THE UNIVERSITY OF CALGARY

An Architectural Evaluation Case Study:
Activity Settings in a Children's Hospital Dayroom

by

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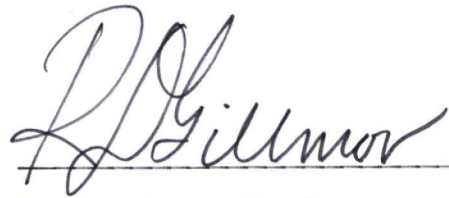
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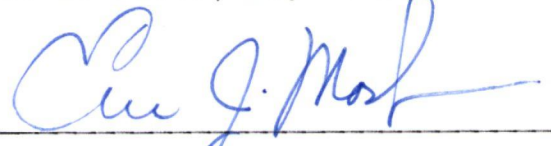of the requirements for the degree of Master of Arts.

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Abstract

This case study describes and evaluates the activities of children in one dayroom of an inpatient health care facility. The study was conducted by the architectural designer of the facility to provide professional feedback, to develop a perception and method for describing criteria for accommodations in the architectural design process. Random observations of the dayroom were recorded over a four month period. Four aspects of the children's activity were analyzed: time of day, age, social interaction, and location. The analysis suggested 14 recurring activity settings which were nominated as the standing patterns of behaviour in this space. These patterns were compared with the environmental values used in the initial architectural design. Applications of this approach to descriptive evaluation, are proposed for the ongoing planning in the space studied as well as the environmental planning process in general.

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Chapter 1 INTRODUCTION

The challenge of architectural design is to achieve congruity in three areas of responsibility. Vitruvius, the Roman architectural historian, called these three aspects of building design: firmness, commodity, and delight. In modern practice, knowledge of these three responsibilities develops in different ways. Our knowledge of firmness, which is the technical integrity of building design, is incorporated into the codes governing engineering design and construction. Our understanding of commodity, which refers to the suitability of the space and facilities for the occupants, grows through the development of organizational environmental models and is applied as a programming specialty to the overall planning process. Our experience of delight, the aesthetic qualities of the buildings and their spaces as an objects, grows as we become more skilled in making beautiful spaces according to the prevailing paradigm of architectural style.

An architectural concept, plan, and design can be understood as the stages of definition of an accommodation hypothesis for an intended environment with symbolic and pragmatic implications. The accommodation hypothesis is normally subjected to continuous evaluation, through the management process, in relationship to the initial and growing objectives of the organization. Conventional

architectural practice does not provide designers, who are responsible for formulating architectural concepts, plans and designs, with opportunities to critically examine the results of their hypothesis. This case study is an exercise in professional feedback, conducted by the designer, to evaluate the architectural hypothesis of a cluster dayroom. The investigator's subjective perception must not be misunderstood as that of an unbiased outside evaluator, but rather as a process to understand and improve the practice of his profession.

A Norwegian architectural historian, Christian Norberg-Schultz explains the challenge of providing commodity in the context of contemporary architectural practice, in his book Intentions in Architecture (1966).

We do not in the first place think of the technical difficulties which have to be surmounted in connection with any building task, but rather we have in mind the problem of defining the task, and deciding whether a planned or completed solution is satisfactory. (p. 7)

One source for the knowledge of what is satisfactory can be found in the work of the Centre for Environmental Structure (Alexander, 1979).

In order to understand this quality [of life] in buildings and in towns, we must begin by understanding that every place is given its character by certain patterns of events that keep on happening there.

These patterns of events are always interlocked with
certain geometric patterns in space. Indeed, as we
shall see, each building and each town is ultimately
made out of these patterns in space, and out of
nothing else: they are the atoms and the molecules
from which a building or a town is made. (p. x)

These two authors provide insight into the challenge
that a building designer has for accommodating the
satisfactory performance of recurring activity. The case
study describes the patterns of events which take place in
one space of a complex health Centre and proposes that the
identification of behaviour settings can be applied to
improving the provision of commodity·in architectural
environments.

Behaviour settings

The approach to this case study was developed from the
work of Roger Barker. Barker's (1968) theory of the human
ecological environment suggests that we occupy "behaviour
settings" (p. 18) which are self-regulated by the occupants
in terms of the opportunities offered by the milieu.
Barker's theory and his perception of behaviour settings has
been applied by Bechtel (1977) to describe the activities of
particular man-made environments for evaluation and

planning. A theory of architectural design proposed by Christopher Alexander (1977) was based upon the identification and enhancement of activity and geometric patterns, which appears to be similar to Barker's perception of our human ecology. This body of theory appears to offer a valid perception for evaluating the building task of an existing facility. The links between these theories suggest that it is possible for behaviour settings to be described as a narrative for the objectives of an operating environment.

Purpose

The investigator's intention was to increase the scope of professional understanding and ability to describe activities which act as criteria for architectural design. The instrumental purpose of this case study was to describe and evaluate the actual use of the dayroom for children in an acute health care environment. The general purpose of the case study was to become aware of a perception and technique for integrating qualitative criteria into the architectural planning process.

Research Site

The site for the research project was a dayroom of the Alberta Children's Hospital, Calgary, Alberta. The dayroom was the central space of a twelve-bed acute care cluster.

The acute care area contains eleven similar clusters plus an intensive care area. The cluster was the "spatial element" (Norberg-Shultz, 1966, p. 136) developed during the initial planning process. The dayroom was intended to provide children, parents, and staff with opportunities for visiting, playing, eating, and watching TV adjacent to the semi-private rooms.

Hypothesis

The hypothesis of this case study was that the qualities of the children's day-to-day activity in the dayroom of cluster 'N' correspond to the model of activity which was projected for the initial design of the dayroom.

Objectives

1. To observe and record the children's activity, by developing a method for describing their purposeful behaviour which was appropriate for evaluating the criteria for the architectural design of a dayroom.

2. To collect information describing the occurrence of children's behaviour as a non-participant observer of the day-to-day activity over a four-month period.

3. To identify and describe the recurring patterns of activity by analyzing the observation descriptions by time of day, age, social interaction, and location.

4. To describe the activity settings from an environmental point of view by defining how the children use the spatial qualities of the dayroom.

5. To evaluate the use of the dayroom by comparing the principles for the use of the dayroom used in the initial design with the evidence in the activity setting descriptions.

6. To propose recommendations for the continuing environmental improvement of the dayroom by suggesting how descriptions of the activity settings could be used to plan more effective utilization of the space.

7. To suggest how the description of activity settings would improve the current quantitative methods of planning and design process between organization and design professionals, by adding a systematic narrative of the activities intended for the environment which relate the personal and physical aspects of the planned milieu.

Child Health Centre Planning

The Child Health Centre was developed to support the needs of children with complex health problems and the needs of their parents, in southern Alberta. The functional planning for an addition to the Alberta Childrens Hospital

was started in 1974. After several interim stages of construction the first patients moved to the Inpatient Area in 1981.

Overview of the project.

The organizational and space requirements were planned in four specialized environments for particular aspects of care: an outpatient area (DAT), an inpatient area, a treatment area, and a school. A fifth modality encompasses all of the off-site care which operate as outreach services. Figure 1 shows the ground floor of the Child Health Centre Inpatient Area.

Cluster Planning

In a typical cluster the dayroom is the central space which is surrounded by six double rooms, an administrative and food preparation space, and opens to a courtyard. Figure 2 illustrates a typical cluster which is an autonomous organizational unit that could be compared to a ward in a conventional hospital.

The seven-year process from initial programming to the occupancy of the clusters had three aspects of planning and development: architectural, operational and furnishing. The architectural concept for the cluster was conceived in 1974 as an integration of two systems of activity, those of children and those of the health care staff. The childrens' system of activity was essential accommodation for each child to actualize his/her own adaptive process and regain

Figure 1

Alberta Children's Hospital – Inpatient Floor Plan
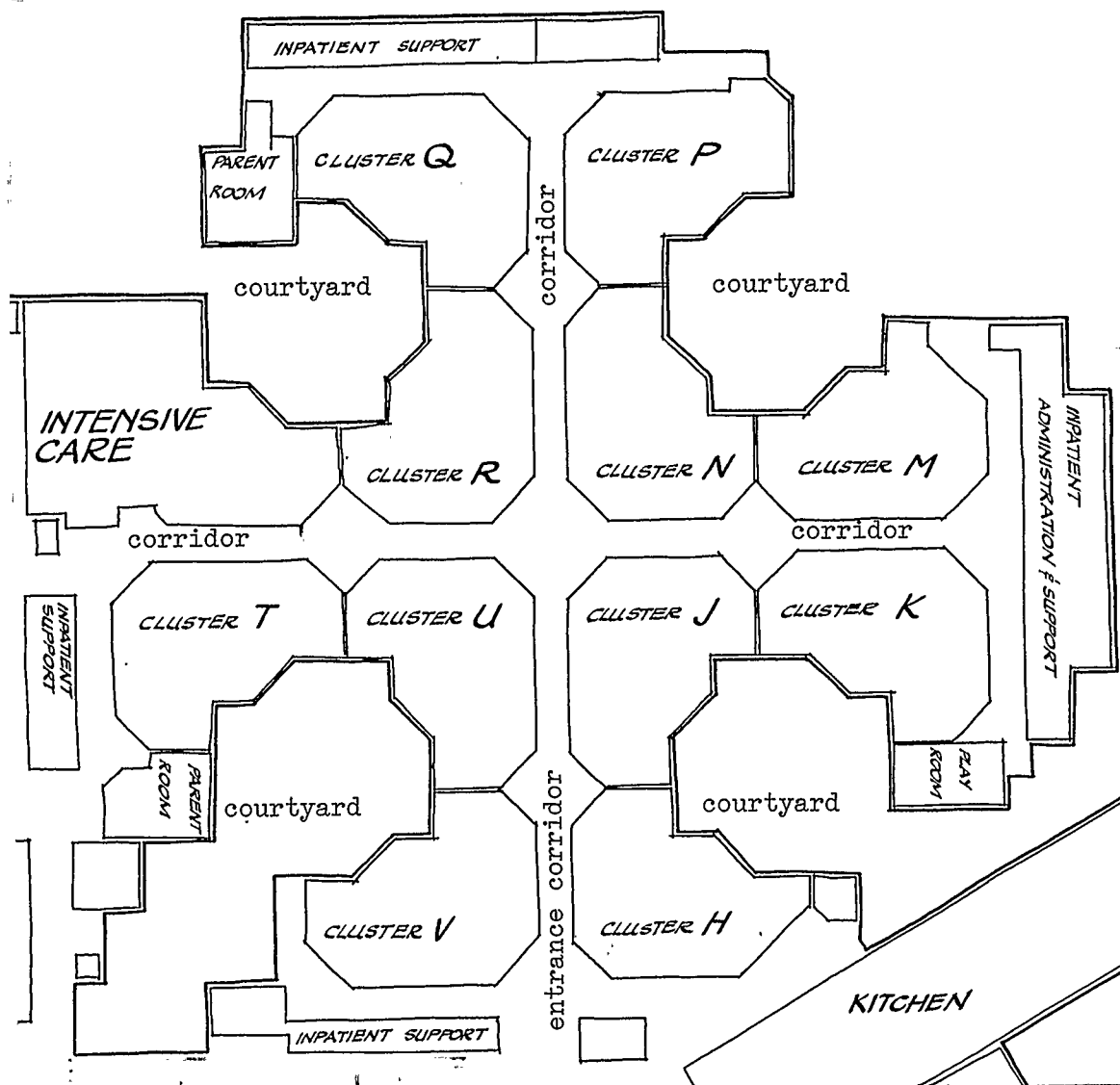
Figure 2

Floor Plan of a Typical Cluster
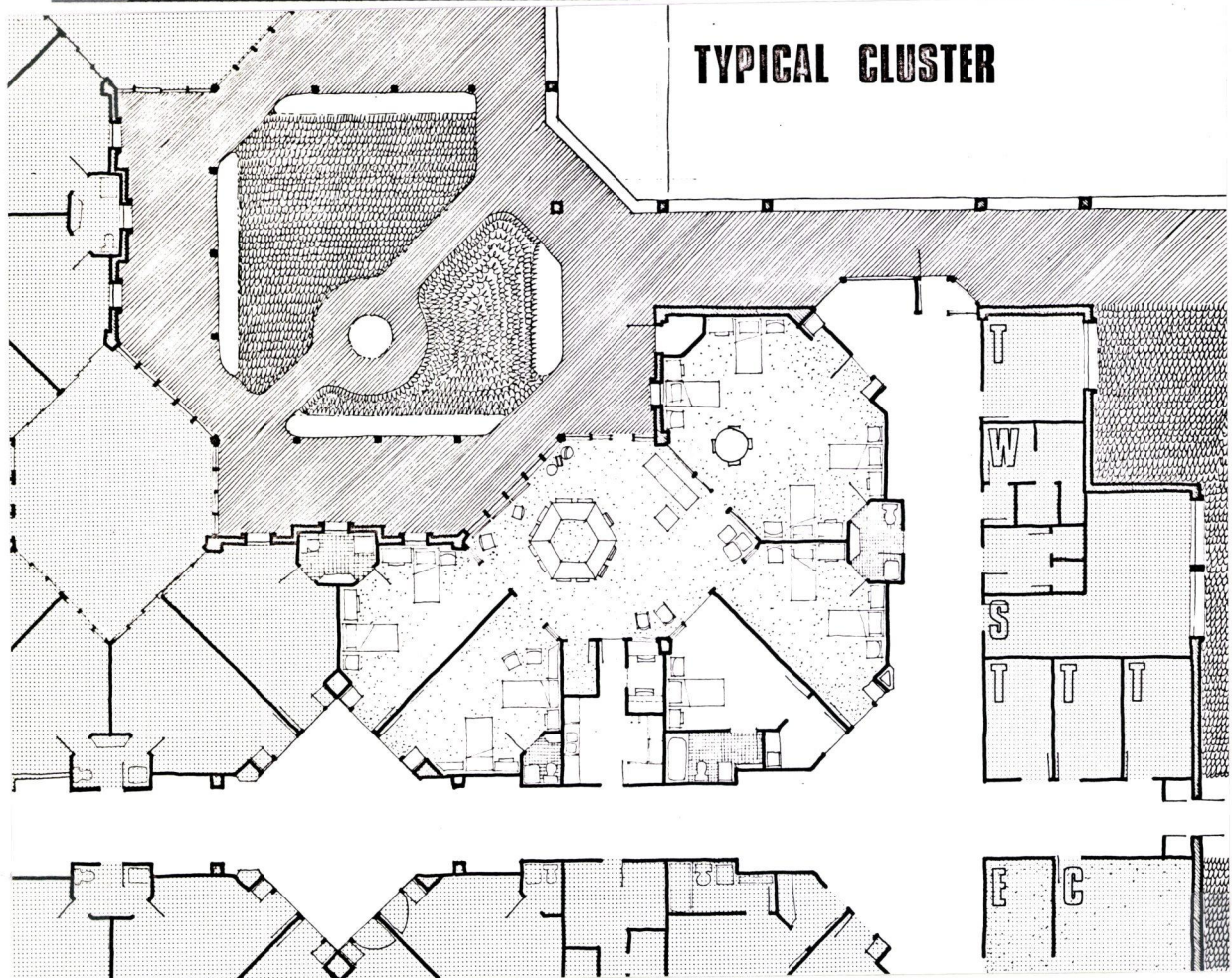
his/her health. The professional and staff system was
essential accommodation to diagnose, treat and stimulate
each child's natural process for healing and health.

The second aspect of the planning, which began in 1975,
was the health care systems planning which led to the
patient care models for the clusters. This process
continues to evolve as practices for childrens health care
change. The work of Kragel, Mousseau, Goldsmith, and Arora
(1974) was adapted for childrens health care process.

The detailed furnishing planning of the environment for each cluster began in 1977 and was led by Anita Olds, who worked with staff to plan the operational character and facilities in the dayrooms for children of different ages . Some clusters have been furnished according to the initial design, others modified due to changes in occupancy and others not completed. Cluster 'N' was one of those not completed. It is furnished with a mixture of contracted, donated, and hand-me-down furniture.

Three Environmental Values in the Cluster Planning

Three environmental values were developed during the initial architectural and operational planning for the clusters and the dayrooms. The first was a recognition of the holistic quality of each child/parent experience during their encounter with the Health Centre. The second was the recognition of the differences in the developmental processes of children at different ages, and the importance of those experiences to the child's comprehension and adaptation to hospitalization. The third was a regard for the experiences which children share among themselves and with parents, which allow them to work through the emotions of coping with hospitalization. Each of these values has an

decisions was based upon a regard for the child/parent spaces and environmental needs. (Cohos Evamy & Partners 1974). This conceptual diagram can be compared to the architectural organization of the cluster and the inpatient area. The principle of these priorities was also applied to the staff planning and organizational development of the cluster nursing teams.

Developmental continuity.

Statements in the Functional Program (Cohos Evamy & Partners 1974) referred to developing environments with regard to the age-appropriate needs of the children in the clusters. The initial assumptions for the occupancy of the clusters was that they would be age-related following the recommendations of Lindheim, Glazer & Coffin (1972). Although the age-related grouping was not achieved for all clusters, in those where it was realized, the environment of the dayroom was furnished with regard to the age-appropriate needs for that group of children.

Social interaction and health recovery.

The cluster configuration was based upon an assumption that a child would be more interested in view of the normal activity of other children playing, than in a view of the natural conditions outdoors. This justification for interior rooms allowed a view of activity and the outdoors

impact upon the quality of the environmental settings which were implied in the initial planning and actualized in the environment of the cluster and the dayroom.

The child's experience.

The priority for the child's holistic experience during his/her encounter with the Child Health Centre was expressed in a diagram developed during the initial planning process.

Figure 3 shows that the first priority for design

Figure 3

Design Priorities Diagram

DESIGN PRIORITIES

1 CHILD (PARENT)
  ∘SPACES & ENVIRONMENTAL NEEDS
2 TREATMENT PERSONNEL
  ∘SPACES & TECHNICAL NEEDS
3 SUPPORT FACILITIES & PERSONNEL
  ∘SPACES, EQUIPMENT & CIRCULATION
4 ADMINISTRATIVE SUPPORT SYSTEMS
  ∘SPACES, EQUIPMENT, CIRCULATION & ACCESS

community

C.H.C.

COMMON CHILD (PARENT) SPACE(S)
SPECIALIZED CHILD TREATMENT SPACES
TREATMENT PERSONNEL NEEDS
SUPPORT FACILITIES & PERSONNEL NEEDS
ADMINISTRATIVE SUPPORT SYSTEMS
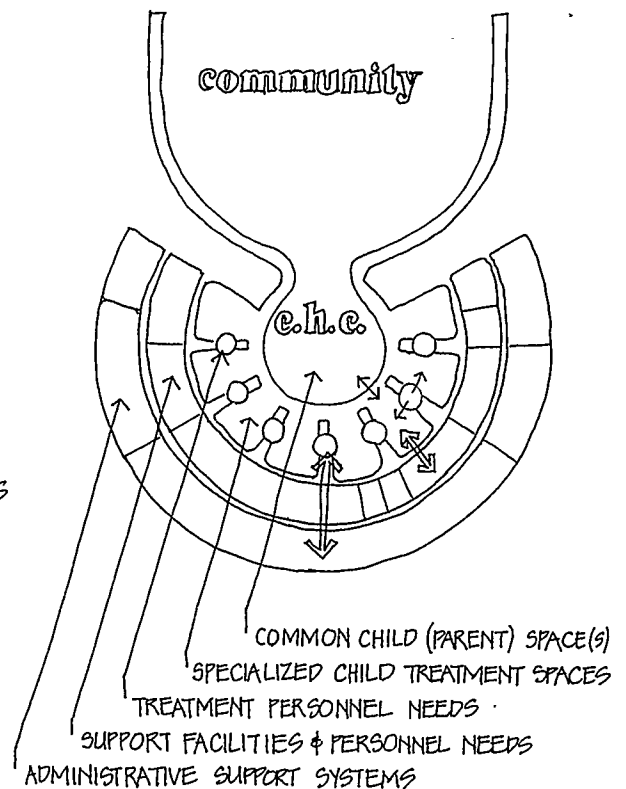
across the dayroom. Each child had control of his/her access to social interaction by being able to observe, listen, or share an activity with others from their individual rooms. The rooms of the cluster could be either semi-private or a dormitory depending upon the position of the sliding glass door between the rooms and the dayroom. Children, parents, or nurses could control the degree of social interaction by adjusting the position of the sliding door. During the hospitalization cycle of arrival, treatment and recovery a child could vary this access to interaction with other children.

These three values for the accommodation of the dayroom constitute symbolic and pragmatic aspects of the architectural hypothesis for the cluster dayroom. The case study is a systematic description and evaluation of the results which are present in the day-to-day activity of the dayroom.

Case Study Contents

The theoretical foundations for the case study are presented in Chapter 2, through a limited review of the literature on environmental perception and children's health care. The methodology, developed by the researcher and the thesis committee, as well as a detailed description of the dayroom of cluster 'N', are described in Chapter 3. The results of the study are presented in the fourth chapter.

The case study concludes with an evaluation of the activity settings in the dayroom and recommendations for the application of this technique to on-going planning in the cluster. A proposal for applying this technique of describing the criteria for architectural accommodations is presented in the fifth chapter.

Chapter 2 LITERATURE REVIEW

The literature reviewed in this chapter is presented in three sections. The first deals with the architectural context of the research project, relating key authors whose work was a stimulus to the initial design. The second section summarizes the health care writing which applies to the activity model used in the design of the cluster and the dayroom. The final section is the literature referring to the investigation process used in the research project.

The Architectural Context

The need for architectural evaluation and feedback from the use of buildings to the professional responsible for design was pointed out by Peter Blake (1987). The editors of the Canadian Architect objected to Professor Blake's call for long term evaluation and suggested that sufficient feedback was available after four or five months of building use. Professor Blake (1987) suggested that [a building] "needs to be occupied, and needs to be used and it needs to be evaluated...then, maybe five or ten years later there is something that can be said about the building" (p. 10).

If environmental evaluation is considered from a longer range view toward measuring the quality of accommodation

provided by the building designer, then the patterns use, and their relation to the architecture must be considered only after they have had time to become established. Norberg-Schultz (1963) and Alexander (1979) provide two different approaches to an understanding of the designers responsibility for providing a high quality of environmental accommodation through the architectural design of a building.

Norberg-Schultz (1968, p. 111) offers one approach to understanding the issue of designed environmental quality by carefully articulating the relationship between the controls which the built environment presumes and the possibilities for interaction and collaboration within the containing spaces. This approach comes from the psychological insights of Egon Brunswick "who was the first to formulate a psychology which integrates the organism with his environment" (Norberg-Schultz, 1968, p. 32). Alexander (1979) also proposes a theory for integrating the quality of the built environment, with the significance of human experience, by reminding designers and builders that "all our experiences there [in buildings], depend not simply on the physical environment but on the pattern of events which we experience there" (p. 63).

A third author Stafford Beer (1971), raises the issue for designers who must hypothesize with models of reality in their design process, "how do [we] create effective models:

which are good - representing reality, are used for what they represent, and are updated to reflect changes with time" (p. 401). As a cybernetitian and philosopher Beer has a great deal to teach designers about the use of accommodation models representing their "perception of meaningful patterns" of reality (p. 400).

These three authors frame the context for this project in terms of an architectural evaluation. Their work provides the approach for the evaluation of the qualities of a built environment, which serve the accommodations the building provides.

Environmental Qualities

Alexander (1979) and Barker (1968) describe the relationship of physical settings and the activities of occupants from two comparable points of view. Each provides designers with a model for describing the qualities of an intended environment. Alexander (1979) argues that "there is a fundamental inner connection between each pattern of events and the pattern of space in which it happens" (p. 92). Barker (1968) defined the same congruity within environments when he applied the designation of behaviour setting. "A behaviour setting is a standing pattern of behaviour and milieu" (p. 18). For the purposes of this project environmental quality will mean this topological relationship between place and activity.

Norberg-Schultz (1963) proposes that architects develop a "perceptual schema" (p. 50) which encompasses a broad understanding of "building tasks" (p. 109). Barker (1968) and Alexander (1969) offer designers a body of theory for developing a well grounded perceptual schemata for observing reality and mechanisms for projecting and environmental model for intended building tasks. Alexander (1979) suggests that there is an archetypal foundation for the relationship between patterns of activity and the geometric order of space in satisfactory settings.

Environmental design criteria

During the initial stage of physical planning the expectations for an organizations ideal environment are documented in a functional program. The traditional approach to facility programming described by (Sanoff, 1977, Pena, 1977; & Palmer, 1981) are limited by their functionalist perception of the building task. A functionalist perception tends to define the criteria for an environment by the services provided rather than the activities which support intended outcomes. In a conventional program document quantitative criteria, process flow diagrams, and steady-state conditions are used to describe operational aspects of the building. These operational criteria acquire an unwarranted authority as an accommodation model for the intended building.

Weckworth (1965) challenges planners to develop organizational criteria which are based upon the results expected rather than just the processes within environments. This is an ecological perception rather than a functionalist perception. In an ecologically related hierarchy each scale of the environment can be modeled with criteria which represent the dynamics of each setting, the relationships between activity and milieu, and the qualitative and quantitative measures which support the organizational purpose. An ecological approach to the initial planning can be continued beyond the task of building the facility, to effectively adapting the use of the building as the organizational role develops in its community. This extension of the initial planning process is especially important in health care facilities.

Norberg-Schultz (1966) suggests an approach to learning for architectural students which could be applied with a planning team to the initial stages of each complex design project. He proposes that students evolve the architectural program as a result of a "task analysis....Only in this way can the student comprehend that building means solution of social and cultural problems, rather than the erection of houses [or hospitals] with a certain number of square meters" (p. 218).

A broader view of the designer's responsibility is
proposed by Bechtel (1977) and Alexander (1979). These two
authors advocate an approach to architectural programming
and design which perceive the ordering of activity and
milieu as integrated activities. Bechtel (1977) advocates
the inclusion of Barker's approach to describing the
ecological quality of the built environment by saying that
"physical environment and behaviour are inextricably bound
together" (p. 10). Alexander (1979) has developed a similar
integrated approach to the task of architecture by searching
continuously from the initial conception to the final
construction for a "resolution of inner forces" (p. 51)
within the environmental container. The search for
resolution can be extended to the utilization of the
opportunities presented within the possibilities of the
constructed facility. This view of the architectural
responsibility suggests that behaviour settings are a
perceptual schemata, that is, environmental units relating
the activity-and-milieu of all the occupants.

The Health Care Content

Most health care planning is oriented toward serving
the health care delivery systems rather than the patient's
process of recovery and habilitation. Thompson and Goldin
(1975) discuss the history of the evolution of health

facility planning and show how the controlling raison d'etre has shifted from healing and recovery to efficient service delivery. Porter (1982) shows the American commitment to the environmental outcome of health facility design as a technologically and organizationally efficient setting, albeit in the service of the medical and nursing professions. Robinson and Clarke (1980) and Crocker (1977) have represented, from a Canadian perspective the need for health care planning, especially for children, which arises from the process and experience of recovery. These two tendencies, which the environment reinforces within the field of health care planning, service to the health care delivery system or service to the people recovering, represent a significant duality for the outcome of a planning process.

Facilities planning

The American Hospital Association has supported a professional role in a planning team for a values manager. The values manager "creates circumstances during the design phase that result in a hospital that satisfies all members of the design team" (Porter, 1982, p. 32), yet the patient is not included on the design team. Thompson and Goldin (1975) admit support for an incriminating admission by a hospital architect James S. Moore "Much as I hate to admit it...the architecture contributes very little to making the

patient well or to patient care" (p. 253). The nomenclature

for identifying the types of health care environments: open

ward, single corridor, double corridor, cluster or work

corridor plan all suggest a service oriented purpose

(Lindheim, et al. 1972, pp. 135 - 152).

Janet Kragel and her planning team were involved in

the initial inpatient planning for the Alberta Children's

Hospital and proposed a planning process model based upon

the belief that the "primary purpose of hospitals is to take

care of patients" (Kragel, et al. 1974, p. 4). Her writing

and participation in the planning process in Calgary helped

to counter the prevailing planning value system among health

professionals, that the health care environment was benign

or at best cosmetic. Although Kragel's approach to planning

has stepped beyond the functionalist values of the typical

facility planners, the potential of environment significance

still eludes her conception. "It is almost impossible to

design specific systems to meet the patient's

socio-psychological needs, such as dignity, identity, quiet

and so forth" (p. 17). In contrast, Alexander (1977)

suggests that this is the very heart of the contribution

which architecture has to make to society, through the

systems of shelter we devise for our activities.

The lack of environmental support for health recovery

was beautifully illustrated in the historical summary by

Thompson and Goldin (1975). Their own research found

patients "are always dreadfully bored" (p. 255) and a large window made a patient "feel less like a prisoner" (p. 271). As an example of the literature available a decade ago, they quote research into the hospital-patient relationship by Ernst Dichter, who concluded unequivocally that the "measurement of a successful hospital should not be how modern its's operating room and facilities are, but whether or not it provides the patient with what he most profoundly needs, security" (p. 272). In the field of health facility planning we need to develop an integrated environmental planning approach and a valid technique for making settings which provide personal security and recovery in relation to appropriate health care service.

Environmental criteria for children's health care

The first children's hospital was started 135 years ago by Dr. Charles West in the rooms of a private English house. An engraving of the ward space, a room which had once been a drawing room "shows a homely disorder of children, attendants, toys and potted plants" (Nuffield Foundation, 1963, p. 1). The engraver has taken great care to show a variety of settings available to children and adults (parents?) with an image which could not be duplicated in the single conventional photograph. The

variety of stimulus and opportunity for different activities shows that Dr. West had an "understanding of the child as a person" (p. 1).

There appear to be about 20 children in the illustration, with 8 beds in the drawing room around a table in the middle of the room. Children are sitting on each side of the table focused on a task and each other's activity. A girl is sitting on the floor playing and two other girls are standing watching a young child receiving an examination. There is small scale children's furniture, a walker similar to contemporary designs, and a child's sized rocking chair. Children in cribs are eating, receiving care from a man, two women are visiting a child in a crib, and another pair are talking near the children's table. There appear to be paintings or drawings on the wall behind the children's beds at a low height. The foreground is occupied by an ark with small toy animals gathered around on the floor. The scene suggests an image of a day care which has a few beds for children who are resting for a short period , but not isolated, and will return to the activity on the floor or the table shortly. This image is as simple a description of an environmental paradigm for children's health care which is still applicable to current health care objectives for healing and recovery.

The contemporary movement for the recognition of the importance of a child's experience in health care settings was initiated by Emma Plank (1971). Her writing, teaching, and leadership helped found the Association for the Care of Children in Hospitals. This group was instrumental in raising the consciousness of health care professionals, including planners, for the significance for the child's experience in a health care setting. She also raised the consciousness of health care workers for the quality of the settings which children inhabit for recovery and continuing individual development.

> When a child is hospitalized, the hospital has to take on tasks beyond its healing function, tasks which must be accomplished so the rhythm of life and growth can go on. The child's normal way of living involves relating to other children, to grown-ups and to play and learning. It has to be skillfully fitted into a day filled with diagnostic and treatment procedures. The test is complicated by the illness itself, of operations, and the possible nearness of death (p. 1).

The difficulty of achieving this sensitivity for each child's process for becoming well, within professionally dominated settings, is reported in a sociological study by Jean Cleary (1980). Beer's (1971) perception of the role of conceptual models, as filters for seeing what it is we hold

to be meaningful, is born out in the diaries which Cleary (1980) recorded the task dominated behaviour of nurses on a pediatric ward. A professional value system which is task oriented rather than patient oriented, carries over into planning activities. An outcome oriented planning process provides an opportunity to overcome these ingrained service and task oriented patterns.

One important observation that Emma Plank makes directly and Crocker (1977) and Lindheim, et al. (1972) imply is the value of the "spontaneous interaction among the children themselves" (Plank, 1978, p. 9). Environments which do not allow children to meet this fundamental need will complicate the healing and recovery process. Crocker (1977) stated four fundamental types of needs which must exist and be accessible by children for a satisfactory environment:

1. normal routines

2. consistent contact with significant people

3. preparation for experiences

4. interaction with a familiar and stimulating environment for exploratory behaviour and play (pp. 10-12)

It would be normal, in a conventional facility planning approach as described by Porter (1982) to assume that these environmental values were achieved through the practices of the staff without corresponding physical environmental

support, ie. design to specifically support these types of opportunities. In a conventional design process the service delivery systems would determine the ordering principles of the environment rather than the fundamental needs of the children for security and recovery. This is natural because the criteria and language for the delivery systems is familiar and quantitative, whereas the qualitative issues of an environment for healing and recovery are much more difficult to communicate. Lindheim, et al. (1972) published a description of their work at the Stanford Children's Hospital which contributed to our understanding of the qualitative issues for the hospital environment for children.

Initial dayroom design principles

Emma Plank's (1971) challenge to designers is simply stated, "we can do a great deal for spontaneous interaction by the grouping of the beds and the organization of their activities" (p. 9). The dayroom of the inpatient cluster was the focus of the spatial unit to allow for the children's spontaneous interaction. The spatial organization for the unit came from the model developed at the Stanford Children's Hospital, described by Roslyn Lindheim et al.(1974).

The most recent basic form for the nursing unit returns
to some of the characteristics of the open ward system
- a central space around which are clustered other
areas. The compact nature of the cluster has many
advantages for pediatric use. It affords visibility
from a central place and eliminates long corridors.
Even when in bed, the children can see the nurses work
area and feel that they are being cared for. Clusters
have a residential scale and encourages close personal
contact between patients and staff, and creates a sense
of place, providing the child with an identifiable home
unit within the hospital (p. 142).

Another consultant who was involved in the design of
the dayroom interiors and furnishing, Anita Olds (1978), has
published a set of three fundamental environmental needs
that children have:

1. the need to feel comfortable (secure)

2. the need to feel in control of one's self

3. the need to feel purposefully active

These three needs were incorporated into the planning and
development of the settings for the age-related dayrooms.

Age-related criteria

Lindheim, et al. (1972) published a set of criteria for children's hospital environments using the developmental needs of children at different ages as their basic premise. Planning the occupancy of the clusters by are, rather than diagnosis was hotly debated during the initial planning of the Child Health Centre. The age-related unit, in general, was not supported by Emma Plank (1971), who felt that the children of different ages provide another dimension of support because of their age variation. By the end of the planning phase there were both types of clusters in the Health Centre. Age-related criteria can be applied in several ways, but most important is the recognition of their necessity in relation to the importance of a positive experience of each child and his/her parent for healing and on-going development.

The criteria which follow were selected from Lindheim et al. (1974) as those applying directly and most prominently to the environment of the dayroom.

1. Infants

    Minimize the number of persons caring for an infant.

    Allow maximum contact with parent or nurse

    Provide places to develop motor skills

    Provide stimulating sensory experiences

    (pp. 19 - 28)

2. Toddlers and Preschoolers

    Allow adequate supervision at all times

    Exclude equipment apt to cause accidents

    Maintain links with home

    Accommodate both child and adult scale

    Promote autonomy and independence

    Provide challenges and stimulation

    (pp. 29 - 54)

3. Grade school children

    Provide continuity in acquiring and

    exercising cognitive and motor skills

    Encourage ability to live and work with others

    Provide opportunities to assume

    responsibility (pp. 58 - 75)

4. Family participation

    Provide internal facilities for parent participation

    Provide rest and relaxation spaces away from

    children (pp. 99 - 106)

Lindheim et al. (1974) show many of the ideal settings for a children's health care environment which were developed through the planning process for the architecture and the nursing care systems at the Stanford Children's Hospital. These criteria form the outline of a

project-specific pattern language in the sense of Alexander
(1977) and imply both physical milieu characteristics as
well as behaviour modeling for children and staff within the
cluster settings (Barker 1968). A similar catalogue could
be developed for a specific project to guide the
understanding and communication for the objectives of the
environmental planning. These models for clarifying the
age-related, developmental needs of children who were
expected to be admitted in the different types of clusters,
were used at several planning workshops during the
development of the inpatient area.

The Process of Investigation

A descriptive research design was selected as an
appropriate method of investigation for this type of
architectural evaluation. Zeisel (1981) and Sommer (1983)
provide a catalogue of approaches to environmental
evaluation which have been developed over the past 20
years. The approach of the research is a type of post
occupancy evaluation which was defined by Zimring and
Reizenstein in Sommer (1983) as having four characteristics:

1. it tends to focus on a single type of building

2. the investigator describes rather than
   manipulates or changes a setting

3. the work is always conducted under natural

   conditions rather than a laboratory

4. the major goal of the study is the application

   of the results to improve the same or similar

   settings. (p. 173)

The investigation was limited to selected information
and analysis which, in the investigator's judgement was
suited to the level of environmental feedback applicable to
architectural planning. Lofland (1971) proposes a
definition for qualitative analysis as "attempts to answer
the question...what are the characteristics of social
phenomena, the forms it assumes,and the variations it
displays?" (p. 13). The investigation was based upon the
premise that a unit of behaviour such as a behaviour setting
can be assumed to exist as a standing pattern and these
"objects" (Norberg-Schultz, 1963, p. 29) comprise the form
of the social phenomena. Following Barker's (1968)
integration of activity with place, in the behaviour setting
unit, the focus of the research is directed toward
describing qualitative environmental phenomena.

Definition of activity settings

Roger Barker (1968) defined a unit of behaviour based
upon standing, or recurring patterns of activity, which he
called behaviour settings. The same unit is often referred
to as an activity setting. An activity setting is a unit

along an increasing scale of observable behaviour from:
"reflex, actone, action, molar unit, activity setting to
group activity" (p. 18). Van der Ryn (1970), Bechtel (1977),
and Wicker (1979) have elaborated the behaviour setting
definition which Barker (1968) proposed and described in
great detail at the level of a whole community. Van der Ryn
(1970) considers behaviour settings as a "cultural
gyroscope" which allow us to predict the activity of others
and participate in familiar ways (pp. 14 -16). Bechtel (1977)
describes his experience using behaviour settings at the
scale of a housing complex and an individual house. Wicker
(1979, pp. 9-15) a student of Barker's, provides detailed
definition of the characteristics of behavior settings,
their boundaries and relationships: "A behaviour setting is
a bounded, self-regulated, and ordered system composed of
replaceable human and non-human components that interact in
a synchronized fashion to carry out an ordered sequence of
events called the setting program" (p. 12). The setting
program implies a recurring pattern of activity-and-milieu
following a sequence which is synchronized and has a
consistent character of initiation, leadership, and
self-discipline among the participants.

The activity setting was chosen for the unit of
description because it is focused on recurring situations,
is a more detailed unit of activity than is used as
functional criteria in architectural programming, is

familiar to health care professionals by describing the activities of the routines of a day and is characteristic of the changes of activity over the time and cycles of the day. Wicker (1979) stated that "the most important conclusion of this research [Barker and Wright 1951] was that the behaviours of children could be predicted more accurately from knowing the situations the children were in than from knowing the individual characteristics of the children"(p. 6). This conclusion supports the claim of Alexander (1979) "there is a fundamental inner connection between each pattern of events and the pattern of space in which it happens"(p. 92). The activity setting of Barker (1968) and the pattern language of Alexander (1979) have many similarities, as if they are two complementary models of reality, one precise about the quality of observable environments, the other prescriptive about the quality of intended environments.

Observation

Barker (1968, p. 29) distinguished the structural attributes from the dynamic attributes of a behaviour setting. He suggested that the former were perceived directly and the latter indirectly apprehended. The forces which relate these types of attributes are 1) physical, architectural planning and furnishing; 2) social, the relationships of people; 3) physiological or biological; and 4) responses to the non-psychological milieu. The

structural aspects of the settings observed in this research project were limited to the events of one space, over the course of different days, according to the sampling schedule. The dynamic attributes were observed and recorded in terms of the "molar actions...[which] involve a whole person...[and] are characterized by their purposefulness" (Fassnacht, 1982, p. 167). From this perspective a format was developed following the definition of Fassnacht (1982) for "event sampling...refers to the precise verbal description of a single behavioural event, that is it involves capturing behaviour in a verbal system" (p. 90). Fassnacht (1982) proposed eleven rules for the "content of a specimen record" (p. 172) which were used to develop the observational notes.

Data analysis

The organized compression of the event sampling is referred to by Miles and Huberman (1984) as data reduction. This is a process of "selecting, focusing, simplifying, abstracting and transforming the data which appear in written-up field notes...through selection, summary or paraphrase, being subsumed in a larger pattern"(p. 21). This process of reduction and seeking relationships for meaning in larger patterns involves a number of steps where the display of the content is part of the process of analysis. Miles and Huberman recommend the design of matrix

displays to suit the needs of the information content and to "keep the words and the quantitative data together" (p. 21).

Setting descriptions

The third step in Alexander's (1977) seven part format for the writing a pattern is a "description of a recurring pattern or problem" (p. x). The patterns of Alexander's (1977) proposal cover the complete scale of building from "independent regions" to "things from your life" (pp. xix - xxxiv), in an integrated hierarchy. Moore, Lane, Hill, & Cohen (1979) followed the pattern language format to research and propose the environmental patterns of children's day care facilities. Underlying the selection of the settings or patterns for a theoretical day care facility was a conviction about the environment which children, in particular, experience as an essential stimulus to their cognitive and psychological growth.

This is perhaps the single most important step in the description of prescriptive settings is to determine the settings which ought to be available. In an actual project the planning team must include the members of the organization responsible for clarifying the vision of their intended environment, as well as those who will carry it out on a daily basis.

Chapter 3 METHOD OF INQUIRY

The methodology for this research project was developed from the theory of ecological psychology developed by Roger Barker (1968). His approach to describing behaviour settings was applied to document the activities of children in a dayroom, which were then evaluated in comparison to the model of activities anticipated when the space was designed. The architectural configuration of the dayroom, in the cluster, act as the apparatus for the research. The subjects are the children admitted to the cluster. The observation approach was developed to describe the purposeful activity of the dayroom occupants. These data were analyzed to identify the recurring activities according to the time of day, age, social interaction, and location. The recording and display of the data were facilitated by the use of a computerized spreadsheet program.

Descriptive Research Design

Fassnacht (1979/1982) distinguishes between two approaches to observation research which are called ethological and ecological. The ethological approach concentrates on describing individual units of behaviour, whereas the ecological approach concentrates on the behaviour in relation to the surrounding milieu, which

includes the control mechanisms operating within the unit.
The ecological approach developed by Barker (1968) was more
applicable to questions related to the architectural task
for planning environments because of the broader operational
scope. Barker's (1968) method for identifying and
describing an ecological environment for human behaviour was
adapted by the investigator in consultation with the thesis
committee, to suit the conditions and objectives of this
case study. The purpose for the descriptive design of the
case study was to identify the ecological-behavioural
patterns which occur in the dayroom and evaluate their
contribution to providing effective natural and normal
experiences for children as part of their hospitalization.
There were two phases for this research design.

Systematic description

The initial task of the research design was to
systematically describe the children's natural activity in
the dayroom. The investigator was a non-participant
observer in the dayroom. The observation period included
sample times from all the hours between 8 am and 10 pm on
weekdays and weekends over a three month period. The
observations were limited to the children's activity and
their interaction with each other and grown-ups. A
descriptive format was developed for collecting data which
was transferred to a matrix for analysis.

Analysis

The second task was to analyze the descriptive data and determine the frequency of recurring behaviour in the dayroom. An analysis technique was used to cluster the descriptions of similar activity. The raw data were analyzed by: 1) time of day, 2) age, 3) type of social interaction, and 4) location of the activity. Clustered similar activity descriptions were ranked by frequency and were proposed as the recurring behaviour settings of the dayroom. Descriptions of activity settings were composed from these data.

The Architectural Context

The site chosen for the case study was the dayroom of cluster 'N'. The dayroom was a semi-private area, accessible from each of six double rooms, and the staff area called the galley. It was possible for the investigator to be a non-participant observer sitting on the perimeter, in a quiet area of the room. Figure 4 illustrates the floor area of the dayroom with the surrounding sliding glass doors of the bedrooms and the courtyard. A galley, with an inward swinging door serves as the food preparation and nursing administration area for the cluster. The dayroom and the galley have not been altered since the original construction so are representative of the initial design quality.

Figure 4

Plan of the dayroom in Cluster N.
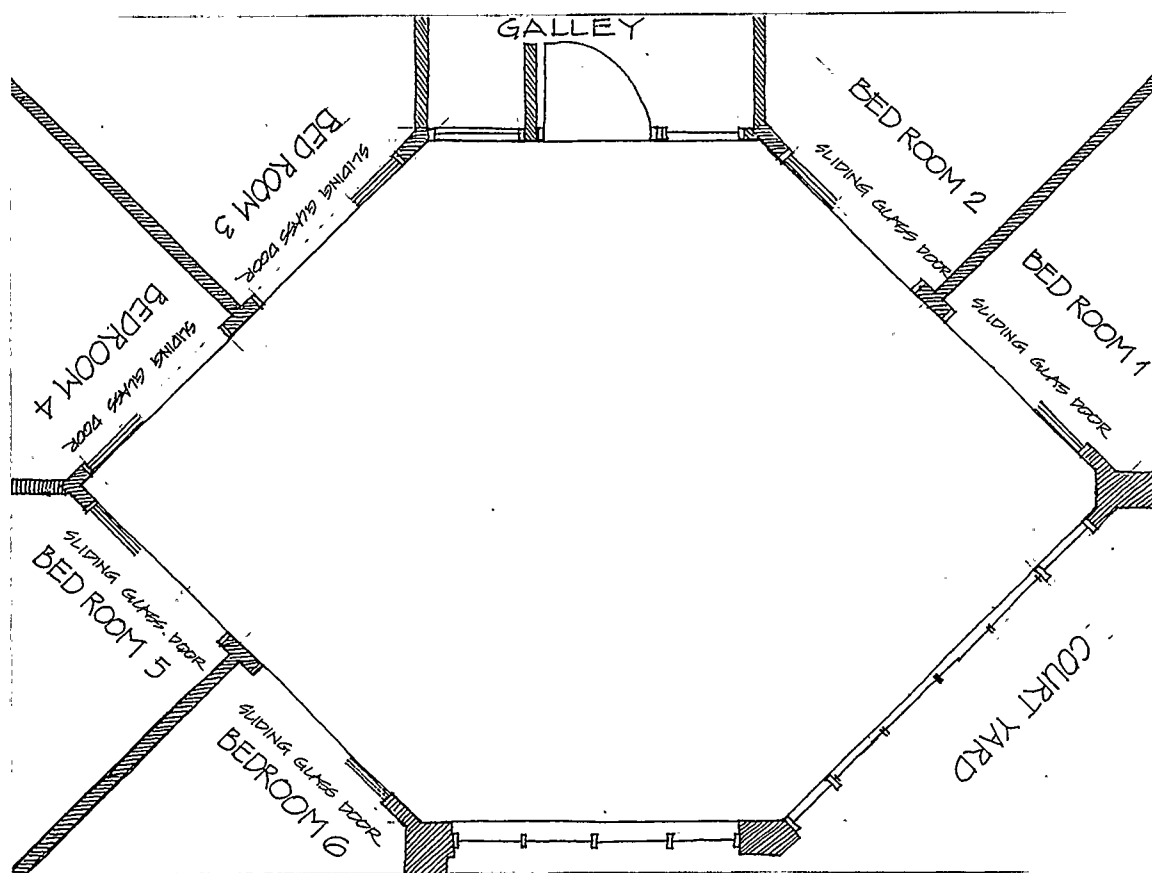
The architectural contract provided for an unfurnished shell with service outlets built-in for the location of the television and other appliances. The furnishing contract determined the type and quality of storage cabinets, one location for supplies was fixed on the wall outside the galley, the other was on the floor beside the television. Two small conference tables of different sizes were used as the central table in the room. Stacking chairs were used

around the table. A child sized table and set of chairs was also supplied. A large console television and soft couch were acquired through donations. Moveable furniture, such as lounge chairs, a lazy-boy chair, a rocking horse and stools were part of the inventory which floated between the rooms and other clusters.

Subjects

The subjects were those children admitted to N cluster who chose to be in the dayroom during the observation sessions. The subjects are identified as <u>dayroom participants</u>. The larger group of children who were hospitalized in the cluster are described as <u>cluster occupants</u>.

Age groups

Five age groups, which corresponded to the groups used during the initial planning, were defined to describe the subjects. The coding in Table 1 shows the coding used to designate girls and boys according to the five age groups. Cluster N was a backup for admission of infants when the regular infant clusters were full.

Length of stay.

A second descriptive category for each subject identifying the length of stay was important as an indication of the duration of their hospitalization. This measure was incorporated into the code for each subject by

Table 1
Subject Age Group Definition

	Gender/ Age		
Group	Code		Definition
Infant	FI	MI	birth - 11 months
Toddler	FT	MT	12 mo - 2 yrs 5 mo
Preschool	FP	MP	2 yrs 6 mo - 5 yrs 5 mo
School Age	FS	MS	5 yrs 6 mo - 11 yrs 5 mo
Adolescent	FA	MA	11 yrs 6 mo - 18 years

adding the numeral of the day of stay to the letters indicating gender and age. For example a male preschooler was in his fourth day on the cluster was described as: MP4, in all three levels of subject description.

Protection of subject privacy.

The anonymity and privacy of the subjects was assured by the use of the three part code indicating the age, gender and day of stay of each cluster occupant. This simple code, with the bed/room address, was sufficient to distinguish the different children during the observation interval and was

the only written description of the child's identity. When
a parent was identified "M" or "F" was added to the child's
code to indicate mother or father.

A notice was posted in the dayroom during observation
sessions to make parents aware of the research project. The
investigator explained the nature of the project to parents
who were interested.

Observation Schedule

At the beginning of the observation schedule an
arbitrary two-hour session was scheduled to observe the
natural routines of the cluster. The meal times provided
the normal rhythm for each day. Nap times, family visiting
and therapeutic programs provided a secondary variation to
the normal pattern. When these natural partitions in the
activity of the day were identified the observation times
were adjusted and scheduled in relation to the rhythm. Four
periods of the day were identified during the early
analysis: morning, midday, afternoon, and evening.

Table 2 shows the four subdivisions of the day, actual
days observed for each subdivision, the 23 observation
sessions and the duration of the observation in each part of
the day. The smaller number of morning observations
reflects the routine quality of that period of the day which
became apparent in the early stages. The days chosen for
observation were random with the condition that an attempt

was made to take samples from several weekdays and both days
of the weekend. On several occasions an observation was not
carried out because there were only one or two children in
the cluster who were ambulant, with very few dayroom
participants.

Table 2
Observation Schedule

TIME	OBSERVATION DAYS	SESSIONS	20 MINUTE INTERVALS	TOTAL TIME
MORNING 800 : 940	TMWS	4	16	5h 20m
MIDDAY 1000 : 1340	WMWTTSS	7	42	14h
AFTERNOON 1400 : 1700	WMTWSS	6	33	11h
EVENING 1720 : 2200	TMTWTS	6	40	13h 20m
TOTAL		23	131	43h 40m

Development of the Instruments

The data collection instruments were developed through
a series of trials in the actual setting and evaluation
reviews with the case study thesis committee. The process
for developing the data collection instruments began with
an initial visit to the cluster to observe the setting and
assess the opportunities for collecting data as an
uninvolved participant. An electronic recording device was

tested and rejected because the technology required the use of predetermined categories of activity and it was not an unobtrusive technique. Several versions of note taking formats and interval times were tested before the formal data collection began.

The initial plan for the research design was to evaluate the activity settings in two different clusters, one age-related and one diagnosis-related. Data were collected from two clusters but as the initial analysis process revealed the magnitude of the task ahead, the scope of the case study was reduced, in consultation with the thesis committee, and only information from one cluster, with age-related subjects, was considered.

Dates of the study

Trial observations were conducted during May and June, 1985, approvals were received in August and the census data collection completed by December of that year. The observations in 'N' cluster took place between September 16 and December 12, 1985.

Data Collection Method

Two types of data were collected. The first was obtained from the daily admission records of cluster N, the second by direct observation of the activity in the dayroom. The daily admission records were used to describe

the occupants by age, gender,and length of stay for each day of the study. The observation data were used to describe the occupancy of the dayroom, the molar activity, interaction, and the variable characteristics of the physical setting.

Cluster Census

The first level of population information was collected from the Health Centre census data in order to describe the overall occupancy of the cluster during observations. These data are the daily record of the admissions, transfers and discharges from the cluster. The census is taken at midnight, that is at the end of the 24 hour period. A Cluster Census Schedule was developed by the investigator, to compile the daily record of the occupancy changes in the cluster between August 18 and December 26. The initial objective was to count admissions for a two week period before and after observations as a way of describing a normalized occupancy pattern in the cluster. In fact the cluster was temporarily closed for Christmas, five days after the last observation.

The Cluster Census Schedule was designed to show the daily census distribution of the cluster. The data on the daily Census Sheet, produced by the Admissions Department, was coded to identify the gender, age group and day of stay for each patient. These data in coded form were compiled on

a matrix display organized with a line for each day and the columns representing each of the twelve beds, that is the address of each patient.

The format was refined as the data were collected and the final version was a spreadsheet display. The first iteration showed the admissions, transfers, and discharges for each day. The second described the pattern of the lengths of stay. Subsequent versions were used for manual analysis.

Cluster Occupancy Form.

The coded patient description used for tabulating the census was also used to describe the cluster population on observation days. This step in gathering data was necessary to determine the code and location for each patient in the cluster. The Nursing staff provided the age and location description of the children in each room at the beginning of the observation session. The location, or address of the child's bed, was used as an identifier during the observation session.

Observation Field Notes

The format for the collection of observation data was divided into four sections. The top of the page had space to record the administrative information for time, date, sequence and day of the week. The next section was designed to record environmental data. The main section of the page

was divided into 12 parts with room for notes on each
possible occupant. The bottom of the sheet had room for
additional notes. (Appendix 1)

A field trial was conducted to test the observation
method. The observational units were composed of two
aspects: content and timing (Fassnacht 1979 pp. 64-67).
Several time intervals were tested. Moore (1983, p. 2) used
a 10 second interval to study the spatial definition of
behaviour settings in several day care centres. This short
interval was not appropriate for collecting data to
represent the events of a whole day. A series of intervals
from 10 to 30 minutes were tested and a twenty minute
interval was chosen in consultation with the thesis
committee. The selection of activity categories were
developed from general principles for describing children's
molar activity (Murray & Zentner, 1975, pp. 20-196). Each
of the 12 spaces for notes describing the activity of the
children had a line for each category of the description of
molar activity.

The investigator's strategy for describing the
children's behaviour was to judge the predominant character
of the child's activity over the 20 minute time interval.
The following ten categories were used as a format to
describe the most conspicuous activity of the child. If a
category did not apply to the activity of the child in the
dayroom the line on the descriptive format was left blank.

In many cases the general notes apply to the collective activity of a small group and are necessary to integrate with the description of an individual child in order to appreciate the context of the behaviour.

1. Location in the cluster: Each child could be in one of three places, his/her room, off the cluster or in the dayroom. This description often identified a child's previous location if arriving in the dayroom, or destination if leaving.

2. Focus in the environment: If it was possible to determine the child's prevalent point of attention in the environment around him/her during the interval, this was added to the description. For example if a child was assembling a puzzle for most of the interval time then the puzzle was the focus.

3. Molar activity: This was a general description of the child's purposeful behaviour, taken as most frequent or conspicuous, over the duration of the interval. This category is augmented by the descriptions in other lines of the field notes.

4. Interaction with others: This line indicated the obvious shared activity with other individuals during the interval. This was the most difficult unit of behaviour to determine when there was a considerable amount of activity or significant contact between children and grown-ups of a short duration. When there was a high level of

communication or reciprocal action among several of people, a judgement was made about the type which was predominant. If the mutual activity was of a short duration it was not included in favor of the one which was prevalent across the time boundaries of the period. A category of solitary activity was included here, in the sense that interaction was generally absent from the activity.

5. Media used: When a child was engaged with an object as media within an activity, such as a puzzle or a book, this was identified.

6. Furniture: When children were using furniture to aid or limit their activity the type of furniture was identified. The floor was included when it was being used specifically as part of the child's purposeful activity.

7. Mobility: This category described the character of the child's ambulation, that is, whether they were walking or crawling, including the tempo with which they carried out this movement.

8. Verbalization: The characteristics and direction of conversation was indicated.

9. Transit route: When the children were travelling through the dayroom their route and destination were noted.

10. Miscellaneous comments: One line was left for additional notes which would apply to the activity of each child.

Physical Variables of the Dayroom

These data were collected on the Observation Field
Notes Form for each interval as well as a separate floor
plan, similar to Figure 4, for the beginning of each session
(Appendix 1). The physical character of the setting for
each interval was described in two parts, a small chart and
a floor plan to record the position of the doors, the
position of the occupants and the furniture.

Position of the room doors.

At the beginning of each 20 minute interval the
position of the sliding doors between the rooms and the
dayroom was recorded. This was one variable in the physical
setting which could be controlled to adjust the degree of
privacy in the room. The bed curtains and the lights were
other elements which could be varied but were generally done
in conjunction with the doors. The opposite is true in some
cases for children who were ambulant but restricted to their
rooms to maintain their isolation for health reasons. The
transparency between the room and the dayroom provided
essential stimulation for the room-bound child.

Dayroom Furniture Location.

A Dayroom Floor Plan was attached to the top sheet of
the Observation Field Notes package for each observation
session. At the beginning of each session a freehand
drawing was made showing the location of the furniture at

that time. When there was a significant relocation the change was noted in the field notes for that particular interval.

Method of Analysis

The purpose of the analysis of the data was to determine the characteristics of the recurring activity and its relationship with the physical aspects of the dayroom environment. Although there were quantitative aspects to this question, the primary interest of this case study project are the qualitative characteristics of the activity settings and their programs. Miles and Huberman (1984) propose a three stage process for qualitative analysis which corresponds to the procedures used in this study.

1) Data reduction

Data reduction refers to the process of selecting, focusing, simplifying, abstracting, and transforming the 'raw' data that appear in written-up field notes...through selection, through summary or paraphrase, through being subsumed in a larger pattern...keep[ing] the numbers and the words you use to derive the data together.

2) Data display

We define data display as an organized assembly of
information that permits conclusion drawing and action
taking....better displays are a major avenue to valid
qualitative analysis...the creation and use of displays
is part of analysis...Designing the rows and columns
of a matrix ...deciding which data, in which forms,
should be entered in the cells are analytic
activities.

3) Conclusion drawing and verification

The [conclusion for]...qualitative analysis is
beginning to decide what things mean, is noting
regularities, patterns, explanations, possible
configurations, causal flows and propositions. The
meanings emerging from the data have to be tested for
their plausibility, their sturdiness, their
confirmibility - that is their validity. (pp. 21-22)

Data Reduction and Display

The procedure for data reduction was initiated in the
design of the observation field note format which was
intended for a spreadsheet with columns for each descriptive
category. Each row was used for the data describing the
activity of an individual child in a particular interval.
The Field Note Description File was written in a
chronological order as the observation sessions occurred.

There were six columns for administrative and coding data and ten for descriptive data. Four stages of the analysis were conducted by sorting the basic spreadsheet (Appendix 3).

Analysis of the census, occupancy and participant data.

Spreadsheets were used to display the cluster census data which enabled several stages of data reduction and analysis. The descriptive statistical summaries were compiled by analyzing this display, identifying the number for each category and counting the results. Similar spreadsheets were developed by the author for the analysis of the cluster occupants and the dayroom participants.

Analysis by time of day.

The first objective for analyzing the activity descriptions was to compile the individual descriptions, that is each row, according to the time intervals. The four periods of the day were used to give this merged data some structure which related to the natural daily rhythm of cluster activity. The administrative data stayed with the descriptive data. Sub-groups of descriptive lines were defined for each 20 minute interval of the day. This display of Interval File data was analyzed and the summary is reported in the following chapter.

Analysis by age groups.

The second objective for analyzing the raw data was to examine the activity descriptions for each child in relation to his/her age group. This was accomplished by selecting and grouping the lines of descriptions in the Interval File for each of the five age groups. This display was the Age File and the descriptions of each child's activity was grouped by similar age for each interval of the day. It was subdivided into five parts, one for each age group. The analysis of this display showed the prevalence of age related activity.

Analysis of social interaction.

The third objective for analyzing the material in the descriptions was to examine the activities in relation to the type of shared activity. This was accomplished by an analysis of the field notes in the interaction column. The Interval File was used as a base file to maintain the time of day relationship of the activities within the different observation sessions. The resulting display and analysis of the data showed the activities related to the four types of interaction.

Analysis of activity by location in the dayroom.

The fourth objective for analyzing the observation notes was to describe the activity in relation to the apparent zones within the dayroom. Because the furniture

locations were very stable in the room it was possible to relate the activity descriptions to consistent places. This was done using the compacted description of activity for each of the four time periods of the day. The analysis of this display showed there were three consistent zones of activity which changed shape during the day.

Multiple Floor Plans

Sketch plans showing the furniture arrangement at the beginning of each observation session were superimposed for each of the four periods of the day. A composite plan was drawn showing the accumulative trace of the furniture. For example the composite plan for the afternoon indicates the positions of the objects for each of the six afternoons on one drawing.

Activity Analysis

The four types of data description: by time of day, age, interaction, and location were all analyzed to describe the characteristics and prevalence of the dayroom activity. The method used was described by Krippendorff (1981) as clustering which "seeks to group together variables which share some observed qualities" (p. 115). Each of the four sub-sets of the observation field notes were analyzed for the prevalent descriptive characteristics. This was a line by line comparison for similarities in the activities

described. Similarities in the descriptive content were the criteria for the formation of clusters. Each subdivision of the data: time, age, interaction, and location; was analyzed independently for the identification and number of similar activity descriptions. The level of discrimination for what is selected and reported in the results was determined in each case according to the content of the descriptions. The obvious limitation in this process is the use of a single observer and analyst.

This methodology of activity description and analysis is labour intensive and time consuming because the descriptive notes contain such a large amount of information. The process of data analysis could have been extended to examine other aspects of the children's activity and health care but the environmental focus of this study has confined the examination of the data to the aspects described.

Chapter 4   RESULTS

The results of the case study observation and analysis
are presented in three stages. First, the population
information on the census in the cluster and the
participation in the dayroom are presented. The results of
the content analysis follow in five sections: 1) time of
day, 2) age groups, 3) social interaction, 4) location and
5) physical variables. The third stage of the results are a
consolidated description of the recurring activity patterns
of the dayroom of cluster N which were observed during the
study. These consolidated descriptions are proposed as the
children's activity settings of the dayroom in cluster N.

Population Descriptions

The population data for the cluster during the period
of the study are presented at three scales. The first is
the description of the whole cluster. The second describes
the cluster occupancy on days selected for observation. The
third is the population of subjects who were present in the
dayroom and are included in the observations.

Cluster census.

Census data describing a four month period of admissions were analyzed to describe the actual occupancy of the cluster during the period of the observation study. Table 3 shows the synopsis of the data for the time period

Table 3
Cluster Census Summary

Number admitted to N cluster over 122 days	230
Mean daily census over the study period	9.39
Number of patient days over 122 day span	1123
Occupancy percentage over the study period	83
Median number of occupants in a given day	9
Mean length of stay (mLOS)in days	4.88
Median length of stay in days	2
Percentage admitted for three days or less	53

of the study. The figures indicate the predominance of a short length of stay and a high turn-over in the daily population of the cluster. The difference between the mean at 4.88 and the median at 2 days length of stay indicates a large number of short stays and a small number of long stays. Children who are admitted for three days or less account for as many patient days as the six children who had the longest lengths of stay.

Table 4 indicates the distribution of the census data by age, gender, and length of stay. The distribution of admissions during the study was skewed toward the younger

aged children. Toddlers and preschool aged children were the largest groups of occupants. The long stay group were four school age boys who had a length of stay over 26 days, and one was in his 86th day, when the census of the study period was concluded. Boys were more prevalent than girls in the four older age groups, especially in the toddler age group. The first four ranked order of the prevalence of children from the ten age-groupings were toddler boys (40),

Table 4
Cluster Census Summary over the 4 month Study Period

Age Group	Total		Girls		Boys	
	N	mLOS	N	mLOS	N	mLOS
Infant	54	3.61	30	3.97	24	3.17
Toddler	64	4.58	24	3.88	40	5.00
Preschooler	63	4.03	27	4.37	36	3.94
School age	37	9.32	14	5.14	23	11.87
Adolescent	12	3	4	3.50	8	2.75
Total	230	4.91	99	4.17	131	5.35

N = number of children admitted, mLOS = mean length of stay

preschool boys (36), infant girls (30), and preschool girls (27).

Cluster Occupancy on Observation Days

Table 5 shows where the children admitted to the cluster on observation days·chose to spend their time. The figures are an average of the observation intervals of the four periods of the day. The standard deviation (SD)

indicates the variability of the average occupancy in a particular location over the 20-minute time intervals of that period of the day.

The morning period (mean SD=1.85) has the highest variability in the locations of children in the cluster and the midday period (mean SD=0.76) the lowest. During the intervals where the dayroom was observed the children spent the majority of their time in their rooms (56%) and less

Table 5
Patient Locations During Observation Days

| | | Number of Children | | |
	Census	Dayroom	Bedroom	Out
Morning N=16				
mean	10.69	4.06	4.94	1.69
SD	1.79	1.91	1.86	1.87
Census %		37.98	46.21	15.81
Midday N=42				
mean	9.68	2.59	5.85	1.24
SD	.70	.91	1.06	.36
Census %		26.76	60.43	12.81
Afternoon N=33				
mean	10.29	3.21	5.19	1.89
SD	1.37	1.38	1.41	.49
Census %		31.20	50.44	18.37
Evening N=40				
mean	10.69	2.09	7.17	1.43
SD	1.11	1.27	1.17	.72
Census %		19.55	67.07	13.38
Average over a day				
mean	10.34	2.99	5.79	1.56
SD	.41	.74	.86	.25
Census %		28.90	55.99	15.11

than a third of their waking hours in the dayroom (29%).
The high times of dayroom use was in the morning (41.64%)
and afternoon (31.07%) periods. The average number of
children in the dayroom over all the observation intervals,
N=131 was 2.99, varying from a low of 2.09 in the evening to
4.06 in the morning.

If a model of occupancy in the dayroom were proposed
from the data in Table 5 it would suggest the following: an
average of four children with variation in the numbers in
the morning, between two and three over the midday period,
up to a third of the children in the cluster during the
afternoon period, and the fewest number averaging only two
in the evening hours.

Dayroom Activity Descriptions

The results of the dayroom activity analysis are
presented in four parts. First, the activities are
described according to the four time intervals of a typical
day. The same raw data were analyzed and the activities of
the four age groups are described. Next the activities of
the four types of interaction are described. The conclusion
of this section describes the recurring activities in the
three locations within the dayroom.

Activity Structure During the Day

The activity of the dayroom was grouped into four time periods, morning, midday, afternoon, and evening. The tables for each time period are similar in format. A brief synoptic summary of the recurring activities are ranked in the first column. These activity summaries are ranked according to the number of occurrences over all the intervals, shown in the second column. The third column shows the number of participants in all intervals when the activity occurred. This tally does not effect the ranking but gives a reflection of the density, or number of children involved in the activity. In all but the age related descriptions, the ages of the participants is shown in a fourth column.

Morning Activity Description

The morning activity shown in Table 6 was recorded in four periods including one weekend day, between 8 and 10 o'clock. Although children may have been awake earlier they did not come into the dayroom until after eight o'clock. Ambulant children took a stretching walk and visited with the nurses in the galley. The older children played before eating, while the younger ones sat quietly, watching the unfolding activity of the morning. Breakfast was the highlight of these first hours. Younger children sat at the little table, carefully watching each other. Bigger

Table 6
Morning Activity Ranking N = 16 | OCC | IP | AGE

Activity	OCC	IP	AGE
eating breakfast at both tables	6	25	ITPS
sitting, quietly watching activity in room	4	15	ITPS
exploring, walking around, playing	3	8	TPS
scenario playing on the floor with small toys	3	4	TS
drawing or doing homework at the big table	3	3	S
playing on table, crib, or bed with small toys	2	5	TP
held in mother's arms watching people	1	1	I
drinking and playing with toys in the playpen	1	1	P

N=observation intervals, OCC=occurrences
IP = interval participants, Age = age group

children were seated at the regular table and were joined by mothers or nurses who were helping infants eat. A games or make-believe imaginative fantasy was played on the floor in the interval before a scheduled morning event. Morning treatment schedules usually created the change in activity for the children from their own pace to that of the care givers.

Midday Activity Description

The midday activities were observed on seven different days, including two weekend days. Weekday mornings were busy with treatment schedules, waiting for surgery or waiting to go to the playroom. When children were unable to go to the playroom a volunteer came to see them in their room or in the dayroom. Children were often left on their own in a high chair to watch or play with toys on the tray.

On weekend mornings Saturday was occupied with television
cartoons and Sunday was a day when families were visiting in
the morning and over lunch.

Table 7 shows the midday activities ranked in the order
of frequency. The relatively low number of occurrences for
lunch (4) and a high number of participants watching TV (15)
indicates the tight weekday scheduling of both these
activities at noon. The afternoon nap was the usual end to
this portion of the day's activity.

Table 7

Mid Day Activity Description N = 42	OCC	IP	AGE
sitting quietly watching activity chair/crib	16	32	ITPS
playing with craft, toy, board game w'chair	7	14	TPS
active play, exploring, pull toy, scenario	5	11	TS
eating lunch at either table	4	26	TPSA
sitting or lying on the couch watching TV	4	15	ITPS
being held rocking, giving a bottle	2	2	I
sleeping or playing in a baby carriage	2	2	I
participating in an assessment with physician	1	1	T
upset and fussing at the big table	1	1	T
preparing for discharge	1	1	T

N=observation intervals, OCC=occurrences
IP = interval participants, Age = age group

Afternoon Activity Description

This segment of the day began after the nap time and
there was no natural break until after supper at seven
o'clock. Afternoons were observed on six days including two
weekend sessions. Often new children and their mothers

arrived during this segment of the day and because they were not yet included in the play room routine off the cluster, often chose to explore the dayroom.

Table 8 shows that as children returned from the playroom they tend to play in one of two modes. In 16/33 intervals 56 children played quietly with small toys while in 11/33 intervals 26 children were active in their choice of activity. During the middle of this time period the staff The evening meal was much more relaxed than lunch and took longer to complete. It was not unusual for physicians or residents to visit children during this period of the day.

Table 8

Afternoon Activity Description N = 33	OCC	IP	AGE
playing quietly, small toys, watching	16	56	ITPS
active play, exploring, talking, visiting	11	26	TPS
eating supper at either table or h'chair	7	28	ITPS
in transit, to/from playroom, or walkabout	7	10	TPS
sitting on couch watching TV	5	10	TPS
being carried or held while upset, restless	4	5	IT
transferred to his room for supper	1	1	S
playing in playpen watching siblings play	1	1	T

N=observation intervals, OCC=occurrences
IP = interval participants, Age = age group

Fathers and siblings arrived during or after supper. There was an evening play time in the playroom which marked a natural transition to the rhythm of the activity in the dayroom for this segment.

Evening Activity Description

The evening portion of the day from seven until ten
o'clock was observed on six different days including one
weekend. Table 9 summarizes a complementary activity
pattern to the afternoon, with 25/66 playing fairly actively
and 13/66 children winding down in a quiet manner. Siblings
who came with their parents brought a lot of stimulation and
activity which the patients often responded to positively.
Family departures often prompted a demonstration of
separation anxiety, even from unrelated children who were
friends for the evening. The last hour and a half was often
a very quiet peaceful time, with a few children up playing
together with the TV off and often a nurse read a story. It

Table 9

Evening Activity Ranking N = 40	OCC	IP	AGE
active play, rocking horse, other children	8	25	TPS
sitting quietly, visiting, listening to story	8	13	ITPS
craft activity with parents	4	6	PS
bedtime snack, late supper	4	6	TPS
sitting on the couch watching TV	3	12	ITPS
sleeping on Mom's shoulder	1	1	I
in transit to the dayroom	1	1	S
getting ready for bed, leave for room	1	2	IP

N=observation intervals, OCC=occurrences
IP = interval participants, Age = age group

was one time when the laughter of children and the visiting
around the couch, warmed the room. In the later part of the
evening the older children and their parents would use the

couch or pull up a circle of chairs. Children and parents observed a bed time routine which closed the day, with the exception of parents sensitive to the needs of children to sit a little longer, share a quiet cuddle or ride the rocking horse one last time.

Comparison by Time of Day

Table 10 shows a comparison of the first three ranked activity analyses in terms of occurrence, for the four periods of the day. This comparison shows the most frequently chosen activity opportunities available in the dayroom. Each cell of the matrix of Table 10 indicates the molar activity type, the location or furniture, the age-group, the percentage of the participants for that period of the day, and the prevalent interaction.

Table 10 describes the most frequent activity over the course of a typical day. The working hours of the day were quieter than the active social time in the evening. The quiet, watching, and sitting activity of the first three quarters of the day involved up to a third of the participants. The active exploration moved up in the ranking as the day developed and was stimulated by the presence of siblings, especially if they were the opposite sex. There was less staff traffic in the afternoon and evening which freed the transit area for children to explore. Television was absent from this synopsis because

Table 10
Activity Comparison by Time of Day

	Rank order of Prevalent Activity		
TIME	first	second	third
MORN N=16	eating talking both tables I T P S 46% peers	watching mobile *chair* I T P S 27% solo	exploration play transit open T P S 13% solo, parallel
MID N=42	sitting watching mobile *chair* I T P S A 30% solo	crafts, game mobile *chair* T P S 13% parents	active explore transit toy corner T P S 11% solo
AFT N=33	playing quietly table, couch I T P S 41% peers & parents	active explore toys, transit T P S 26% peers & family	eating talking tables, *chair* I T P S 20% parents
EVG N=40	vigorous, play transit, horse T P S 36% family & sibs	sitting couch ITPSA 19% family & staff	craft, games big table, couch P S 17% parent & peers

chair = wheelchair, high chair or stroller

the noon cartoons were the only regular programs, otherwise
when the TV was on, typically, the children, especially the
younger ones, would monitor the screen while doing something
more focused.

Dayroom Activity Description for each Age Group

Cluster N was occupied by children in five age groups
with all but the adolescents well represented in the use of
the dayroom. Following the description of each age group,
their most frequent activities are ranked.

Infants Day Room Activities

Infants were in the dayroom, in four distinct periods of the day, when they were likely to be awake or active. There were 25 infant interval participants who were in the dayroom during 15 of the 43, 20-intervals of the typical observation day. Table 11 shows that a child's Mother initiated much of her infant's participation in the dayroom. Although the data did not describe the mother's activity it is possible that she chose to sit with or feed her child in the dayroom, for her own needs. There were two cases when infants were alone and in one, a nurse spent some time with the child. This suggests that if there is not a parent with the infant, who is able bring them into the dayroom, the child would spend most of his/her time in the room.

Table 11

Infant Activity Ranking N = 15	OCC	IP
mother holding child, bottle, cuddling, talking	11	16
lying in baby carriage, sleeping or playing	4	4
mother helping child eat in h'chair and playing	3	4
sitting in high chair watching activity in room	1	1

N = intervals when activity is present
OCC = number of occurrences, IP = interval participant

Toddler Day Room Activity Description

There were 124 toddler interval participants who were present in the dayroom in all but three of the observation intervals until 9 o'clock in the evening. Table 12 ranks the frequency of the toddlers activities into ten types. Toddlers curiosity and need to watch the activity of others (38/131) whether alone or with parents was their dominant use of the dayroom. For half this number (19/131) their need was satisfied by playing actively and exploring. Toddlers spent their time either alone or with an adult, and only on a few occasion would they engage in active social play with other children.

Table 12

Toddler Activity Ranking N = 36	OCC	IP
sitting quietly h'chair, crib, parents, solo	16	38
active play exploring room, toys, equipment	11	19
sitting quietly, small table, parallel , chat	8	24
sitting with others on couch, TV, story, visit	7	11
playing, eating, big table, parents, or nurse	6	7
playing on floor with toys, alone, at toy box	5	11
playing with toys, playpen, watching the action	5	5
sitting on Mom's lap watching, having bottle	4	7
riding on the rocking horse alone, with parent	3	3
trio playing tag and tickling on the couch	2	6

N = intervals when activity is present
OCC = number of occurrences, IP = interval participant

Preschool Day Room Activity Description

There were 115 preschool interval participants in 34 of
the 43 intervals in the observation day. Table 13 shows a
variety of focused activities which demonstrates that
preschoolers will choose to engage in a specific activity.
They were able to choose a craft, game or toys to play
with. The preschoolers were generally on their own until
four in the afternoon. Only 20% of the preschoolers were
described as playing actively with 80% of their activity
quiet or passive. On weekends parents were with their
children in the morning. One creative parent exercised her
opportunity for leadership in the dayroom and organized a
whole morning program of craft activities for her son which
contributed to the pleasure of other children.

Table 13
Preschool Activity Ranking N = 34

	OCC	IP
craft, game, parent, or solo watching in *chair*	18	23
sitting on couch, story,TV,game parent or alone	13	20
crafts,playdough,puzzles,eating,watching big table	12	25
mobile active play, exploring,small toys	12	16
quiet activity at small table,eating,chat,play, TV	7	16
floor play with toys, with others, toy box	5	7
riding the rocking horse with enthusiasm	4	5
playing with toys in the play pen	1	1
playing at the big table over the back of couch	1	2

N = intervals when activity is present
OCC = number of occurrences, IP = interval participant

School-age Day Room Activity Description

School-age children participated in 36 intervals and accounted for 91 interval participants. The greatest lengths of stay occurred for the boys in this age group. One was bedbound and the other severely handicapped although able to sit in the dayroom in his wheelchair. The content of their activity descriptions were analyzed and clustered into 7 recurring types.

Table 14 shows school-age children used the dayroom first thing in the morning and were usually the last to leave in the evening. The variety of activity was greater, more focused and the tempo was more subdued than the younger children. Specific task oriented activities were selected by the children and practiced at the big table. They were sociable with each other, creating imaginative role-play games, with a running dialogue for the role their dolls were representing. When sitting by themselves, they were less distracted by the surrounding activity and could sustain their own center of interest in an activity or watching television. Their active time was in the afternoon and evening, corresponding to the natural rhythm of after school

Table 14

School Age Activity Ranking N = 36	OCC	IP
sitting alone in *chair watching TV or room	17	23
sitting on couch,playing with others, TV, eating	13	14
homework,colouring,playdough,lego,eating,big table	12	22
sharing a scenario game with toys on the floor	7	11

Table 14 (continued)

School Age Activity Ranking	OCC	IP
walking,exploring,visiting, transit around room	6	8
pair playing lego big table over back of couch	6	11
eating or watching TV at the small table	3	3
riding the rocking horse, keeping eye on mother	1	1

N = intervals when activity is present
OOC = number of occurances, IP = interval participants

hours. A few were satisfied to spend free time in their

rooms and come into the day room in the evening after the

action of the youngsters had diminished.

Adolescent Day Room Activity

There were very few adolescents admitted to 'N' cluster

during the study and only one was in the dayroom during an

observation session. She watched the other children a bit,

had one meal and later in the day sat with two adult friends

who came to visit. The sample is considered too small to be

included.

Comparison of Activity by Age Groups

This comparison is a matrix display ranked by column

and row of the activities of the four age groups who were

participants in the dayroom. The format of the matrix cells

in Table 16 has four lines of descriptive data. The first

line indicates the type of molar activity, the second the

furniture or location, the third the time of day and the

percentage of participants, and the fourth the types of

social interaction which were involved with the activities.

Table 15 shows infants were participants in half the intervals of each of the three older age groups. The other three age groups provide the visible molar activity of the dayroom. The sequence of the toddlers activity settings illustrates the range of activity growing from being cautious in the morning, to more active by afternoon, and being most active in the evening. All of the preschooler activity in the first three ranks is quiet and focused on a

Table 15
Activity Comparison by Age Group

	Rank order of Prevalent Activity		
	first	second	third
Age			
TOD	sit,quiet play	eating,play,talk	mobile play
N=36	hi.chair,crib	small table	transit area
	mi af 31%	mo mi af 19%	mi af ev 15%
	solo,par.,staff	peers & parents	solo,parent
SCH	watch,story,TV	homework,craft	games,eat,talk
N=36	*chair,bed	big table	couch & chairs
	mo mi af 22%	momiafev 21%	mo mi ev 20%
	solo & staff	peers & staff	parents & solo
PRE	craft,toy,eat	craft,game,eat	story,TV,game
N=34	big table	*chair,bed	couch,sm.chair
	momiafev 22%	mo mi af 20%	mo mi af 18%
	par.peers,staff	solo, parent	peers,solo
INF	cuddling, bottle	sleeping	watching
N=15	adult chairs	baby carriage	high chair
	mo af ev 64%	mi 16%	mo af 16%
	mother	nurse	mother

chair =wheelchair, high chair, stroller

particular medium. The school-age group is even more passive in the ranking of the three most prevalent activities.

Ambulant and non-ambulant had very different opportunities for activity in the dayroom. The field notes did not discriminate between non-ambulant children who were in chairs or cribs because of illness, not able to walk temporarily, or disabled. Regardless of the cause of their non-ambulance these children had to be content with sitting in their various chairs. A counter perception which the observation of molar behaviour does not identify, is the extent to which the vicarious opportunities for the non-ambulant children were satisfactory for their particular need at the time.

Description of Social Interaction

The types of children's social interaction were restricted to four types. Individual activity, shared contact between children, interaction with parents, and parents were identified in the dayroom.

Independent activity.

Independent activity was observed in 31 intervals and involved 84 participants. This special category of implied interaction was intended to show the activities of children who were more independent over most of the time in an observation interval. In this regard the observer does not

decide when the children are monitoring or aware of the activity of others. Table 16 lists in rank order the types of recurring independent activity. Children of all ages demonstrated this behaviour. Children active in the dayroom without a focused interaction with others were prevalent in the morning hours and in the early afternoon before supper. The lowest incidence of this type of activity was after lunch until three o'clock. The tempo tends to be quiet with the most prevalent being watching the activity of others. The low average number of children who use the dayroom as well as the high turn-over of admissions contribute to reduces opportunities for interaction between children.

Table 16

Independent Activity Ranking N = 31	OCC	IP	AGES
sitting quietly watching in *chair	14	30	TPSA
playing quietly on the floor with toys	11	21	TPS
homework, eating, snack, lego at big table	5	12	PS
exploring the day room, the galley	4	5	TP
watching TV on couch or from big table	4	11	TPSA
eating or playing in h/w chair	2	2	TS
playing with a puzzle at the small table	2	3	P

N = intervals when activity is present
OCC = number of occurrences
IP = interval participant

Interaction between children.

This category of social interaction is developed from incidents where the children are sharing an activity for more than half of the duration of the 20 minute interval. If a smaller time interval had been used to describe the interaction specifically, there would have been a much higher incidence in this category. There were 19 intervals when this activity was clearly expressed by 49 participants. In these data each participant was counted, that is if two children were playing, that counted as two participants. The younger children encountered each other for shorter time intervals, then continued with their parallel or independent activity. Often the interaction with others was mixed among children, parents, and staff during an interval and the observation data were not specific about the distribution of the shared activity.

Table 17
Activity Ranking with other Children N=19

Activity	OCC	IP	AGES
sharing conversation with meal at tables	7	14	TPS
playing with small toys on floor, scenario	6	15	TPS
talking, crafts, puzzle at small table	4	8	PS
playing, teasing, tickling back of couch	2	3	TP
sharing a drawing over back of the couch	1	2	S
talking together walking around room	1	3	S
watching TV talking & Lego on couch	1	2	S
talking between lounge and wheelchair	1	2	TS

N = intervals when activity is present
OCC = number of occurrences
IP = interval participant

Table 17 displays the rank order of the activities shared by the children with each other. Most of the shared activity is accompanied by conversation at the table, with a game, or craft. The furniture facilitated much of this type of interaction. The absence of interaction between children was promoted by the poor placement of children who were immobile or confined by an IV.

Activity of Children with their Parents.

The interaction between parents and their children took place where they could be in close proximity on chairs together, on the floor, or being held. During weekday mornings the mother was usually the accompanying parent and she was joined in the late afternoon and evening with the rest of the family. Members of an extended family often joined the parents in the evening.

Table 18

Activity Ranking with Parents N = .40	OCC	IP	AGES
holding, playing, talking to child in chair	17	39	ITP
sitting at couch,talking,TV,playing	16	34	ITPS
observe active play on floor,rocking horse	13	21	TPS
share activity or eating at the big table	10	22	TPSA
helping child eat in h/ w'chair,crib	4	11	ITP
in transit or exploring room together	2	2	PS

N = intervals when activity is present
OCC = number of occurrences
IP = interval participant

Table 18 ranks the activities with parents. The first two categories indicate the shared activities when the child and parent were in fairly close proximity to each other. In these types of interaction the child was held or actively engaged with a common activity. The next two, rank 3 and 4, indicate the parent in the role of observer participant. The last two helping activities imply a direct communication and mutual action with the child. Parents also spent time with their children in their individual rooms. Parents, especially mothers of younger children spent a considerable amount of time engaged in one-on-one activity with their children. It was not unusual for parents to engage children other than their own, either individually or with their own child.

Activity Analysis of Children with Staff.

A great many of the brief encounters and interaction between staff and children are not reflected in the descriptions of a 20-minute interval. The housekeeping staff are not mentioned in the observation notes but were observed to be very sensitive to the children who were in the cluster, especially those whom they came to know over a longer admission.

Table 19 lists the rank order of the activities which describe the interaction of children and staff in the dayroom. The meal time interaction was direct assistance for attention and help with eating. Less pragmatic

activities received less staff attention. The nursing

students assigned to the cluster spent time with children

playing or reading to them. In the afternoon and evening

the nurses were sensitive to the opportunities for reading a

settling story after the parents had gone home. The

activity describing shared conversation in the transit zone

was recorded six times but a smaller interval length would

have shown it occurring more often.

Table 19
Activity Ranking with Staff   N = 28   OCC   IP   AGES

	OCC	IP	AGES
helped with eating, table & h'chair	9	19	ITPS
sharing play,story,attention,w.chair	8	16	ITPS
sit on couch, reading, standing talking	8	12	TPS
sharing a conversation while in transit	6	6	TPS
play with toys on floor, staff watching	1	1	T
receiving care while sitting in w'chair	1	1	S
carried from day room to play room	1	1	P

N = intervals when activity is present
OCC = number of occurrences
IP = interval participant

Comparison of types of social interaction.

Table 20 is a matrix display of the four types of

interaction. Both the rows and columns are ranked in order

of highest incidence. Each cell has four lines, the first

indicates a key word for the type of activity, the second

the location, the third the percentage of the interval

participants, and the fourth the age groups who demonstrated

the activity.

The first two ranked activities for each type of

socialization represent over half of the interaction

activity. Parents support the activity of children in

different types of chairs as their first ranked (30%)

interaction. The first ranked activity for solo

participants (36%) indicate the choices available for

Table 20
Comparison of Social Interaction

Type	first	second	third
PRNT N=40	craft,play,game *chair* bed 30% I T P S	talking,TV,game couch 26% I T P S	mobile,horse,toys floor,corner 16% I P T S
SOLO N=31	sit, watch table *chair* bed 36% T P S A	play, explore floor,toy corner 25% T P S	eat,scenario,toy big table 14% T P S A
STAFF N=28	eating,teasing tables,*chair* 34% I T P S	play,story,talk *chair* 29% I T P S	playing,story couch 21% I T P S
PEER N=19	scenario,toys floor toy corner 31% T P S	eat,talk,play big table 29% T P S	playing,talking small table, couch 16% P S

chair = wheelchair, high chair, stroller

non-ambulant children. Staff interact with children in chairs in the first two ranked (total 63%) types of activity. The activities shared among children imply an ambulant ability.

The significant difference in those activities where children appear to be acting on their own is whether or not they are ambulant. The non-ambulant children are fixed to their chairs while the ambulant children are free to explore the room and discover the opportunities available. This fundamental ability to have access to the things and each other in the room, shows in the low incidence (n = 19) of children playing together. They use the floor, the toy corner and both tables and because they can gather, they can play together.

Day Room Activity Description by Location

The location of the furniture within the day room determined by the access route, shape, and solid walls of the dayroom. The transit route from the galley to the room doors was the first controlling factor. The second factor was the sub-division of the remaining floor shape by the heavy furniture which is not normally moved. The third factor of the dayroom furnishing character was the optional choice by staff or children, for the use of the remaining open area. Figure 5 shows the approximate boundaries of these activity zones within the dayroom.

Transit zone.

Movement and exploration took place in the transit zone. The major route in the day room was from the galley door, right to rooms one and two, left to rooms three to six. The minor route completed the circle across the space in front of the couch. The transit zone offered enough space for more active children to run or pull a toy across the floor. The perimeter route offered younger children exploratory access to the equipment and supplies stored along the solid walls beside the galley door. Curious children were able to touch the piles of diapers and towels, the scales, see equipment on the table, or examine a blood pressure machine. One evening three children had a game of driving toy cars through a furniture tunnel.

Central zone

The center of the room was occupied by three furniture elements which did not move during the period of the observation. The television, the couch and the two tables were placed in the center of the dayroom and acted as the hub for the space and activities in the room.

The table was always up against the couch so children could climb up and play over the back to join in the table activity. Some of the most wonderful exchanges between children took place because of this relationship between the back of the couch and the table. Younger children could

watch the activity of older children, or gather around the table, lying on their tummies as opposed to a chair.

The couch was a serviceable two seater which faced the television. It was the only object that the children could climb around on, that invited cuddling and was like an island in a sea of activity. The high back on the couch and it orientation away from all the doors to other rooms, gave a sense of protection and privacy for parents and children. When the television was on the parents and children collected on the couch as silent spectators.

There was space between the couch and the television for a small table and three or four small chairs. This furniture was set-up for breakfast and lunch by the staff. The table was stored under the television stand in the afternoon and the chairs were used without the table. It was an ideal space for toddlers and preschoolers to eyeball each other on their first encounter at meal time.

Variable Uses of the Floor Area

Figure 5 indicates a variable boundary around the hub which accommodated the moveable furniture and activities. This space was used for high chairs, wheelchairs, baby seats, baby carriages, strollers, cribs, beds, and the wagon. The external perimeter of this zone defined the edge of the transit zone. As a result children were well placed

Figure 5

Dayroom Activity Zones

Legend

Transit zone

Central furniture

Central floor area

Variable use floor area
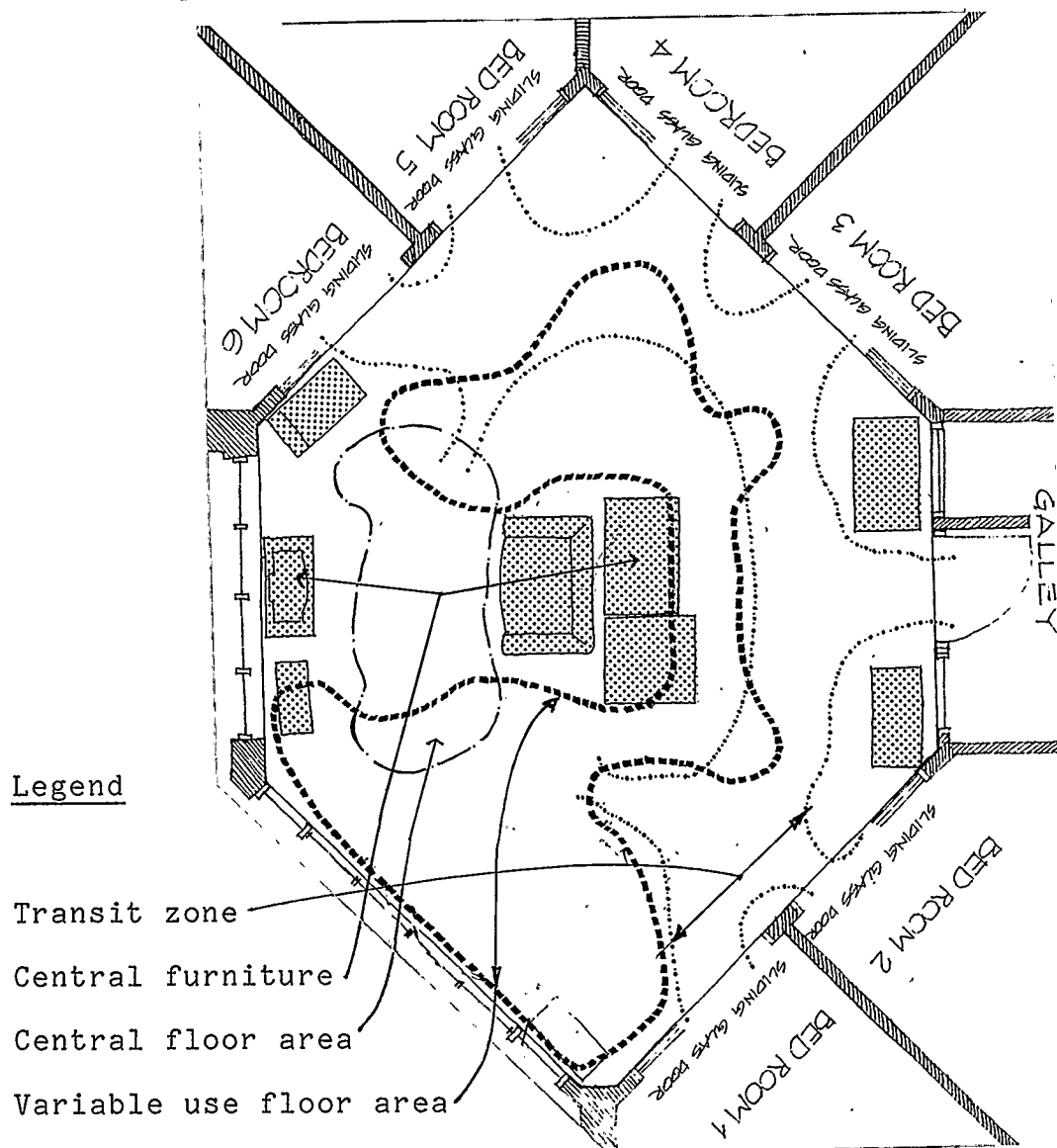
to view activity and be part of the passing communication
which those in transit would offer.

The moveable adult chairs were used for quiet, passive
time. Lounge chairs from the rooms, a lazy-boy chair, a
rocking chair and several stools were used by parents to

cuddle their infants or toddlers, or for older children the snuggle with a blanket.

Free floor space in the corners or protected areas were selected by children for playing with small toys. Make-believe scenarios with character toys were acted out. Often when the sliding doors were open these games took place in the threshold space of the room, protected but visible.

The toy box was the anchor corner for a parking area which contained the rocking horses, the playpen, the carriage, the stroller, and the soft cuddle toys. They were in a zone with no transit cutting through. This created a safe corner. Children collected in this safety zone. The playpen was relocated from time to time but never out of this zone of the room.

Comparison of Activity Locations

Table 21 shows the frequency of activity in each of the eight sub-locations of the dayroom. The three zones, the transit, central,and variable are separated by a space in the table. The highest frequency of activity location occurred in the variable area (103) of the dayroom through the use of moveable chairs. The highest times for use are related to the meal times (47) and the waking periods of the day (38) when young children are in a high chair or wheelchair observing the activity of others. In the fixed

Table 21
Frequency of Activity Locations During the Day N = 343

Location	MORN	MID	AFT	EVG	Total
transit zone	6	9	8	10	33
big table & chairs	11	9	30	10	60
couch	8	9	21	19	57
small table & chairs	12	14	5	3	34
moveable child chair	17	47	38	7	109
moveable adult chairs	0	5	13	7	25
floor	4	9	6	9	28
toy box	4	3	15	8	30

location, the big table was used most frequently in the
afternoon (30). The activity in this area shifted from the
small chairs in the morning to the couch in the evening.
The moveable adult chairs and the toy box were used most
frequently in the afternoon. The highest use of the transit
zone was in the evening(10).

Composite Plans

The floor plan data were analyzed to identify the
physical trace (Zeisel 1981 p. 94) of the furniture
according to the positions at the beginning of the
observation session.

Figure 6
Morning Furniture Location

Legend

1. wheelchair
2. high chair
3. small chair
4. crib
5. small table
6. playpen
7. rocking horse
8. wagon
9. adult chair
10. rocking chair
11. lounge chair
12. lazy boy chair
13. baby carriage
14. stroller
15. toy box
16. stool
17. overbed table
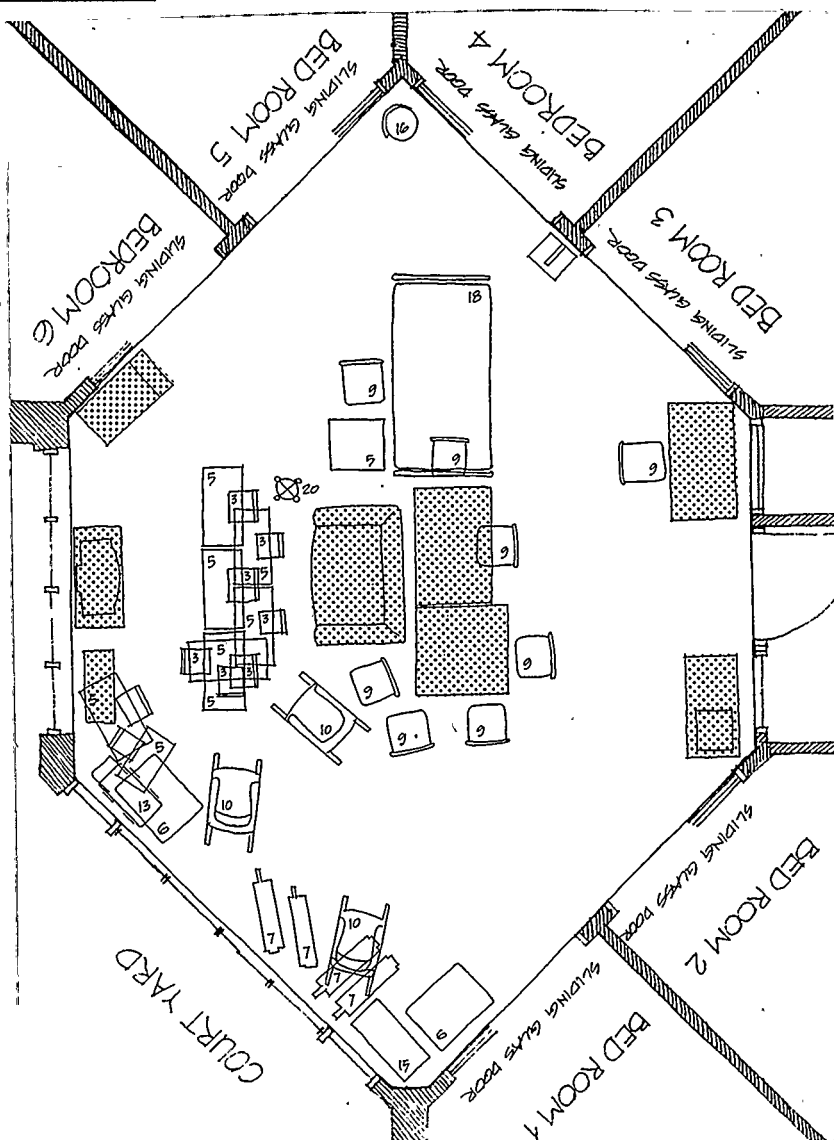18. bed

Figure 6 illustrates that the morning activity occurred around the central furniture and floor space. The rocking chair (10) was in different positions but always in the low traffic corner. The playpen (6), wagon (13) and small table (5) took slightly different positions in the parking area against the glass wall. The bed (18) was in the dayroom for the morning on only one occasion.

Figure 7
Midday Furniture Location

Legend

1. wheelchair
2. high chair
3. small chair
4. crib
5. small table
6. playpen
7. rocking horse
8. wagon
9. adult chair
10. rocking chair
11. lounge chair
12. lazy boy chair
13. baby carriage
14. stroller
15. toy box
16. stool .
17. overbed table
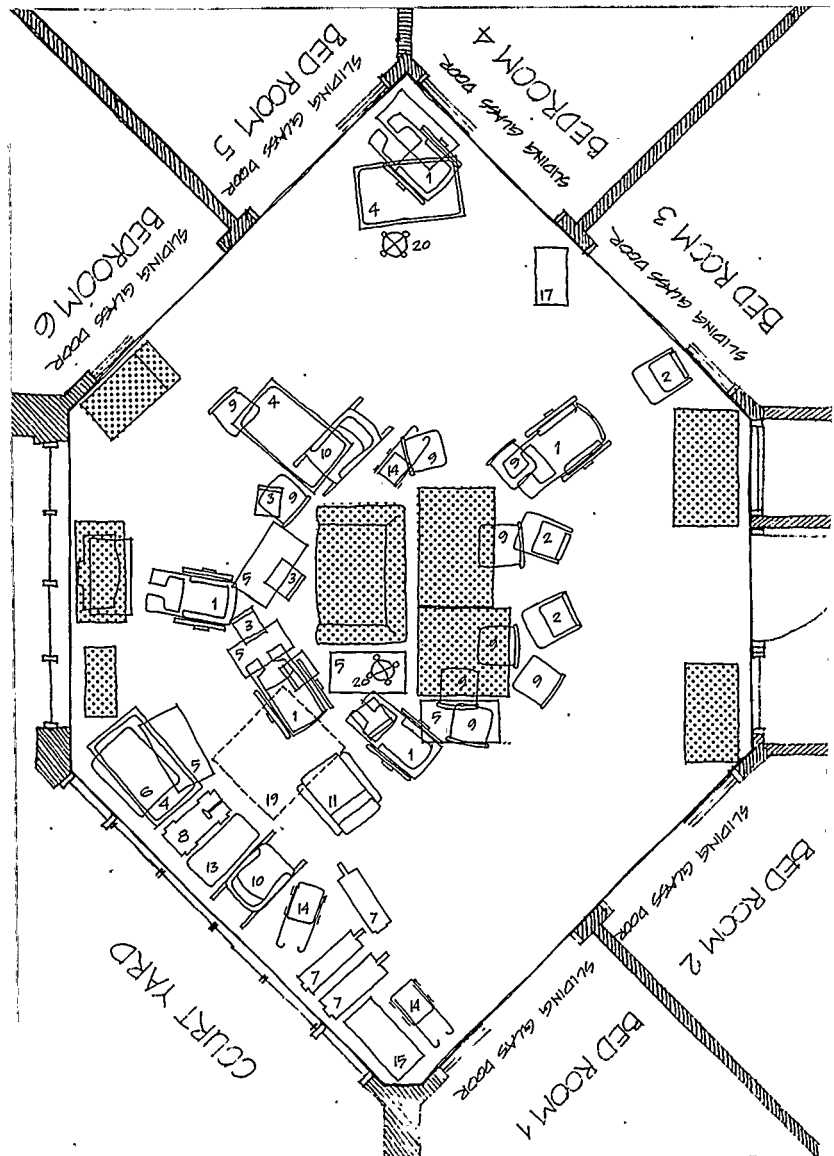18. bed
19. blanket
20. IV pump

Figure 7 illustrates the prevalence of movable

children's chairs clustered around the fixed furniture.

Cribs (4) were either close to other children or the wall

outlet for the IV pump (20). There was not much activity

near the toy box (15) and the parking area was tidy.

A wheelchair (1) projected into the transit zone.

Figure 8
Afternoon Furniture Location

Legend

1. wheelchair
2. high chair
3. small chair
4. crib
5. small table
6. playpen
7. rocking horse
8. wagon
9. adult chair
10. rocking chair
11. lounge chair
12. lazy boy chair
13. baby carriage
14. stroller
15. toy box
16. stool .
17. overbed table
18. bed

Figure 8 illustrates the positions of active play equipment used during the afternoon. Rocking horses (7), wagon (8), and baby carriage (13) were used in several different positions. A social circle formed around the end of the couch. The wheelchair (1) was on the outside, projecting into the transit zone.

Figure 9
Evening Furniture Location

Legend

1. wheelchair
2. high chair
3. small chair
4. crib
5. small table
6. playpen
7. rocking horse
8. wagon
9. adult chair
10. rocking chair
11. lounge chair
12. lazy boy chair
13. baby carriage
14. stroller
15. toy box
16. stool
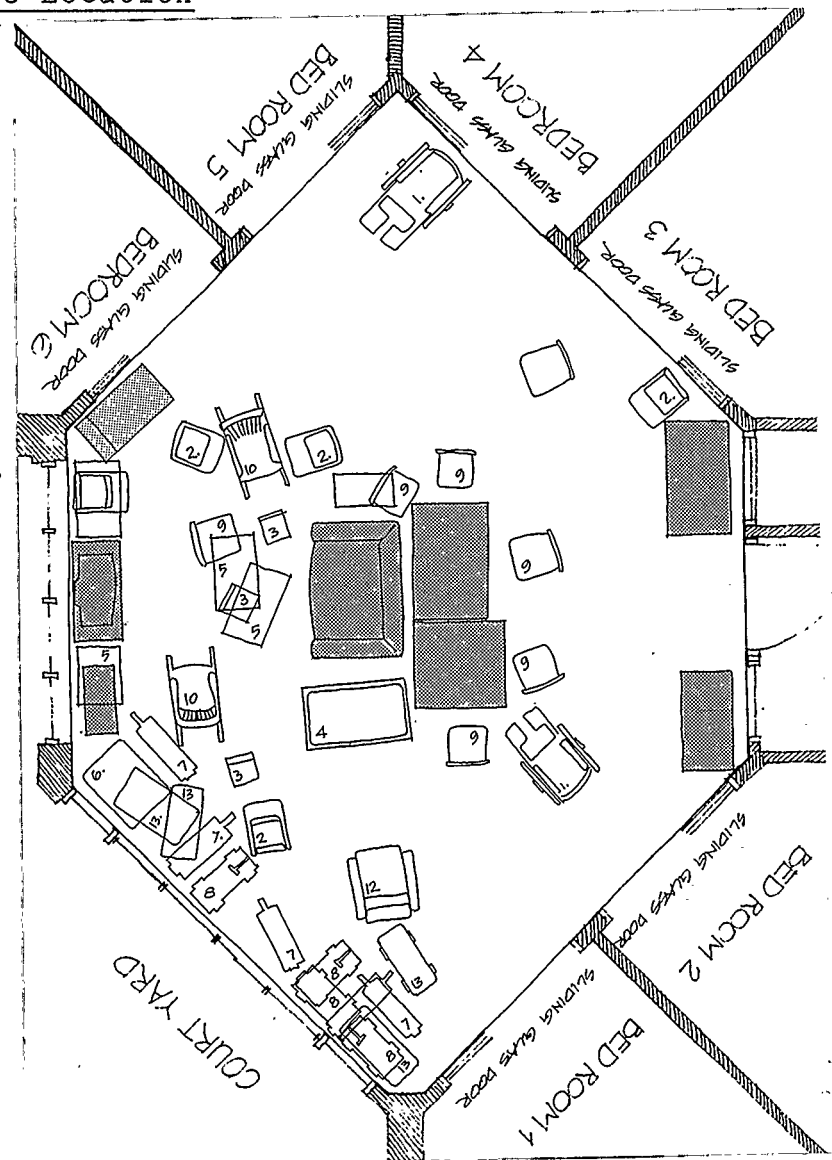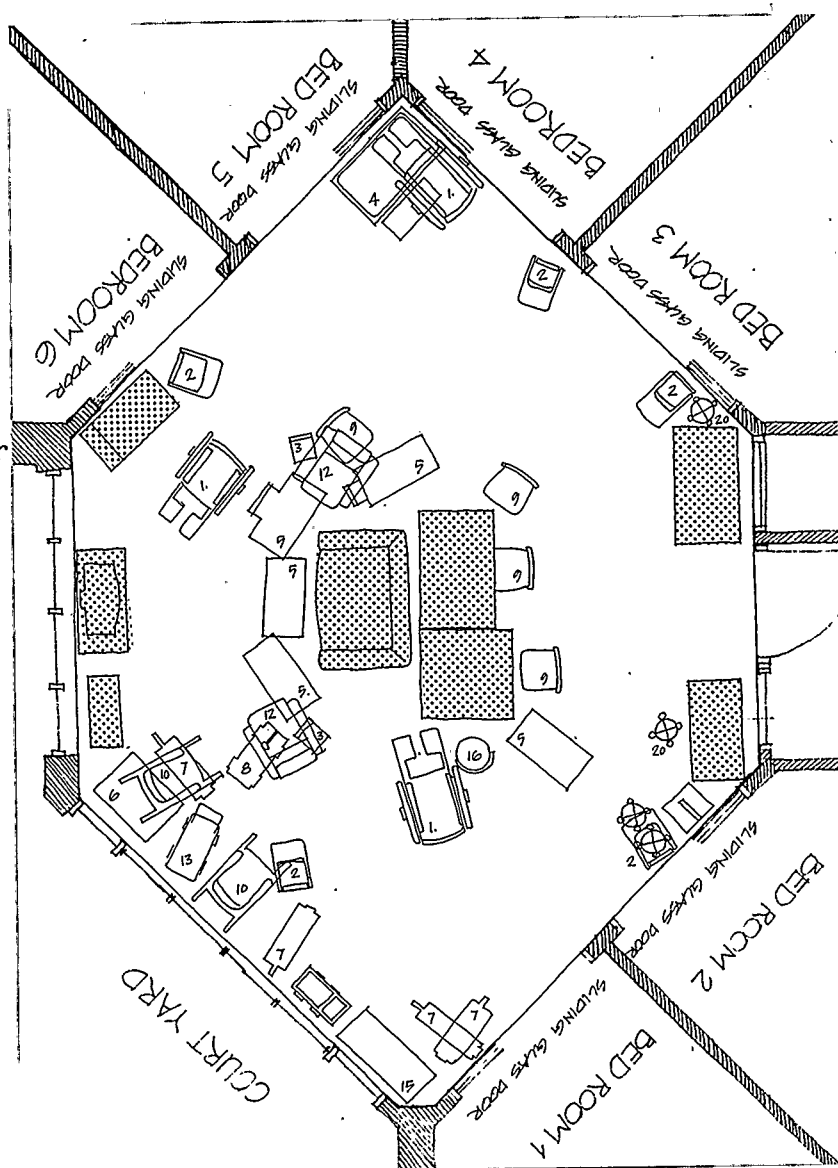17. overbed table
18. bed

Figure 9 illustrates the social activity in the evening gathered around the couch. The stacking chairs (9) and a stool add to the circle around the tables. The rocking horse (7) and the toy box (15) have more open space

around them as they were both in use in the evening. The
high chairs (2) and wheelchair were empty.

Comparison of Activity Location Frequency

Table 22 shows the first three ranked activity
locations for the four periods of the day.   The text of the
matrix cell indicates the room location or, furniture
related to the activity, and the number is the percentage of

Table 22
Activity Location Comparison

time	first	second	third
MORN	edges transit moveable "chairs" 29%	small table & small chairs 20%	big table adult chairs 19%
MID	edges transit moveable "chairs" 46%	small table & small chairs 14%	a. big table b. couch c. transit zone d. floor 4 @ 9%
AFT	edges transit moveable "chairs" 30%	big table adult chairs 24%	couch adult chairs 17%
EVG	couch adult chairs 28%	a. big table b. transit zone 2 @ 15%	floor toy corner 13%

chair = wheelchair,high chair, stroller

the interval participants. Similar ranked data are
indicated by a lower case letter (a,b,etc).

Table 22 shows that the first three periods of the day the children who were in their chairs along the edge of the transit zone (29%, 46%, 30%) were the most prevalent. These children were either non-ambulant or chose to sit in one of the types of chairs. The small table and chairs were the next most frequent (20%, 14%) location for the children's activity.

Sliding Door Position Analysis

The sliding glass door between the double rooms and the day room was used in a number of ways. Children, parents or staff were able to adjust their position. The door was a triple panel, opening to just over four feet wide. Children confined to their room under isolation techniques were able to see the activity of the day room. When the doors were open the combination of spaces was similar to a dormitory because of the transfer of sound and visual monitoring. Each room can have this range of connection or separation by controlling the door position. The bedside curtain in the room provides personal privacy. Figure 10 is the graph of the percentage of enclosure of the dayroom perimeter over an average day of the observations. The shaded area of the graph represents the percentage of openness averaged over each 20-minute interval.

Figure 10 shows that the room doors are open twice as much as they are closed (mean = 69%). On average the occupants and staff choose to keep the doors more open than closed. The doors which were closed for isolation shift the

Figure 10

Percentages of Dayroom Enclosure

PERCENT

100 ———— OPEN
74 ·········· +1 STD
69 ———— MEAN
55 ———— -1 STD
0 ———— CLOSED

TIME OF DAY (800, 900, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2100, 2200)
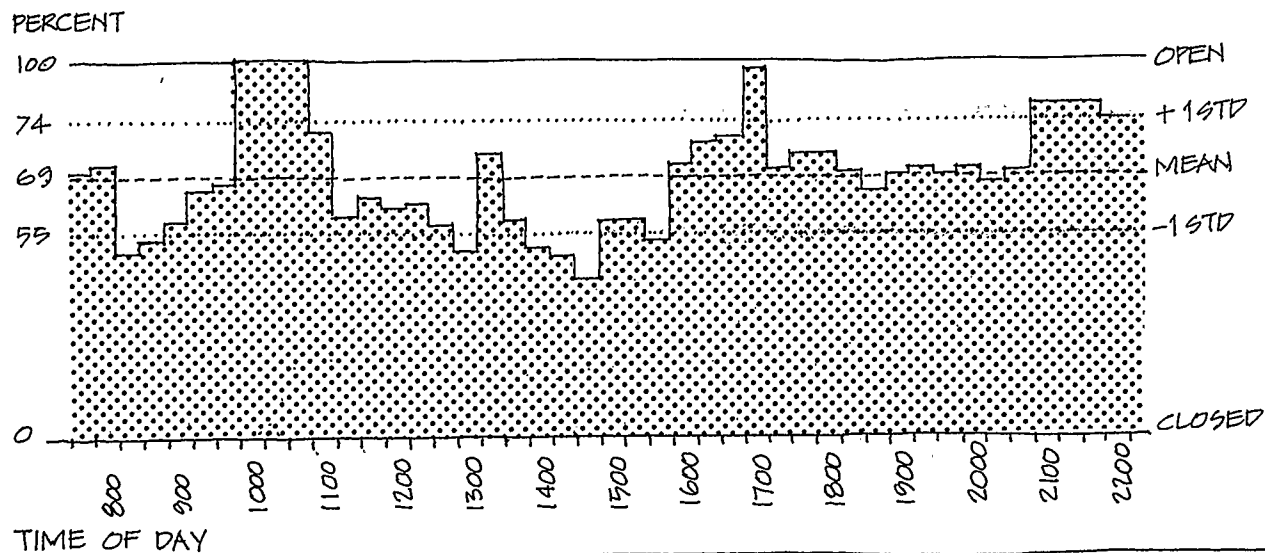
average to decrease the percentage of openness, suggesting that for occupants who do have an option on the door position, that the rooms are even more the 69% open.

Activity Setting Descriptions

The activity setting descriptions represent the
recurring activities of the dayroom. The descriptions are a
composite of the data which were analyzed by time of day,
age, interaction, and location. The titles of the sixty
sub-component descriptions for the three categories: time,
age, and interaction are included in Appendix 4. These
sub-components were compared and resulted in the fourteen
categories of recurring activity. The activity setting
descriptions are presented in relation to the three zones of
activity in the dayroom: the transit, the central, and
variable zone. The activity settings descriptions suggest
the most prominent standing patterns of children's behaviour
which comprise a majority of the available experiences in
the dayroom.

Settings in the Transit zone

The pathway between the galley and the bedrooms was
busiest in the morning because of the increased staff
traffic to all the rooms. In the afternoon there is less
staff traffic and in the evening most of the circulation is
family.

1. Mobile active play.

The active children were engaged in exploring the
dayroom. The youngest usually spend a good portion of their
initial hours in the cluster travelling from object to

object as if preparing an inventory of this new environment. Preschoolers who were active soon focused on the potential of the toy box. This recurring setting was very focused and provided new patients with a sense of familiarity, if not excitement and pleasure. This interaction with the environment was most prevalent before and after supper. Before supper children were active in the parking lot corner with toys or on the rocking horse. After supper, and before the playroom time, toddlers and preschoolers were active with the rocking horse and the movable toys. This movement, which increased as the day progressed was important, not only for the participants but also for the quiet children who were able to watch all of this activity. This setting allowed toddlers and preschoolers to express themselves with mobile activity close to their maximum level. Older children, who were capable of much more gross motor movement were limited in the setting. The visiting siblings contributed to this setting by providing initiative and leadership for active play. These visiting children were welcome in the dayroom and contributed to the quality of the activity with their play.

One exceptional incident which was important, occurred in this setting after most of the children had gone to bed. A preschooler was having trouble settling down on his first night in the Hospital and chose to ride the rocking horse

until he fell off. His mother waited patiently until the
crash, then collected the lad and helped him relax. Having
burned his energy off, he was able to go to bed in his own
time. This setting is a self-regulated situation with a
warm sense of tolerance on the part of the staff.

2. Meeting along the path.

The pathway was adjacent to most of the locations where
children in support furniture were located. This proximity
enabled staff who were travelling between rooms to talk to
children, help with an activity, or adjust them in their
chair. This setting was the opposite of the conventional
notion of keeping children out of the way, in this case the
children were kept in the way, so that contact with them was
available during the routines of other work.

Activity settings in the fixed space zone

3. Using child sized furniture.

The gathering of toddlers and preschoolers at the small
table, was usually initiated by the staff through their
morning conversation with the children. Although the
children were offered a place for breakfast or lunch, their
major preoccupation was watching each other and the activity
around them. When there was conversation at the table, it
was usually related to comparing each other's food. When
the task of eating was not proceeding at a reasonable pace,
a staff member provided assistance or encouragement. It was

not unusual for a parent to join a child using the couch as
a seat and the small table for their food tray. This
setting is most prevalent at breakfast and lunch when the
meal time and duration was bounded in the routine of the
cluster. This gathering at close range was available for
the ambulant children but not for the toddlers who were put
in a high chair.

4. Sitting on the couch.

Everyone used the couch. Infants and mothers used the
comfort of the couch to cuddle, toddlers and preschoolers
used the couch as a playground site, school-age children
used the couch as a perch. The couch offered two
experiences, a semi-private seat to face away from others
and a comfortable back to lean over and share in the
adjacent activity at the table. Other furniture was pulled
into the space beside and in front of the couch for family
visiting in the evening. Parents would sit with children
watching television. On other occasions the television may
have been on but the focus of attention was on the
conversation among the group. The couch and the circle of
chairs gave a semi-private space to the groups who gathered
in the evening. At a smaller scale the protected space of
the couch offered a comfortable shelter for parents or staff
to sitting with a child to read a story. After parents left

in the evening, preschool and young school-age children were invited to bring a blanket or snuggle toy to share a story with staff.

There were no time boundaries on the use of the couch and access was on a first-come basis. The size and weight of the couch gave it the quality of an anchor in a space full of movement and exposure.

5. Watching TV.

The television in the dayroom probably resembles settings in the family rooms of most homes. There were no televisions provided in the patient rooms. The television was chosen most often by children as an independent activity. Children in wheelchairs were moved to the area at the sides of the couch, and children at the table, in the big chairs, would watch from those locations. Toddlers in high chairs would watch but their attention to it was secondary, at a monitoring level. The staff and parents determined when the television was turned on or off, and there was a rough weekday routine. The television was always on at noon for the cartoons, irregularly in the afternoon, usually in the evening but not on throughout the evening hours. The volume was always low. Saturday was the only morning that the TV was on for a great length of time.

6. The big table.

The table was the site for a variety of activities and was used throughout the day. The setting was the site for each of the meals and bedtime snacks. Parents used it with their children for shared craft activities or games. Staff used the table to help feed children, write in the charts, or share a conversation with a parent.

The morning and noon meals were routine starting and finishing within an hour.   Preschoolers and school aged children who sat at the table and made a small group, sharing conversation or watching the activity of others. The evening meal period extended from five o'clock until nearly seven. In the evening the table might have one child eating and another playing with lego. Parents and children would sit together at one end of the table sharing a craft, talking, or sharing their concerns with each other.

Activity settings in the variable space zone

7. Watching from a safe place.

This setting allows children who might otherwise be bedridden to be in the convivial space of the room, observing the activities around them. These are primarily children who are in some type of supportive furniture such as a high chair, wheelchair, crib, stroller, playpen or even their bed. This setting occurred in the morning, the midday and the afternoon. There was very little of it during the

evening. Toddlers, the majority of children in this setting, were generally on their own because their position was confined. The data did not describe the inner state of the children but we can infer from the demonstration of their behaviour which was watchful, attentive, calm, passive without demonstration and alert to their surroundings; that the experience of being a spectator was generally positive. Because children were placed in this setting it is highly bounded, limited, and subject to the sensitivity of the staff.

8. Assisted eating

Children in high chairs, wheelchairs, or in bed ate in these devices when they were in the dayroom. For older children the meal tray was placed on an overbed table. Younger children were given a dish at a time on the trays of their high chair, or if they needed help were assisted in eating by the staff or parents. The requirement for assistance meant that an adult would initiate the setting. Often a small group would form with one nurse helping two children in high chairs with the meal. Parents were encouraged by staff to take leadership and help prepare and serve the trays for their child.

9. Being with mother

This setting is the dominant setting for infants. Over 60% (Table 11) of the infant interval participation was while being held by the mother. This setting took place

during all periods of the day when the infants were up for a
bottle. The dayroom provided the opportunity for mothers to
walk and sit with their infants, away from the space of the
crib and in the company of other adults in the dayroom. The
women would talk with and cuddle their infants, perhaps
share in a conversation with each other or another child.
The rocking chair was their first choice for seating. This
setting was also chosen by children and mothers to share a
comforting time together. Children confined to a crib or
bed were often brought into the dayroom and joined with
their mothers sitting beside them.

10. Assisted activity.

This activity setting was the activity support system
for children who were confined in a piece of furniture such
as a wheelchair, high chair or crib. The support was
initiated primarily by the parents then by staff,
volunteers, or students. With the help of a grown up
children were able to engage in a shared activity such as a
craft project, a board game or listen to a story. This
setting was a substitute for a child if he/she could not go
to the playroom. When this setting occurred there was
usually conversation between the participants. A spin off
of the conversation and activity was that it provided a
focus for children not directly involved. Volunteers were
assigned to a cluster so the setting was bounded by their
schedule.

11. Playing quietly with other children

Shared activity among children was most prevalent for the ambulant children and usually occurred in the afternoon. Pairs or small groups formed without adult leadership to share a game, lego building or play with materials from the toy box. This setting formed in the sheltered floor areas defined by the other furniture or the clear areas of the transit route, such as the threshold of a room that was not occupied.

12. Imaginative play with toys.

This setting usually took place on the open area of the floor although some incidents were mobile which involved action on a small table, around the couch, or even back into one of the rooms. School age children were the most creative in developing imaginative scenarios related to the roles which toys represented. Other imaginative games were played with the material available in the toy box or the cupboard. Preschoolers and toddlers responded more to the imaginative potential of the toys by animating themselves, rather than directing the action of the toy character. The younger children used more floor area and were more vigorous in the dynamics of their expressions. The preschoolers included the transit zone in the pattern of their play. This setting was initiated and led by the children themselves.

13. Playing socially

This setting was chosen by children admitted for several days and ambulant. Siblings were more active in this setting. On several isolated intervals children were observed in conversations with each other without any other intervening media or activity. Two school aged children talked while sitting in their chairs, and a trio were involved in a walk and a discussion.

14. Playing with parents.

Some parents were active participants, others attentive observers of their children. The open area of the floor beside the transit zone towards the room doors was the favorite place for playing on the floor. Parents of toddlers and preschoolers were often on the floor or sharing a game at one of the small tables. Parents were more likely to be observers when their children were riding the rocking horse. Parents, especially fathers, were often involved in taking a child for a walk to explore other areas of the Health Centre. The wagon was used by mothers and fathers for taking a small group of toddlers for a ride.

Conclusion

These 14 activity settings describe the majority of the recurring activity in the dayroom of cluster N. Each activity setting is composed of physical and behavioural units which occur together and have the opportunities for a

variety of experiences which were intended to contribute to the quality of each child's health recovery process. The next chapter will compare these settings to the activity model which was projected for the initial architectural design.

Chapter 5 DISCUSSION

The case study discussions are presented in two parts. First the activity settings were evaluated in relation to the extent to which they support the activity model which was proposed for the initial planning. A recommendation to improve each setting was proposed. The second part of the discussion proposes two types of application for the use of behaviour setting descriptions, one for on-going planning in cluster N, and the other for general use in architectural planning.

Evaluation

The selection and subjective descriptions of the activity settings were composed from evidence of the opportunities and choices which the majority of children and their parents made during the study. The 14 settings contribute to the actualization of the three environmental values of the initial planning: holistic experience, developmental continuity and socialization, to a different degree. The contribution of each setting was shown in the following evaluation of the case study evidence.

Holistic Experiences for Adapting to Hospitalization

Five of the activity settings contribute strongly to the processes which allow children and parents to adapt to their hospitalization. These five settings represent a continuum of the childrens activity system which was expressed through their range of physical behaviour.

Mobile active play.

An intended outcome of the dayroom was that children satisfy their need for challenge and stimulation. This experience was readily available for toddlers and preschoolers. The dayroom size, and resources were most suited to the scale of opportunities demanded by children of these ages. Infants and school-age children were not as able to meet their needs for challenge and stimulation through active play. The limitations of the dayroom were explored and tested by the siblings who visited the dayroom in the evening.

If the outdoor space in the courtyard was used children of all ages could have had a greater range of opportunities for active play. The opportunities for mobile active play could be enhanced by moving the furniture and initiating small group activities or games among the children. This would be especially valuable on weekends when the schedule for treatment and the playroom are reduced and there is a

supply of siblings to help with the flow of the game. Parents or older children could be given the leadership in this setting.

Imaginative play with toys.

The dayroom was placed in the cluster to enable children to have autonomous access to a familiar and stimulating environment which was different from their room. The expected outcome was that children would feel somewhat at home, comfortable, and secure. The case study showed that the setting: imaginative play with toys, allowed children to lose themselves in their activity with the discovery and imaginative interaction with toys. The toy box, located in a sheltered corner of the dayroom, was the resource for this essential experience. This setting met the needs of ambulant toddlers, preschoolers and school-aged; but was not as accessible for immobile children. The dayroom has not been activated as a surrogate playroom and does not therefore have a range of play materials available to children in wheelchairs and high chairs.

If there was a mobile playroom kit on a gypsy wagon, or a mobile trapeze apparatus for playing with character dolls, children who can not get at the toy box treasures, could be active within their range of motion.

Watching from a safe place.

An important outcome for the dayroom experience was that it provide a positive reinforcement for each child's adaptive process during his/her recovery. One aspect of adaptation was the assumption that the opportunity to see other children at different stages of their health recovery experience would be a benefit. The dayroom does provide children with immediate access and proximity to each other's experiences. This is the prevalent activity in the first half of the day for toddlers and school-age children. The deficit of this setting was the duration of this passive observation without opportunities for an alternative focus.

The transition from passive observation to gentle engagement can be encouraged by the placement of immobile children close to each other, or beside a table, rather than just beside a power outlet for the pump.

Watching TV.

The appropriate place of television was debated in the planning of the cluster. Television was restricted to the dayroom in the interests of pulling children out of their rooms to watch regular programs. The television was one element which might resemble a normal activity at home and allow children to imaginatively escape from the conditions of the hospital. In fact the television received more attention from the adults than the children. Children monitor the activity of the room and the television

program. The size of the screen was too large for the room and the orientation of the television and the couch dominated the dayroom furniture arrangement.

The use of television could be improved by using a smaller set on a swivel, choosing one with a built-in VCR and relating the seating so the it does not dominate the room.

Developmental Continuity

The dayroom was intended to balance the disruptions of hospitalization to a child's normal process of growth and development. Four of the activity settings contribute to this principle in a significant way to insure that the rhythm of life goes on in a secure way.

Being with mother.

Hospitalization is disruptive to infants and mothers. The dayroom was intended to support the continuity between mother and child during hospitalization. The dayroom allows mothers to nurse, cuddle and entertain their infants; in the company of other mothers, children and the staff. The children and the mothers have access to a small group, are protected from anyone who is not in the cluster and can share the experiences of their hospitalization. The dayroom lacked any opportunity for infants to develop their motor

skills, other than playing on a blanket on the floor. There were no protected alcoves for parents to be with their infant

The normal development between infants and their parents could be enhanced in the dayroom by providing a cushioned platform for them to cuddle and play together. Infants and parents who are developing their own communication through activity and games could continue this vital process.

Playing with parents.

The dayroom in the hospital was modeled in many ways after a family room in a home. There was expected to be opportunities for children and parents to share their familiar activities. In this sense the dayroom does what the playroom does not facilitate, the continuity in the interaction of children and parents. The dayroom was a dominant domain for children's activity and parents were invited to give their full attention to their child's mastery of all its possibilities from pulling a toy to riding the rocking horse. Parents and children used most of the furniture in the room for their shared activity. When parents were not attending to their children they generally left the cluster which might indicate an unease on their part, as if there was not a comfortable place for them, on their own, in the dayroom.

A corner seating arrangement with the security of a back, might have allowed more visiting between parents while monitoring the activity of their children.

Helping with activity and Assisted eating.

These two similar settings demonstrate the intention of the dayroom to support the recovery process. Children in these settings are immobile, which for most children is only temporary. The environment must compensate for this disability. Staff were involved in assisting children eat while parents assisted them with their activities. The furniture which assists children to be out of bed is often not chosen to extend their opportunities without assistance. Without the assistance of another person immobility was isolating once a child's interest went beyond passive observation.

The tables, high chairs, and wheelchairs could be integrated into the activity opportunities of the dayroom. Table tops could be built to give more surface access and high chairs could be attached to tables rather than isolated. Activity surfaces with recesses to hold supplies or keep games on the surface could be developed.

Child sized furniture.

In order to encourage young children to be independent and autonomous preschool sized furniture was included in the dayroom. The small table and chairs were used by the children for meals and some play-time activities. The

number of children using the furniture, and the dayroom as
well was usually less than four. This group size was
smaller than the numbers assumed at the initial planning
stage. The children used the furniture in the daytime when
they were there in small numbers but, when the room was
congested with visitors the small furniture was usually
displaced. The small furniture was only used by ambulant
children although the couch was used to lie on while eating
off the small table.

A child seat which attaches to a table could have been
used on the small table to allow children in high chairs to
join the small groups in the morning.

Socialization

The dayroom was intended to balance the isolation of a
child's hospitalization experience. The priority of the
cluster plan is that access to the activity of other
children is more important than an outside window in each
room. Although all of the activity settings contribute to
the socialization potentials of the dayroom, five are more
important in their contribution.

The big table.

The hand-me-down table, an arrangement of two different
sized conference room tables, allows for variety of activity
which compares to a family kitchen table. Sharing is the
primary quality of activities at the table. Everyone uses
it during every period of the day. The light moveable

chairs and irregular profile allowed for a great range of individual and small group use. The charm of this focal point in the room was further enhanced by its relation to the back of the couch. Young children were able to lean over the back of the couch and see the table top like big people. The investigator was surprised that the tables were never rearranged or relocated for different uses. The location of the table on the edge of the transit zone made it difficult to seat children in wheelchairs.

Since the table is not moved the setting could be enhanced by providing a decorative hanging task light. Half of the table could be located for events in a more sheltered part of the dayroom. The type of table legs made access by wheelchairs difficult. A table mounted child seat would have allowed young children to join the groups at the table. An intravenous pump power outlet would allow those children to join the table group as well.

Sitting on the couch.

The quality of activity in this setting also balanced the negative experiences of hospitalization. The couch offered comfort and security; either alone with a pillow or cuddle toy, or with someone else. Family circles formed in the semi-privacy of the couch and the space in front. The position of the couch in the center of the room, aligned

with the television, implied a conventional use, but this axis was on the shortest dimension of the room and congested the area near the galley door.

A different position and relationship among the couch, television and table would improve this setting. If this arrangement were turned 45 degrees to the long axis of the room it would create an alcove on one side and a larger open area on the other. The asymmetry of the arrangement would offer a greater variety of activities on the sides, and more openness in front of the couch for a circle of chairs and monitoring children playing.

Playing with other children and Playing socially.

These two settings show similar ways in which the dayroom supports the opportunities for children to relate to each other and continue to develop their cooperation skills. The children found protected areas within the dayroom to make space for a small group activity. The investigator was surprised that the fewest occurrences of social activity were among peers. This is perhaps due to the high turn-over in admissions and young age and low number of ambulant children in the dayroom.

An alcove with activity media would have improved the setting. An adjacent platform with a mattress could have allowed bedridden children to join ambulant children in shared play, even if it was parallel play typical of toddlers and young preschool children.

Meeting along the path.

The internal corridor or transit zone in the dayroom was the source of spontaneous interaction between staff and children. The internal pathway allows a constant monitoring by staff, parents and children. The openness of the room doors extends this capacity to monitor and supervise during the focused activities. Because the transit zone is only used by essential traffic, it is a safe corridor with no carts, opening doors, or blind corners. The projections by wheelchairs or beds were tolerated and in fact provided a place for children to sit on the edge of activity.

The dayroom was originally conceived as a children's domain with staff access on the exterior of the cluster perimeter. The important flaw in this aspect of the activity model was to not recognize the importance of the casual contact between staff and children which occurs while the staff are moving between the rooms. In spite of the congestion, or perhaps because of it, the dayroom has an aspect of convivial business with the mixture of coming and going to and from the rooms.

Evaluation Conclusions

The evidence and evaluation of the use of the dayroom by children in cluster N suggests that to a large extent the actual activities support the environmental values projected for the space in the initial planning and design. Recurring

activity patterns expressed by the 14 activity settings,

describe the qualities of the self- regulated activity

opportunities for children in the dayroom environment.

Several of the settings show limitations, which can be

overcome, in the accommodation of opportunities for

non-ambulant children. Objectives for the quality of each

setting and the relationships among them can now be

established with reference to an actual description of the

childrens' activity system.

Applications

Ongoing planning in the cluster

The first proposal for the application of the activity

setting method developed in this case study is for the

ongoing planning in the cluster. The following ideas are

suggestions for applying the results of this case study to

plan, implement, and evaluate the quality of the environment

in 'N' cluster. The ideas are the author's own, and are not

intended in any way to reflect upon cluster staff or the

administration of the facility regarding their

responsibility for ongoing planning.

Monitoring the cluster activity.

The first step might be for the staff to develop a

simple way to identify and monitor the activity of the

cluster in terms of the settings which have been proposed,

keeping track of the qualities which they feel contribute or detract from their objectives for the experiences of the children in the day room. This exercise parallels the monitoring of individual behaviour but is concerned with the extra-individual quality of the activity and the controls, which structure the recurring patterns of activity of groups of children or their associations in the day room.

The case study recommends that facilities and opportunities of immobile children be improved in a number of ways. These aspects of the settings could be monitored and described in terms of the needs of immobile children of each age. A weekly review over several months would identify recurring benefits and deficits in the activity settings for these children. It would be especially important to identify the social forces which guide the work of the care givers, beyond the limits of their clinical focus. An evaluation for planning could begin from this participation and evidence.

Adjusting the existing dayroom conditions.

The objectives identified in the previous stage could be applied to develop a sequential plan for implementing and monitoring the effects of changes to the day room. The ongoing planning of the activity settings in the cluster must be implemented by the leadership and in the physical components in the settings. For example if non-ambulant children were placed in better proximity to their peers, and

if tables were available to allow the children more
opportunity for exploration and movement, the results might
show fewer children in the setting <u>watching from a safe</u>
<u>place</u> and more involved in <u>playing quietly with other</u>
<u>children</u>, or <u>imaginative play with toys</u>.

Ongoing planning at this stage would open the staff to
the opportunities to become responsible for the environment
to which their patients have access. The physical setting
can be as much a part of the cluster staff's responsibility
as they are willing to undertake. They are familiar with
the control which is exercised at Halloween or Christmas to
give the room a special character. Why not exercise the
same willingness to adapt their own environment, but on
behalf of the needs of children in the different settings.

<u>Planning cluster modifications.</u>

During the initial planning of the facility there were
several design exercises for specially built children's
furniture, some of which are installed in other clusters but
may not be used to their best advantage. This level of
specialization is most effective when the design and the
working patterns of the staff, are self supporting.
Following Barker's (1968) theory the facility and the
program for its use must be congruent. This experience
would be an educational opportunity for the staff in the
cluster to become more creative with the settings they are
responsible for on a daily basis. In this sense the staff

of the cluster would own the environment rather than appear as tenants responsible for giving care. The scope of care giving would be expanded to include the ecology of the cluster which has a great impact on the experience of the children who occupy the dayroom settings.

Activity setting descriptions applied to initial planning.

The second proposal of this case study is that activity setting descriptions can be usefully applied to existing planning processes.

A unit for environmental planning.

One definition for planning which has been proposed by Weckworth (1985) is "deciding in advance what ought to happen" (mimeo, unpaged). If this definition was applied to environmental design it would suggest being able to decide in advance what behaviour settings ought to exist in an environment, as a result of the planning process. This accomplishment would represent an understanding of the building task as proposed by Norberg-Schultz (1968). Barker's (1969) technique of describing behaviour settings as units of existing environments, could be applied in a pro-active way, as criteria for the planning. The elements of these criteria could include the expected standing patterns of behaviour, the relationship of the activities, milieu, leadership and control mechanisms. The goal would

be to use the activity setting criteria in these four
dimensions to clarify the assumptions and justify the
objectives of the organizational and physical planners.

This approach to environmental planning would shift the
balance of facilities programming documentation from
facilities criteria to activity criteria. Activity criteria
suggest expectations for activity and relationships for
operational outcomes, related to the settings which people
will experience. The physical planners and those who
control the building will share the challenge of fulfilling
these expectations and opportunities for the occupants they
serve.

A method for describing qualitative criteria.

The inclusion of activity setting descriptions in
conventional programming processes would enable planners in
the organization, to express and describe qualitative
criteria for the environment in terms of the patient or
user's needs. This approach to describing expectations for
the activity in the intended settings acts as a role model
narrative for those sharing the image of the intended
facility and its outcomes. Images for what ought to be
accomplished in each setting, although shared in the initial
planning, becomes reality for those who manage and operate
the facility. If the approach, priorities, and
understanding of the task of the building are not fully

explored and understood initially; then the values which are understood among those responsible for making and accepting the physical form will prevail.

Congruity for planning and evaluation.

If the activity setting descriptions can be projected at the initial stages of planning then the achieved settings can be compared to those initial objectives. This possibility for using a comparable measure of qualitative objectives addresses Beer's (1971) challenge, that planners develop "effective models which are used for what they represent and are updated to reflect changes with time and expectations" (p. 401)

Alexander's (1979) inquiry into the underlying structure of our collective ways of building claims that we have built in archetypal ways over the generations. A review of the Nuffield Foundation (1963) planning suggests historical similarities with the settings observed in the Alberta Children's Hospital. Moore (1984) and Spivak (1985) have applied this approach of generic activity setting descriptions as a way of describing the criteria for accommodation in specialized care facilities. The challenge for planners of the physical environment is to develop an understanding of ideal behaviour settings and incorporate them as qualitative criteria into the discussion and documentation of their planning process.

Conclusion

This case study of the activity settings in the dayroom
of Cluster N was a unique opportunity to evaluate the
architectural accommodation model used for the planning and
design of the space. The activity settings which appear to
be stable, support the three environmental values developed
in the initial planning. If the perceptual schemata of
activity settings, which can be described in an existing
situation, can be projected in a prescriptive sense as the
criteria for planning and design, then the accommodation
models used by administrative and architectural planners may
be more congruent than current practices allow. The use of
activitiy settings as qualitative criteria for environmental
models may further our understanding and competence in the
practice of architecture.

The valuable lessons for the investigator, of the case
study process, were developing observation skills,
structuring the data for analysis, developing descriptions
from the evidence, and evaluating the opportunities for
improving the environment of the dayroom. The project
allowed the investigator to examine the outcomes of an
intentional design process, for a particular space, from a
new perspective. This perspective adds to the
investigator's scope of professional practice with an
increased understanding of the role that the architectural

planning process can play in improving the accommodations
which buildings provide.

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APPENDIX 1

OBSERVATION FIELD NOTE FORMAT

resident notes

	CLOSURE			
	ROOM DOOR		BED CURTAIN	
ROOM	S	H	1	2
1				
2				
3				
4				
5				
6				
DAYROOM				
TV				

DESCRIPTIVE NOTES

	1-1		1-2		2-1		2-1	
LOCATION								
FOCUS								
ACTIVITY								
INTER'N								
MEDIA								
FURNITURE								
MOBILITY								
VERBAL'N								
TRANSIT								
MISC.								
	3-1		3-2		4-1		4-2	
LOCATION								
FOCUS								
ACTIVITY								
INTER'N								
MEDIA								
FURNITURE								
MOBILITY								
VERBAL'N								
TRANSIT								
MISC.								
	5-1		5-2		6-1		6-2	
LOCATION								
FOCUS								
ACTIVITY								
INTER'N								
MEDIA								
FURNITURE								
MOBILITY								
VERBAL'N								
TRANSIT								
MISC.								

GENERAL COMMENTS

APPENDIX 2

SAMPLE OBSERVATION FIELD NOTE

CLOSURE			
	ROOM DOOR		BED CURTAIN
ROOM	S	H	1	2
1	0			
2	.5			
3	0			
4	1			
5	0			
6	0			
DAYROOM	OFF			
TV	ON			

```
resident notes
sib of 51 & mom, both sibs
12 on couch, mom in chair
31 & 41 on floor with toys (41M)
42 walking around
52 & mother standing
21's father
Nurse talking to resident
Lab lady with cart
observor in chair
activity peaked at 8:00
activity dropped off by 8:30
```

DESCRIPTIVE NOTES

	1-1 FA	1-2 FS	2-1 MS	2-1 MP
LOCATION	room	dayroom		
FOCUS				
ACTIVITY		drawing & colouring		
INTER'N		father arrives		
MEDIA		coloured markers		
FURNITURE	lying in bed	sit on couch	lying in bed	lying in bed
MOBILITY				
VERBAL'N		to Fr & Mo		
TRANSIT				
MISC.				

	3-1 FT	3-2 MS	4-1 FP	4-2 room
LOCATION	dayroom	room	dayroom	
FOCUS				
ACTIVITY	solo play		assembly blocks	
INTER'N	Nurse			Lab tech
MEDIA			lego	
FURNITURE	floor	lying in bed	playing on floor	
MOBILITY				
VERBAL'N			requesting M	to join her
TRANSIT				
MISC.				

	5-1 FI	5-2 FI	6-1 FA	6-2 FS
LOCATION	dayroom	dayroom	room	room
FOCUS				
ACTIVITY	family group	asleep		
INTER'N	M & F	M carrying		
MEDIA				
FURNITURE	2 chairs & floor		lying in bed	lying in bed
MOBILITY	M carries around			
VERBAL'N				
TRANSIT	in room			
MISC.				curtain clos

GENERAL COMMENTS
"you gotta get well in this place"

APPENDIX 3

SPREADSHEET ILLUSTRATION

OF

1. FIELD NOTE DESCRIPTION FILE

2. INTERVAL FILE

3. PRESCHOOL ACTIVITY SUMMARY SORT

APPENDIX 3, part 1

Field Note Description File

This sample of the spreadsheet identifies the headings and gives an example of two entries. The actual file was designed for the maximum width of a 14" print format with the columns for each heading and each row for the description of each child in the dayroom during each interval (interval participant).

N CLUSTER DAYROOM ACTIVITY LOG, VERSION 1 (illustration)

DATE	24 11	12 12
DAY	sun	thur
TIME	1000	2020
SEQ	26.1	40.3
KEY	62	41
A/S	MP2	FP1
ACTIVITY	playing in w'chair	assembling lego
FOCUS	craft activity	building activity
INTERACTION	mother, father	asks M to join her
MEDIA	paper glue decoration	lego
FURNITURE	w'chair & ovbed table	floor
MOBILITY		
VERBALIZATION	talking animated	to mom
TRANSIT		
MISC	mother's initiative	

APPENDIX 3, PART 2

Interval File - Sample Illustration

The actual sheet was formatted for 14" computer paper
with the summary text on one line and space to determine
the classification of similar activities (denogram)

AFTERNOON ACTIVITY SUMMARY (illustration)

time	#	age	IP	activity description
1720	1	ITPS	10	sitting quietly, playing or watching
	2	TP	4	active playing with sibs of parents
				exploration
	3	TP	2	slow to finish supper, talking with parents
	4	S	1	moved into his room (objecting)
1740	1	TP	4	gathering around the big table
	2	PS	2	active play, visiting the galley
				music box stereo
	3	T	1	sitting playing on Mom's lap with small
				toy (nightgown)
	4	T	1	standing in playpen watching sibs play

APPENDIX 3, part 3

PRESCHOOL ACTIVITY SUMMARY SORT

This is an excerpt from the content analysis of the
activity summaries of preschool children.   The column
indicated (#) show the classification of the clusters of
activities considered to be similar.   The results of this
stage of analysis are presented in Table 14.

TIME IP   Descriptive Notes   #

        1 walking to explore the room   1

1420   1 playing by self with small toys, walking, talkin 1

1440   1 leaves for the playroom   1

        1 mobile active play, walking, talking,   1

        2 discovering toy inventory, walking, exploring, t 1

        1 exploring the room and its toys   1

        1 playing actively with the toys, walking around r 1

1820   1 leaves for the playroom   1

        3 playing around the room, craft from playroom, ta 1

1940   3 active exploration, play, puzzle with parent   1

2000   3 playing actively, exploring, on rocking horse,wa 1

        2 watching other people from sitting at the small 2

840   4 sitting eating at small table watching room's ac 2

920   3 sitting alone quietly watching other activity @ 2

APPENDIX 4

PRELIMINARY ACTIVITY SETTING LIST

APPENDIX 4

The first outline of the activty setting descriptions were written from the data of the three catagories of analysis: time of day, age, and social interaction. The second version which is presented in the text is a composite of these three perspectives of the data.

Time of Day

Morning

    eating breakfast

    watching from a safe place

    explorering the dayroom

    other morning activity

Midday

    watching from a safe place

    helping with something to do

    playing in motion

    eating lunch

    other midday activities

Afternoon

    playing quietly with friends

    mobile active play

    eating supper

    going off for a walk

    other afternoon activities

Evening

    playing actively

    sitting on the couch

    sharing at the table

    other evening activities

Age of the Children

Infants

    being with mother

    relaxed in a carriage

    watching from a safe place

Toddler

    watching from a safe place

    using child sized furniture

    exploring the room

    sitting on the couch

    sharing the kitchen table

    playing on the floor

    other settings

Preschoolers

    busy off the floor

    sharing the kitchen table

    sitting on the couch

    mobile active play

    using child sized furniture

    other preschool settings

School-age

    sitting by myself

    sharing the kitchen table

    sitting on the couch

    playing make-believe

    crusing

    other school-age settings

Social Interaction

Solo

    watching from a safe place

    playing quietly on the floor

    exploring the dayroom

    watching TV

    other activity alone

With Peers

    sharing a meal

    playing with toys

    using the small table

    playing socially

    other activities among children

With Parents

    helping with something to do

    sitting on the couch

    playing with parents

    sharing the table

    other activities with parents

Staff

    helping with eating

    helping with something to do

    sitting on the couch

    meeting along the pathway

    other activities with staff