☐ Just Right ☐ Dull ☐ Too Dull ☐

37. Would you describe the main reception/waiting area as being stuffy ?

Yes ☐ No ☐

38. What do you LIKE most about the main reception/waiting area ? Please write below

.....
.....
.....
.....
.....
.....

39. What do you DISLIKE most about the main reception/waiting area ? Please write below

.....
.....
.....
.....
.....
.....

40. Which of the following do you think should be provided in the main reception/waiting area ?

Reception Desk/Counter	☐	Creche	☐
Waiting Area	☐	Toilet Facilities	☐
Bank	☐	Newsagent	☐
Shop	☐	Chemist	☐
Restaurant	☐	Grocery/Food Shop	☐
Snack Bar	☐	Florist	☐
Chapel	☐	Meditation/Quiet Room	☐
Post Office	☐	Exhibition Space	☐
Lift	☐	Staircase	☐
Escalators	☐	Wheelchair Area	☐
Pram Area	☐	Stretcher Area	☐
Porters Lodge	☐	Ambulancemens Room	☐

Other(s) ..... Please State

41. Which of the above SIX are most important to you ? Please list them in the order of importance.

1. ..... 4. .....

2. ..... 5. .....

3. ..... 6. .....

E. FACILITIES IN THE MAIN RECEPTION/WAITING AREA

42. Did you use the WAITING AREA in the main reception area ?
Yes ☐ No ☐ Not Available ☐

If yes

A. Was it difficult to find ? Yes ☐ No ☐

B. Did you have any problem gaining access ? Yes ☐ No ☐

C. Do you think the location is convenient for
a. the department you are attending ? Yes ☐ No ☐
b. for the main reception/waiting area ? Yes ☐ No ☐

D. How would you describe the chairs provided ?

	Yes	No
Comfortable	☐	☐
Sufficient in numbers	☐	☐
Poorly arranged	☐	☐

E. Do you think the space provided for waiting is
Too small ☐ Just right ☐ Too big ☐

F. If you have any comments about the waiting area, please state below

.....

43. Did you use the RESTAURANT/SNACK BAR in the main reception/waiting area,
Yes ☐ No ☐ Not Available ☐

If yes,

A. Was it difficult to find ? Yes ☐ No ☐

B. Did you have any problem gaining access to the restaurant/snack bar . Yes ☐ No ☐

C. Do you think the location is convenient for
a. the department you are attending ? Yes ☐ No ☐
b. for the main reception/waiting area ? Yes ☐ No ☐

D. Do you think the space provided for the restaurant/snack bar is
Too small ☐ Just right ☐ Too big ☐

E. How would you describe the seating in the restaurant/snack bar ?

	Yes	No
Comfortable	☐	☐
Sufficient in number	☐	☐
Poorly arranged	☐	☐

F. Do you use the snack/drink machine provided ?
Yes ☐ No ☐

G. If you have any comments about the restaurant/snack bar please state below

.....

---

44. Did you use the SHOP in the main reception/waiting area,
Yes ☐ No ☐ Not Available ☐

If yes,

A. Was it difficult to find ? Yes ☐ No ☐

B. Did you have any problem gaining access ?
Yes ☐ No ☐

C. Do you think the location is convenient for
a. the department you are attending ? Yes ☐ No ☐
b. for the main reception/waiting area ? Yes ☐ No ☐

D. Do you think the space provided for the shop is
Too small ☐ Just right ☐ Too big ☐

E. If you have any comments about the shop please state below

.....

45. Did you use the the TOILETS in the main reception/waiting area ?
Yes ☐ No ☐ Not Available ☐

If, yes,

A. Were they difficult to find ? Yes ☐ No ☐
B. Did you have any problem gaining access to the toilets Yes ☐ No ☐

C .Do you think the location is convenient for
a. the department you are attending ? Yes ☐ No ☐
b. for the main reception/waiting area ? Yes ☐ No ☐

D. Do you think there are enough wc's ? Yes ☐ No ☐

E. Did you have to queue to use the toilets ?
Yes ☐ No ☐

F. Do you think there are enough wash hand basins ?
Yes ☐ No ☐

G. Do you think the space provided for the toilets are
Too small ☐ Just right ☐ Too big ☐

H. Do you prefer ?
Unisex Toilets ☐ Separate for male and female ☐

I. If you have any comments about the toilets, please state below

.....

---

46. Did you use the BANKING FACILITIES in the main reception/waiting area ?
Yes ☐ No ☐ Not Available ☐

If yes,

A. Which did you use ?
Counter ☐ Counter and Till ☐ Till Only ☐

B. Was it difficult to find ? Yes ☐ No ☐

C. Did you have any problem gaining access ?
Yes ☐ No ☐

D. Do you think the location is convenient for
a. the department you are attending ? Yes ☐ No ☐
b. for the main reception/waiting area ? Yes ☐ No ☐

E. Do you think the space provided for the bank is
Too small ☐ Just right ☐ Too big ☐

F. If you have any comments about the bank please state below

.....

47. Did you use the FLORIST or flower dispensing machine in the main reception/waiting area ?
Yes ☐ No ☐ Not Available ☐

If yes,

A. Was it difficult to find ? Yes ☐ No ☐

B. Did you have any problem gaining access to the florist ?
Yes ☐ No ☐

C. Do you think the location is convenient for
a. the department you are attending ? Yes ☐ No ☐
b. for the main reception/waiting area ? Yes ☐ No ☐

D. Do you think the space provided for the machine florist is
Too small ☐ Just right ☐ Too big ☐

E. If you have any comments about the flower dispensing machine, please state below

.....

---

48. Did you use the CRECHE in the main reception/waiting area ?
Yes ☐ No ☐ Not Available ☐

If yes,

A. Was it difficult to find ? Yes ☐ No ☐

B. Did you have any problem gaining access to the creche ?
Yes ☐ No ☐

C. Do you think the location is convenient for
a. the department you are attending ? Yes ☐ No ☐
b. for the main reception/waiting area ? Yes ☐ No ☐

D. What do you think the furniture provided ?
a. suitable for children Yes ☐ No ☐
b. sufficient Yes ☐ No ☐
c. comfortable Yes ☐ No ☐

E. Do you think the toys provided are
a. in good condition ? Yes ☐ No ☐
b. sufficient ? Yes ☐ No ☐

F. Do you think the mothers and babies room for changing nappies should be provided near the creche ?
Yes ☐ No ☐

G. If you have any comments about the creche, please state below

.....

49. Did you use the TELEPHONES in the main reception/waiting area ? Yes ☐ No ☐ Not Available ☐

If yes,
A. Were they difficult to find ? Yes ☐ No ☐

B. Did you have any problem gaining access to them ?
Yes ☐ No ☐

C. Do you think the location is convenient for
a. the department you are attending ? Yes ☐ No ☐
b. for the main reception/waiting area ? Yes ☐ No ☐

D. Do you think the space provided is
Too small ☐ Just right ☐ Too big ☐

E. Do you think the number provided is adequate ?
Yes ☐ No ☐

F. If you have any comments about the telephones please state below

.....

---

50. Did you use the POSTAL FACILITIES in the main reception/waiting area Yes ☐ No ☐ Not Available ☐

If yes,
A. Which did you use ? Post Box ☐ Stamp Machine ☐

B. Was it difficult to find ? Yes ☐ No ☐

C. Did you have any problem gaining access ? Yes ☐ No ☐

D. Do you think the location is convenient for
a. the department you are attending ? Yes ☐ No ☐
b. for the main reception/waiting area ? Yes ☐ No ☐

E. Is the space provided for the postal facilities
Too small ☐ Just right ☐ Too big ☐

F. If you have any comments about the postal facilities please state below

.....

---

51. Did you use the ESCALATOR in the main reception and waiting area ? Yes ☐ No ☐ Not Available ☐

If yes,
A. Did you find it difficult using it ? Yes ☐ No ☐

B. If you have any comment about the escalator, please state below

.....

52. Did you use the LIFTS in the main reception/waiting area ?

Yes ☐ No ☐ Not Available ☐

If yes,

A. Were they difficult to find ? Yes ☐ No ☐

B. Did you have any problem gaining access to the lifts access to the lifts . Yes ☐ No ☐

C. Do you think the location is convenient for
a. the department you are attending ? Yes ☐ No ☐
b. for the main reception/waiting area ? Yes ☐ No ☐

D. Do you think the lift size is
Too small ☐ Just right ☐ Too big ☐

E. Do you find it easy to use the lifts controls ?
Yes ☐ No ☐

F. If you have any comment about the lifts, Please state below

.....

---

53. Did you use the the STAIRS in the main reception/waiting area ?

Yes ☐ No ☐ Not Available ☐

If yes,

A. Were they difficult to find ? Yes ☐ No ☐

B. Did you have any problem gaining access to the stairs through the fire doors ? Yes ☐ No ☐

C. Do you think the location is convenient for
a. the department you are attending ? Yes ☐ No ☐
b. for the main reception/waiting area ? Yes ☐ No ☐

D. Do you think there were
a. too many steps ? Yes ☐ No ☐
b. steps were too steep ? Yes ☐ No ☐
c. steps not wide enough ? Yes ☐ No ☐
d. handrails badly positioned ? Yes ☐ No ☐
e. handrails difficult to grip ? Yes ☐ No ☐

E. If you have any comments about the stairs. Please state below

.....

54. If you have any ideas about how the main reception/waiting area in this hospital can be improved please state below ?

.....

55. Please write any comments which you may have about this hospital main reception/waiting area which you think I might have left out below

.....

B/3. The Pilot Questionnaire - Staff

H [ ][ ][ ][ ]
N [ ][ ][ ]
D [ ][ ][ ]
Da[ ][ ]
T [ ][ ]

QUESTIONNAIRE

STAFF

THE DESIGN OF HOSPITAL RECEPTION AND WAITING AREAS

I hope you can help by filling in this questionnaire.

The aim of the project is to find out how the design of hospital reception and waiting areas affects you and your activities within the hospital with a view to helping the planning and design of reception and waiting areas in hospitals in future.

This questionnaire is part of a research project which is being carried out at Oxford Polytechnic, in the Post-Graduate Research School, Department of Architecture.

Please could you try to answer all the questions briefly and on your own while in this hospital, it should not take you too long and return it to
If you cannot however complete it in this hospital could you please take it home and return it in the enclosed adressed stamped envelope.

All answers will be treated in the strictest confidence.

Please use ticks [✓] for your answers.

Thank you very much.

A. ABOUT YOURSELF

1. **Sex:** Male [ ] Female [ ]

2. **Age:** Under 10 [ ] 10 - 19 [ ] 20 - 29 [ ]
30 - 39 [ ] 40 - 49 [ ] 50 - 59 [ ]
60 - 69 [ ] 70 - 79 [ ] Over 80 [ ]

3. **Are you a** PORTER [ ] RECEPTIONIST [ ]
AMBULANCEMAN [ ] DOMESTIC [ ]
DOCTOR [ ] NURSE [ ]

Other .....Please State

4. How long have you worked in this hospital ?

Under 1 year [ ] ; 1 - 5 years [ ] ; More than 5 years [ ]

5. Are you a wheelchair user ? Yes [ ] No [ ]

B. COMING INTO THE HOSPITAL

6. What means do you often use to get into the hospital ?

Foot [ ] Car [ ] Ambulance [ ]
Taxi [ ] Bicycle [ ] Bus [ ]

Other(s) ..... Please State

7. Which of the hospital parking areas do you often use ?

Front [ ] Rear [ ]
Basement [ ] Side [ ]
Staff [ ] None of these [ ]

Other(s) ..... Please State

8. Which entrance do you often use to get into the hospital ?

Main Entrance [ ] Accidents/Emergency [ ]
Physical Medicine [ ] Back Entrance [ ]

Other(s) ..... Please State

9. Do you get any difficulty getting from where you often park to the entrance you often use ?

Yes [ ] No [ ]

If Yes, please state below

.....

10. Do you find any problems with access into the reception area of the entrance you often use ?

Yes ☐ No ☐

If Yes, was it due to difficulty in,

Opening the doors into the entrance lobby ? Yes ☐ No ☐
Opening the doors into the reception area ? Yes ☐ No ☐

Other(s) ..... Please State

11. How would you describe the reception you provide to patients/visitors in the main reception area ?

	Very	Not Very	Neither Nor	Not Very	Very	
WELCOMING	☐	☐	☐	☐	☐	UNWELCOMING
HELPFUL	☐	☐	☐	☐	☐	UNHELPFUL
FRIENDLY	☐	☐	☐	☐	☐	UNFRIENDLY
PROMPT	☐	☐	☐	☐	☐	SLOW
CHEERFUL	☐	☐	☐	☐	☐	DEPRESSING

12. Do you think you give a HURRIED ATTENTION to patients/visitors in the main reception/waiting area ?

Yes ☐ No ☐

13. Do you think your conversation with the patients/visitors in the main reception area is overheard by others ?

Yes ☐ No ☐

14. Do you think the directions you give patients/visitors in the main reception/waiting area is clear and simple ?

Yes ☐ No ☐

15. Do you find it easy to find your way within the hospital ?

Yes ☐ No ☐

16. How would describe the hospital signs ? Please Tick

Clear	Yes ☐	No ☐
Simple	Yes ☐	No ☐
Difficult to Read	Yes ☐	No ☐
Difficult to Understand	Yes ☐	No ☐
Poor colour contrast	Yes ☐	No ☐
Letters too small	Yes ☐	No ☐
Too many in one area	Yes ☐	No ☐
Poorly Lighted	Yes ☐	No ☐

D. THE MAIN RECEPTION AREA

17. What do you often go to do in the main reception/waiting area ? Please state below

.....
.
.
.
.
.....

18. Do you encounter any problems when you are going about your work in the main reception/ waiting area ?

Yes ☐ No ☐

If yes, please state

.....

19. Which of the following do you think should be provided in the main reception/waiting area ?

Reception Desk/Counter	☐	Creche	☐
Waiting Area	☐	Toilet Facilities	☐
Bank	☐	Newsagent	☐
Shop	☐	Chemist	☐
Restaurant	☐	Grocery/Food Shop	☐
Snack Bar	☐	Florist	☐
Chapel	☐	Meditation/Quiet Room	☐
Post Office	☐	Exhibition Space	☐
Lift	☐	Staircase	☐
Escalators	☐	Wheelchair Area	☐
Pram Area	☐	Stretcher Area	☐
Porters Lodge	☐	Ambulancemen Room	☐

Other(s) ..... Please State

20. Which of the above SIX are most important to you ? Please list them in the order of importance

1. ..... 4. .....

2. ..... 5. .....

3. ..... 6. .....

21. Do you have any comments about any of the above in the main reception/waiting area of this hospital ? Please state below

.....
.
.
.
.
.....

22. Do you SEE any of the following in the main reception and waiting area ?

Patients in distress	Yes ☐	No ☐
Patients on stretchers/trolleys	Yes ☐	No ☐
Patients vomiting	Yes ☐	No ☐
Patients bleeding	Yes ☐	No ☐

Other(s) ....Please State

23. Does any of these upset/disturb you ? Yes ☐ No ☐

If yes, please state

.....

24. Do you HEAR noises from any of the following in the main reception and waiting area ?

Patients in distress	Yes ☐	No ☐
Children playing	Yes ☐	No ☐
Office Equipment	Yes ☐	No ☐
Toilets	Yes ☐	No ☐
Light Fittings	Yes ☐	No ☐
Airconditioning	Yes ☐	No ☐

Other(s) ....Please State

25. Does any of these noises upset/irritate you ? Yes ☐ No ☐

If yes, please state

.....

26. Are you aware of any of the following SMELLS in the main reception and waiting area ?

Disenfectants	Yes ☐	No ☐
Medicines	Yes ☐	No ☐
Toilets	Yes ☐	No ☐
Floor polish	Yes ☐	No ☐

Other(s) ....Please State

27. Does any of these smells upset/irritate you ? Yes ☐ No ☐

If yes, please state

.....

28. How best would you describe the atmosphere in the main reception/waiting area ? Please Tick

	Very	Not Very	Neither Nor	Not Very	Very	
QUIET	☐	☐	☐	☐	☐	NOISY
CLEAN	☐	☐	☐	☐	☐	DIRTY
FRIENDLY	☐	☐	☐	☐	☐	UNFRIENDLY
RELAXED	☐	☐	☐	☐	☐	TENSE
CHEERFUL	☐	☐	☐	☐	☐	DEPRESSING
TIDY	☐	☐	☐	☐	☐	UNTIDY
FORMAL	☐	☐	☐	☐	☐	INFORMAL
HOMELY	☐	☐	☐	☐	☐	INSTITUTIONAL

29. How would you describe the overall size of the main reception/waiting area ?

Too small ☐ Just Right ☐ Too big ☐

30. How would you describe the temperature in the main reception/waiting area ?

Too Hot	Hot	Warm	Cold	Too cold
☐	☐	☐	☐	☐

31. Would you describe the lighting level in the main reception/waiting area as

Too Bright	Bright	Just Right	Dull	Too Dull
☐	☐	☐	☐	☐

32. Would you describe the main reception/waiting area as being stuffy ? Yes ☐ No ☐

33. What do you LIKE most about the main reception/waiting area ? Please write below

.....

.....

34. What do you DISLIKE most about the main reception/waiting area ? Please write below

.....

.....

35. If you have any ideas about how the main reception/waiting area in this hospital can be improved please state below ?

.....

36. Please write any comments which you may have about this hospital main reception/waiting area which you think might have been left out below

.....

E. WHERE YOU OFTEN WORK

37. Which of the following rooms do you normally work in ?

Reception/Enquiries [ ] Porters Lodge [ ]
Ambulancemens Room [ ] Shop [ ]

Other(s) ..... Please State

38. Do you think the location of this room where you normally work in is convenient to the main reception/waiting area ?

Yes [ ] No [ ]

If no, please state where you want it located

.....

39. Do you think the equipment provided in this room where you normally work in is adequate ?

Yes [ ] No [ ]

If no, please state what you want provided

.....

40. Do you think the furniture provided in this room where you normally work in is adequate ?

Yes [ ] No [ ]

If no, please state what you want provided

.....

41. How would you describe the overall size of this area where you normally work in ?

Too small [ ] Just Right [ ] Too big [ ]

42. How would you describe the temperature in this room where you normally work in ?

Too Hot [ ] Hot [ ] Warm [ ] Cold [ ] Too cold [ ]

43. Would you describe the lighting level in this room where you normally work in as

Too Bright [ ] Bright [ ] Just Right [ ] Dull [ ] Too Dull [ ]

44. Would you describe this room where you normally work in as being stuffy ?

Yes [ ] No [ ]

45. What do you LIKE most about this room where you normally work in ? Please write below

.....

46. What do you DISLIKE most about this room where you normally work in ? Please write below

.....

47. Which of the following department do you normally work in ?

Outpatients [ ] Pathology [ ]
Pharmacy [ ] Orthopaedic [ ]
Xray [ ] All Parts [ ]

Other(s) ..... Please state

48. Do you find you have to walk long distances between the places you normally work in this hospital ?

Yes [ ] No [ ]

If yes, specify between which areas/departments/clinics below

.....

B/4. The West Suffolk Hospital Retail Shop Survey

STAFF

WEST SUFFOLK HOSPITAL RETAIL SHOP SURVEY

To ensure that the hospital obtains as much money as possible from all possible avenues, an Income Generation Group has been set up.

To help the group assess the feasibility of providing shop accommodation at the main entrance of the hospital it is important that we have your views on this proposal.

We should be most grateful if you would tick in the appropriate boxes to indicate which facilities you would use.

	Very Often	Often	Some-times	Hardly Ever	Never
1. Florist	☐	☐	☐	☐	☐
2. Newspapers & Magazines	☐	☐	☐	☐	☐
3. Cards	☐	☐	☐	☐	☐
4. Books	☐	☐	☐	☐	☐
5. Charities Shop	☐	☐	☐	☐	☐
6. Video Hire	☐	☐	☐	☐	☐
7. Gifts & Toys	☐	☐	☐	☐	☐
8. Groceries, Fruit & Veg	☐	☐	☐	☐	☐
9. Hairdressing Salon	☐	☐	☐	☐	☐

10. Are there any others that you feel would be useful but are not listed above?.....

.....

.....

.....

Thankyou very much for your co-operation and comments.

PLEASE RETURN THIS FORM TO YOUR HEAD OF DEPARTMENT

APPENDIX C

MAIN STUDY ; THE MATRICES OF DISTANCES

This Appendix contains the matrices and the description of the distances between the reception counters.

NEWHAM HOSPITAL - MATRIX OF DISTANCES BETWEEN RECEPTION COUNTERS

0.0	38.0	35.6	30.8	30.8	68.4	68.4	48.4	95.4	101.4	90.0	93.6	95.8	104.4	145.8	167.0	167.0	192.2	200.2	173.0
38.0	0.0	15.6	61.2	61.2	94.0	94.0	74.0	121.0	127.0	115.6	119.2	121.4	130.0	171.4	192.6	192.6	217.8	225.8	197.2
35.6	15.6	0.0	58.8	58.8	91.6	91.6	71.6	118.6	124.6	113.2	116.8	119.0	127.6	169.0	190.2	190.2	215.4	223.4	194.8
30.8	61.2	58.8	0.0	14.0	91.6	91.6	71.6	118.6	124.6	113.2	116.8	119.0	127.6	169.0	190.2	190.2	215.4	223.4	194.8
30.8	61.2	58.8	14.0	0.0	91.6	91.6	71.6	118.6	124.6	113.2	116.8	119.0	127.6	169.0	190.2	190.2	215.4	223.4	194.8
68.4	94.0	91.6	91.6	91.6	0.0	20.0	44.0	91.0	94.2	82.8	86.4	88.6	97.2	138.6	159.8	159.8	185.0	193.0	164.4
68.4	94.0	91.6	91.6	91.6	20.0	0.0	44.0	91.0	94.2	82.8	86.4	88.6	97.2	138.6	159.8	159.8	185.0	193.0	164.4
48.4	74.0	71.6	71.6	71.6	44.0	44.0	0.0	53.0	77.0	65.6	69.2	71.4	80.0	121.4	142.6	142.6	167.8	180.8	147.2
95.4	121.0	118.6	118.6	118.6	91.0	91.0	53.0	0.0	124.0	112.6	116.2	118.4	127.0	168.4	189.6	189.6	214.8	227.8	194.2
101.4	127.0	124.6	124.6	124.6	94.2	94.2	77.0	124.0	0.0	18.6	53.4	55.6	64.2	105.6	126.8	126.8	152.0	165.0	131.4
90.0	115.6	113.2	113.2	113.2	82.8	82.8	65.6	112.6	18.6	0.0	42.0	44.2	52.8	94.2	115.4	115.4	140.6	153.6	120.0
93.6	119.2	116.8	116.8	116.8	86.4	86.4	69.2	116.2	53.4	42.0	0.0	15.0	56.4	97.8	119.0	119.0	144.2	152.2	123.6
95.8	121.4	119.0	119.0	119.0	88.6	88.6	71.4	118.4	55.6	44.2	15.0	0.0	58.6	100.0	121.2	121.2	146.4	154.4	125.8
104.4	130.0	127.6	127.6	127.6	97.2	97.2	80.0	127.0	64.2	52.8	56.4	58.6	0.0	51.4	72.6	72.6	97.8	105.8	77.2
145.8	171.4	169.0	169.0	169.0	138.6	138.6	121.4	168.4	105.6	94.2	97.8	100.0	51.4	0.0	40.0	40.0	62.8	70.8	43.4
167.0	192.6	190.2	190.2	190.2	159.8	159.8	142.6	189.6	126.8	115.4	119.0	121.2	72.6	40.0	0.0	20.0	86.4	94.4	65.8
167.0	192.6	190.2	190.2	190.2	159.8	159.8	142.6	189.6	126.8	115.4	119.0	121.2	72.6	40.0	20.0	0.0	86.4	94.4	65.8
192.2	217.6	215.4	215.4	215.4	185.0	185.0	167.8	214.8	152.0	140.6	144.2	146.4	97.8	62.8	86.4	86.4	0.0	12.0	24.6
200.2	225.8	223.4	223.4	223.4	193.0	193.0	180.8	227.8	165.0	153.6	152.2	154.4	105.8	70.8	94.4	94.4	12.0	0.0	32.6
173.6	197.2	194.8	194.8	194.8	164.4	164.4	147.2	194.2	131.4	120.0	123.6	125.8	77.2	43.4	65.8	65.8	24.6	32.6	0.0

NEWHAM HOSPITAL - STATISTICAL DESCRIPTION OF MEAN DISTANCES BETWEEN EVERY RECEPTION COUNTER AND THE REST OF THE RECEPTION COUNTERS FOR EVERY RECEPTION COUNTER

	N	MEAN	MEDIAN	TRMEAN	STDEV	SEMEAN	MIN	MAX	Q1	Q3
MDIST	20	110.11	110.50	109.42	17.17	3.84	86.40	146.30	94.96	122.07

NEWHAM HOSPITAL - MATRIX OF DISTANCES BETWEEN RECEPTION COUNTERS

0.0	38.0	35.6	30.8	30.8	68.4	68.4	48.4	95.4	101.4	90.0	93.6	95.8	104.4	145.8	167.0	167.0	192.2	200.2	173.0
38.0	0.0	15.6	61.2	61.2	94.0	94.0	74.0	121.0	127.0	115.6	119.2	121.4	130.0	171.4	192.6	192.6	217.8	225.8	197.2
35.6	15.6	0.0	58.8	58.8	91.6	91.6	71.6	118.6	124.6	113.2	116.8	119.0	127.6	169.0	190.2	190.2	215.4	223.4	194.8
30.8	61.2	58.8	0.0	14.0	91.6	91.6	71.6	118.6	124.6	113.2	116.8	119.0	127.6	169.0	190.2	190.2	215.4	223.4	194.8
30.8	61.2	58.8	14.0	0.0	91.6	91.6	71.6	118.6	124.6	113.2	116.8	119.0	127.6	169.0	190.2	190.2	215.4	223.4	194.8
68.4	94.0	91.6	91.6	91.6	0.0	20.0	44.0	91.0	94.2	82.8	86.4	88.6	97.2	138.6	159.8	159.8	185.0	193.0	164.4
68.4	94.0	91.6	91.6	91.6	20.0	0.0	44.0	91.0	94.2	82.8	86.4	88.6	97.2	138.6	159.8	159.8	185.0	193.0	164.4
48.4	74.0	71.6	71.6	71.6	44.0	44.0	0.0	53.0	77.0	65.6	69.2	71.4	80.0	121.4	142.6	142.6	167.8	180.8	147.2
95.4	121.0	118.6	118.6	118.6	91.0	91.0	53.0	0.0	124.0	112.6	116.2	118.4	127.0	168.4	189.6	189.6	214.8	227.8	194.2
101.4	127.0	124.6	124.6	124.6	94.2	94.2	77.0	124.0	0.0	18.6	53.4	55.6	64.2	105.6	126.8	126.8	152.0	165.0	131.4
90.0	115.6	113.2	113.2	113.2	82.8	82.8	65.6	112.6	18.6	0.0	42.0	44.2	52.8	94.2	115.4	115.4	140.6	153.6	120.0
93.6	119.2	116.8	116.8	116.8	86.4	86.4	69.2	116.2	53.4	42.0	0.0	15.0	56.4	97.8	119.0	119.0	144.2	152.2	123.6
95.8	121.4	119.0	119.0	119.0	88.6	88.6	71.4	118.4	55.6	44.2	15.0	0.0	58.6	100.0	121.2	121.2	146.4	154.4	125.8
104.4	130.0	127.6	127.6	127.6	97.2	97.2	80.0	127.0	64.2	52.8	56.4	58.6	0.0	51.4	72.6	72.6	97.8	105.8	77.2
145.8	171.4	169.0	169.0	169.0	138.6	138.6	121.4	168.4	105.6	94.2	97.8	100.0	51.4	0.0	40.0	40.0	62.8	70.8	43.4
167.0	192.6	190.2	190.2	190.2	159.8	159.8	142.6	189.6	126.8	115.4	119.0	121.2	72.6	40.0	0.0	20.0	86.4	94.4	65.8
167.0	192.6	190.2	190.2	190.2	159.8	159.8	142.6	189.6	126.8	115.4	119.0	121.2	72.6	40.0	20.0	0.0	86.4	94.4	65.8
192.2	217.6	215.4	215.4	215.4	185.0	185.0	167.8	214.8	152.0	140.6	144.2	146.4	97.8	62.8	86.4	86.4	0.0	12.0	24.6
200.2	225.8	223.4	223.4	223.4	193.0	193.0	180.8	227.8	165.0	153.6	152.2	154.4	105.8	70.8	94.4	94.4	12.0	0.0	32.6
173.6	197.2	194.8	194.8	194.8	164.4	164.4	147.2	194.2	131.4	120.0	123.6	125.8	77.2	43.4	65.8	65.8	24.6	32.6	0.0

NEWHAM HOSPITAL - STATISTICAL DESCRIPTION OF MEAN DISTANCES BETWEEN EVERY RECEPTION COUNTER AND THE REST OF THE RECEPTION COUNTERS FOR EVERY RECEPTION COUNTER

	N	MEAN	MEDIAN	TRMEAN	STDEV	SEMEAN	MIN	MAX	Q1	Q3
MDIST	20	110.11	110.50	109.42	17.17	3.84	86.40	146.30	94.96	122.07

NEWHAM HOSPITAL - STATISTICAL DESCRIPTION OF DISTANCES BETWEEN RECEPTION COUNTERS

	N	MEAN	MEDIAN	TRMEAN	STDEV	SEMEAN	MIN	MAX	Q1	Q3
C1-MRC	20	97.3	94.5	97.0	59.5	13.3	0.0	200.2	40.6	161.7
C2-OPD1	20	118.5	120.1	119.1	65.9	14.7	0.0	225.8	64.4	187.3
C3-OPD2	20	116.3	117.7	116.8	65.4	14.6	0.0	223.4	62.0	184.9
C4-OPD3	20	116.1	117.7	116.6	65.8	14.7	0.0	223.4	63.8	184.9
C5-OPD4	20	116.1	117.7	116.6	65.8	14.7	0.0	223.4	63.8	184.9
C6-CHN1	20	102.1	91.6	102.7	51.3	11.5	0.0	193.0	83.7	154.5
C7-CHN2	20	102.1	91.6	102.7	51.3	11.5	0.0	193.0	83.7	154.5
C8-FRACTURE	20	87.2	71.6	86.8	47.2	10.5	0.0	180.8	56.2	137.3
C9-AED	20	129.5	118.6	131.2	55.1	12.3	0.0	227.8	99.7	184.3
C10-CHN3	20	99.55	114.80	101.44	43.01	9.62	0.0	165.00	67.40	126.80
C11-LAB	20	89.29	103.40	90.68	40.57	9.07	0.0	153.60	56.00	115.40
C12-XRAY	20	92.20	107.00	93.99	41.20	9.21	0.0	152.20	59.60	119.00
C13-ADMIN	20	94.18	109.20	96.07	41.67	9.32	0.0	154.40	61.80	121.20
C14-MORTUARY	20	86.40	88.60	88.78	34.18	7.64	0.0	130.00	60.00	121.70
C15-PHARM	20	104.9	102.8	107.0	53.4	11.9	0.0	171.4	54.2	162.8
C16-MAT1	20	122.2	124.0	125.1	60.1	13.4	0.0	192.6	76.1	184.0
C17-MAT2	20	122.2	124.0	125.1	60.1	13.4	0.0	192.6	76.1	184.0
C18-MAT3	20	138.1	149.2	141.3	72.2	16.2	0.0	217.8	86.4	209.2
C19-REHAB	20	146.3	159.7	149.9	74.3	16.6	0.0	227.8	94.4	217.6
C20-EDUC	20	121.7	128.6	124.3	65.1	14.6	0.0	197.2	65.8	188.9

NEWHAM HOSPITAL - MEAN DISTANCES BETWEEN EVERY RECEPTION COUNTER AND THE REST OF THE RECEPTION COUNTERS FOR EVERY RECEPTION COUNTER

97.30	118.50	116.30	116.10	116.10	102.10	102.10	87.20
129.50	99.55	89.29	92.20	94.18	86.40	104.90	122.20
122.20	138.10	146.30	121.70				

MAIDSTONE HOSPITAL - MATRIX OF DISTANCES BETWEEN RECEPTION COUNTERS

0.0	61.2	60.6	58.8	62.3	61.7	86.0	86.0	79.5	78.7	116.6	116.6	97.2	138.9	147.2	147.2	122.0	32.0	32.0
61.2	0.0	16.6	22.4	57.3	56.7	95.6	95.6	89.9	88.3	126.2	126.2	106.8	149.5	156.8	156.8	131.6	93.2	93.2
60.6	16.6	0.0	21.8	56.7	56.1	95.0	95.0	89.3	87.7	125.6	125.6	106.2	147.9	156.2	156.2	131.0	92.6	92.6
58.8	22.4	21.8	0.0	47.5	46.9	85.8	85.8	80.1	77.9	116.4	116.4	97.0	138.7	147.0	147.0	121.8	83.4	83.4
62.3	57.3	56.7	47.5	0.0	13.2	82.7	82.7	77.0	75.4	113.3	113.3	93.9	135.6	143.9	143.9	118.7	80.3	80.3
61.7	56.7	56.1	46.9	13.2	0.0	82.1	82.1	76.4	74.8	112.7	112.7	93.3	135.0	143.3	143.3	118.1	79.7	79.7
86.0	95.6	95.0	85.8	82.7	82.1	0.0	20.0	52.3	50.7	88.6	88.6	69.2	110.9	119.2	119.2	94.0	118.0	118.0
86.0	95.6	95.0	85.8	82.7	82.1	20.0	0.0	52.3	50.7	88.6	88.6	69.2	110.9	119.2	119.2	94.0	118.0	118.0
79.5	89.9	89.3	80.1	77.0	76.4	52.3	52.3	0.0	14.0	82.9	82.9	63.5	105.2	113.5	113.5	88.3	112.3	112.3
78.7	88.3	87.7	77.9	75.4	74.8	50.7	50.7	14.0	0.0	81.3	81.3	61.9	103.6	111.9	111.9	86.7	110.7	110.7
116.6	126.2	125.6	116.4	113.3	112.7	88.6	88.6	82.9	81.3	0.0	20.0	38.6	80.3	88.6	88.6	63.4	87.4	87.4
116.6	126.2	125.6	116.4	113.3	112.7	88.6	88.6	82.9	81.3	20.0	0.0	38.6	80.3	88.6	88.6	63.4	87.4	87.4
97.2	106.8	106.2	97.0	93.9	93.3	69.2	69.2	63.5	61.9	38.6	38.6	0.0	45.7	66.0	66.0	40.8	129.2	129.2
138.9	149.5	147.9	138.7	135.6	135.0	110.9	110.9	105.2	103.6	80.3	80.3	45.7	0.0	107.7	107.7	82.5	170.9	170.9
147.2	156.8	156.2	147.0	143.9	143.3	119.2	119.2	113.5	111.9	88.6	88.6	66.0	107.7	0.0	20.0	32.8	179.2	179.2
147.2	156.8	156.2	147.0	143.9	143.3	119.2	119.2	113.5	111.9	88.6	88.6	66.0	107.7	20.0	0.0	32.8	179.2	179.2
122.0	130.0	131.0	121.8	118.7	118.1	94.0	94.0	88.3	86.7	63.4	63.4	40.8	82.5	32.8	32.8	0.0	154.0	154.0
32.0	93.2	92.6	83.4	80.3	79.7	118.0	118.0	112.3	110.7	87.4	87.4	129.2	170.9	179.2	179.2	154.0	0.0	13.6
32.0	93.2	92.6	83.4	80.3	79.7	118.0	118.0	112.3	110.7	87.4	87.4	129.2	170.9	179.2	179.2	154.0	13.6	0.0

MAIDSTONE HOSPITAL - STATISTICAL DESCRIPTION OF MEAN DISTANCES BETWEEN EVERY RECEPTION COUNTER AND THE REST OF THE RECEPTION COUNTERS FOR EVERY RECEPTION COUNTER

	N	MEAN	MEDIAN	TRMEAN	STDEV	SEMEAN	MIN	MAX	Q1	Q3
MDIST	19	89.74	84.55	89.36	11.94	2.74	74.33	111.69	82.94	101.10

MAIDSTONE HOSPITAL - MATRIX OF DISTANCES BETWEEN RECEPTION COUNTERS

0.0	61.2	60.6	58.8	62.3	61.7	86.0	86.0	79.5	78.7	116.6	116.6	97.2	138.9	147.2	147.2	122.0	32.0	32.0
61.2	0.0	16.6	22.4	57.3	56.7	95.6	95.6	89.9	88.3	126.2	126.2	106.8	149.5	156.8	156.8	131.6	93.2	93.2
60.6	16.6	0.0	21.8	56.7	56.1	95.0	95.0	89.3	87.7	125.6	125.6	106.2	147.9	156.2	156.2	131.0	92.6	92.6
58.8	22.4	21.8	0.0	47.5	46.9	85.8	85.8	80.1	77.9	116.4	116.4	97.0	138.7	147.0	147.0	121.8	83.4	83.4
62.3	57.3	56.7	47.5	0.0	13.2	82.7	82.7	77.0	75.4	113.3	113.3	93.9	135.6	143.9	143.9	118.7	80.3	80.3
61.7	56.7	56.1	46.9	13.2	0.0	82.1	82.1	76.4	74.8	112.7	112.7	93.3	135.0	143.3	143.3	118.1	79.7	79.7
86.0	95.6	95.0	85.8	82.7	82.1	0.0	20.0	52.3	50.7	88.6	88.6	69.2	110.9	119.2	119.2	94.0	118.0	118.0
86.0	95.6	95.0	85.8	82.7	82.1	20.0	0.0	52.3	50.7	88.6	88.6	69.2	110.9	119.2	119.2	94.0	118.0	118.0
79.5	89.9	89.3	80.1	77.0	76.4	52.3	52.3	0.0	14.0	82.9	82.9	63.5	105.2	113.5	113.5	88.3	112.3	112.3
78.7	88.3	87.7	77.9	75.4	74.8	50.7	50.7	14.0	0.0	81.3	81.3	61.9	103.6	111.9	111.9	86.7	110.7	110.7
116.6	126.2	125.6	116.4	113.3	112.7	88.6	88.6	82.9	81.3	0.0	20.0	38.6	80.3	88.6	88.6	63.4	87.4	87.4
116.6	126.2	125.6	116.4	113.3	112.7	88.6	88.6	82.9	81.3	20.0	0.0	38.6	80.3	88.6	88.6	63.4	87.4	87.4
97.2	106.8	106.2	97.0	93.9	93.3	69.2	69.2	63.5	61.9	38.6	38.6	0.0	45.7	66.0	66.0	40.8	129.2	129.2
138.9	149.5	147.9	138.7	135.6	135.0	110.9	110.9	105.2	103.6	80.3	80.3	45.7	0.0	107.7	107.7	82.5	170.9	170.9
147.2	156.8	156.2	147.0	143.9	143.3	119.2	119.2	113.5	111.9	88.6	88.6	66.0	107.7	0.0	20.0	32.8	179.2	179.2
147.2	156.8	156.2	147.0	143.9	143.3	119.2	119.2	113.5	111.9	88.6	88.6	66.0	107.7	20.0	0.0	32.8	179.2	179.2
122.0	130.0	131.0	121.8	118.7	118.1	94.0	94.0	88.3	86.7	63.4	63.4	40.8	82.5	32.8	32.8	0.0	154.0	154.0
32.0	93.2	92.6	83.4	80.3	79.7	118.0	118.0	112.3	110.7	87.4	87.4	129.2	170.9	179.2	179.2	154.0	0.0	13.6
32.0	93.2	92.6	83.4	80.3	79.7	118.0	118.0	112.3	110.7	87.4	87.4	129.2	170.9	179.2	179.2	154.0	13.6	0.0

MAIDSTONE HOSPITAL - STATISTICAL DESCRIPTION OF MEAN DISTANCES BETWEEN EVERY RECEPTION COUNTER AND THE REST OF THE RECEPTION COUNTERS FOR EVERY RECEPTION COUNTER

	N	MEAN	MEDIAN	TRMEAN	STDEV	SEMEAN	MIN	MAX	Q1	Q3
MDIST	19	89.74	84.55	89.36	11.94	2.74	74.33	111.69	82.94	101.10

MAIDSTONE HOSPITAL - STATISTICAL DESCRIPTION OF DISTANCES BETWEEN RECEPTION COUNTERS

	N	MEAN	MEDIAN	TRMEAN	STDEV	SEMEAN	MIN	MAX	Q1	Q3
C1-MRC	19	83.39	79.50	84.55	40.78	9.35	0.0	147.20	60.60	116.60
C2-OBS	19	90.6	93.2	92.1	46.0	10.6	0.0	156.8	57.3	126.2
C3-OPD1	19	90.1	92.6	91.6	45.9	10.5	0.0	156.2	56.7	125.6
C4-OPD2	19	83.06	83.40	84.18	42.64	9.78	0.0	147.00	47.50	116.40
C5-REHAB	19	83.05	80.30	84.36	39.67	9.10	0.0	143.90	57.30	113.30
C6-PHARMACY	19	82.52	79.70	83.79	39.54	9.07	0.0	143.30	56.70	112.70
C7-AD.ACUTE1	19	82.94	88.60	85.69	32.82	7.53	0.0	119.20	69.20	110.90
C8-GERIATRIC	19	82.94	88.60	85.69	32.82	7.53	0.0	119.20	69.20	110.90
C9-ADMIN	19	78.17	82.90	80.69	31.41	7.21	0.0	113.50	63.50	105.20
C10-XRAY	19	76.75	81.30	79.19	31.01	7.11	0.0	111.90	61.90	103.60
C11-CHN1	19	84.55	88.60	87.08	34.21	7.85	0.0	126.20	80.30	113.30
C12-CHN2	19	84.55	88.60	87.08	34.21	7.85	0.0	126.20	80.30	113.30
C13-FRACTURE	19	74.33	69.20	75.48	33.63	7.72	0.0	129.20	45.70	97.20
C14-AED	19	111.69	110.90	114.78	42.25	9.69	0.0	170.90	82.50	138.90
C15-AD.ACUTE2	19	111.6	119.2	114.2	51.7	11.9	0.0	179.2	88.6	147.2
C16-AD.ACUTE3	19	111.6	119.2	114.2	51.7	11.9	0.0	179.2	88.6	147.2
C17-ST.CHANGE	19	91.05	94.00	92.70	43.34	9.94	0.0	154.00	63.40	122.00
C18-MORTUARY	19	101.1	93.2	102.5	50.5	11.6	0.0	179.2	80.3	129.2
C19-CHEM.PATH	19	101.1	93.2	102.5	50.5	11.6	0.0	179.2	80.3	129.2

MAIDSTONE HOSPITAL - MEAN DISTANCES BETWEEN EVERY RECEPTION COUNTER AND THE REST OF THE RECEPTION COUNTERS FOR EVERY RECEPTION COUNTER

83.39	90.60	90.10	83.06	83.05	82.52	82.94	82.94
78.17	76.75	84.55	84.55	74.33	111.69	111.60	111.60
91.05	101.10	101.10					

APPENDIX D

AMENITIES PROVIDED

This Appendix contains ;

D/1. Table showing amenities available in the main reception and waiting area.

D/2. Table showing the estimated distances from the enquiries desk to the amenities available in the main reception and waiting area.

FACILITY	HOSPITAL TYPE			
	G	BB	H	N
1. ENQUIRY DESK	○		○	
2. ENTRANCE LOBBY	○	○		○
3. RECEPTION COUNTER	○		○	
4. MAIN WAITING	○	○	○	○
5. TEA BAR	○	○	○	○
6. VISITORS WAITING	○			
7. AMBULNACE STAFF ROOM	○	○	○	○
8. PORTERS ROOM	○	○	○	○
9. SANITARY FACILITIES (M)	○	○	○	○
10. SANITARY FACILITIES (F)	○	○	○	○
11. PRAM STORAGE	○	○	○	
12. TROLLEY STORAGE	○		○	
13. WHEELCHAIR STORAGE	○	○	○	○
14. SUBWAITING AREA				○
15. CLEANERS ROOM				○
16. STAFF SANITARY (M)				○
17. STAFF SANITARY (F)				○
18. SHOP	○	○	○	○
19. CRECHE	○	○		
20. BANKING FACILITIES - TILL - COUNTER		○	○	
21. STAIRCASE	○			
22. LIFTS	○			
23. ESCALATOR	○			
24. SOCIAL SERVICES OFFICES	○			

Appendix D/1 Table showing Amenities Available in the Main Reception Area

G - Greenwich, BB - Best Buy, H - Harness, N - Nucleus

FACILITY	HOSPITAL TYPE			
	G	BB	H	N
1. ENQUIRY DESK	....	....	....	....
2. ENTRANCE LOBBY	10.0	5.0		4.0
3. RECEPTION COUNTER	12.0		20.0	
4. MAIN WAITING	7.0	4.0	5.0	9.0
5. TEA BAR	25.0	25.0	5.0	12.0
6. VISITORS WAITING	30.0			
7. AMBULNACE STAFF ROOM	13.0	4.0	25.0	4.0
8. PORTERS ROOM	13.0	4.0	25.0	4.0
9. SANITARY FACILITIES (M)	15.0	10.0	15.0	14.0
10. SANITARY FACILITIES (F)	16.0	14.0	16.0	15.0
11. PRAM STORAGE	11.0	7.0	14.0	
12. TROLLEY STORAGE	6.0		14.0	
13. WHEELCHAIR STORAGE	6.0	7.0	14.0	4.0
14. SUBWAITING AREA				10.0
15. CLEANERS ROOM				8.0
16. STAFF SANITARY (M)				9.0
17. STAFF SANITARY (F)				14.0
18. SHOP	9.0	34.0	15.0	12.0
19. CRECHE	15.0	7.0		
20. BANKING FACILITIES- TILL - COUNTER		37.0	11.0	
21. STAIRCASE	5.0			
22. LIFTS	10.0			
23. ESCALATOR	9.0			
24. SOCIAL SERVICES OFFICES	25.0			

Appendix D/2 Table showing the estimated distances from the Enquiries Desk to the Amenities in the Main Reception Area

G - Greenwich, BB - Best Buy, H - Harness, N - Nucleus

APPENDIX E

MOST IMPORTANT AMENITY IN THE MAIN RECEPTION AREA

This Appendix contains a table which show the patients rating of the most important amenity in the main reception and waiting area.

MOST IMPORTANT AMENITY	NEWHAM	MAIDSTONE
1	CRECHE	RECEPTION COUNTER
2	WAITING AREA	TOILET FACILITIES
3	TOILET FACILITIES	CRECHE
4	NEWSAGENT	SNACK BAR LIFT FLORIST
5	CHEMIST	CHEMIST CRECHE
6	WHEELCHAIR	EXHIBITION SPACE MEDITATION ROOM ESCALATOR WHEELCHAIR AREA NEWSAGENT

Appendix E. Table Showing Patients Rating of the Most Important Amenity in the Main Reception and Waiting Area

APPENDIX F

CONFERENCE REPORT

This Appendix contains a copy of a paper submitted by the author on 'Paediatric Architecture - the Built Environment and Child Development in Africa', for the African regional Workshop.

" TOO FRIGHTENED TO GO TO HOSPITAL "

A paper on "Paediatric Architecture - the Built Environment and Child Development in Africa" submitted to the African Regional Workshop for the conference to be held at the University of Science and Technology, Kumasi, Ghana, from the 31st October - 4th November, 1989.

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1.0 Introduction

There is a wide body of knowledge which confirm the existence of a relationship between a child's behaviour and the design of therapeutic environments. From this relationship a positive correlation which suggests the improvement in design of the therapeutic environment will result in the improvement of a child's behaviour can be inferred. Hospitals, are examples of such therapeutic environments within which most patients, especially children, during the time of treatment or consultation, are exposed to varying physical and psychological conditions which often induces varying degrees of stress or discomfort. The care of children in hospitals involves not only giving attention to their emotional well being, but also to their physical needs as well. In addition it is generally accepted that children are emotionally vulnerable and earlier experiences in such environments may affect their later development and a child's reaction to the hospital environment could result in ill effects which could also interfere with the success of medical treatment the child is to receive. Although the ultimate behaviour of children within the hospital environment are dependent on a number of other factors, the two main variables, child development and the design if hospitals will be the core of this paper.

Designing therapeutic environments have never been easy and no universal solution have been developed. Most existing examples, either in the developed or the developing countries have been identified as not meeting the children's requirements. The result is that most children are often very apprehensive to go to hospital. It is amazing that although nearly a century ago, Florence Nightingale remarked, "Hospitals are to do the sick no harm", most hospitals appear to have presumably the exact opposite effect. The remarkability of Florence Nightingales's statement is that it was based on her nursing experiences during the Crimea war. These experiences enabled her to provide recommendations and guidance for the development hospital wards, often referred to as the "Nightangale ward," for example, the wards at the Okomfo Anokye Hospital in Kumasi, Ghana.

The Nightangale wards have been empirically verified in a number of studies especially in Britain as being effective in meeting most of the user requirements than most of the "modern" hospital ward designs. This paper is not suggesting that the Nightangale ward approach should be adopted for all hospitals since each hospital project require different solutions. However, since most hospitals "do children more harm than good," it is necessary to understand the underlying causes of most children to be apprehensive in going to hospital.

2.0 Going into hospital

For most truculent children, it has been argued, going into hospital is often a traumatic experience for most parents or dependants. The child's behavioural indicators such as crying or stamping of feet often exhibited either when the child is informed or on the day of the child's attendance to the hospital are often misconstrued by the parents as token gestures of rebellion.

"Hospitalphobia" as this phenomenon is referred to is a recognised psychological condition which affects a substantial percentage of children irrespective of their social, economic, racial or national background. This phenomenon can often reduce intelligent children in this age group into sobbing wrecks who will prefer, in some cases to ran away or hide from their parents, in order to avoid the ordeal of having to go into hospital for treatment which will inevitably make them better. In extreme cases, even in adults, this phobia can also provoke physical symptoms such as headaches, vomiting and fits which might not necessarily be the conditions for which treatment was required in the first place.

The causative factors for such distress varies from child to child. Some of these factors could be as simple as the fear of diagnosis or treatment procedures in the hospital in the which are often uncomfortable and sometimes very painful such as injections. For others, these could be the embarrassment of having to undress at some stages during diagnosis or treatment in the full view of others patients. Even the idea of being seen to be more sick, or having your temperature taken at the entrance in the full view of other patients could be embarrassing. For others, the causes may be more deep rooted, perhaps a relative is sick or has died or the child is terribly frightened of breaking away from the tightly knit family unit. In most cases, the nature of the severity of the symptoms which are the result of these stresses can cause breakdown of communication between the parent and the child and in extreme cases an outside or professional help is required to get such a child into the hospital. The professional help which might be sought in these extreme case would be the employment of the services of psychologists who will attempt to talk the child through the possible traumatic experiences that the child has gone through or is likely to go through on visiting the hospital. Some of the

methods adopted may be basically asking the child why, when and how the child perceives the traumatic experiences within the hospital environment. It is amazing to know the kind of comments that even some adults especially the elderly give to similar questions.

For others, the design of the hospital building and its related interiors creates conditions which induces this apprehension.

Both the psychological and physical factors have design implications of great importance. These implications must be clearly understood if the varying degrees of anxiety experienced by the children are to be minimised. The minimisation will invariably encourage most of them to be more confident in visiting hospitals and in seeking hospital treatment. Ultimately, as it has been argued that "prevention is better than cure" and "it is more cost effective to treat diseases at the early stages before they become chronic," the creation of an environment to minimise both the psychological and physical factors associated with these stresses is of prime importance. Some solutions, as advocated strongly by some designers and psychologists, are the creation of a friendly, relaxed, homely, light, attractive and non-clinical environment as possible within the accommodation provided without compromising health and safety requirements. The creation of a friendly, relaxed, homely, non-clinical, environment raises a more scientific problem which involves these general concepts which are not easy to measure and can only be resolved scientifically so that any solutions evolved could be of significant value. Refurbishing an existing environment by placing a couple of plants in one corner, bright colours in the other, paintings on the walls, piped music or videos might help but they are not the ultimate solutions.

There is no doubt that there are currently strong advocates for home treatment and a number of publications or governmental policy documents on issues such as, "humanisation of hospitals," "hospitals are for people," "putting patients first" and "flexible hospitals" are being published. But these publications and or the existing examples or studies have not provided solutions to the problem. The three factors which have been suggested as being the causes for the creation of anxiety in children namely sight, sound and which will be evaluated in the context of three specific and identifiable areas namely the main entrance , the corridors, and the wards in a hospital in order to attempt to provide some of the answers to the problem of children and therapeutic environments.

3.0 <u>The Design of Hospitals</u>

To have considered all the design aspects of hospitals would be have been beyond the scope of this paper, thus the focus on the main reception area, the corridors and

the children's wards.
However at the whole hospital level, what the child sees, hears, or smells in relationship to the hospital location, the introduction into the hospital, the size, and the external atmosphere around the hospital. What is of most importance is that even at the whole hospital level, these factors can cause a degree of stress among the children. Some examples which can cause anxiety in the child are having to go past a mortuary, or a cemetery, or having to go past the casualty department with accident patients dripping in blood, or having to cross a busy road before getting into a hospital, or the sound of sirens, or the smell of foul or rotting bodies, The design should ensure that some of these sights, sound or smells experiences are minimised or avoided at the whole hospital level. The hospital accommodation should be located in order that patients and their parents arriving by public transport do not have to walk long distances on the site. Those arriving by ambulance or by car should be able to alight as near the hospital main entrance as possible. Having entered the hospital building, the design of the spaces and the route along which the child is likely to take to get treatment must also be considered within the context of sight, sound and smell. These main areas are, the main reception and waiting area, the corridors and the wards which are discussed in the next three sections.

3.1 The Main Reception Area

The child usually accompanied by the parent or often a member of the family enters the hospital by the main out-patients entrance. This area is often referred to as the main reception and waiting area. From this area the parent and older children expect that well placed and clear sign posting should direct them to easily identifiable areas and rooms within the hospital. Where difficulties are encountered, they expect that assistance for directions will be sought and obtained from the receptionists, the porters, the ambulanceman or other identifiable members of staff. They also expect that the directions given would be clear and understandable. These barely happen in most hospitals, in some extreme cases very few vistas exists which make it easier for most parents and children to refer to. Where these signs exist, those which refer to rooms or spaces with medical terminologies are often difficult to understand. A patient is more likely to understand a directional sign or message of, for example, "go to the children's ward", than say, "go to the paediatric ward", or a ward named after a personality. The cost implications of improper signposting, though not immediately or easily quantifiable involves the time the staff have to spend directing patients.

In the main reception area, the sight of other "more sick children," blood, sputum, rubbish, dirty dark corridors, congestion (seated or standing) or the

sound of dentists drills, other children crying after injection or other distractive noises such as construction or renovating processes, telephones, ambulances, faulty trolleys, lifts wheelchairs, fire alarms, or even the sound of a market place like atmosphere (where the nurse shouts instructions from one end , the pharmacist from the other, the bottle or the fruit pedlar or the shop/snack bar from another corner) or the smell of disinfectants, rotten smells (toilets, food etc.) could be the causes of anxiety. Sometimes the fact that your name is going to be pronounced wrongly could also be the causes.

The other major factor to consider is the "friendliness" of the staff especially those you first meet on entering the hospital. It has been proved that if most or all the factors stated above have been carefully considered and the staff do not match up to the "design-friendly" atmosphere or create a dehumanising atmosphere then the whole concept minimising these stresses will not be achieved.

From the main reception area the patient is linked up to the areas where treatment is required through the corridors, the design of the corridors are discussed in the next section.

3.2 <u>The Corridors</u>

Corridors play an important part in helping to create a welcoming and homely environment in hospital and it has been suggested that the route from the main entrance to the patients point of destination should be as short and as simple as possible in order to reduce anxiety. Long uninteresting corridors are undesirable.

Most of the sights, sounds and smells in the corridors would be similar those in the main reception area. In addition there is likely to be a lot of pedestrian, wheelchair and trolley traffic. Some of these trolley traffic is likely to carry a patient with a drip which could be stressful to the child.

A number of recommendations have been suggested for the design of corridors, some of which are, proper lighting, signposting, imagery and distances walked. The distances to be walked within the hospital must be made to look manageable or as short as possible and could where possible corridor design incorporate more interesting measures. These measures could include reducing the perceived corridor length by introducing changes in shape through waiting spaces and lobbies, introducing daylight and vistas, providing interesting views on to the outside areas which are landscaped courtyards, variations in colouring and patterns on floors and walls, as well as the judicious use of pictures, murals and paintings. Where the corridor leads to the children's ward, for example, there is no need having an expensive print of a Piccasso or a Bon or a Renoir when a simple

child drawing would be appropriate. In some hospitals the children are asked to contribute to the painting of murals as part of their recovery or educational projects while in the hospital and this approach have proved to be quite popular. The other recommendations are, broken down lifts must be made to work. The worst experience is for a sick child to be caught in a lift or to walk along distance to a lift only to realise that it is out of order. The ordeal of having to use the stairs could be traumatic.

The corridors link the main reception and waiting area to the wards and it is in this area that most children spend most of their time, the design of the wards it is expected must cater for all the requirements of the child in order that full co-operation with hospital treatment could be achieved. These requirements are discussed in the next section.

3.3 The Childrens Wards

In the past two decades, the improved knowledge of child development coupled with the recognition of the basic emotional and psychological needs of children have created more enlightened attitudes to the care of children in hospitals. This improved knowledge has brought about radical changes in the attitudes of staff in the organisation of childrens wards.

All children, irrespective of their illness or special care requirements, have these basic emotional and psychological needs. These needs it has been argued are best met by having children together in their own children wards which allow them to be nursed by those with the requisite qualifications, experience and know the techniques required in the care of the sick child which is different from those which are applicable to the adult patient. Having children in their own wards allow the physician to be responsible for the child's general care as well as management and oversight of the unit and the welfare of the children without any reduction in the clinical responsibilities. In addition this arrangement makes it easier for the organisation of the childrens education and play facilities This arrangement could also ensure that a child's link with home is not broken and is maintained by unrestricted visiting and by the provision of accommodation for parents. In hospitals where this arrangement of the provision of separate ward for children is ignored, it is often disturbing to see sick adults in wards having sick children mingling around them creating a lot of discomfort.

Although a wide range of ward designs exists, a number of designers continue to advocate for the further development of new forms of wards. Although there is enough existing evidence to confirm the effectiveness of the "Nightangale Ward", for example, as meeting most of the patients and the other user requirements than most

of the "modern" type of hospital wards, the main purpose of wards as well as the dynamic nature of the activities within them as defined in the literature, interviews and personal observation, highlights why the need for new ward designs are important.

Childrens wards, for example, are basically to provide residential accommodation and facilities for, firstly, the investigation, diagnosis and treatment of children including joint assessment with the health care staff, secondly, for play and education, thirdly, for rehabilitation to provide mobility and independence of patients aiming for early discharge, and fourth, for parents and relatives of children. Wards are expected should be planned for all levels of medical care , high dependency and medium dependency and may be allocated by age or speciality medical, surgical, etc.)

Most of the sights, sounds and smells in the wards are likely to be similar to those in the main reception area and the corridors but with the added factor of the child having to spend a longer time than those spent in the two other areas. In addition, there would be the knowledge that other children would be in a similar or worse situation and would be competing for attention from the nursing staff.

Among the recommendations that a number of practising designers and studies have advocated in order to minimise the impact the design of childrens ward have on the children using them are the importance of its location, layout, provision of appropriate environmental conditions, facilities for children play and education (related to the specific age group), accommodation for parents. The idea of parents or adults sharing hospital space or beds with their sick children in a common space is not encouraged.

In terms of layout, the childrens wards should be on the ground floor wherever possible to ensure that the children can go outdoors and play within the courtyards. The wards should be as open as possible to enable the nursing staff to observe the patients for most of the time and the children should be able to see the nurses in order to feel assured and safe. A safe outdoor play area should if possible adjoin the indoor day area, the entrance of this play area should be visible to staff in the interest of security and to prevent children form straying.

A multi purpose space could be provided for play dining, education and recreation. The likelihood of wide range of age groups in a nursing section increase the need to plan two separate parts conveniently situated and suitable for children of the various ages. Tables and chairs suitable for the range of children likely to use the accommodation. Ease of access for wheelchairs, beds, and cots is essential. What should be avoided are miniature toilets since most children do not use these

miniature toilets at home. Storage should be provided for toys and other bulky items and materials. A lockable cupboard is also needed for the storage of play items requiring a degree of security.
In some hospitals, "play mistresses" have been appointed. These specialists "mistresses" go around the childrens wards and areas where children are concentrated and basically teach and play with them as they children might have done if they were in school. Children straying from other departments is not encouraged.

Windows sills and doors must be at the toddler vision sight so that children do not have to climb on to beds or chairs in order to be able to look outside.

In terms of the child's safety, areas or conditions under which the child is normally not exposed to at home, for example, the hospital kitchen, infected rubbish, treatment rooms, door latches, low level wiring or engineering terminals, (switches and sockets) and lift controls should be properly considered.

4.0 Recommendations

There is no doubt that within the African context most of the the problems identified with child development and the design of therapeutic environments will be exaggerated due the lack of new hospitals for evaluative studies to be undertaken, inadequate trained staff, equipment, medicine and the difficulty in creating appropriate environmental hospital conditions. However these disadvantages does not suggest that the minimum that is or can be provided should not be encouraged. It is quite disheartening to be aware that even in some of the developed countries most of these design requirements are often overlooked.

The following recommendations have been recommended in the literature and practising designers. The most important is national governmental health care policies should be related to hospital design. They argue that there is no need advocating for standardised designs for example, in a capitalist society where health care is minimally controlled by the government or pseudo-capitalist societies where the government plays minimal part in providing health care for most of its citizens. Those who provide the health care facilities will invariably adopt designs which will enable them attract as many customers (patients) as possible. There is no doubt that the provision of health care system(s) in the western world is expensive and satisfactory. Other examples, however, in two particular "third world countries" are worth investigating in order that the solutions developed which have been very effective in those countries could be related, modified and use to suit the circumstances in Africa. The mirage of "Health Care for All by 2000" which unfortunately is only a decade away, is only be achievable with the evolution of

original comprehensive research and planning and implementation within the African context.

Secondly, in order that special needs related to children of different ages are given due consideration, it is important that the patients, doctors, nurses and remedial therapists with experience in the care of children and with the current responsibility for such care are involved from the initial stages in the planning of new hospitals. This approach although expensive will lead to substantial reductions in running costs. Thirdly, a careful and accurate assessment of the amount of accommodation requirement must be made by the design team as the provision of too much accommodation can have just as serious effects as the provision of too little.

Fourth, the changing local clinical practices must be studied as well as the estimated birth projections to decide how many beds are required and thus to be catered for in the hospitals wards. Fifth, emphasis in designing these hospitals in general and the childrens wards specifically must be on shortening the length of stay. Sixth, the actual educational needs of the children within the individual countries should be studied in detail by experts and the design of the health facility should reflect an understanding of the various facets of these needs.

Seventh, privacy and personal dignity especially where adolescent boys and girls share some accommodation and circulation space must be carefully considered. Eight, there is the need to train specialists designers, including architects, interior designers and artists in health care facilities provision at the national, regional and district levels. Ninth, time and money must be allocated to the specialist designers in this field as most designers like all other professions are attracted by the lucrative offers in the private sector. Research although not cheap, must be encouraged.

Tenth, useful information could be extracted from the bulk and large volumes of appropriate literature which exists in most of the developed countries. This information could be evaluated by the trained specialists or consultants within the framework of the individual countries health requirements and policies and modified to suit accordingly. The basic mistakes in the developed countries will then not be mirrored and magnified in the developing countries. Eleventh, foreign consultants in spite of their long experience abroad should not be preferred over local consultants who are not based in those countries. Naturally with immense experience.

Twelth, standard designs having been empirically verified designs as being suitable for the local conditions could be adopted to bring down costs. Thirteenth, the total flexible approach can be adopted.

Fourteenth, the use of the appropriate local materials and skills as well as the adoption of local imagery within the interiors should be encouraged.

5.0 Conclusions

The main conclusion to be drawn from this paper is that there is a relationship between child development and the design of therapeutic environments and the adequate understanding of this relationship has significant health, design and cost implications. Providing a child with a welcoming, relaxed and homely environment in a hospital will help in the child's development of a positive attitude towards hospital treatment.

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APPENDIX G

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