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Ministère du
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Canada

Physical Components of Correctional Goals

by Kenneth L. McReynolds

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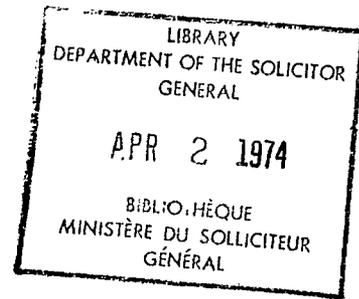
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PHYSICAL COMPONENTS OF CORRECTIONAL GOALS

by

Kenneth L. McReynolds

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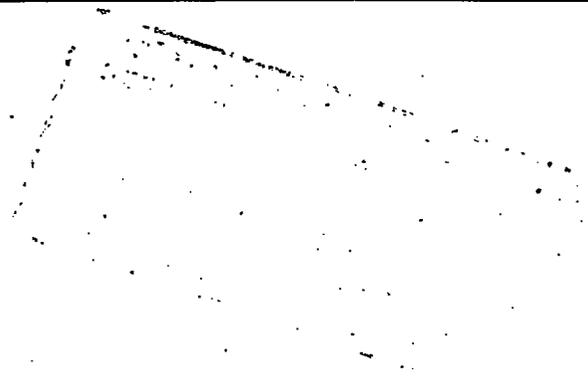
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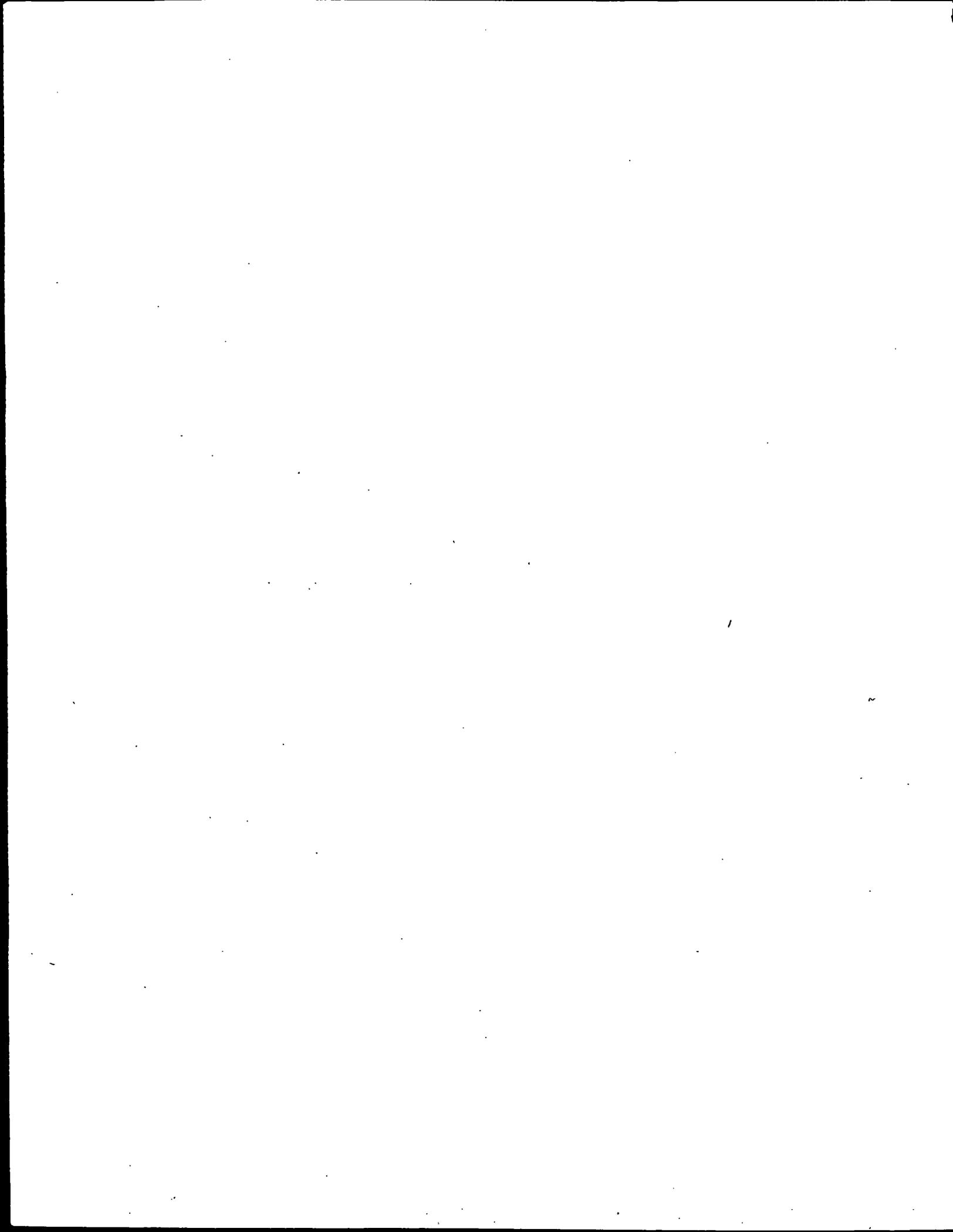
The combined interest in the problem by Dr. Ciale and Mr. I. Simpson, Facilities Planning Officer of the Canadian Penitentiary Services led to financial support for the study by the Research Centre of the Department of the Solicitor General.

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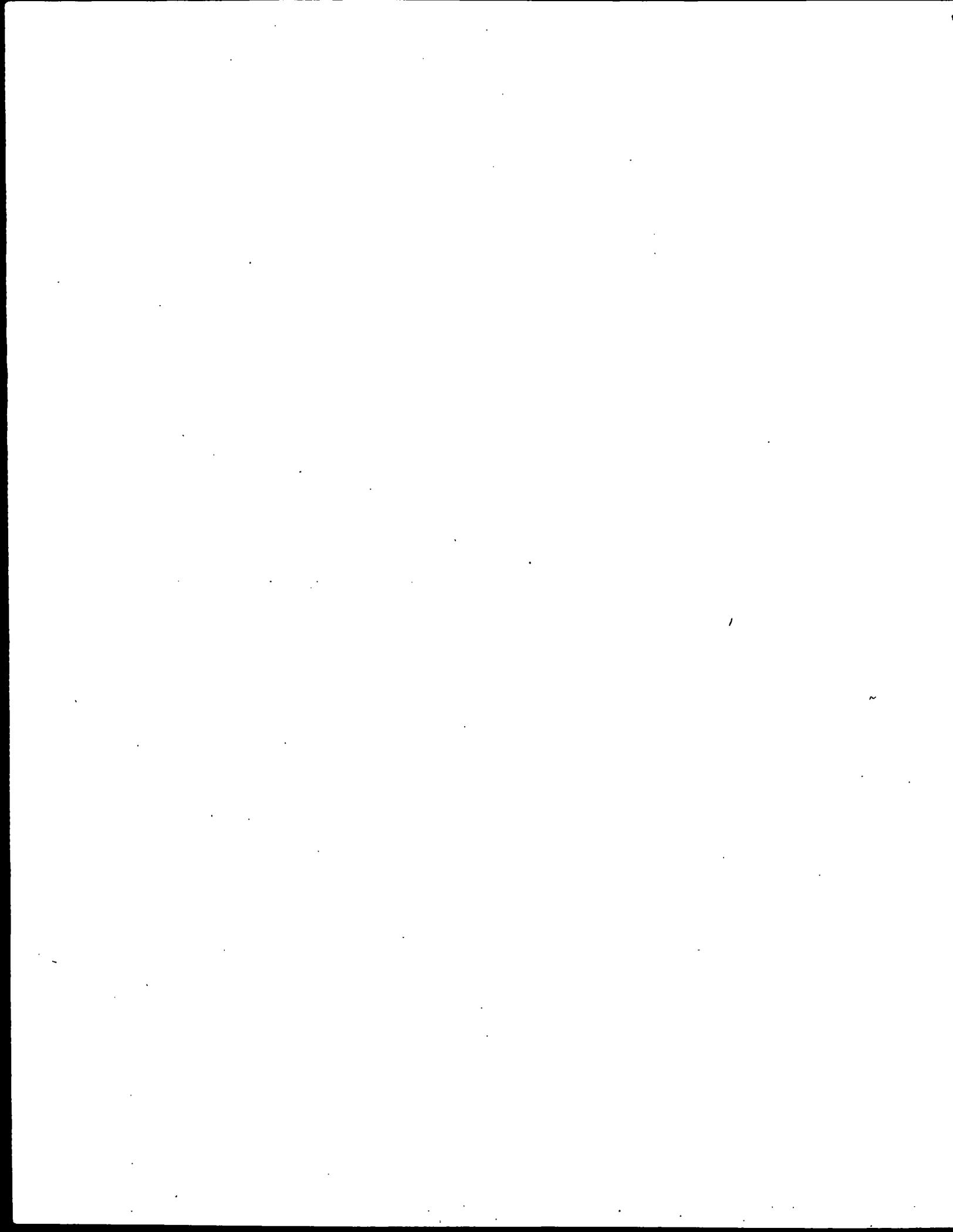


PREFACE

The genesis of this study evolved from the desire to use a systematic approach in the design of physical facilities. Past experience relied heavily upon subjective interpretations of space use and functional requirements, continually making assumptions during the design. The objective use of information on space use and behavioural patterns in the design problem was becoming increasingly difficult.

Recently, when the problem of designing correctional facilities came to my attention, I discovered relatively few pockets of data on the problem. Current demands for improved correctional facilities lack objective architectural data on which to assess the effectiveness of a facility to accommodate the correctional programs. The correctional problem is being extensively examined by sociologists, psychologists, criminologists and psychiatrists who, in most instances, briefly relate their findings to a specific building. They are holding the physical environment as fixed assuming that it does not influence the users of the facility. Furthermore, these examinations are often made within facilities designed and constructed many decades prior to the study. By the time of the examination, residents and staff have adapted to and have been molded by the physical facilities. We considered that many of the physical components of the physical environment are variable and should be examined when studying the correctional problem. As such, it is important to identify the extent to which juxtapositions of spaces hinder or help administrators to implement correctional programs. Is it possible to relate correctional goals directly in the design of correctional facilities? How can data be used more objectively in design decisions?

This study outlines a working model to break down the problem into three sets of variables, to examine the interrelationships between the variables and to restructure the variables into clearly defined groups. Empirical data gathered at four sample facilities use the working model to look for variable combinations common between the groups.



ABSTRACT

This study sets out to identify a design process where the Architect can use correctional goals in the design of correctional facilities. It is assumed that the Architect must ultimately make an intuitive leap between the requirements for correctional goals and the physical form. This intuitive leap can be made, in a more vigorous way, by analysing the problem through an approach which deals with the problem at less complex levels.

The approach to the problem uses three categories of variables to identify the complexity of interrelationships. These categories include the physical components, the operational characteristics for implementing correctional programmes and the behavioural patterns of residents and staff.

A working model restructures the physical components in a way that reduces the interaction between groups of physical variables while maintaining a high level of homogeneity within each group. Relationships between the operational and behavioural variables and the physical variables are used in the model to determine the interrelationships among the physical variables. The interrelationships, recorded on matrices, provide the input for a computer-aided factor analysis approach. Variable combinations, called 'pure core groups', exist when all the variables in the combination are interrelated. The computer is used to identify all pure core groups in a matrix and to compute an homogeneity index to evaluate the homogeneity for each group. This index takes into account the number of interactions between the variables of a group and the interactions with variables outside the group.

The physical variables are regrouped through the selection of the set of pure core groups with the highest degree of discrimination. The groups are selected according to the highest homogeneity index and the least number of outside variables. The interrelationships tie the groups together into a hierarchy from which conflicts can be identified, trade-offs can be evaluated and design decisions can be made.

The working model is used to determine what effects, if any, similar and dissimilar organisations have on the physical variable groupings. Four sample facilities are chosen for examination. Empirical data, gathered through interviews with staff and residents, observations of resident-staff encounters and from internal reports, makes it possible to identify the interrelationships between the variables.

Main findings of the study outline the importance of access to public transportation and community resources. Citizen participation within a facility relates more directly to staff encouragement than to transportation or distance travelled. The informal encounter between staff and residents is important for healthy staff-resident relationships. These encounters are influenced by circulation patterns, egress points from activity areas and the integration of staff and resident domains. The availability and juxtaposition of large and small meeting spaces in the housing unit are essential for a housing-orientated treatment program which in turn reinforces the integration of staff into the resident's domain.

The study is explorative in a subject for which there are few analytical precedents. The findings should not be taken as final conclusions but as the stepping stones for more systematic investigations.

RÉSUMÉ

Cette étude tentera d'identifier un processus de design par lequel l'architecte peut utiliser les buts de réhabilitation propres dans le design d'équipement pour centres de réhabilitation. On peut assumer que l'architecte devra en définitive se servir de son intuition pour établir le lien entre les exigences de ces buts et

la forme physique. Ce lien peut être établi plus spécifiquement en analysant le problème au moyen d'une approche qui traite du problème à des niveaux moins complexes.

Cette approche utilise trois catégories de variables pour identifier la complexité des interrelations. Ces catégories incluent les composantes physiques, les caractéristiques opérationnelles pour la mise en oeuvre des programmes de réhabilitation et les patterns de comportement des résidents et du personnel.

Dans un modèle opérationnel les variables physiques sont regroupées de façon à réduire l'interaction entre les groupes de variables tout en maintenant un haut niveau d'homogénéité dans chaque groupe. Les relations entre les variables opérationnelles et de comportement et les variables physiques sont utilisées dans le modèle pour déterminer les interrelations parmi les variables physiques. Les interrelations enregistrées sur matrices fournissent l'intrant nécessaire à une méthode d'analyse factorielle par ordinateur. Des combinaisons de variables, ou "noyaux purs", sont formées lorsque toutes les variables d'une combinaison sont intercorrélées. L'ordinateur identifie tous les noyaux purs d'une matrice et calcule un indice d'homogénéité propice à l'évaluation de l'homogénéité de chaque groupe. Cet indice tient compte du nombre d'interactions entre les variables d'un groupe et toutes autres variables externes. L'ordinateur fait aussi le calcul du nombre de ces variables externes qui agissent sur les variables d'un groupe.

Les variables physiques sont regroupées en choisissant la série de noyaux purs qui possède le plus haut degré de discrimination: les groupes de noyaux purs sont sélectionnés en tenant compte de l'indice d'homogénéité le plus haut et du plus bas nombre de variables externes. Les interrelations entre les groupes les relient en une hiérarchie grâce à laquelle des conflits peuvent être identifiés, des "trade-offs" peuvent être évalués et des décisions de design peuvent être prises.

Le modèle opérationnel sert à déterminer quels sont les effets (s'il en existe) produits par des organisations similaires ou dissimilaires sur les groupes de variables physiques. Dans les quatre complexes formant le modèle, des données empiriques sont recueillies à la suite d'interviews avec le personnel et les résidents, par l'observation des rencontres entre le personnel et les résidents et grâce à l'accès à des rapports internes. Ces données permettent l'identification des interrelations parmi les variables.

Les principaux résultats de cette étude soulignent l'importance de l'accessibilité aux moyens de transport publics et aux ressources communautaires. La participation des citoyens se rapporte plus directement à l'encouragement du personnel qu'aux services de transports ou aux distances à parcourir. Un aspect important de l'entretien des bonnes relations entre le personnel et les résidents est les rencontres informelles. L'occurrence de ces rencontres est influencée par les patterns de la circulation des individus, les points de sortie des zones d'activités et l'intégration du personnel dans le domaine des résidents. La possibilité et la juxtaposition de lieux de rencontre (grands ou petits) dans l'unité d'habitation permet la mise en oeuvre d'un programme orienté vers l'habitation et qui intègre le personnel au domaine des résidents.

L'étude est une recherche sur un sujet pour lequel il y a peu d'analyse antérieure et pour lequel le manque de données est extrême. Pour ces raisons, on ne peut tirer de conclusions finales des résultats de cette recherche.

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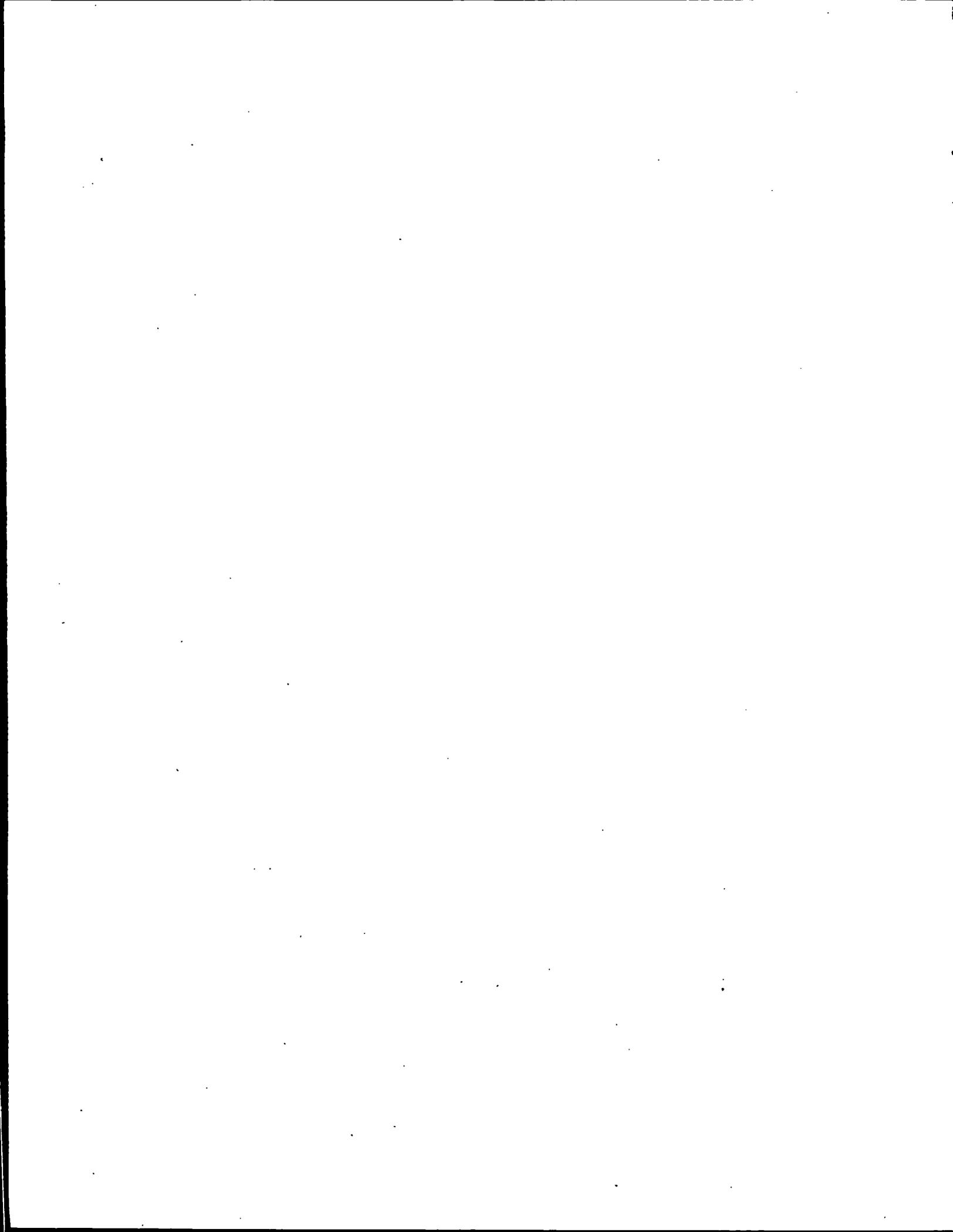
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SECTION A

Introduction

1.0

On March 31, 1966, 0.1% of the Canadian population (24,303 persons) was confined within Canadian Correctional Institutions. Statistics published by the Canadian Penitentiary Services and the President's Task Force on Corrections Report 1967 indicated alarming population increases within correctional systems which would tax many of the obsolete and overcrowded institutions currently with us. The President's Task Force Report, for example, predicted that the correctional systems in the United States would expand 50%, from a daily population in 1965 of 1,282,386 to a daily population in 1975 of 1,841,000.

Fortunately, the growth rates expected between 1965 and 1969 have fallen short of the projections. The Report of the Canadian Committee on Corrections could not substantiate any conclusive reasons for this pattern. Even without the anticipated growth, many current institutions are obsolete and have become correctional hindrances. Many need vast improvements to make them operable for contemporary correctional philosophy.

When and how did the problem of creating adequate facilities begin? Formerly corporal and capital punishment were the only ways to deal with those persons convicted by the courts of committing an offence. Flogging, mutilation and branding were the most common minimum physical restraints at a negligible cost to the public. Stocks and pillories located in the public square were very simple and inexpensive devices.

A major method used by England for dealing with convicted offenders was to ship them to the new colonies. From 1607 to 1852 it is estimated that over 150,000 convicted offenders were sent to either America or Australia.

The pressures for a more humane approach in caring for the convicted offender resulted in physical confinement.

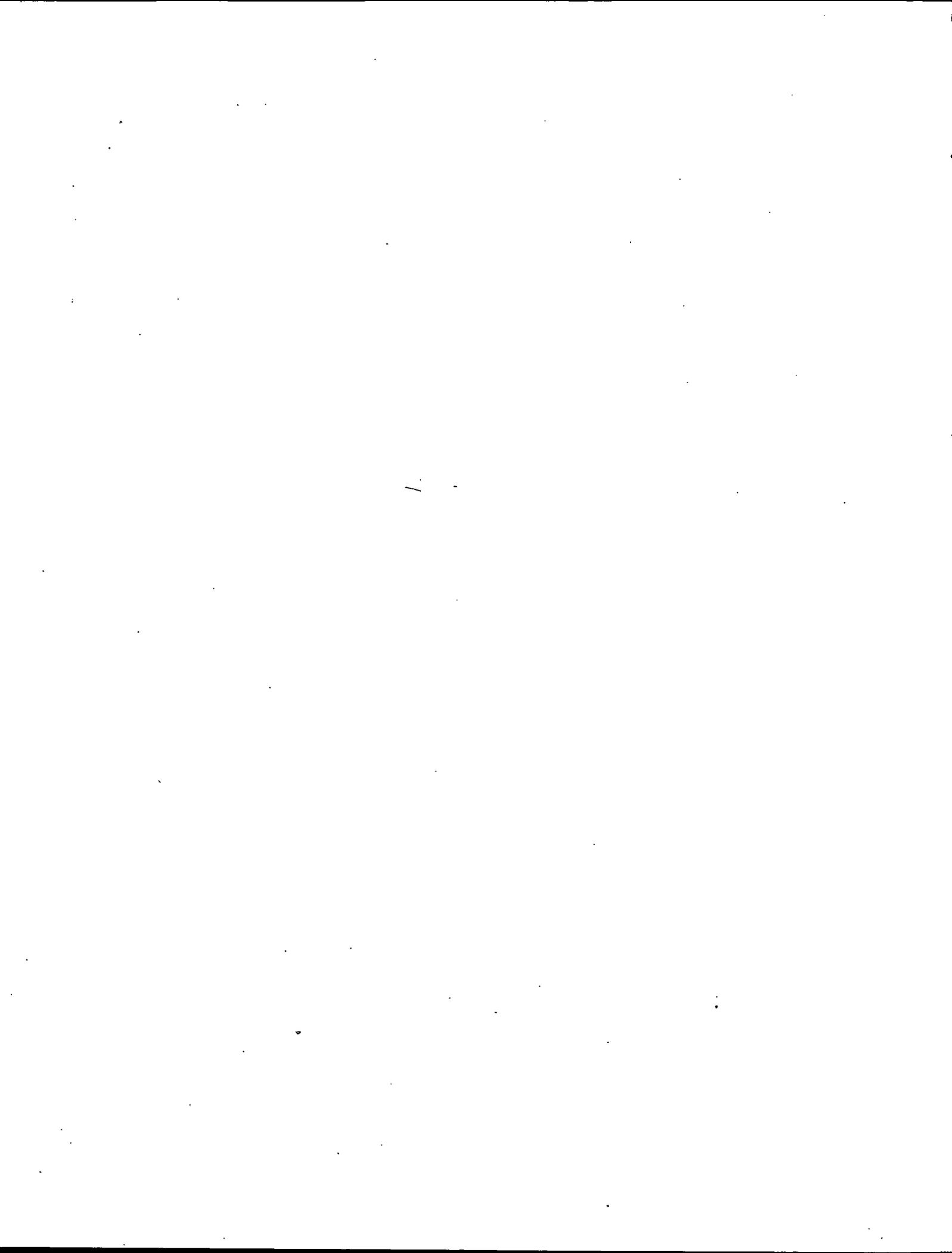
Physical Confinement

1.1

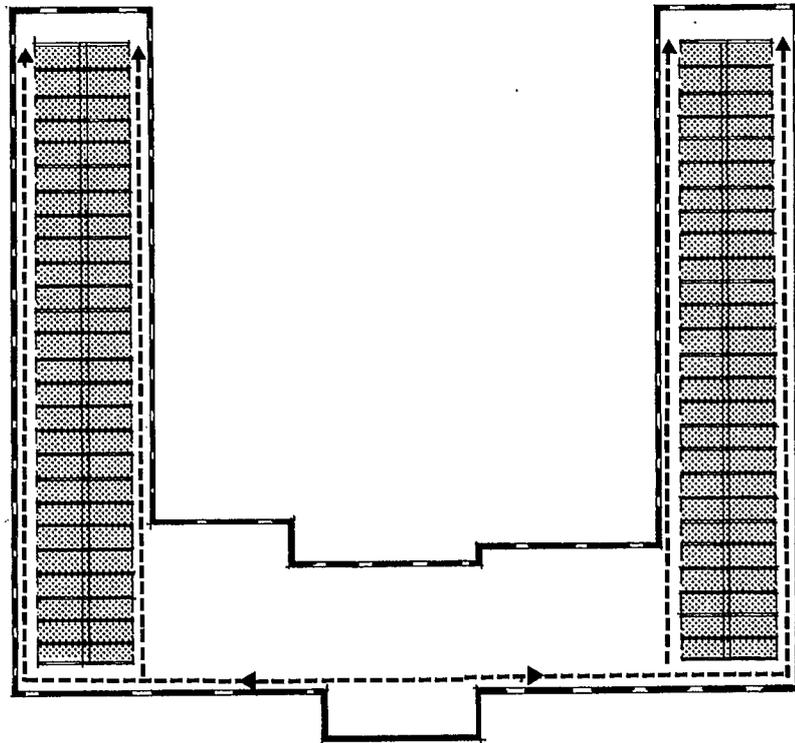
The first common alternative to corporal and capital punishment and the first solution to physical confinement was the practice of housing all convicted offenders in a single room. All were placed within the same confines regardless of age, sex or condition of health. This system was quite inferior for living conditions were very unsanitary, disease was rampant, and starvation and suicide were common occurrences.

The physical facilities consisted of nothing more than a large room which was securely barred. The administrative unit was very small and its only duty was to maintain control of the offenders.

The development of the physical facility, as it exists today, was a painstaking process, extending over four centuries from its crude beginnings in the sixteenth century. One of the first complexes to confine convicted offenders was St. Bride's Wells in London - 1557. During the reign of Henry VIII, all monasteries were closed and since they had housed a great number of vagrants a great need was created for more institutions. The public were not aware of the overcrowding and obsolete conditions in the physical facilities until 1764, when Cesare Beccaria exploited them in his book, "Essays on Crimes and Punishment". John Howard further aroused the public conscience with his book, "The State of the Prison in England and Wales". Consequently, a law was passed in 1779 establishing the use of penitentiary houses with cellular confinement.

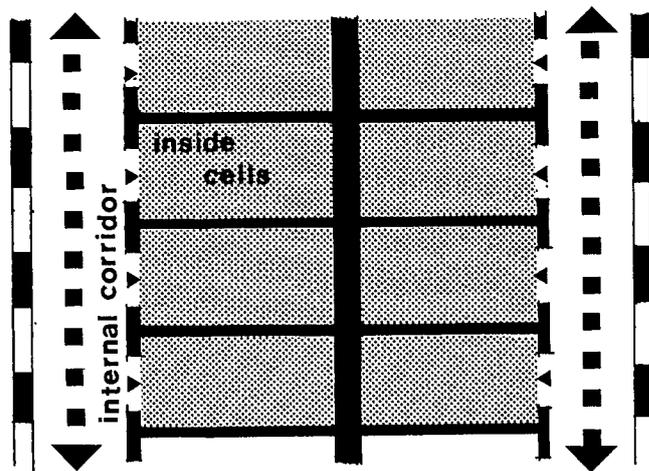


a) Plan of Auburn State Prison



Auburn State Prison 1828

b) The inside cell of Auburn



Plan of Inside Cells at Sing Sing, N.Y.

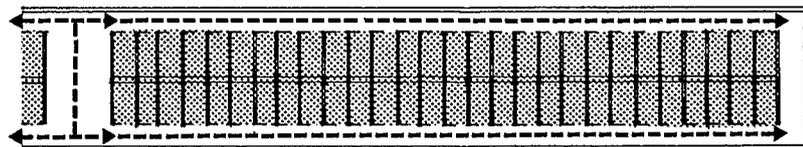


Figure 2: Inside Cells – Auburn State Prison and Sing Sing, N.Y.

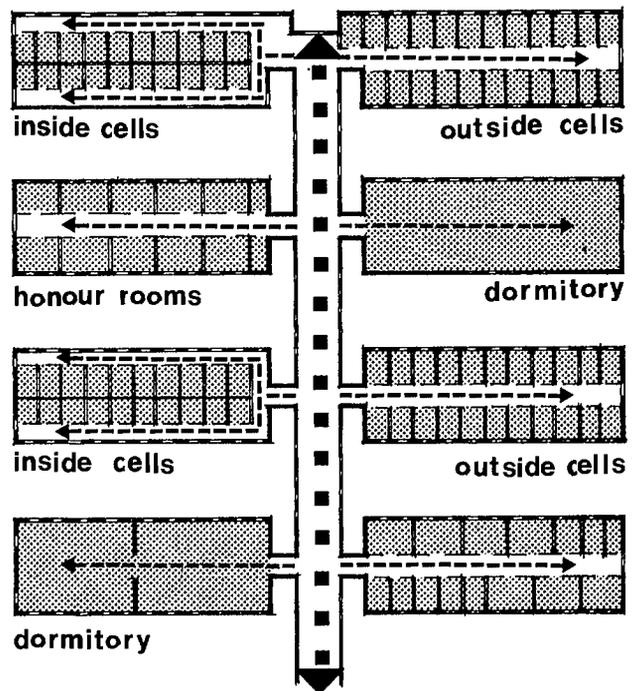
The simplicity of the nineteenth century custodial facilities was no longer adequate to accommodate the prescriptions for the resident's treatment. Additions to existing physical facilities emerged in the form of industrial shops, classrooms, extensive medical facilities, recreational facilities, libraries, etc. The movement, however, was hurried and planning was insufficient. This resulted in over-crowding, poor circulation and control and general dissatisfaction among staff and residents. Sites where these problems exist include the Auburn State Prison, Eastern Penitentiary in Philadelphia, Western Penitentiary in Pittsburg, Kingston Penitentiary in Kingston, Ontario, and St. Vincent de Paul Penitentiary in Montreal, Quebec.

New physical facilities, identified according to plan forms, such as the telephone plan, the interior court plan and the campus plan, began to make their appearance in the 1930's and 40's in the United States and in the 1950's in Canada.

TELEPHONE PLAN

Developed in Fresne, France in 1898, and resembling the form of a telephone pole, this plan solves the problem of excessive corridor lengths and maintains a separation of the different types of residents. A spine corridor connects the living units with the "treatment facilities" of the physical complex (Figure 3).

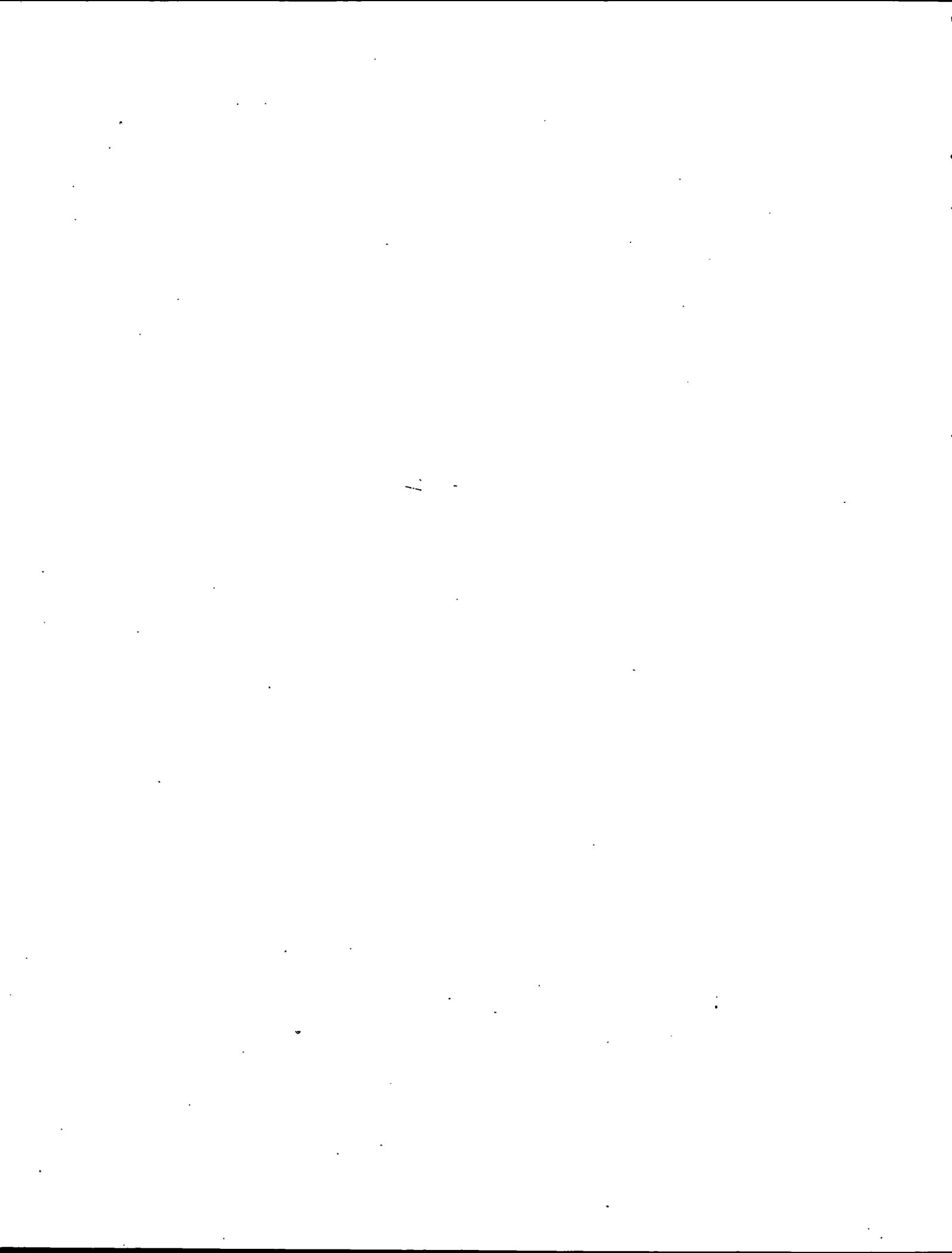
Figure 3: Telephone Pole Plan originating in Fresne France 1898



Large resident populations can be accommodated by this plan. This is exemplified by two major complexes in the United States: The Federal Penitentiary in Lewisburg, constructed in 1932 for 1,414 residents (Figure 4), and Camp Cooke, California, constructed in 1947 for 1,417 residents. Canada also adopted this plan at the Women's Prison in Montreal built in 1966 for 126 residents.

INTERIOR COURT PLAN

The interior court plan uses the building as the peripheral custodial barrier. All resident outside activity is concentrated within the interior court. An example of this development is the Federal Correction Institution in Danbury, Connecticut (Figure 5) constructed in 1940 for 517 residents.



Rather than pursue a definite plan type, some facilities comprise several plan forms. For example, the telephone plan was integrated with the interior court plan at Greenhaven Institution, New York in 1930 (a facility for 2,016 residents). Facilities became immense. The Michigan State Prison, built in 1929 is reputed to be the largest in the world, housing 5,737 residents.

Treatment programmes were initiated; however, the facility was often unable to accommodate the variety of equipment and spaces needed to meet the needs of the residents. Work placement was frequently independent of the resident's needs and did not contribute any therapeutic solutions to the problem of the resident's delinquency (Tolhurst 1966). Fornataro (1965) concluded, from a study of correctional facilities, that the traditional momentum of custody and punitiveness has not really been overcome in Canada, nor have any effective remedial programmes been implemented.

Even with the introduction of treatment, the resident was still dissociated from the free community. The characteristics of the prison community, found by Donald Clemmer (1926) and by Goffman (1961), in his "Total Institution", worked against the most ambitious and desirable correctional aims. Relationships between staff and residents remained distant and an application of mass treatment stripped the resident of his individuality. This philosophy still had a rather high rate of recidivism, 35 – 40% (Glaser 1964). However, it was an improvement over the custodial philosophy. The concern for treatment today is being expanded in two major areas: socialization and resocialization. Socialization as defined by Street (1966) was the development of the resident in his relationship with others. Resocialization indicates that the resident must undergo some correctional guidance in his behaviour before he socializes with others again. The treatment programme, therefore, requires substantial knowledge and understanding of each resident and a close relationship between staff and residents.

Trends

1.3

Current trends are breaking down the barriers that have existed between a correctional facility and the free community. Criminologists are striving to use the community to resocialize and socialize the resident wherever possible and whenever applicable. Community-based programmes, such as the Essexfield Project in New Jersey and the Prova Project in Utah, led the way in the integration of residents in the community.

Daniel Glaser (1964) predicts that the location of physical facilities will eventually be related directly to the community from which the resident originates. These facilities would be smaller in size, relying on contacts with community organizations. Glaser foresees most of the treatment being exercised through person to person contacts between staff and residents in the routine acts of work, study and play. Howard Gill (1961) envisions residents living under normal conditions comparable to the free community where mutual trust and respect, co-operation and willingness replace the old preoccupation with security and segregation.

However there is a continuing need for some custodial facilities and these facilities currently exist. The problem before us then becomes one of providing physical facilities which reflect the current trends of community integration and individualized attention and which can grow with changing correctional philosophy.

Purpose

2.0

PURPOSE

The specific purpose of this study is threefold:

1. To examine the relationship between the goals of correctional administrators and the physical facilities in which they are implemented.
2. To examine the relationship between physical facilities and alternative correctional goals.
3. To relate 1. and 2. above in the design process.

The term 'correctional goal' refers to the aim of dealing with convicted offenders in a correctional system. The American Correctional Association and the Report of the Canadian Committee on Corrections see the aim of correctional services as being twofold. First, to carry out the sentence of the court, to restrain those persons who may endanger the safety of others in the community. Secondly, to take whatever course of action is necessary to return the offender permanently to the community as a contributing member of society.

The application of these aims varies greatly between various organizations. Street, Vinter and Perrow (1966) studied organizations for treatment and identified the correctional goals as "essential constraints built into the organization". Correctional goals often derive from the aspirations of administrators of correctional systems extra muros of any physical facility. Yet these goals are implemented in the physical facility by a correctional organization which does not necessarily hold an identical definition of the goals. The treatment techniques and operational procedures vary as do the many disciplines involved in this problem.

Interdisciplinary Nature of the Problem

2.2

The current implement of correctional techniques depends upon the individual characteristics of the offender, his interaction with groups and his ability to change. This has involved professionals, such as sociologists, psychologists and psychiatrists. The new discipline of criminology and the consultation of architects further complicate the problem. Psychologists and psychiatrists continually search for common characteristics among offenders, developing treatment techniques which produce resourceful citizens. The criminologist studies the most effective ways to implement these treatment techniques. The Architect strives to facilitate these treatment techniques in a physical setting.

The cultural characteristics of prison populations, the effects of institutionalization and impersonalization, and the characteristics of individual inmates have been examined in many different ways. Clemmer (1926) provided one of the first comprehensive views of the sub-cultural structure within the prison population. The effects of impersonalization within the 'total institution' was observed by Goffman (1966).

In most cases when studies have been completed, the physical facility has received only a brief reference but sufficient to recognize its importance. Furthermore, these studies assume that the physical facility is a fixed element which doesn't influence human relationships. In the California Report 'Design for Change' (1968) the physical facility was considered essential in the correctional program. Srivastava (1968) found that relationships developed within physical facilities influenced the character of the individual. Therefore, the framework of the physical facility can have great influence on the character development of a resident.

Identification of Actual Use Patterns

2.3

Many spaces within a physical facility are designed with a specific use in mind and are labelled as such by the designer. Since spaces can accommodate a variety of uses, it is no surprise to find that often they are not used as originally intended. The problem is by no means confined to correctional facilities. Van der Ryn and Silverstein (1966) when studying student housing, found that ". . . some of the most cherished assumptions of administrators and designers are inconsistent with actual preferences and activity patterns of student users of university-sponsored housing." But there is a great difference between students and offenders. In the correctional facility, the offender resides unwillingly with persons not of his preference. He lives within a predetermined programme designed to change his behaviour either through treatment or custody.

Spaces, then, are multi-purpose and their assembly into a facility determines their effectiveness in accommodating varying use patterns. Designers and administrators require a terminology so that they can apply the use patterns and functional needs of staff and offenders to the development of a new physical facility.

It is essential that the designer understands the terminology of the criminologist and the administrator and vice versa, when creating a new facility. Designers, criminologists and administrators must mutually understand the implications of each other's decisions. Only in this way can a physical facility be created in which the correctional goals can be achieved.

DEFINITION OF TERMS

Before delving into the problem it is important that the context of several terms used in this study be fully understood.

CORRECTIONAL PROGRAMS

The correctional goals, for a correctional system, are implemented through a wide range of correctional programs. A correctional program is defined as "the technique of applying treatment or the procedure of operating a service, or function". This accounts for both aims of the correctional goals. Such programs may include many types of group discussions, individual therapy or community integration programs.

ISSUES

The problem in this study is broken down into three groups of constituent parts called issues — operational, behavioural and physical issues. These issues remain constant while their respective component parts may vary.

The operational issue includes the operational procedures necessary to restrain persons who endanger themselves and/or the safety of others in the community and treatment techniques employed within a physical facility.

The behavioural issue involves the social-behavioural patterns of offenders, staff and administrators within a physical facility. Included in this issue are such variables as informal and formal encounters, group activity and resident retreat.

The physical issue includes the physical characteristics and component parts of the physical facility, i.e. locational characteristics, building plan, availability and allocation of spaces, etc.

VARIABLES

The component parts of each issue are called variables. The *operational* and behavioural variables, selected in this study, represent those identified variables which have an effect on some physical variable.

LINK

The number of variables within each issue represents a separation of a problem into its more clearly understood parts. Some of these variables are independent; however, most are influenced by or influence other variables.

A link is established when the influence between two variables is traced and identified. A link is defined as the interaction among operational, behavioural or physical variables which affect the structure of a physical variable.

Approach

3.0

Many forces, which are outside the structure of the study, influence the methods of formulating solutions to the problem. These involve: the degree of complexity of the problem; the range of sample facilities available for study; and the range of disciplines involved in the study. The application of this influence in solving the problem is termed the "approach" to the problem.

Preliminary investigation of the problem failed to uncover any relevant data pertinent to a study of physical facilities and correctional goals. Most available data on many correctional aspects is of little use for the design of physical facilities. Therefore, it is important that the correctional design problem be studied in a systematic structured way, looking at the general issues of the problem rather than the specific ones. This study is considered a pilot study where an overview examination will open the way for a more vigorous investigation of smaller issues.

This overview examination is further influenced by the inconclusive and often unrelated data on many sociological and psychological aspects of the problem. Many correctional techniques are in a state of change (Tolhurst 1966), increasing the difficulty to determine those correctional techniques which ultimately affect or are affected by the design of physical facilities. There is a lack of knowledge and an unsystematic approach to the development of correctional techniques (President's Task Force on Corrections 1966). Powers (1961) compared treatment programs to "... a sort of sociological smorgasbord ranging from the punitive to the permissive, from restraint to rehabilitation, from repression to reformation." Without definitive knowledge of the success of a program, several programs are possibly very important within the total structure of the correctional system, yet, undesirable as an individual answer. In such instances, assumptions are worth stating, even if they are wrong, so that they may be improved by criticism. (Alexander 1968)

The overview of the problem permits an examination of some of the many alternative techniques without becoming involved at this time, in the gathering of "hard data". The hard data approach of sociologists and psychologists is not considered as important as structuring the problem to arrive at a more objective design solution for the physical facilities. This study follows Van der Ryn's experience with Student Dorms in 1966 when he found that "preliminary reconnaissance of an environment can quickly yield information to the designer and avoid gross errors".

Residents

3.2

Many terms have been used to identify convicted offenders such as inmate, convict, prisoner — all connoting confinement, segregation cells and striped uniforms. The term, student, is not totally applicable to the variety of offenders that existed, for many convicted offenders are not studying but are working or simply being confined. The term "RESIDENT" bears no previous connection with the correctional problem yet it implies that the convicted offender is residing within the physical facilities. The term "RESIDENT" will be used in this study to indicate all convicted offenders confined within a correctional facility.

As of March 31, 1968, there were 23,368 male and female residents within Canadian Correctional Institutions (Table 1). Of this number, 81% were classified as adult Male. The age of an adult male varies among the 10 Provinces in Canada. For example, British Columbia, Manitoba and Quebec recognize a minimum adult age of 18 years, Newfoundland 17 years and 16 years for the remaining Provinces. As a result of their high percentage, adult male residents were selected for this study. This group also comprises a number of residents between the minimum age and 24 years called "young adults".

TABLE 1

Population in Canadian Correctional Institutions on March 31, 1968 (Canadian Institution Statistics 1967-68)

Type of Institution	Residents	
	Male	Female
Training schools (under minimum age)	2,552	1,104
Provincial institutions	12,130	556
Federal institutions	6,904	122
Totals	21,586	1,782

Correctional typology classifies the adult male residents in a variety of ways. Howard B. Gill (1961) outlined four broad divisions of residents: the new resident; the tractable resident; the intractable resident and the defective resident. The new resident has not experienced confinement in an institution. The tractable resident is capable of correctional treatment and has a desire to change his ways. The intractable resident (professional thugs, gangsters, racketeers, etc.) is capable of correctional treatment but has no interest in changing. He rejects all efforts to change, wanting only 'to do his time'. The defectives (the mentally deficient, sex deviates, drug and narcotic addicts, etc.) are incapable of correctional treatment and require intensive care.

Several typologies peculiar to each correctional system are used to determine the characteristics of the residents. The classification system can be sociologically, psychologically and psychiatrically based. Each orientation, ultimately affects the type of correctional programs to be implemented. However, the European idea of grouping according to age, recidivism, length of sentence, etc. is still used by some correctional systems (Tolhurst 1966). In practice, it is common to mix the resident types so that a clear definition becomes difficult. This study examines those physical facilities which accommodate tractable and new adult male residents.

Physical Facilities

3.3

The adult male resident in Canada is committed to either a Provincial System, if his sentence is under two years, or the Canadian Penitentiary Service, if his sentence is two years and over. The Federal institutions are most commonly called 'penitentiaries', reflecting their pre-1900 construction, and the more recent institutions are called 'correctional institutions'. Many provincial institutions are called gaols, training schools, etc., which indicates the continuing search for terms to refer to the physical facilities in which correctional programs are implemented. Many of the terms are what Chermayeff and Alexander (1963) and Lindheim (1965) call "catchwords" in that they imply visual conceptions of past solutions.

To the designer, the correctional problem is one of interrelating several physical components into physical forms known as 'PHYSICAL FACILITIES'. This term does not connote preconceptions of past solutions and yet implies the complexities within the physical solution.

The Directory of Correctional Institutions and Agencies of the United States of America, Canada and Great Britain (1968) lists over 467 physical facilities in Canada and the United States for the adult and young adult male offender. This covers a wide range of facility types.

Selection Criteria

3.4

The criteria, for selecting sample facilities, requires facilities which reflect contrasting solutions of the correctional problem; which are representative of the wide range of solutions; which have a similar date of construction; which reflect a stage in the changing correctional philosophy, and which have available literature on the correctional goals and techniques being implemented.

The 467 physical facilities, in the 1968 Directory of Correctional Institutions, can be categorized according to the six broad categories listed in the President's Task Force on Corrections (percentage of total facilities).

Type A — the major institutions such as penitentiaries, prisons, correctional institutions and any other major complex: 29 (30%) in Canada and 144 (39%) in the United States.

Type B — the smaller major facilities such as reformatories, training schools, industrial and vocational centres: 18 (14%) in Canada and 64 (17%) in the United States.

Type C — all minimum security facilities such as farms and farm annexes, camps and road gangs: 40 (42%) in Canada and 118 (32%) in the United States.

Type D — physical facilities constructed specifically and solely for the purpose of reception and classification. 0 in Canada, 16 (4.5%) in the United States.

Type E – pre-release guidance centres or any community based centre: 0 in Canada, 16 (4.5%) in the United States. (Today, Canadian Penitentiary Service has four such physical facilities in operation.)

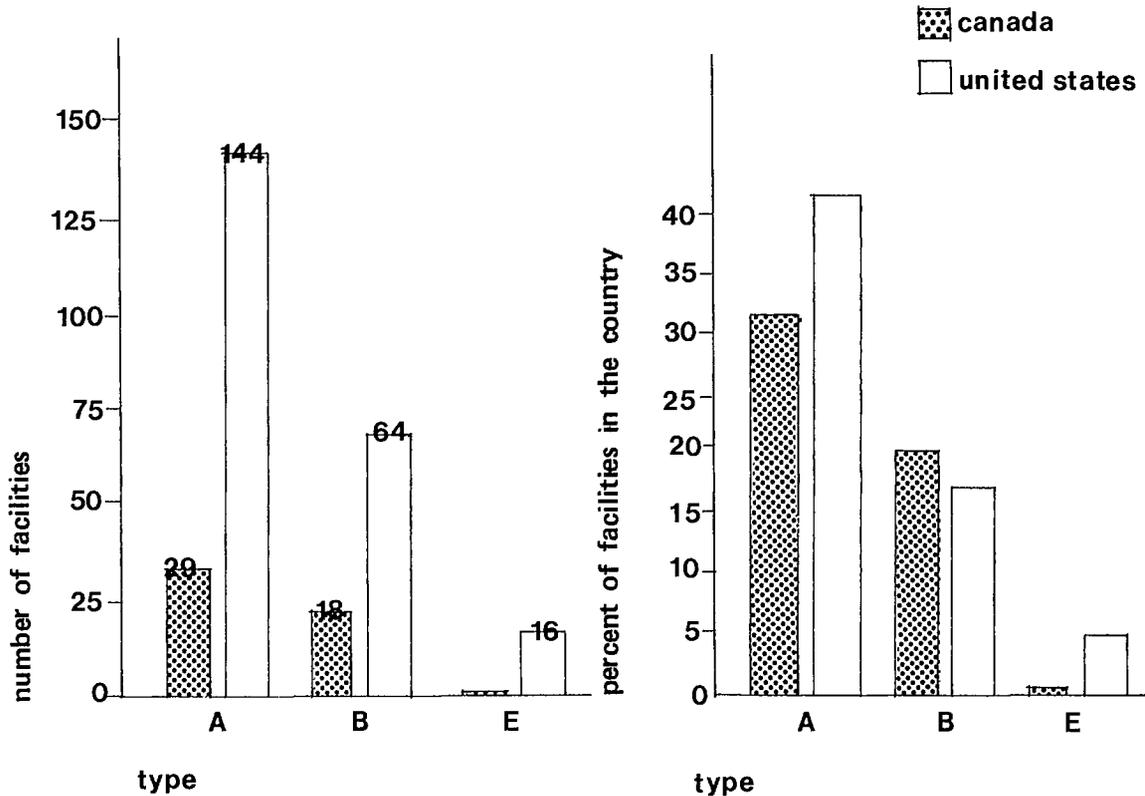
Type F – all physical facilities for special correctional programs for drug addicts, alcoholics, mentally retarded and the mentally ill.

The greatest percentage of the total is Type C, which consists largely of small road gangs and forestry camps where the facilities are often temporary mobile units. These facilities are relatively insignificant for the purpose of this study and are excluded from the selection. Types D and F, 8% of the total number of facilities, involve specific treatment programs, but do not reflect the majority of facilities and are therefore also excluded from the selection.

TABLE 2

Physical Facility Types Related to Number of Facilities, Data extracted from the 1968 Directory of Correctional Institutions and Agencies of the United States, Canada and Great Britain.

Type C, the greatest percentage of the total, consists largely of small road gangs and forestry camps where the facilities are often temporary mobile accommodation. These facilities are felt to be relatively insignificant to the purpose of this study and are excluded from the selection. Types D and F both involve specific treatment programs which do not reflect the majority of complexes. Since they represent only 8% they are also excluded from the selection.



The facility types, excluding C, D and F are listed in Table 2 according to the number of facilities and their percentage of the total number of facilities for each type in Canada and the United States.

The types of complexes excluding C, D and F listed in Table 3 according to number of complexes and the percentage of the total number of complexes for each type in Canada and the United States are taken from the 1968 directory of Correctional Institutions and Agencies of the United States, Canada and Great Britain. It must be realized however that between January 1, 1968 and 1970, several new complexes have become operable.

Types A, B and E represent over 55% of the total number of physical facilities in both countries. In spite of the limited 2.5% in Type E, it is included in the selection due to its representation of the current trend of community-based correctional programs. One physical facility from each of Type A, B and E provides the wide range of solutions from which to examine variable patterns for program dependency. Two physical facilities of one type provide further comparison. Two Type A facilities are selected since Type A has twice the number of Type B facilities.

The development period for Types A, B and E did not occur simultaneously. Appendix I illustrates that 16% of all existing complexes were constructed in the nineteenth century and 35% between 1955 and 1968. Examination of the initial construction time for all existing facilities dates back 150 years. Type B had its origin in the 1820's in the United States, and 1910 in Canada, while Type E developed in the sixties represents the most recent trend in corrections. Type E facilities have not been illustrated for Canada, although three facilities have been organized by the Canadian Penitentiary Service since 1968. The facilities selected for study were all constructed in the 1960-1968 period and reflect similar correctional philosophies.

TABLE 3

Average Sizes of Facility Types. Data extracted from the Directory of Correctional Institutions and Agencies of the United States, Canada and Great Britain (1968)

Facility Type	Average Resident Population	
	Canada	U.S.
A	404	1,053
B	240	706
E	—	42

Case Studies

3.5

COWANSVILLE INSTITUTION (COW)

The first physical facility studied is the Cowansville Institution (COW) in Cowansville, Quebec. It is a Type A facility, under the jurisdiction of the Canadian Penitentiary Service, constructed 60 miles south of Montreal in 1964. The maximum bed capacity of 432 residents reflects the Canadian average size for Type A facilities (Table 3). During the observation period, there were only 232 residents in the facility. Most of these were between 19 - 24 years of age with sentences of two years or more.

It is located 5 miles outside the town of Cowansville in the rural countryside and 15-32 miles away from the closest urban areas (25,000 – 70,000 people). The major urban centre, Montreal, is 58 miles from COW.

The facility is enclosed by a 14' wire fence through which access is gained at the main gate (Figure 7) and the vehicle sally port. All persons must pass through the main gate which has two large electrically operated doors, controlled by the gate-keeper.

The plan (Figure 8) shows a division of the facilities into five separate areas: the administration centre; the living centre; the community centre; the special handling area; the workshop centre. Their physical assembly forms a pinwheel circulation system that forces all movement through the central control room outside the administration unit.



Figure 7: *The Main Entrance Gate to COW*

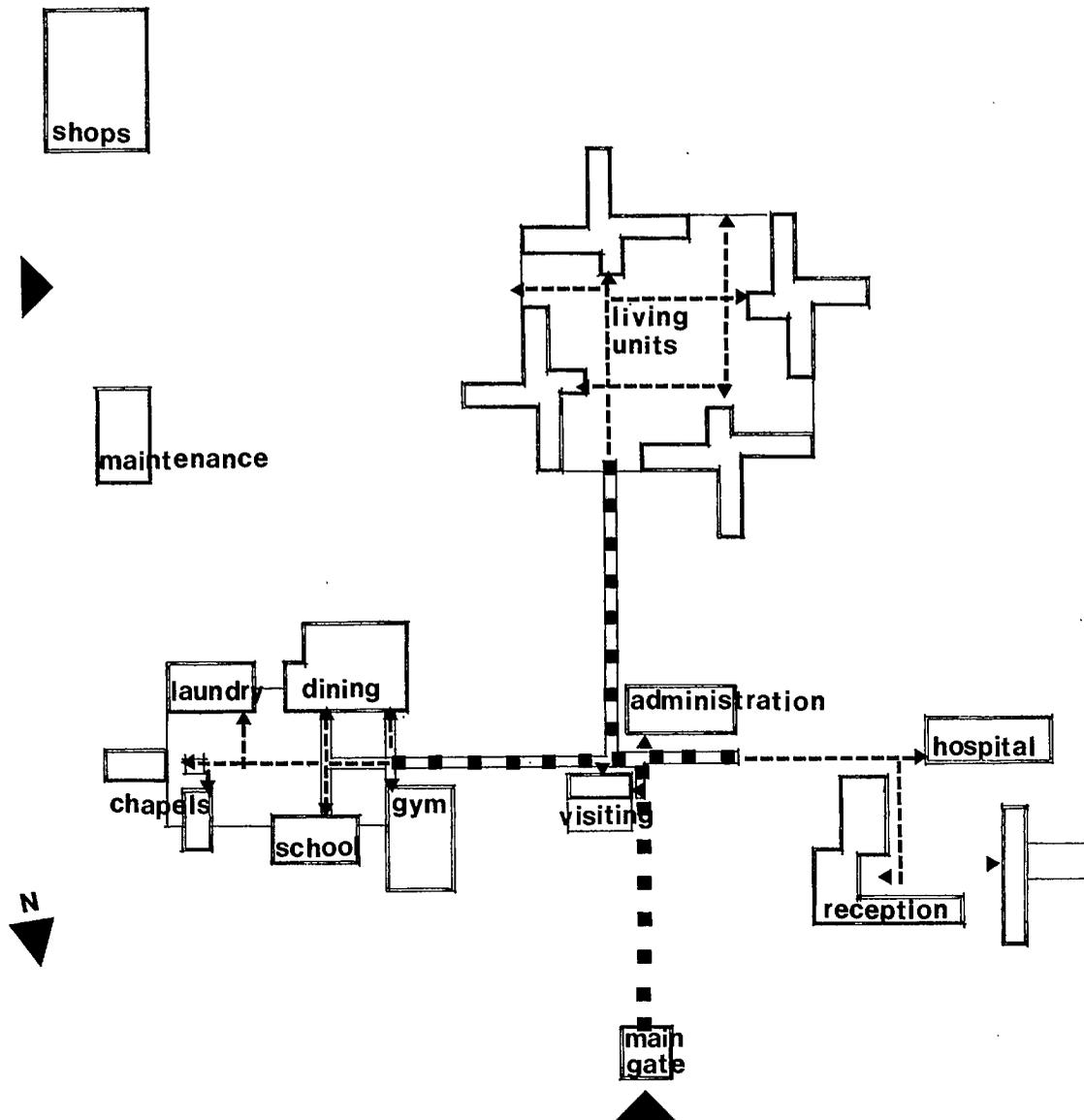


Figure 8: Plan of COW facility

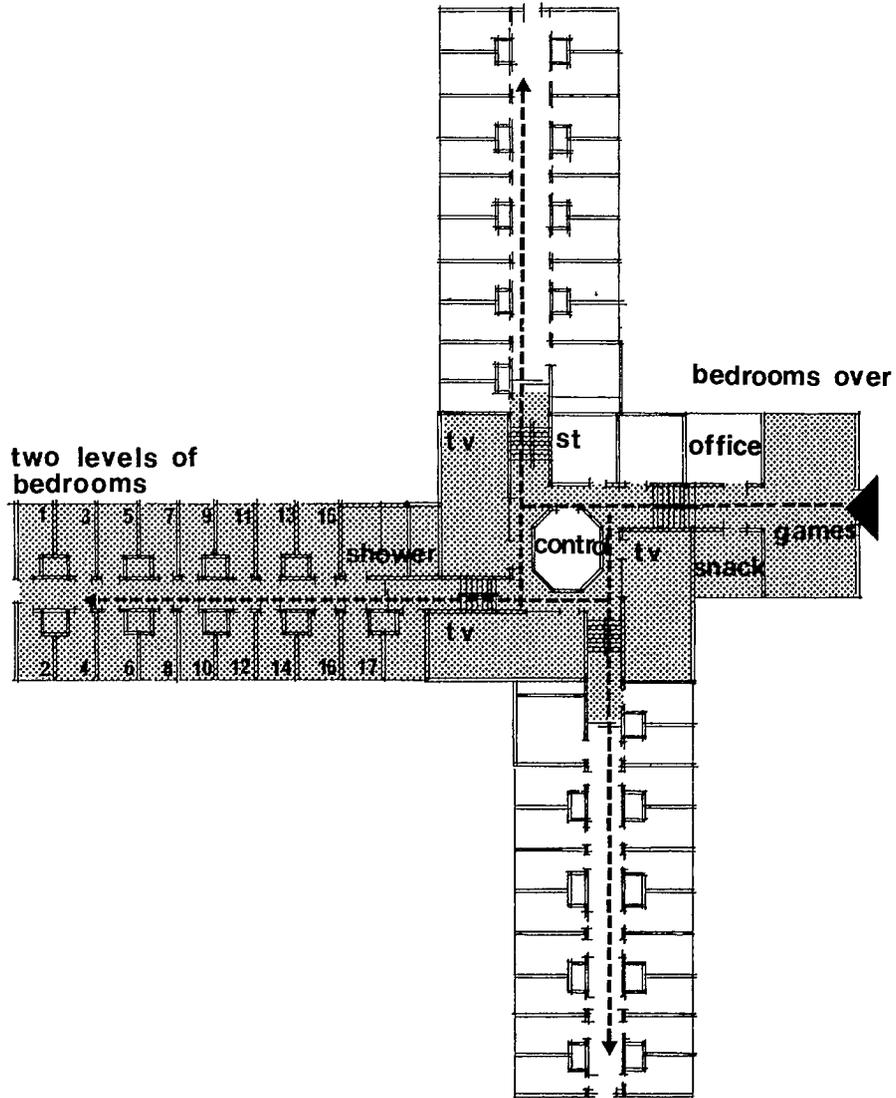
The living centre is composed of four individual buildings with small singular cells, a dayroom and two TV rooms for resident communal activity. Each building (Figure 9) houses 108 residents in six 17-room units. One larger space near the entrance serves as a game room. The administration centre breaks down into administrative offices and a visiting unit. There is only one space in the office area which can accommodate meetings of up to 20 people at one time. The visiting area is quite large (1200 sq. ft.) adjoining a control space. The community centre consists of a large multi-purpose room which serves as a gymnasium and auditorium. In the adjacent school building, three classrooms and a library comprise the four major spaces. Two large spaces (rooms), each accommodating 165 residents, serve as dining spaces with an adjoining smaller dining space used by the Staff.

There are two exterior courts, one next to the community centre, and one opposite the living centre (Figure 10). These courts are very bleak without any landscaping or recreational facilities and dotted with signs advising everybody to keep off the grass.

Controls in the external covered corridors consist of concrete grills along the sides and electrically operated steel grills at access points. The covered corridors are 14' wide, lined by concrete grills 6" apart (Figure 11).

Figure 9:

Typical Floor Plan of Housing Unit. Shaded area represent useable area in the unit by a resident in that wing



typical floor plan - housing unit



Figure 10: *Exterior Court to the Housing Units at COW*

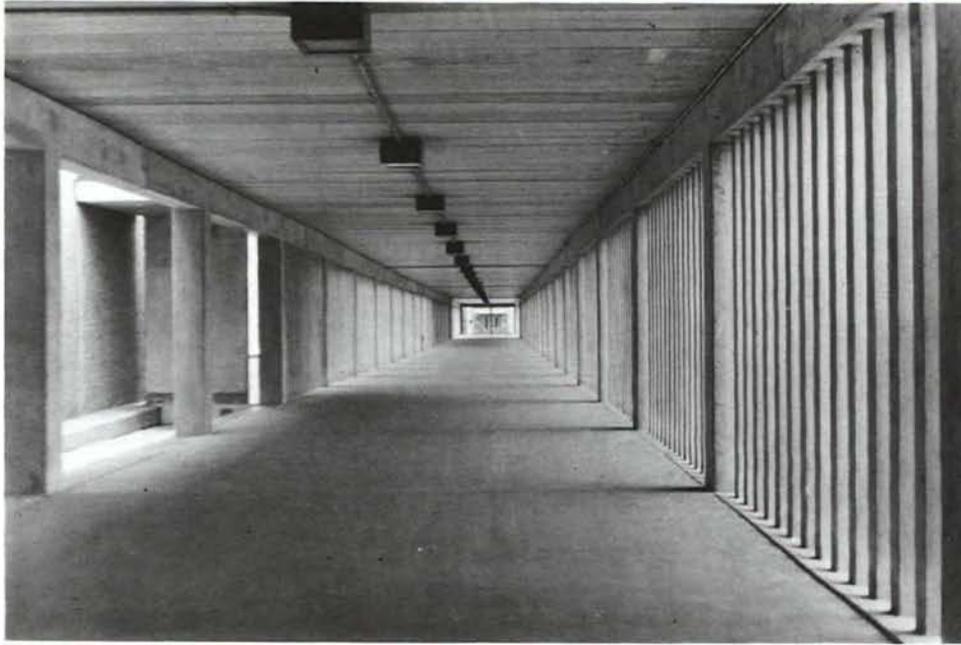


Figure 11: *External circulation corridors at COW*

The windows on all buildings are covered with precast concrete grills (Figure 12) permitting manual operation of the windows by residents. All movement must pass either through the control centre at the heart of the external corridor system or through the various sub-control units within each activity area.

In COW there are three identifiable domains. The residents' domain is confined to the housing unit in the living centre, and is defined by physical barriers. The staff domain centers around the administrative area, except for the control stations in each activity area. The public domain is restricted to either the visiting unit or the interview spaces in the administration area.

WISCONSIN CORRECTIONAL INSTITUTION (FL)

The Wisconsin Correctional Institution (FL), located in Fox Lake, Wisconsin, is also a Type A facility with characteristics similar to COW. The age of the residents at FL is predominantly 19-23 years, with an average sentence just under two years. FL has a maximum resident population of 624, which is under the American average of 1,053 residents per facility. (Table 3). Constructed in 1960, according to clearly defined correctional goals, its location is somewhat similar to COW, with the nearest urban area being 60 miles away.

The facility is located sixty miles from the urban areas of Milwaukee and Madison, in the heart of farmlands in rural Wisconsin. Several small communities within the vicinity of the complex, reflect the pattern seen at COW.

The entrance to the facility is off a rural side road two miles from a through highway to Madison (Figure 13). Two wire mesh fences with six guard towers encompass the buildings. The only entrance is through a small gate controlled by a guard (Figure 14).

The plan (Figure 15) shows a "campus" arrangement of buildings within the fenced enclosure, with extensive recreation space around the buildings. Six housing units, each with a capacity of 96 residents, surround the two exterior courts. Opposite the housing units are classrooms, workshops, dining halls, reception, medical and administrative units. The housing units (Figure 16) have four self-contained wings with 24 residents to a wing, which are patterned on the telephone plan. These open onto a central spine corridor, off which is located the control room. The only large space in the unit is the basement storage area off the main corridor.



Figure 12: *Three sets of Movement Controls at COW*

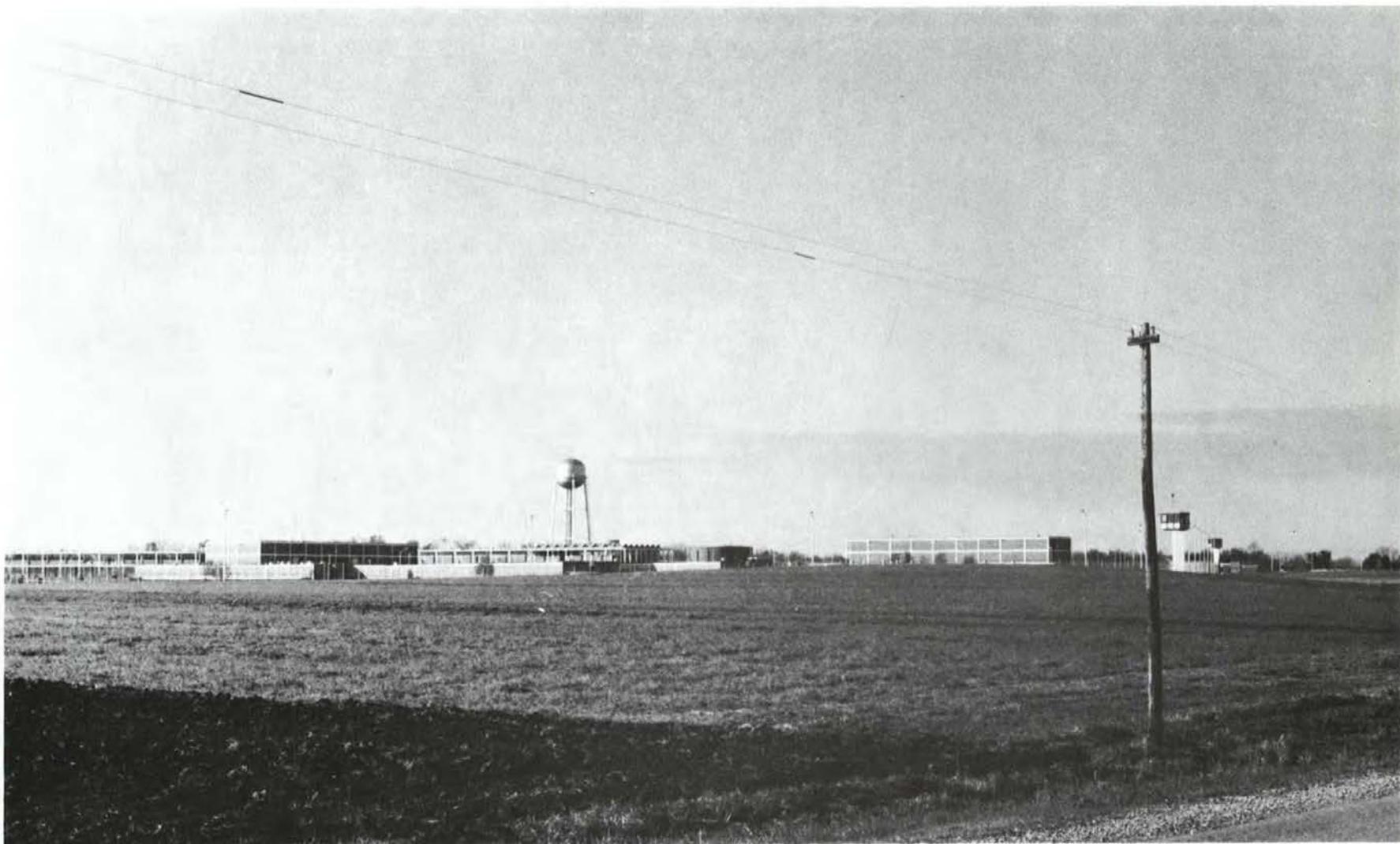


Figure 13: *View of FL Facility from Rural Road.*



Figure 14: *View of main gate at FL.*

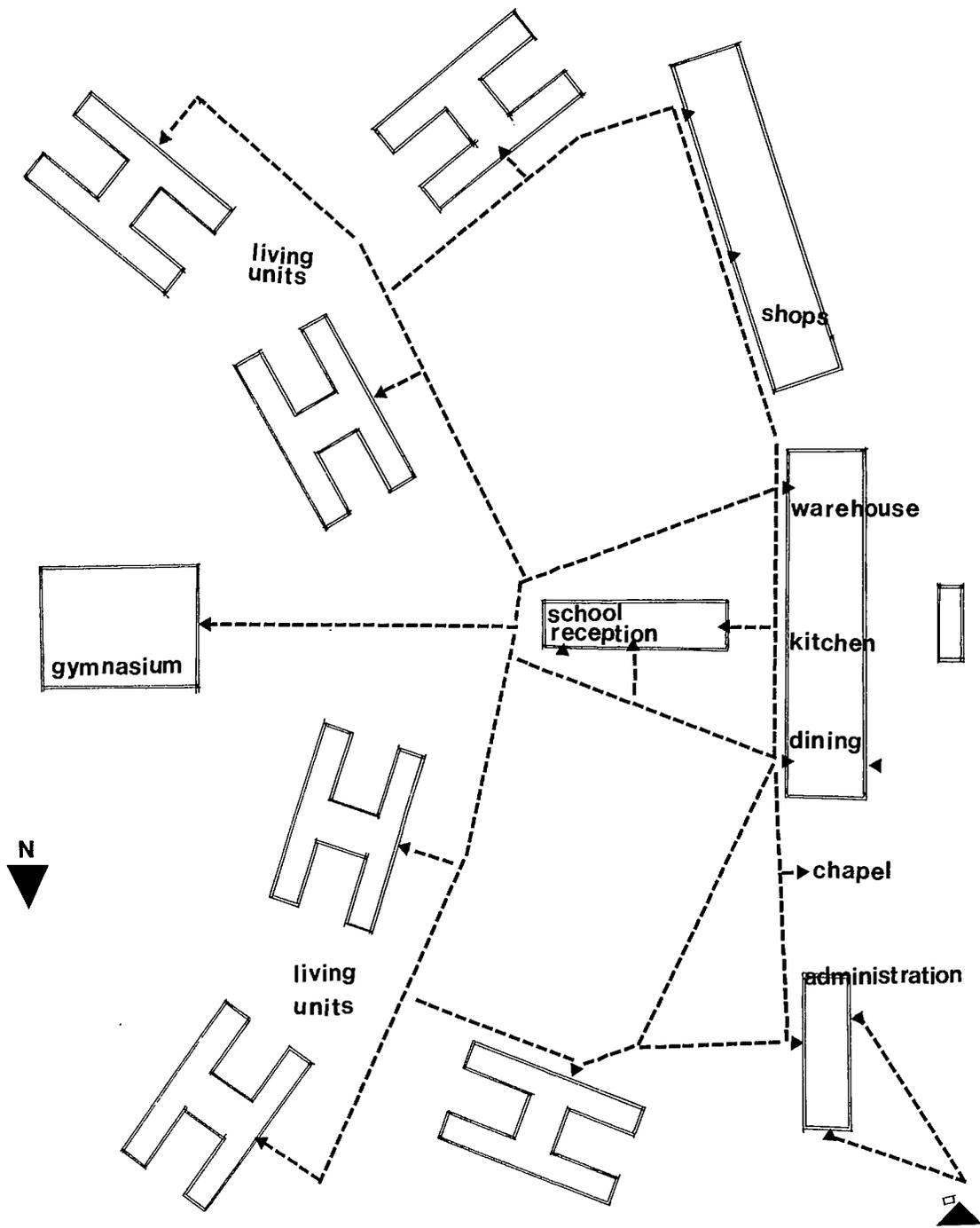
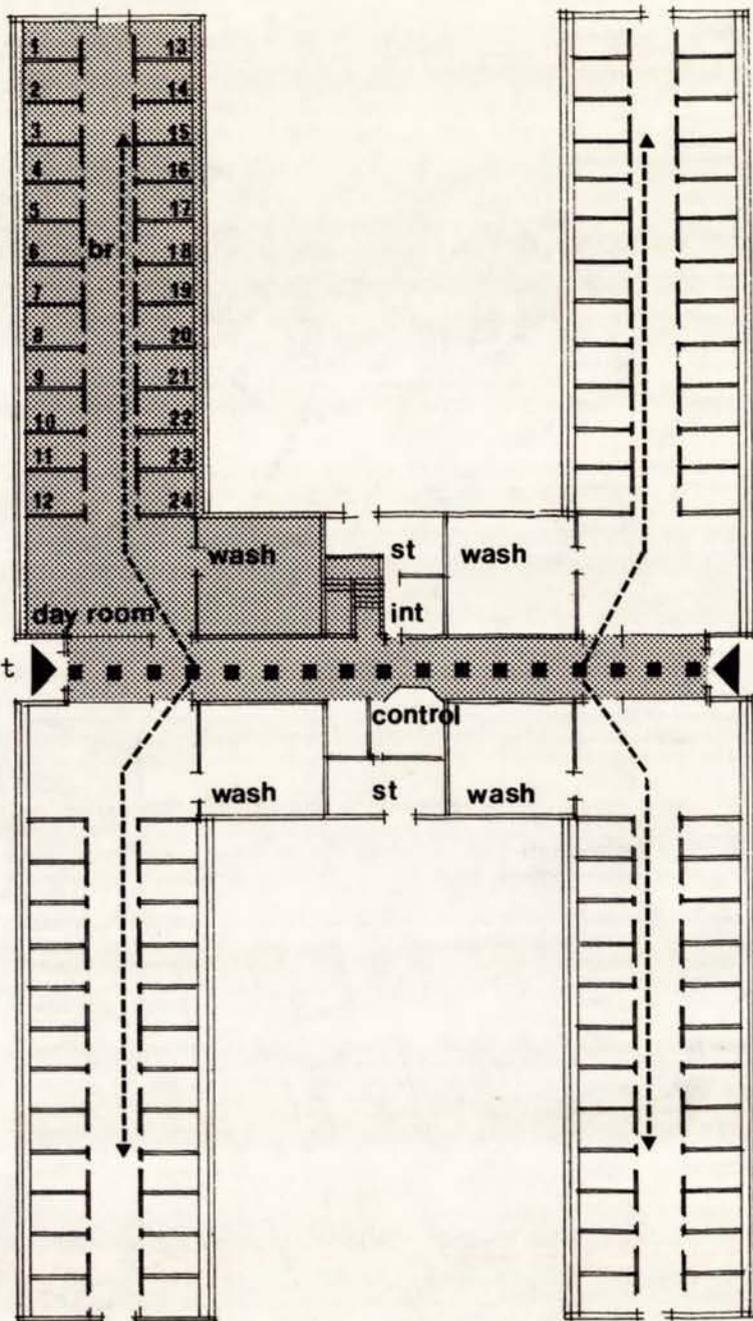


Figure 15: Site Plan of FL

Figure 16
 Floor Plan of FL
 Housing Unit. Resident
 from shaded wing has
 access to the shaded
 area



The school area is composed of 10 classrooms and a central library. One large dining hall serves all the residents and a smaller one accommodates the staff. The administrative unit is very spacious with six rooms large enough for meetings of 20 or more and two areas capable of accommodating over a hundred.

The controls at FL consist of the two periphery fences and six guard towers. The main doors to each housing unit are not locked until after 9:00 each evening. The residents are responsible for the keys to their own rooms and have the right to operate their own windows.

The juxtaposition of buildings at FL create a visual separation of residents and staff. The staff present in the resident domain confine themselves usually to their control station. Therefore, residents and staff have basically separate domains.

DETROIT PRE-RELEASE GUIDANCE CENTRE (DET)

Detroit Community Centre (DET) in Detroit, Michigan, is operated as a community directed pre-release guidance centre by the Bureau of Prisons. The program was initiated in 1962 in the renovated annex of a church, located in the heart of Detroit. It has a resident population of 32, which is just under the American average for Type E, (Table 3). The age bracket at DET is between 23 and 27 years.

DET is located four blocks outside what is considered to be the downtown core of Detroit (Figure 17) on the corner of Trumbull and Michigan Avenues. The Bureau of Prisons rents the three-story annex of St. Peter's Church for the Centre. The area around the Centre has been razed and is scheduled for redevelopment. It is surrounded by community facilities like restaurants, laundries, employment agencies and has good access to the automotive industry. Adequate transportation facilities are adjacent to the Centre.



Figure 17: View of DET against Detroit skyline and the main entrance to the centre.

On the first floor (Figure 18) the office of the case worker is to the immediate right of the main door. The main corridor contains the only telephone available to the residents and a drinking fountain. The resident common room, off the main corridor, is lined with lockers and completely furnished with lounge furniture, including a stereo. At the end of the corridor is the office of the Director.

The second floor (Figure 19) consists of a television room, kitchenette, washroom, dormitory, and counsellor's office. The kitchenette serves predominantly as a study or office for the residents. Opposite the television room is a dormitory for ten residents, furnished with a single bed and small locker for each resident (Figure 21). Washroom facilities are at the end of the main hall and the counsellors' office is directly opposite the top of the stairs.

The third floor consists primarily of dormitory space. It is subdivided by the main corridor into variations of sleeping areas: a single, double, triple and two four-man rooms for a total of 14 beds (Figure 20).

The basement of the centre is reserved for laundry, recreation and storage facilities. The lounge, TV rooms and the office of the case worker are the only spaces large enough for group meetings.

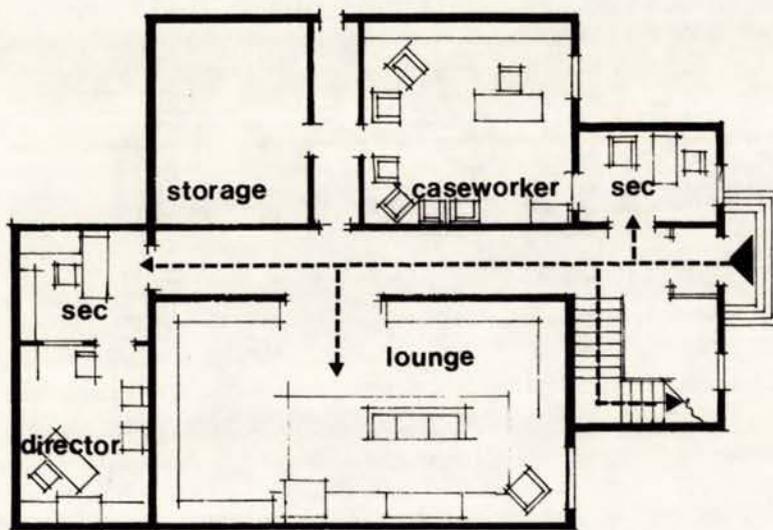


Figure 18:
first floor plan

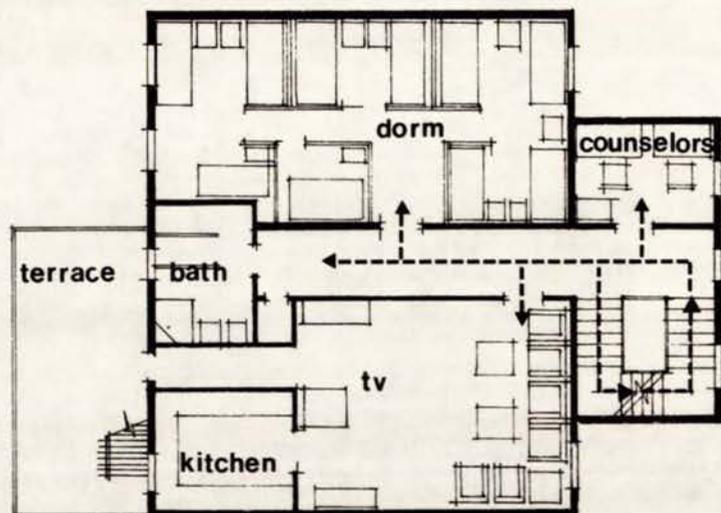


Figure 19:
second floor plan

Figure 20:
third floor plan

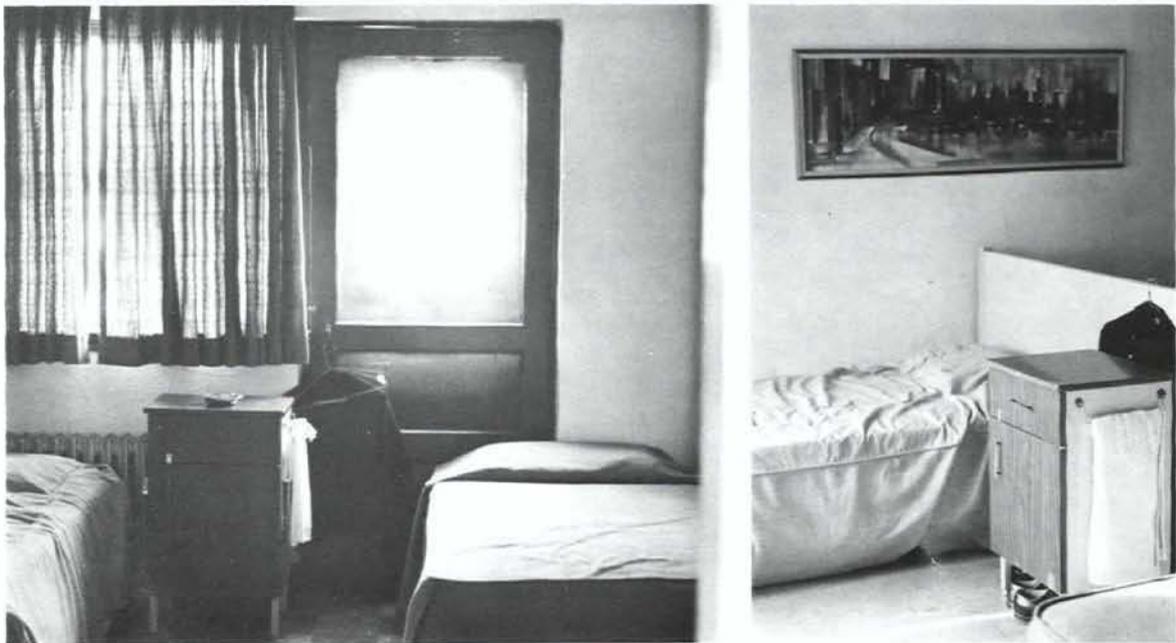
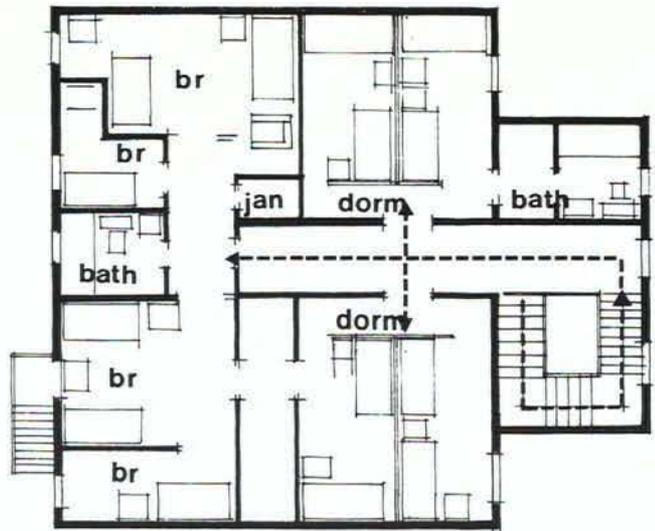


Figure 21: *Personnel Domains at DET*

ROBERT F. KENNEDY YOUTH CENTRE (MOR)

The fourth selection, the R.F. Kennedy Youth Centre in Morgantown, West Virginia (MOR), is a Type B facility under the jurisdiction of the Bureau of Prisons. MOR, constructed in 1968, has a maximum bed capacity of 352 residents; however, there were only 200 residents in MOR during the study. This population is under the American average (Table 3) for Type B institutions. The treatment program at MOR is one of the most comprehensive programs available. An extensive report 'Differential Treatment' outlines the concepts of treatment. The resident characteristic at MOR varies from the other three resident types. The resident is between 16 and 20 years of age, with offences predominantly in interstate transportation of stolen goods and drugs. The Centre serves the Eastern United States, often bringing residents hundreds of miles from their homes.

This facility is located immediately adjacent to a secondary road leading into Morgantown (pop. 45,000) 5 miles away. The entrance control station is 100 feet from the secondary road.

Separate buildings arranged about a community square reflect the 'campus' pattern of COW and FL (Figures 22, 23). There are, however, no peripheral barriers because control relies on close co-operation between staff and residents. The five general areas in the facility are:
1) housing:

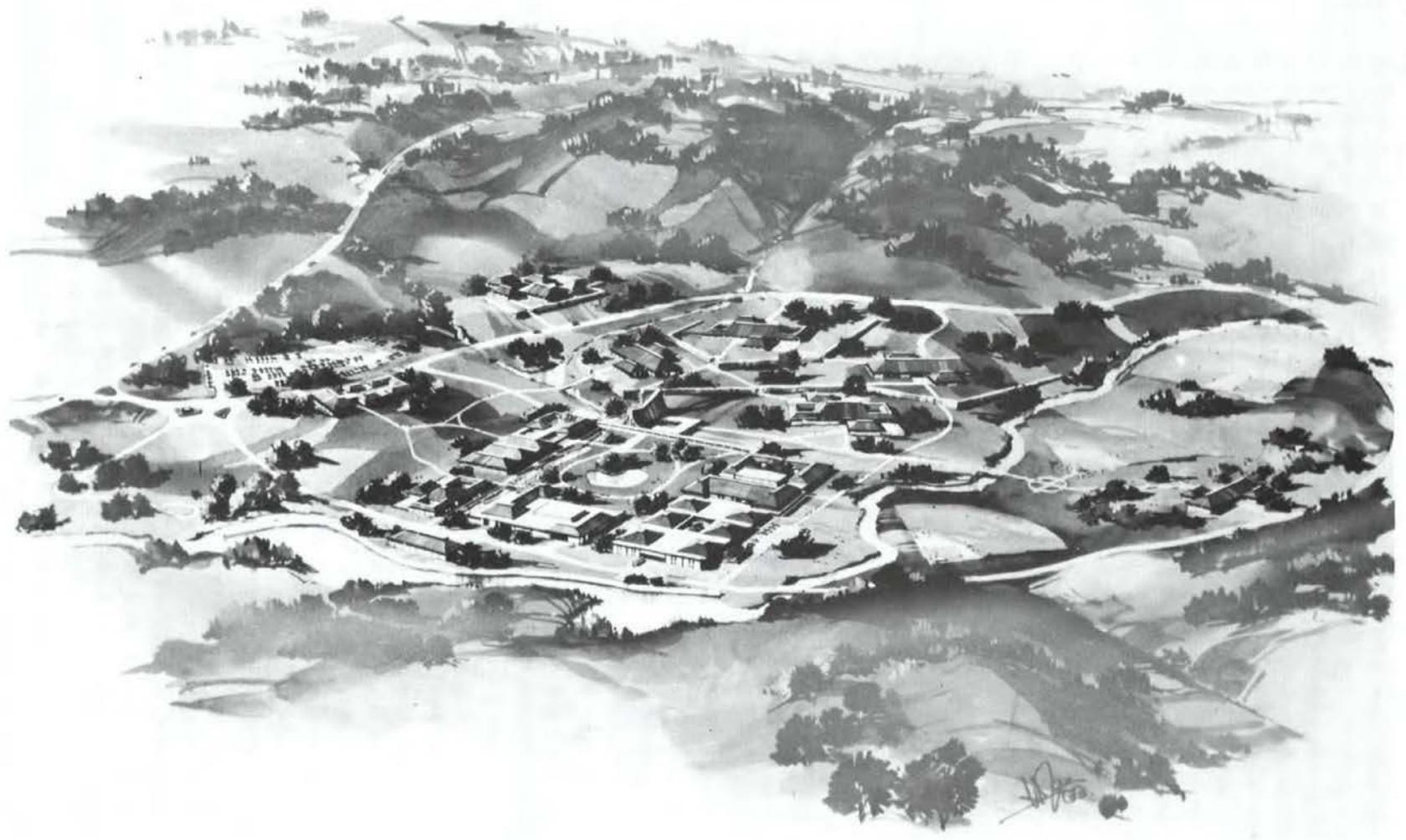


Figure 22: *Birds Eye – View of MPR Facility.*

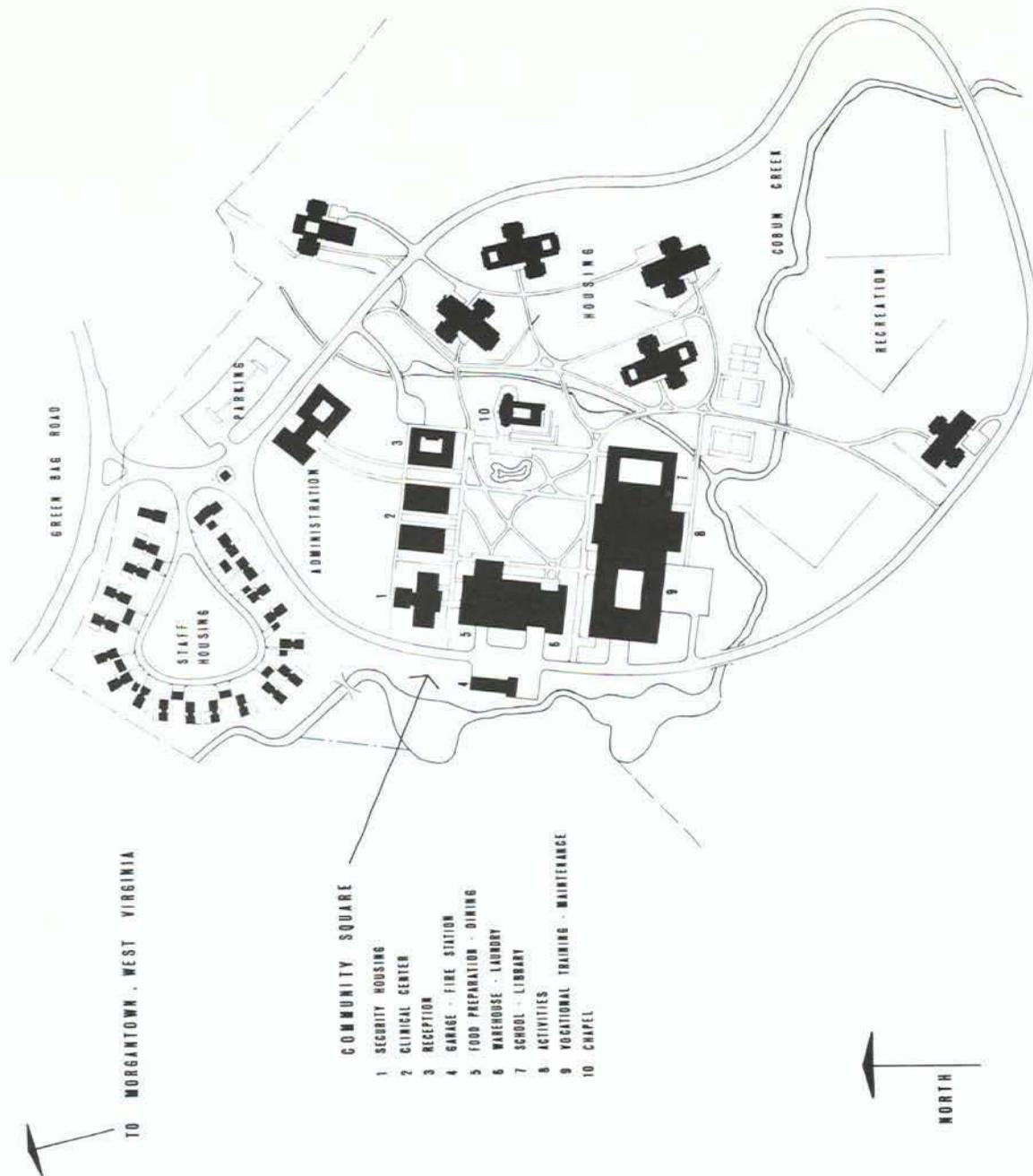


Figure 23: Site Plan of MOR.

- 2) academic, vocational and recreational;
- 3) dining, laundry and warehouse;
- 4) recreation and clinical centre with security housing and,
- 5) administration.

Five housing units are cottage type units (Figure 24), four of which house 62 residents. The fifth unit was originally intended for pre-release activity, but is not in operation yet. Two of the units have internal courts. The sleeping areas, in each unit, include two dormitories each for 16 residents, 14 single rooms with washroom facilities and 18 single bedrooms without these facilities. Common ablution facilities are provided in all four wings of the unit. A large all-purpose room is the central space, while four smaller spaces are provided, one for each wing. A further four spaces are enclosed for more private use.

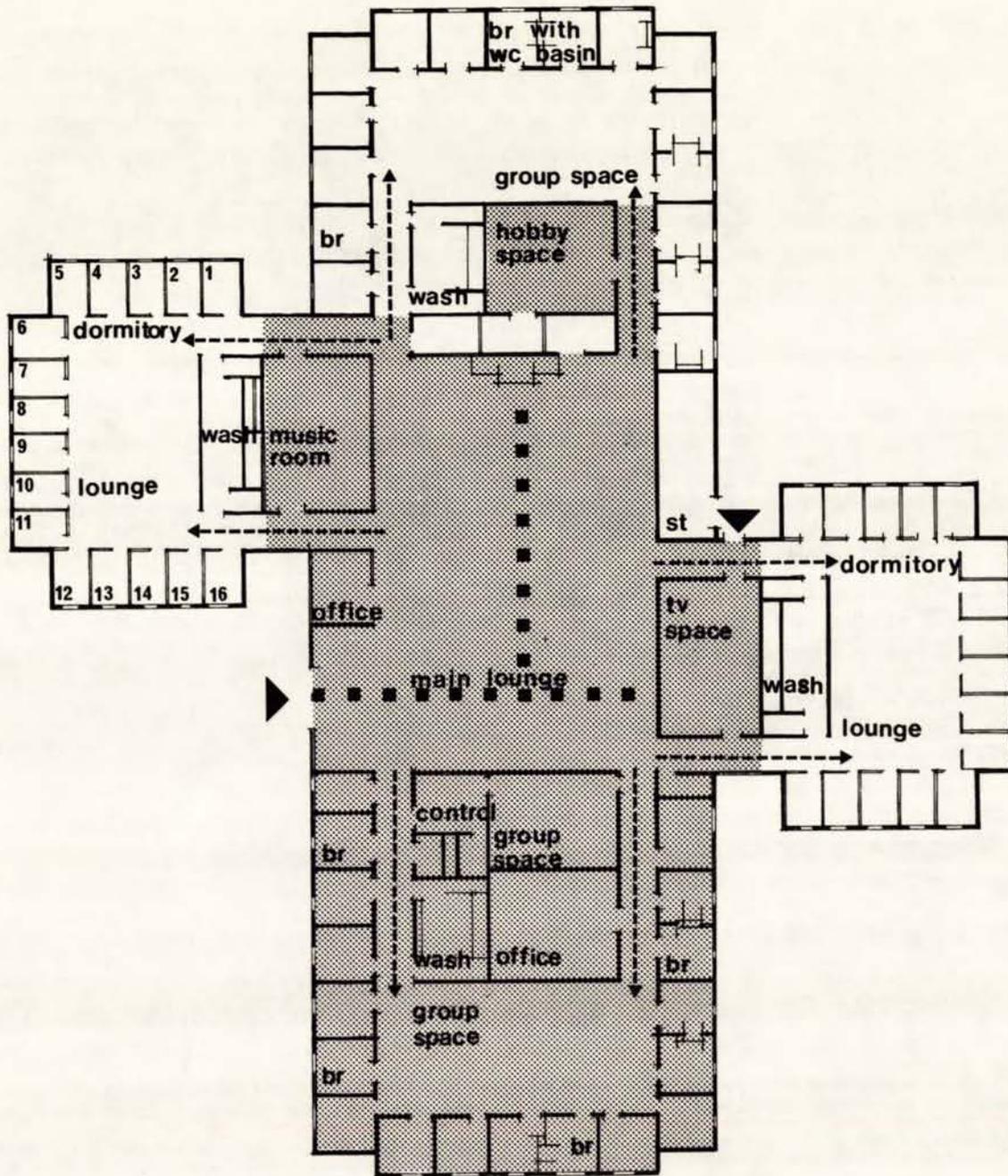


Figure 24: Plan of Housing Unit at MOR.

The classrooms, library, gymnasium, swimming pool and auditorium open off a wide corridor which leads directly into the community square. On the west of the square is the commissary, laundry and separate dining facilities for the residents and staff. The administrative unit is located high on a hill, near the entrance to the facility, overlooking the well landscaped community square.

The large meeting spaces at MOR are found primarily in the cottage units, each unit having nine major spaces. The domains of the staff and residents are completely integrated through the implementation of treatment programmes in the cottage unit as well as elsewhere.

The only movement controls used at MOR are the locks on the main doors in activity areas. Residents have the responsibility of controlling the keys to their own rooms, with this responsibility being used in the behavioural reinforcement system.

Summary of Selection

A direct comparison between the selected facilities is difficult except when examining the impact of the correctional program on selected physical variables. Only COW and FL have similar physical and resident characteristics. All four facilities, however, were constructed in the sixties, are considered to be good representative facilities of their type and are all contained in, what are considered to be, the more progressive correctional systems.

ORGANIZATION AND METHODOLOGY

4.0

Since few studies are available on correctional facilities and since the problem is programmatic, less emphasis is placed on the acquisition of data and more on the method to determine the physical components that are affected by correctional programs. It is envisioned, however, that any method used here will be useful in subsequent, more detailed analyses of data.

Structure of Study

4.1

The organization of this study evolves through a preliminary investigation of the problem, its development, a field survey of sample facilities, and an analysis of relationship patterns.

Working Hypothesis

4.2

How can the constituent parts of the problem be identified and how can we determine which components are independent of the correctional program? One solution involves reducing the problem into three issues – the physical, operational and behavioural issues. Each of the issues reduces into sets of variables, which are representative of the issue and which form a working structure for the study.

There are innumerable inter-relationships between the variables, only a few of which have been identified in this study. The criteria, for determining the interaction between the physical variables, derives from identifying the interaction between each physical variable and a number of operational and behavioural variables.

Suppose that the physical variables, for the four sample facilities, are restructured from these relationships and that combinations of variables occur regardless of facility, then it follows that these variables are independent of the correctional program.

A physical solution for certain variables may be the same, regardless of the program. When solutions for variables appear consistently, they are no longer independent of the correctional program. It may then be possible to establish those variables affected by correctional goals and the extent to which they are affected. If this is the case, then it may be possible to develop a system to measure the influence of correctional goals on a physical facility.

Data Acquisition

4.3

A preliminary investigation and search of literature provided the background to many operational and behavioural aspects of the correctional problem. This information was useful for structuring a series of techniques to study the sample facilities. These techniques included conducting interviews; making first hand observations; searching through institution records; and acquiring user diaries. It was more important to identify as many interactions between the variables as possible, for restructuring the physical variables, than to acquire an abundance of hard data.

Interviews

The intention of the interviews was to set up and identify as many variable interactions as possible. They focused on routine patterns of community integration, staff-resident encounters, resident communal activity and resident retreat.

All users of the physical facility were assumed to hold equal significance in this study – including both staff and residents. The correctional staff responsible for security, the treatment staff responsible for implementing treatment programs, and the administrative staff responsible for outlining policy and maintaining records were all considered important, along with the residents, in undertaking solutions to the problem.

There was a conscious attempt on behalf of the interviewer to remain neutral in the discussion. A stranger in any facility is bound to cause a stir but the resident preferred that the interviewer not be identified with the organization. This was accomplished through impromptu interviews which were much more beneficial than the staid, ritualistic meetings held in the booths of the administrative unit. The informality of the discussion promoted a greater freedom and sincerity of expression.

“On the spot” interviews vary in choice of locations, with respect to the group being interviewed. The resident was usually interviewed in the housing unit during his leisure periods or when he was scheduled to be in the unit. The resident’s routine was least interrupted in this way. Staff interviews were conducted in their office or wherever they were posted in the facility. The staff were interviewed during the day when most residents were involved in their daily routine.

Observations

The intention of first hand observations was to provide a check on data acquired through the interviews. The observations were used to examine whether the residents and staff actually behaved according to the ways indicated in the interviews. (App. 1.3)

The observations in the sample facilities focused on the occurrence of impromptu encounters between staff and residents, and a mutual exchange of information. An encounter was recorded only if it occurred between staff and residents and lasted for more than five seconds.

It was assumed that most impromptu encounters occurred in the areas where movement patterns crossed, such as the circulation routes between activities and the points of entry. Drawings were made of those areas in each facility considered to be most important and observations were made over three-hour periods. A specially designed sheet was used to cover a 10-minute observation period in which all movement and the occurrence of any interaction between staff and residents was recorded. The sheets were later assessed to determine the accuracy of the assumptions.

Search of Institution Records

All correctional organizations maintain records on the operation of their facility. Often the types of data maintained was inconsistent between facilities as well as being inapplicable to the nature of this study. The intent, of searching the records at each sample facility, was to find information which could help to verify the quality of the interviews.

The most common usable data pertained to records of visitors to the institution and of the return of residents to the community. Resident counts, sometimes maintained for resident movement, give an account of resident use of the facilities over an extended period of time.

User Diary

It was difficult, in a short time, to observe all the interaction between staff and residents throughout the total complex. The diaries were used with the intention of acquiring a sample record of residents and staff interaction throughout a three day period. All facets of the encounters were recorded. In addition, the staff was also asked to record their activities in the outside community.

Analyses

4.4

Designers often have the difficulty of objectively using data which has been collected on a design problem. The question of how it can be used is slowly being answered through the use of computer aided design techniques.

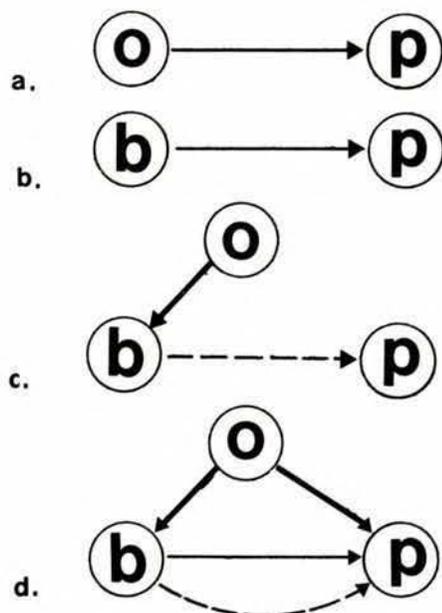
One solution involves fragmenting the physical issue of the problem into several components, correlating the components on a matrix and then restructuring the components into groups. Ghermayeff and Alexander (1963), Lindheim (1965) and Alexander (1964) all suggest dissecting the problem into the most

fundamental components in ways in which least interfere with the structure of the problem. Lindheim (1965) further recognized that "new forms do not get generated by new geometry but rather by new methods of spatial organization".

In this study, a correlation of the operational and behavioural issues with the physical issue is used as a criterion for correlating the physical issue with itself. The physical variables are regrouped with the intent to reduce overlapping between groups. Whereas the Chermayeff and Alexander model produced vague areas among groups, this study attempts to achieve a better classification of groups. An analysis of the variable combinations in these groups will provide an indication of those variables dependent on correctional programs.

Physical/Behavioural Correlation

Three types of interactions influence the design of the physical form and these interactions are defined by links. A link exists if what is done physically, to accommodate a behavioural, operational or behavioural/operational variable, affects the form of the physical variable. The link may have a positive effect indicating conflict. The absence of a link between variables indicates an independency (Alexander 1964).



A direct link exists between the operational issue and the physical issue, the direction of influence indicated by the arrow in Figure (25a). Similarly, a direct link exists between the behavioural issue with the physical issue (25b). There are, as well, interrelationships from the operational issue affecting the behavioural issue which inevitably influence the design of the physical issue, (25c). The broken line indicates the indirect influence of the operational issue on the physical issue. The solid line represents the direct influence.

The interrelationships become more difficult to follow when each issue is reduced to a number of variables. If the figure in (25d) is magnified, the links connecting the variables of the other issues become extremely complex (Figure 26).

Figure 25: Interrelationship between issues.

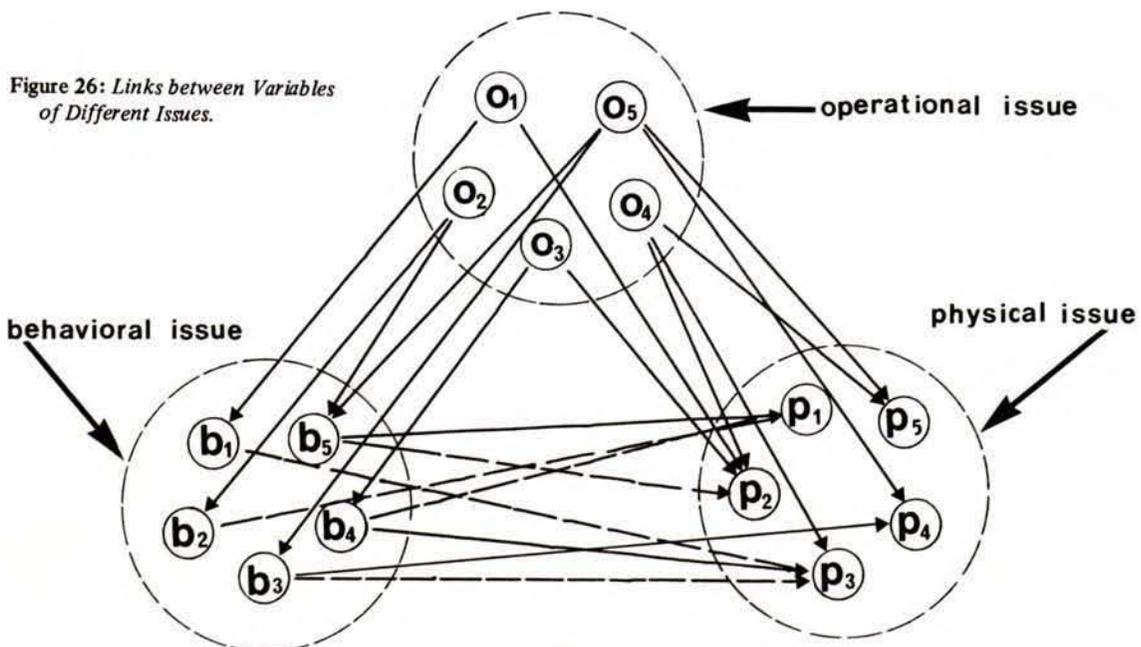


Figure 26: Links between Variables of Different Issues.

The links between the variables do not necessarily have identical influence on the design of the physical form. A subjective evaluation can be made of each link, giving it a value according to its "relative strength". Tabulating the number of links for each physical variable, the total value of links for each physical variable equals the sum of the relative strengths of all the links to the physical variable. Dividing the total value of links by the number of links produces the average value for the links.

A chart indicating the importance of the links illustrates those physical variables which have the greatest interrelationship with the operational variables. This chart is valuable and useful when determining the interactions between physical variables and assessing variable combinations. The matrix (Figure 27) lists the physical variables on the vertical arm and the operational and behavioural variables on the horizontal arm of the table and records the links. Values that identify the existence and strength of a link, are placed at the intersection of lines between two variables.

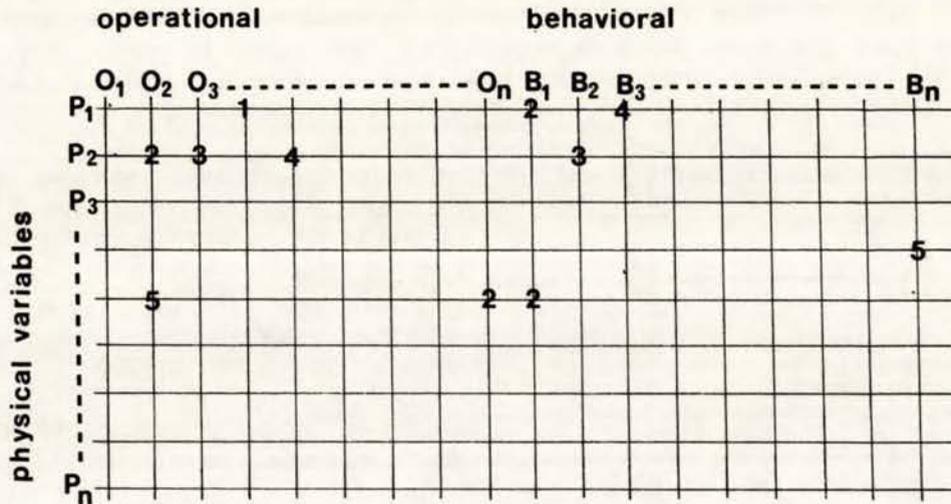


Figure 27: Chart of Physical/Behavioural Correlation.

The above matrix is used to correlate the physical variables against themselves. Those physical variables, with links to the same operational and behavioural variables, are examined to determine if what is done physically to one will ultimately affect the physical form of the other. Furthermore, each physical variable is examined, against all other physical variables, to identify all possible links on the physical variable matrix (Figure 28).

Clustering the physical variables, into groups showing the greatest separation, will provide the basis for determining those operational and behavioural variables which influence design solutions. Clustering produces "pure-groups" and "pure-core groups".

A pure group is a group where all the variables interact with one another and each group may consist of two or more variables or as many as six and seven. Figure 29 illustrates the pure groups, where all variables in the group are linked.

Groups that interact only among themselves with no outside interaction are rare. Most often, the variables of the pure group interact with variables outside the pure group. These outside interactions change the pure group to pure core group and affect the density of the pure core group. The density, in this context, is defined as the number of outside interactions occurring divided by the total number of outside interactions possible. For example, the maximum density possible occurs in the pure group; i.e. the four variable group has 100% density when all 16 of the possible 16 interactions exist. (Figure 29). If this four variable pure group has interactions with 9 outside variables, the possible interactions for the pure core group increases from 16 to 52 (Figure 30). The pure core group in the example has a density of 52% due to the existence of only 11 interactions out of 36 in the outside interactions.

Thus, the density of the "pure core group" will vary directly with the number of variables outside the pure core sometimes called left-over-variables.

Figure 28: Physical Variable Correlation matrix;

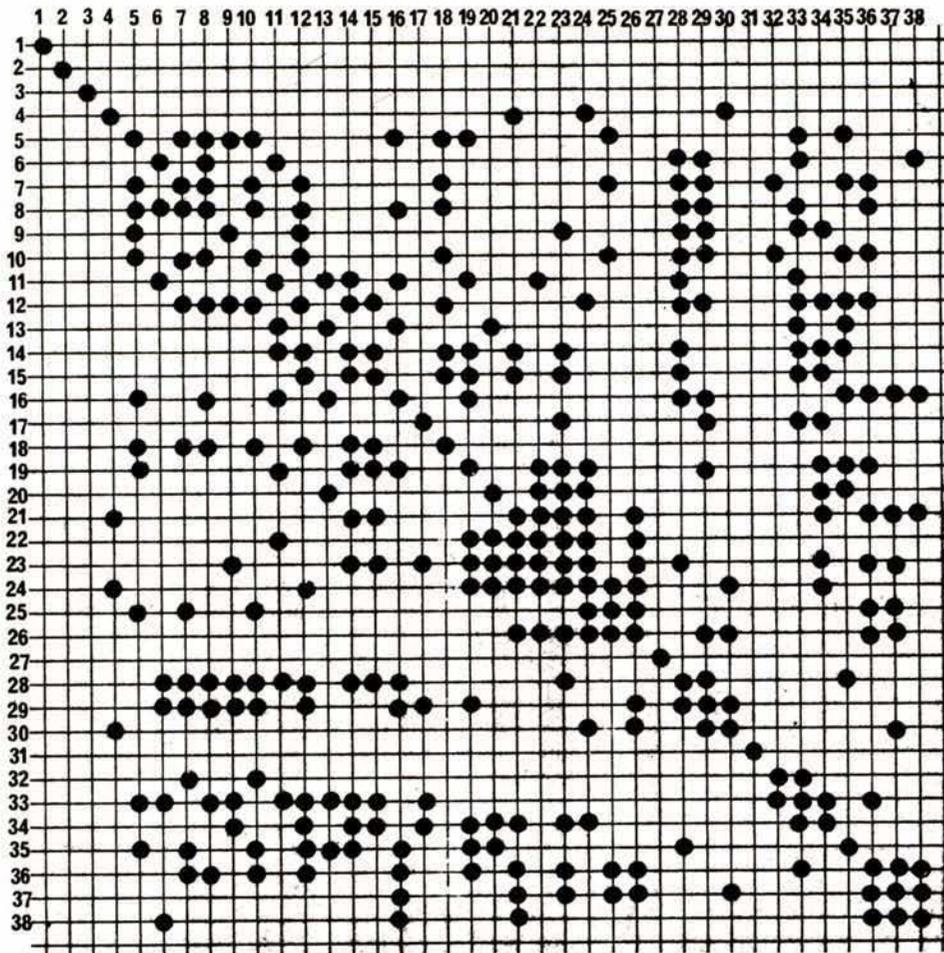
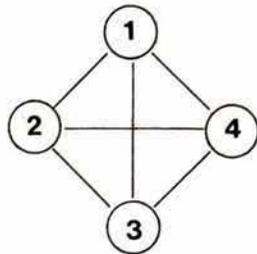


Figure 29: Maximum Density for a Pure Group.

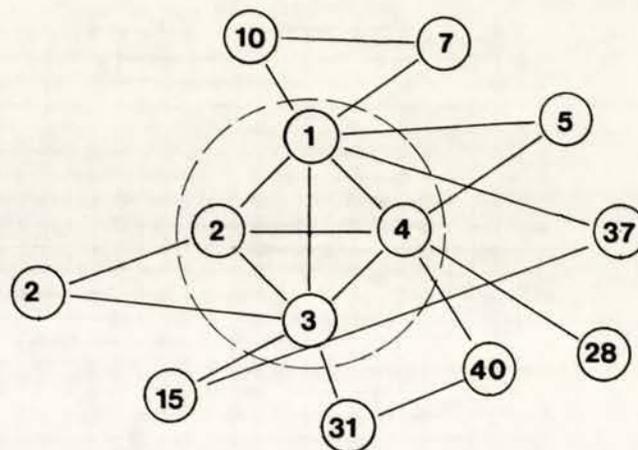


a. Diagram of Links

	1	2	3	4
1	X	X	X	X
2	X	X	X	X
3	X	X	X	X
4	X	X	X	X

b. Matrix of Links between the Variables

Figure 30: Pure Core Group Density.



a. Diagram of Links

	1	2	3	4	5	7	10	15	22	28	31	37	40	
1	X	X	X	X	X	X	X						X	
2	X	X	X	X						X				
3	X	X	X	X				X	X		X			
4	X	X	X	X	X					X				X

b. Matrix of Links

When two groups have the same number of pure core variables and the same number of interactions, the group with the fewer left over variables will have the greater density.

Another characteristic of the pure core group is the homogeneity index for the group. The 'B-Value' calculated in the Bi-Factor Analysis (Harmon 1966) is needed to evaluate the homogeneity of similar and varying sized pure core groups. The B-Value for each pure core group results from a mathematical calculation involving; (a) the number of variables in the matrix; (b) the number of variables in the group; (c) the sum of interactions in the group. The B-Value for a group is calculated using the formula.

$$B = \frac{200(n-r)S}{(r-1)T_s}$$

where B = B value

r = number of variables in the group

n = number of variables in the physical/physical correlation matrix

T_s = sum of all interactions for each pure core variable in the group

S = L plus S of the previous group starting with 0 for the first S

where L = the sum of interactions among the pure core variables less one variable

In this study, a binary evaluation scale is used on the matrices. With this 0 - 1 scale, L equals the sum of interactions between the variables in the pure core group, i.e. two variables have one interaction for a value of 1, three variables have two interactions for a value of 2 etc. Table 4 can be used to calculate the B-Value for different groups using the formula for the binary scale. The only unknown values in the table are the number of variables in the matrix and the sum of all interactions for each pure core variable in the pure core group.

TABLE 4

Table to Calculate B-Value for Matrices with a Binary Scale

r	L	S	200(n-r)S	Ts	(r-1)Ts	B
2	1	1	200(n-2)	Ts ₂	Ts ₂	200(n-2)Ts ₂
3	2	3	600(n-3)	Ts ₃	2Ts ₃	300(n-3)Ts ₃
4	3	6	1200(n-4)	Ts ₄	3Ts ₄	400(n-4)Ts ₄
5	4	10	2000(n-5)	Ts ₅	4Ts ₅	500(n-5)Ts ₅
6	5	15	3000(n-6)	Ts ₆	5Ts ₆	600(n-6)Ts ₆

A computer program has been developed so that the computer will select all pure core groups in a matrix, calculate the B-Value and number of left over variables for all pure core groups, and list the groups in descending order of B-Value for each group size. In cases where groups have the same B-Value, they are listed according to ascending number of left over variables. Some 40 variable matrices have over 500 pure core groups.

Selecting the Optimum Set of Groups

Without duplicating any variable, the pure core groups can be combined into sets, which include all variables on the matrix. Several combinations of groups are possible, each combination having a total B-Value. The selection task involves selecting the combination of pure core groups which produces the highest total B-Value.

One selection process involves selecting the largest sized group with the highest B-Value. The group with the next highest value, having no variables in common with the first group, is then selected and the process continues until all groups, in that size category, are selected or eliminated. In the event that two unselected groups, with variables in common, have identical B-Values, the group with the least number of left over variables is selected. When the largest group size is depleted, the process then proceeds to the next smaller group, always looking for a group or combination of groups that produces a higher B-Value than a group already selected. It must be remembered that a variable may only be selected once. Each selected group is then given a weighted B-Value, i.e. the B-Value for the group multiplied by the number of variables in the group. The total B-Value, for the selected set of groups, is the sum of the weighted B-Values for each group.

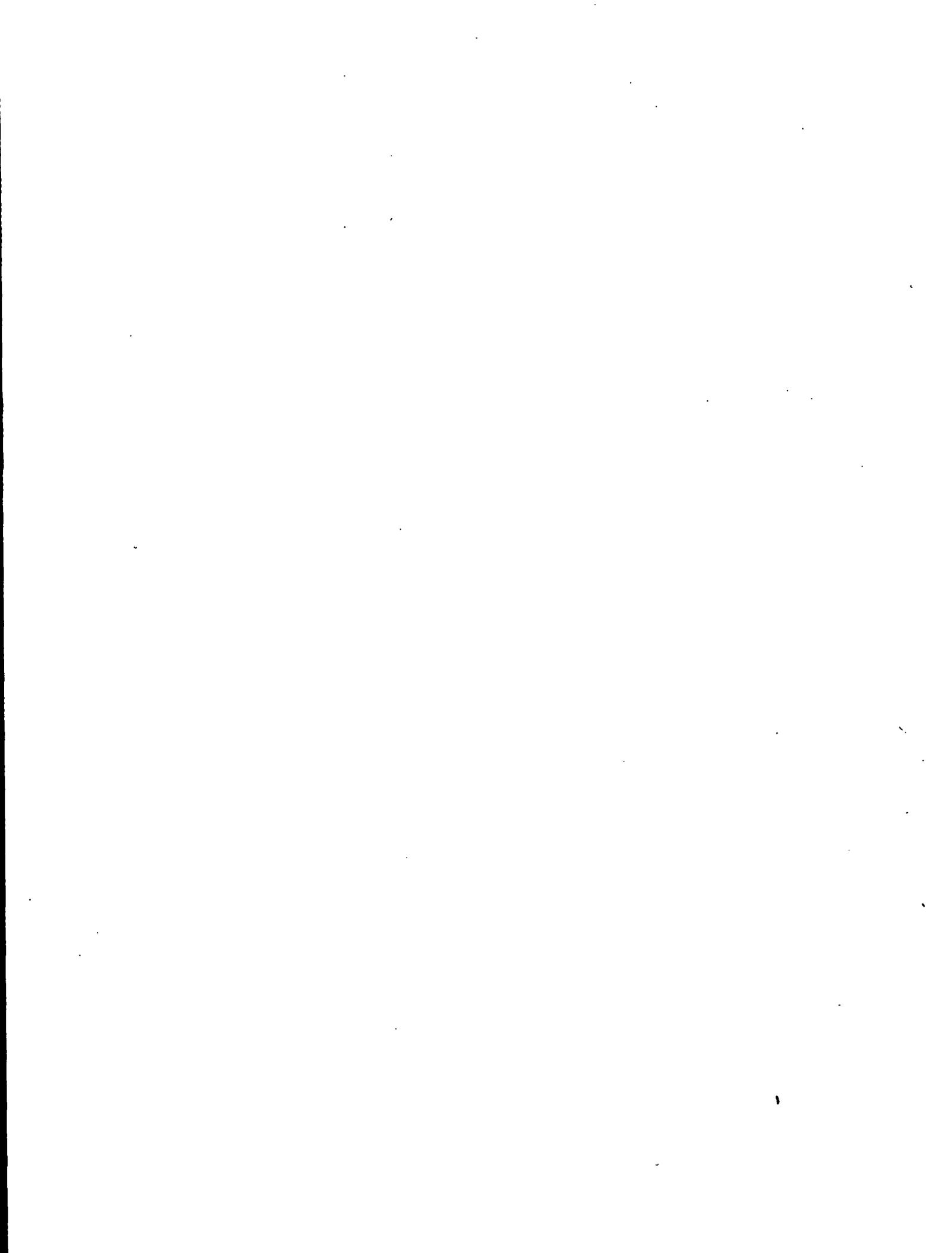
The variables can be selected in more than one set of pure-core groups: however, we are looking for the set that produces the highest total B-Value. Comparing this total, to the maximum B-Value possible for a matrix, produces the degree of optimization of that selected set of groups in the matrix. The maximum B-Value for each variable equals the highest B-Value of all the groups in which a variable is found. The sum of all maximum B-Values produces the maximum B-Value for the matrix.

It is important to know the optimization of the selected set of groups within its matrix in order to compare selected sets from different matrices. Sets with similar degrees of optimization are assumed to be comparable and, therefore, we can analyze the common variable contributions found in the selected sets.

Common Variable Combinations

Since the four selected facilities are different in their operational and behavioural goals, those physical variables affected by these goals should form different interactions for each facility. Conversely, those physical variables forming identical combinations with all facilities are independent of the correctional programmes.

A core of physical variable combinations, which are common for all operations, form the foundation for the physical form. Their relationships, with other outside variables, generate the abnormality peculiar to a solution.



SECTION B

Case Studies 1.0

CASE STUDIES

Operational Typology

1.1

The four selected facilities encompass a variety of physical solutions, each having an operation relative to an operational typology. Several operational typologies have been constructed for examining social problems. Korn (1964) designed an operational typology on relationships between participants which comprised: the operator relationship, by which the expert dictates all behaviour; the prescriber relationship, whereby the expert offers the resident advice; and the co-learner relationship, which is a mutual learning process of both parties. Street, Vinter and Perrow (1966) defined an operational typology based on a set of correctional beliefs for correctional organizations. This typology involved the obedience/conformity operation structured to satisfy sets of confinement requirements; the re-education/development operation developed to promote academic and vocational skills; and the treatment operation, structured to satisfy a process of socialization or resocialization for rehabilitation purposes.

The Street, Vinter, Perrow typology is being applied here to assess the affect of operation on behaviour in the selected facilities.

Obedience/Conformity

Cowansville Institution (COW)

COW is organized primarily on a tight security basis. The staff is custodially orientated, as reflected in the 185 staff members of whom 55% are security staff, 21% treatment staff and 24% administrative staff (see Appendix 1.5). Discipline and conduct at COW are dictated by a strict set of regulations. The residents' movements are scheduled and controlled throughout every 24-hour period with numerous headcounts taken each day.

The treatment programme at COW provides the residents with an opportunity to further their academic abilities and vocational skills. However, the resident is placed in any vacancy that happens to be available, for the programme does not cater to specific interests. The academic programme operates on two semesters a year and for three months academic training is unavailable.

Counselling of any nature is virtually non-existent at COW, save for the efforts of two guidance officers who each handle a caseload of 100 residents. The large groups and very limited staff make it very difficult to initiate any beneficial programme. For a new technique to become operable, it must first satisfy security requirements.

Re-Education/Development

1.2

Wisconsin Correctional Institution (FL)

The FL organization aims at maintaining an equal balance between security and treatment operations. The administrative hierarchy places equal responsibility on both treatment and custodial departments. Of 177 staff members, 50% are involved in security, 30% implement treatment and 19% are employed in administrative roles.

Activities, both inside and outside the facility, involve co-operation from both custodial and treatment staff. Treatment programmes place strong emphasis on developing the academic and vocational skills of the residents and relate more to the specific needs of the resident. A religious programme was initiated between the residents and the community under the direction of an enthusiastic religious leader. Counselling from six social workers and a psychologist depends largely upon resident initiation. Group counselling is also provided to the residents.

Rules at FL are held to a minimum and pertain specifically to the conduct of residents within the facility.

TREATMENT

Detroit Pre-Release Guidance Centre (DET)

Robert F. Kennedy Youth Centre (MOR)

The DET and MOR organizations aim at achieving an understanding of the behaviour of each resident. The security of the operation depends on a mutual trust and close contact among staff and residents. The 8 staff members at DET are preoccupied solely with treatment programming. The staff structure at MOR is highly treatment-orientated for 40% of 159 staff are involved in treatment, 35% in security and 25% in administration. DET concerns itself with the specific problems of the resident and the operation is organized to develop a dependency in the resident on the community rather than on the complex.

The differential treatment techniques at MOR are given priority over all other aspects in the facility. Security staff is trained to be instrumental in treatment programmes. The treatment staff is allocated according to the needs of each housing unit and the behavioural characteristics of the residents in each unit.

The treatment programme at MOR, "Differential Treatment", divides residents into five behavioural categories and treats them accordingly. Counselling is adapted to the needs of each resident and can be either staff or resident initiated. Weekly schedules outline the counselling programme for each behavioural category.

Regulations at MOR, pertaining to conduct, operate according to the category each resident has attained. The residents in each behavioural category can achieve a certain status level within the particular category, which grants them greater privileges than the preceding level. The residents are also granted a voice in the formulation of rules within their respective housing units.

Operational Variables 2.0

Each of the sample facilities has distinctive characteristics in relation to administrative procedures, techniques for implementing treatment programmes and in rules and regulations which influence behaviour in the facility. The following evaluation involves those variables, peculiar to certain facilities. Variables which are identical to all facilities are ignored.

Administrative Procedures 2.1

a) Supervision of Resident Movement in the Housing Unit

Staff supervision of residents can vary from constant surveillance of all movement to casual observations by the unit supervisor. At both COW and FL, the staff is located to achieve the maximum surveillance, especially at COW where the supervisor is located at the focal point of all corridors. At MOR, most resident movement is unsupervised, leaving the responsibility with the resident. Supervision at DET is very casual and is used only to promote staff-resident interaction.

Scale:

Constant supervision	5	Casual supervision	1
COW:	5	FL:	4
DET:	1	MOR:	2

b) Supervision of Resident Movement in the Facility

In all facilities except COW, the residents can move freely between activities within the facility. At COW all movement is highly supervised and filtered through a central control. Moreover, it is only at COW that the residents move at scheduled times.

Scale:

Maximum supervision	5	Minimum supervision	1
COW:	5	FL:	2
DET:	0	MOR:	2

c) Resident Movement to the Community

Only in DET are the residents given free access to the community, however they are restricted if they are unable to demonstrate responsibility in their actions. MOR residents are selected periodically to leave the Centre unaccompanied. FL and COW residents can leave only under escort, occurring primarily during work-release programmes. DET residents sign themselves out, whereas residents at the remaining three facilities have to be checked out through a central control point.

Scale:

Highly supervised	5	Non-supervised	1
COW:	5	FL:	4
DET:	1	MOR:	4

d) Public Movement and the Facility

The public has free access to DET and all areas are available for observation. At COW, FL and MOR, however, the public must be checked through a control point with COW again having the most stringent requirements. The public is given more encouragement at MOR and FL to visit with residents.

Scale:

Restricted movement	5	Free movement	1
COW:	5	FL:	5
DET:	1	MOR:	3

e) Control of Resident Bedroom Doors

The resident can be locked in his room either manually or electrically, by the supervisor or, in some cases, he can be given the responsibility to lock his own room. Doors at COW are controlled electrically by the unit officer. At FL, the resident has the key to his room. The resident at MOR is closely supervised in the beginning but gradually advances to a room under his own control. Most accommodation at DET is in dormitories and the residents maintain jurisdiction over their lockers.

Scale:

Staff control	5	Resident control	1
COW:	5	FL:	1
DET:	0	MOR:	1

Scale:

Non-treatment orientated	5	Treatment orientated	1
COW:	5	FL:	5
DET:	0	MOR:	1

f) Visiting Residents

The restrictions imposed on visitors include: time limits on the visits; the number of visitors allowed; and defined areas of observation.

Scale:

Highly restrictive	5	Non-restrictive	1
COW:	5	FL:	5
DET:	1	MOR:	3

Scale

Defined areas	5	Free access	1
COW:	5	FL:	3
DET:	1	MOR:	1

g) Recording Resident Behaviour

A behaviour account registered on good staff-resident contact, either written or oral, is often necessary in assessing the resident's progress. At MOR and DET, the resident's behaviour is essential to both programme and supervision; interviews are daily or weekly occurrences. At COW and FL only monthly interviews are conducted.

Scale:

No Record of Behaviour	5	Records of behaviour	1
COW:	4	MOR:	1
FL:	3	DET:	1

Treatment Techniques

2.2

h) Provision of Psychiatric Services

The only facility that provides immediate psychiatric services is MOR. All other facilities rely either on community services or on those of another facility. Too often, however, the service is not rendered when needed.

Scale:

Psychiatric Services in the facility	5	Psychiatric Services in the community	1
COW:	3	FL:	3
DET:	1	MOR:	5

i) Resident Employment in the Community

Only the residents on day parole at COW and awaiting release at FL are permitted to work in the community. They work regular hours and are transported to and from their place of employment. The only restrictions on the DET resident is that his place of employment be not more than one hour travelling time from the facility. MOR has not implemented an employment programme.

Scale:

No community employment	5	100% community employment	1
COW:	4	FL:	3
DET:	1	MOR:	5

j) Control of the Housing Unit Programme

The activities and programme in the housing unit can either be under direct control of the staff or the residents. At both DET and MOR the staff and residents regulate activities on a co-operative basis. At COW and FL the staff still dictates the programme and keeps it under strict control.

Scale:

Staff control	5	Resident Control	1
COW:	5	FL:	5
DET:	2	MOR:	3

Scale:

Non-treatment Orientated	5	Treatment Orientated	1
COW:	5	FL:	5
DET:	1	MOR:	1

k) Individual Counselling Implementation

Individual counselling refers to the discussion of a resident's personal problem with a qualified staff member. At FL and COW all individual counselling occurs in the administration unit. MOR has individual counselling both in the housing unit and administration unit. All facilities have space available for counselling but DET and MOR are the only two that encourage meetings with the residents. The supervisory staff at COW and FL are not trained to conduct an organized programme as evidenced at MOR and DET.

Scale:

Administration Unit Orientated	5	Housing Unit Orientated	1
COW:	5	FL:	5
DET:	1	MOR:	3

Scale:

Resident Initiated Meetings	5	Staff Initiated Meetings	1
COW:	5	FL:	4
DET:	3	MOR:	3

l) Group Counselling Implementation

Residents are called together in groups of 5-10 residents for modelling and role playing, etc., or in larger groups of 40-60 residents for unit meetings and reality therapy, etc. At MOR all group counselling takes place in the living unit, maintaining the unity of the group. Group counselling at FL occurs in the administration unit, because spaces are not available in the housing unit for group discussions. Counselling is not implemented at COW or DET.

Scale:

Administration Unit Orientated	5	Housing Unit Orientated	1	No Implementation	0
COW:	0	FL:	5		
DET:	0	MOR:	1		

m) Academic Training

Education is provided either within the facility itself, as is the case at COW, FL and MOR, or through the community as at DET. The academic programme meets the specific needs of the resident at MOR and FL; however, it is often used as an escape from other activities by the residents at COW.

Scale:

Schedule Oriented Education	5	Treatment Oriented Programme	1
COW:	5	FL:	3
DET:	1	MOR:	1

Scale:

Facility based	5	Community based	1
COW:	4	FL:	4
DET:	1	MOR:	3

n) Resident Review

The case of each resident at MOR is reviewed on a weekly basis by the staff. At COW resident progress is only reviewed every three months or prior to parole eligibility. At FL reviews are more frequent than at COW, but much less frequent than at DET.

Scale:

Quarterly Reviews	5	Daily reviews	1
COW:	5	FL:	3
DET:	2	MOR:	3

o) Provision of Arts and Crafts

Arts and crafts are basically time-filling projects and are usually forgotten by the resident upon release. Two spaces at FL are used by the entire population and the programmes are scheduled. At MOR and COW no spaces are specifically assigned. However, materials are provided to the residents if they should desire to work on a project in their own rooms. At DET, where residents have free access to the community, there is no need for such an activity. At FL and COW, the public are encouraged to participate in resident arts and craft activity.

Scale:

Time Passer	5	Treatment Oriented	1
COW:	5	FL:	5
DET:	0	MOR:	2

Scale:

Excluding Public Participation	5	Including Public Participation	1
COW:	2	FL:	4
DET:	0	MOR:	2

p) Rules for Resident Movement in the Housing Unit

At COW, a resident may not enter another resident's room without permission, whereas at FL and MOR residents may travel freely throughout their respective wings. At FL no more than three residents are allowed in a room at any one time. Movement is restricted, however, between the wings of a housing unit at COW, FL and MOR. There are no restrictions at DET.

Scale:

Total restrictions	5	No restrictions	1
COW:	5	FL:	3
DET:	1	MOR:	2

q) Rules for Personalization

The resident's bedroom is the one area that remains personal to each resident. Much of the personal liberty is absent at COW because the resident is not allowed to make any rearrangements in his room. The resident is permitted to make changes relative to his personal tastes at FL and MOR. DET leaves the entire decisions to the resident. No matter how insignificant these few liberties may seem, they do allow the resident to retain a personal identity.

Scale:

Fixed arrangement	5	Flexible arrangements	1
COW:	5	FL:	1
DET:	1	MOR:	1

r) Rules for Resident Groups

Security-minded facilities such as COW preserve very strict control over movement. For example, at COW residents in the exterior courts or moving between activities are restricted to groups of two and only certain paths of travel. At FL and MOR group sizes are not dictated and very few restrictions are made on travel areas. Some of the grassed areas at FL are restricted from resident use.

Scale:

Group Restrictions	5	No Group Restrictions	1
COW:	5	FL:	1
DET:	0	MOR:	1

Scale:

Use Walking Surfaces Only	5	Use Any Surface	1
COW:	5	FL:	3
DET:	0	MOR:	1

s) Rules for Sound Control

The transfer of sound throughout a facility is accentuated with the proximity of the residents. Residents are not allowed to play any musical instrument in the housing units at COW because of the poor acoustics. At FL, acoustics are more adequate for each unit of 17 residents is separate from the next; residents are permitted to play musical instruments during specified times. MOR has a similar policy to FL and DET has no restrictions.

Scale:

Highly restrictive	5	No restrictions	1
COW:	5	FL:	3
DET:	1	MOR:	2

Operation Variable Evaluation

2.4

The operation at each facility was evaluated through a comparison of the operational variables according to categories of control, restrictive or facilitative treatment, community orientation and communication. In Table 5, twelve variables are considered to be control oriented, the high values representing restriction, the low values representing free movement. COW scores with maximum relative control, 5 per variable, followed by FL with 3.25 per variable. The evaluation reflects the openness of MOR, 1.92 per variable and DET, 1.13 per variable.

TABLE 5

Evaluation of Sample Facilities According to Control

Variable	COW	DET	FL	MOR
a	5	1	4	2
b	5	0	2	2
c	5	1	4	4
d	5	1	5	3
e	5	0	1	1
f ₁	5	1	5	3
f	5	1	3	1
j	5	2	5	3
p	5	1	3	2
r ₁	5	0	1	1
r	5	0	3	1
t	5	1	3	2
Total	60	9	39	25
No. of variables	12	8	12	12
Average	5.00	1.13	3.25	1.92

In Table 6, sixteen variables are considered to influence treatment of residents, both facilitative as indicated by the low values on the chart and restrictive marked by the high values. COW variables once again are evaluated as restrictive of treatment having an average of 4.06 per variable. FL is next with a 3.62 average while MOR and DET definitely lean towards facilitating treatment with 2.25 and 1.25 averages respectively.

TABLE 6

Evaluation of Sample Facilities to Treatment

Variable	COW	DET	FL	MOR
c ₁	5	1	4	4
e ₁	5	0	5	1
f	5	1	3	1
g	4	1	3	1
h	1	1	3	5
i ₁	4	1	3	5
j	5	1	5	1
k ₁	5	1	5	3
k	5	3	4	3
l	0	0	5	1
m ₁	5	1	3	1
m	4	1	4	3
n	5	2	3	3
o	5	0	5	2
q	5	1	1	1
r	5	0	3	1
Total	68	15	59	36
No. of variables	15	12	16	16
Average	4.06	1.25	3.62	2.25

In Table 7, eight variables are community oriented, the high values representing non-community orientation, the low values representing community orientation. Both COW and FL have the same tendency towards non-community orientation with variables of 3.88. MOR's average of 3.5 is not much lower, however, DET exemplifies the fundamental aim of the facility with total community orientation.

TABLE 7

Evaluation of Sample Facilities According to Community Orientation

Variable	COW	DET	FL	MOR
c	5	1	4	4
d	5	1	5	3
f	5	1	5	3
f ₁	5	1	3	1
h	1	1	3	5
i ₁	4	1	3	5
m	4	1	4	3
o	2	0	4	2
Total	31	7	31	26
No. of variables	8	7	8	8
Average	3.88	1.00	3.88	3.25

Finally, if we examine the five variables involving communication, we see in Table 8 that COW and FL have the least tendency towards good communication with 4.75 and 3.60 averages respectively. DET and MOR have similar averages of 2.50 and 2.20 respectively from their endeavours to increase communication.

TABLE 8

Evaluation of Facilities According to Communication

Variable	COW	DET	FL	FL	MOR
g	4	3	1		1
j	5	2	5		3
k	5	3	4		3
l	0	0	5		1
n	5	2	3		3
Total	19	10	18		11
No. of variables	4	4	5		5
Average	4.75	2.50	3.60		2.20

The summary of these evaluations confirms the categorization of the case studies. COW and FL are essentially security conscious, whereas MOR and DET are highly treatment oriented.

TABLE 9

Summary of Facility Evaluation

Category	COW	DET	FL	MOR
Control	5.00	1.13	3.25	1.92
Treatment orientation	4.06	1.25	3.62	2.25
Community orientation	3.88	1.00	3.88	3.25
Communication	4.75	2.50	3.60	2.20
Total	17.69	5.88	14.35	9.62
Average	4.42	1.47	3.59	2.41

Socio/Behavioural Effects

3.0

Many social and behavioural relationships in a facility reflect the type of operation directing the program. Street et al (1966) found that staff/resident relationships alter in their importance between the treatment and obedience/conformity operations. On the one hand, effective treatment requires close personal contact between staff and resident and, on the other hand, confining residents requires no personal contact.

As an operation alters its philosophy, changes can be seen in several ways. For instance, the community is encouraged to participate in the program or the residents are encouraged to participate in constructive communal activities. The following topics represent some relationships which either influence the design of physical form or are influenced by the physical form.

Community integration is seen as constructive physical interaction between citizens of the community and the residents, either inside or outside the facility. It is now a recognized fact that reducing community isolation within a facility is essential to the contemporary correctional scene (Goffman 1966). A separate sub-culture thrives in facilities lacking community integration and inevitably becomes detrimental to the fulfillment of correction goals (Clemmer 1926). Interaction between residents and the community helps to reduce this isolation and breaks down the tendency towards a separate sub-culture.

Often the resident's contact is limited to his immediate family or close personal friends, his counsellor, his probation officer or social worker in the facility. However, he needs further contacts with citizens and organizations from the community. In some cases (DET), the resident may be encouraged to achieve absolute dependency on the community: this requires facilities and communication techniques which best benefit the program.

Variable (i): Personal Visits to Residents

Each institution studied served geographical zones of different sizes. DET prefers that a resident be from the Detroit area; however, exceptions are made when a resident must be relocated from his residence because of personal family problems. At DET 59% of the residents were from Detroit, 13% from the surrounding area and the remaining 28% had been relocated to the Detroit area. Most visits at DET occur within the facility during the initial stay but, after a short waiting period when mutual trust and responsibility have been achieved, the resident is encouraged to visit the community.

The majority of MOR residents come from the eastern half of the United States. Out of 200 residents, those States most represented were North Carolina — 10%, Florida — 9.5% and Ohio and Alabama — 8%. The additional residents came from 24 States. Visits from the residents' families were relatively few due to the great travelling distances.

60% of the COW and FL residents come from homes within 60 miles of the complex. At COW, 24% were from the Cowansville area and 18% from places more than 60 miles away. Residents from the larger urban centres received the highest percentage of visits in both institutions.

The distances of travel influence the regularity of visits by friends and relatives. At COW and FL, just over 53% of the residents received visits at regular intervals. This figure reflects the findings of Pauline Morris (1965) when she discovered 54% of the wives in England visited on every possible occasion, and of Glazer (1964) who found 50% of the residents received visits.

Interactions with Physical Variables

COW	2	3	6	35
DET		3		
FL	2	3	6	35
MOR	2			

COW and FL are identical in the identified interactions with physical variables. DET depends on transportation accessibility, because most residents travel by themselves to visit in the community. MOR is highly dependent on the great distances to be travelled, which decreases the number of visits.

Variable (ii): Resident Trips into the Community

Resident trips into the community occur either with or without escort. The comparatively low number of trips at COW are conducted under escort except for the isolated cases where residents are on temporary absence or day-parade without escort. During the year 1968, two residents attended night school twice weekly, 18 residents sang in the choir on two occasions, 20 residents made weekly trips to the swimming pool in Cowansville and 3 residents attended a ceramic course in Granby. On several occasions residents were taken to a hospital outside Cowansville or to Montreal for a medical examination. All transportation was provided by the staff.

At MOR, a resident can earn 2¹/₂ day-furloughs per month, to visit his family, During 1969, 53 furloughs were granted. The resident is driven to the transportation depot and then is left unescorted. All trips made within the Morgantown area are escorted.

The community based program at DET directs the resident towards community living. All residents must be employed or attend school Fifty per cent of the residents find daily employment in the automotive industry and an additional two per cent work the night shift. Residents may work overtime providing they inform the staff of their intentions. All residents average one trip a week to the bank to maintain a savings account. An average month sees ten residents making at least one trip to the State Hospital in Detroit, with each resident responsible for his own transportation.

At FL, a work furlough is offered for 15 residents who are approaching parole, with all transportation provided by the employer.

Interactions with Physical Variables

COW	1	2	
DET	1		3
FL		2	
MOR		2	

Variable (iii): Resident Transportation Patterns

The residents of COW, FL and MOR must be driven by government vehicle to the points of destination or places where they may get public transportation services. DET is the only facility where public transportation services are within walking distance. Bus stops are within 100 feet of DET and residents rely solely on the Detroit transportation service. Residents are responsible for their own transportation costs.

Interactions with Physical Variables

COW	2		
DET	2	3	
FL	2		
MOR	2		

Variable (iv): Public Integration in the Facility

All facilities lean towards using community resources within the facility. COW utilizes the resources least of all reflecting a lack of staff ambition to encourage this activity or reluctance on the part of the public to participate. Weekly meetings held in COW involve 9-25 residents and 4-5 visitors in AA meetings; three residents take a weekly ceramic course with thirteen citizens, and six residents in music lessons from two citizens.

Public integration at MOR involves three visits per week by a selected group of thirty citizens, who visit a different cottage each visit (Figure 31). Spaces, available in the housing unit, permit such a programme. Entertainment activities are organized each month between the residents and community groups. Although the facility is relatively new, citizen interest and co-operation is growing rapidly.

An ambitious religious leader at FL has involved many organizations actively, in a variety of evening programs, within the facility. Some participants travel up to 100 miles to make the weekly or semi-weekly visits. The AA are also active in the treatment programs at FL. All meetings, however, take place in the administration unit, as there is a lack of suitable places in the living units.

Public integration at DET does not exist within the facility, as the programs are designed to develop community dependency by the residents.

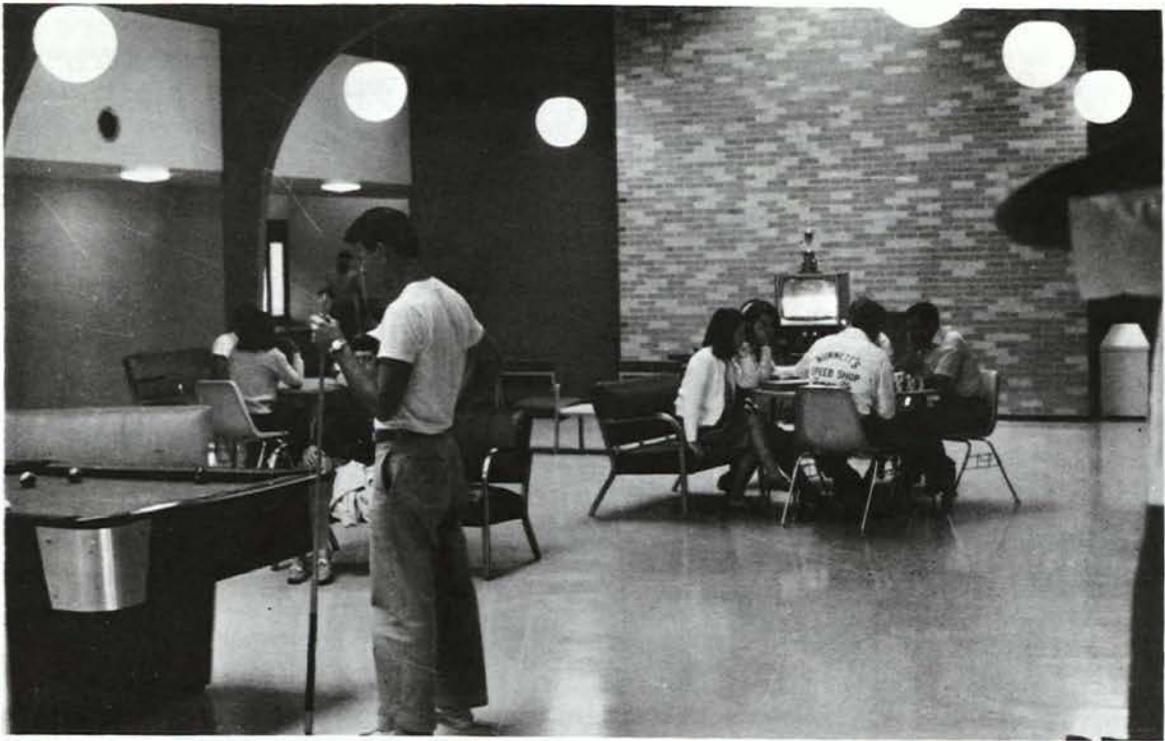


Figure 31: Public Integration into the Housing unit for Social activities.



Interactions with Physical Variables

COW	1	2		9		13	14	16	
DET									35
FL	1	2				13		16	35
MOR	1	2	8		12				

A staff-resident encounter involves physical interaction for over 30 seconds duration between one or more staff members and one or more residents. This encounter can be either preplanned or impromptu.

Variable (v): Staff-Resident Preplanned Encounters

The staff-resident preplanned encounter varies between each facility according to the implementation of correctional goals and the treatment program. At DET, the case worker sets a schedule to meet each resident in his office once a week; all remaining encounters are impromptu. At COW, most encounters between staff and residents are preplanned. The resident initiates the encounter by filling out a request sheet, while the Classification Officer tries to see each resident in his case load once a month. The encounters occur predominantly in private offices in the administrative unit, because spaces are not available in the living units. If the group involves more than six participants, encounters are held in the conference room.

Depending upon the behavioural characteristics of the residents and the treatment techniques, the preplanned encounter at MOR can be either individual or group oriented. Individual counselling occurs in several spaces within the cottages, while group counselling occurs in several spaces within the cottages, while group counselling is limited to the larger spaces in the housing unit. Residents in groups of 5-10 use the 150 sq. ft. office space for modelling and role playing. Cottage meetings, involving up to 60 residents, use the large lounge (Figure 32) – a space which is not available either at COW or FL. Spaces, outside of the living units, are available for use which give participants an option on where to gather.

Almost all scheduled encounters at FL occur in the administration or academic area (Figure 32). The only preplanned staff/resident group activity in the housing unit takes place in the 100 sq. ft. space behind in guard station. The three conference rooms, each 10' x 15', and the entrance lobby in the administration building, are used extensively for group meetings. The resident-staff group meetings usually work on a ratio of one staff member to ten residents. Larger groups of 80 or more (staff meetings) use the staff lounge (Figure 32).

Interactions with Physical Variables

COW	5	12	30	
DET	5	8	13	
FL	5		30	
MOR	5	8	12	30

Figure 32: Group Meetings that are Scheduled

a) Reality group of 68 in housing unit lounge at MOR



b) Introduction meeting for new resident at FL



c) Staff meeting for 97 in staff lounge at FL



Variable (vi): Staff-Resident Impromptu Encounters

The staff-resident impromptu encounter is either staff or resident initiated and is an essential characteristic in the development of good staff/resident relationships.

The scheduled daily routine at COW and FL limits encounters to those times when the resident is free to move. Most impromptu encounters, in both facilities, occur at the main entrance of the administration

centre and in the corridor outside the staff offices. Impromptu encounters are mostly resident initiated. Staff initiated encounters occur at the entrance to and in the main corridors of the housing units. The residents initiate other encounter along the main circulation routes by familiarizing themselves with staff movements. For example, at FL the staff often take short cuts through a main corridor of a housing unit on the way to the gymnasium; it is on this route that many staff are approached by residents.

Most impromptu encounters at MOR occur in the housing unit where the counsellors and caseworkers make themselves readily available. The availability of seating surfaces, around the entrances to the housing units, increases the number of staff/resident encounters.

The free use of the community square, by both staff and residents, is another factor that influences impromptu encounters (Figure 33). The small court at MOR offers a comfortable atmosphere and promotes staff/resident interaction. The larger squares at FL separate the staff and resident which allows the groups to disperse in all directions and to avoid contact with each other. In comparison with MOR, FL does not have a successful staff/resident interaction program.

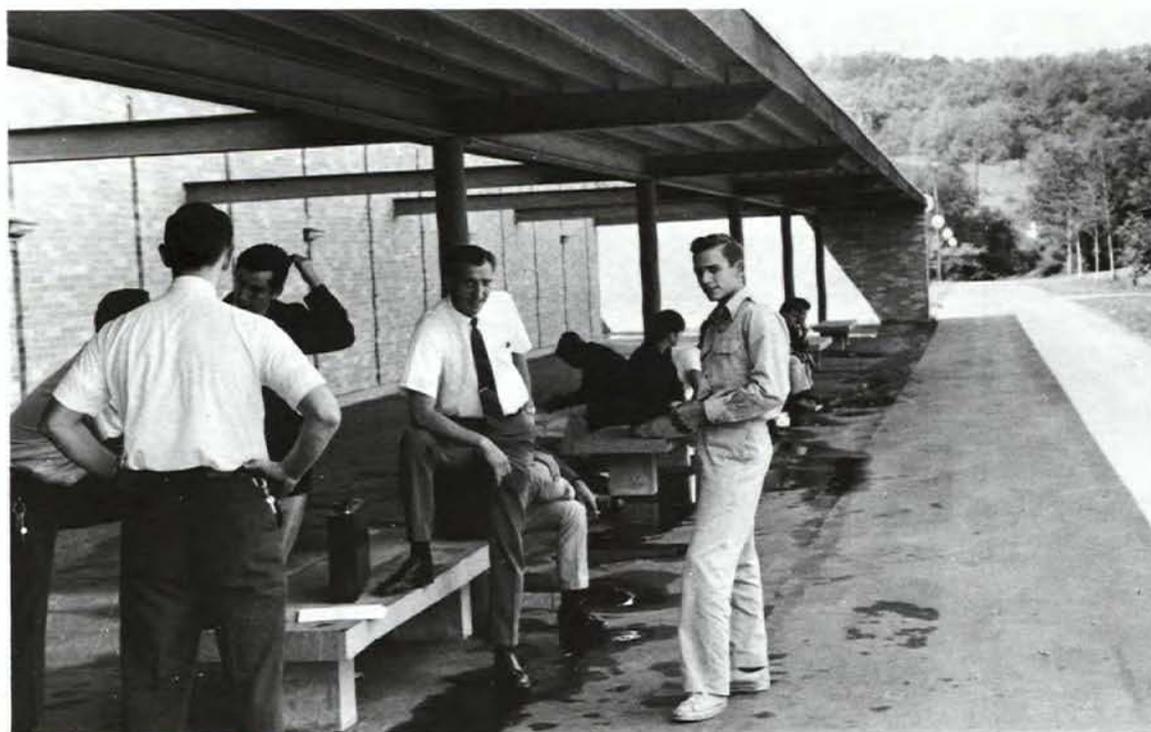


Figure 33: Residents and Staff near Entrance to Activities Building at MOR

The impromptu encounters at DET occur in the main corridors on the first and second floors. Interaction is especially prominent in the space around the counsellor's office (Figure 34).

Impromptu encounters coincide with points of entry into activity areas and at the intersection of circulation routes. The location of the impromptu encounter depends on the degree of privacy required for the particular discussion. Most residents expressed the opinion that encounters in external spaces gave them the greatest degree of privacy and removed suspicions of sound transfer within the facility. At FL in particular the residents hesitated to disclose confidential problems in many spaces because of the sound transfer. All doors have large gaps at the top and the bottom, which eliminate any acoustical privacy.

Interactions with Physical Variables

COW		11	19	22	23	24	32	34
DET	4		19	21	22	24		
FL		11	19	21		23	24	32 34
MOR	8		19	21		23	24	32



Figure 34: Director with two Residents at DET.

Variable (vii): Public-Resident Scheduled Encounter

Residents at each facility did get the opportunity to meet outsiders on certain occasions. The percentage of resident participants, however, was often very low.

At COW, the parole officer visits weekly, in the administration unit, to interview two or three residents who are ready for parole; six social welfare representatives make approximately two visits a week, interviewing from 6.7 to 1.41 residents per visit, and a manpower representative makes bi-weekly visits to provide employment service to the residents.

Interactions with Physical Variables

COW	11	13	16	30	33	34
DET	8					
FL	11		16	30	33	34
MOR			16	30	33	34

Communal Activity

3.3

Communal activity within a facility occurs when residents group together, during their free time, to collectively participate in common activities. Daniel Glazer (1964) found that most residents distrust each other and tend more towards isolation than communal activity. He also discovered that relations are better among smaller groups of residents when there is no contact with the rest of the population. (Figures 35).

Variable (viii): Resident Group Activity

The most common use of pleasure time is spent watching television and playing sports. At all facilities, except DET, the gymnasium is controlled by only 20% of the residents while outdoor recreation draws 55% of the population for participation and spectator involvement.

Figure 35: Communal Activities at MOR



a) Playing the guitar using the retaining walls for seats



b) Playing horsehoes outside the housing unit



c) Playing cards in the main lounge

FL allows free movement throughout the facility between 5.45 p.m. and 9.00 p.m., during which time the library is used extensively by the residents. Whereas the residents at FL are permitted to use the library at any time, the residents at COW are restricted to one visit per week to the library.

The activities at COW are strictly regulated, limiting spontaneous group activities. The younger population at MOR are more active with musical instruments, and two spaces within each housing unit adequately accommodate this activity. Internal courts within the housing units at MOR are used for group musical sessions and over 80% of the residents interviewed approved of the courts being used in this manner. Musical activities at FL are restricted to the gymnasium because of poor acoustics in the housing unit. Group activity greatly disturbs the other residents in the wing.

Spaces for arts and crafts are plentiful at FL with two areas in the gymnasium opened to the residents twice weekly. One space in each housing unit at MOR is provided solely for arts and crafts, but this program is not as active as at FL. COW has no provisions for this activity. DET has no real need for arts and crafts, as the residents are involved in community activities.

Interactions with Physical Variables

COW	7	9	12	34	
DET			12		
FL	8	9	10	12	34
MOR	8		10	12	31

Goffman (1964) found that the territories of the self being are violated in the institution. Many residents desire spatial, visual and acoustical separation from the population for letter writing, studying, reading, etc.

Variable (ix): Search for Privacy

The resident domains at FL and COW provide a reasonable level of privacy; however, the acoustics are so poor in both places that one cannot retreat from constant noise. MOR provides reasonably sound-proof rooms, in direct contrast to DET's dormitory system which does not lend itself at all to resident retreat. Residents of DET, however, have the alternative of going into the community to obtain the desired degree of privacy. The internal courts in the housing units at MOR are used as retreats by the residents. Over 90% of the residents at COW, FL and MOR use their own rooms as the first resort to privacy, and the external courts as the next most desirable space (Figure 36).

The toilet and wash basin setup within each room at COW has been severely criticized by the residents as being most unnatural and inconvenient "I don't like sleeping with my face in the john". It has also contributed to the noise pollution within the institution.

Interactions with Physical Variables

COW		7	10	30	33
det	1			30	
FL		7	10	30	33
MOR		7	10	30	33

Physical Variables

Those physical components in the sample facilities most pertinent to the implementation of correctional techniques, are described and examined according to six general categories: location, programmed spaces, non-programmed spaces, movement, environmental controls and user domains. The variables were selected according to their identifiable influence on the correctional program rather than to provide a complete account of all physical characteristics and components of a facility.

Location Variables

Physical Variable 1: existence of urban centres

It is most commonly and correctly assumed that urban areas provide the greatest supply of community facilities for potential use in a correctional program.

A good labour market, the existence of hospitals, clinics, professional assistance from universities and centres for academic and vocational training, characteristics of urban areas, are all important to the contemporary facility. The use of community facilities, however, relies primarily on the ability of the staff to influence and encourage citizens to participate in the program.

Located in a large urban core, the staff at DET enforce good resident use of available facilities. MOR, even though it is on the periphery of an urban area, takes little advantage of existing community resources in their current program. FL and COW are both removed from urban areas and therefore have very little opportunity. This variable interacts with physical variables 2 and 3 in all facilities. DET, because of its community oriented program, has several interactions not seen in the other facilities.



a) COW Living Court – restricted use institutional seating



b) MOR Community Square when residents gather



c) one of two main courts

Figure 36: *External Courts for resident retreat in the facilities.*

Interactions with Other Physical Variables

COW	2	3					29
DET	2	3	4	9	14	15	17
FL	2	3					
MOR	2	3	4				

Physical Variable 2: availability of transportation services

Transportation service is necessary for persons travelling to and from the facilities. Private and public transportation are the two alternatives available. Transportation, conducted by private cars, government vehicles and/or the public bus service, relies on major roads and expressways. The public bus service was found to be predominantly urban at DET and MOR and regional at FL and COW. The regional service is very undependable and therefore of little use to the facility.

TABLE 10

List of Transportation Services Available at Each Facility

Service	Distance in Miles			
	COW	DET	FL	MOR
Secondary road	1.00	0.00	0.10	0.10
Major road	2.00	0.02	12.00	1.00
Expressway	30.00	0.50	—	—
Public Bus Stop – U	—	0.20	—	3.00
Public Bus Stop – R	5.00	0.50	12.00	1.00

This variable has common interactions at all facilities with variables 1, 3 and 4. DET, because of its dependency on the community, has outside interactions with variables 8 and 9.

Interactions with Other Physical Variables

COW	1	3	4		
DET	1	3	4	8	9
FL	1	3	4		
MOR	1	3	4		

Physical Variable 3: accessibility to transportation services

The accessibility to available transportation services is identified by distance in Table 10. All facilities, except COW, have direct pedestrian access to a major artery and expressway and direct pedestrian access to both urban and rural bus services. Several bus stops are located within a one mile walking distance of DET, while MOR is just within walking distance of a rural bus service. The rural bus service at COW and FL, with service twice daily, is inadequate for most activities.

Interactions with Other Physical Variables

COW	1	2	4			
DET	1	2	4	9	14	15
FL	1	2	4			
MOR	1	2	4			

Physical Variable 4: pedestrian entry into facility

The entrances into COW and FL are strictly controlled, (Figures 7, 14), less controlled at MOR and open at DET. All entrances are clearly visible to the public from the access roads except at COW, where the gate is 2 miles away from the access road and is hidden from those approaching the facility.

Programmed Spaces

4.2

During the design phase of a facility, most spaces are commonly designated for a specific function – which is known as programming. The case studies are compared with the basis of dividing the number of spaces provided for each program by the number of residents in the facility.

TABLE II

Ratios of Spaces per Resident – according to ultimate bed capacity

SPACE	TYPE	COW	DET	FL	MOR
		432	Ultimate Bed Capacity 24	624	352
5	Private Meeting Space	0.055	0.125	0.120	0.300
6	Visiting Space	1 ϕ	1 ϕ	1 ϕ	–
7	Resident Relaxation Space	1.000	0.050	1.000	0.500
8	Resident Passive Recreation & Entertainment	0.480	0.125	0.070	0.83
9	Resident Active Recreation & Entertainment	0.002	–	0.005	0.010
10	Resident Personal Domain	1.000	0.050	1.000	0.500
11	Temporary Waiting Room	0.004	–	1.000	0.500
12	Voluntary Communal Activity	0.051	0.125	0.088	0.153
13	Meeting Space for Inter-Staff	0.016*	0.042*	0.060*	0.060*
14	Spaces for Academic Training	0.014	–	0.020	0.043
15	Arrangements for Vocational Training	0.023	–	0.028	0.033
16	Spaces for Public-Resident Encounters	0.013	–	0.014	0.003
17	Spaces for Resident Food Consumption	0.004	–	0.004	0.003
18	Spaces for Staff Food Consumption	0.005*	–	0.008*	0.005*

NOTE:

Ratios represent the number of assigned spaces per resident in the facility.

* Ratio represents number of assigned spaces per staff.

ϕ Denotes 1 space in facility and not a ratio.

Physical Variable 5: private meeting space

Private meeting space, varying from 100 to 200 sq. ft. in size, is assigned for private encounters between two, three or four participants. Those spaces intended for private meetings within each facility are identified in Table 11. MOR has the best ratio because of the great number of private meeting spaces in the housing unit and the number of staff.

In all facilities variable 5 interacts with variables 13, 19 and 25. Variable 5 does not interact with variables 16 and 18 at DET because these variables do not apply. It does not interact with variable 30 at FL because of the lack of sound control.

Interactions with Other Physical Variables

COW			11	13	16	18	19		25	30	33
DET	8	10		13			19	20	25	30	
FL			11	13	16	18	19		25		33
MOR	8	10	11	13	16	18	19	20	25	30	

Physical Variable 6: visiting space

The visiting spaces are those reserved for visits between the resident and his family. COW and FL both have one large space, approximately 1500 sq. ft. which is located near the main entrance. DET and MOR do not have any space specifically assigned for visiting. DET has no restrictions on public use of spaces, but does encourage the residents to visit in the community. MOR is the most restrictive of all the institutions as far as visiting area is concerned. Visits are restricted at MOR to either the housing unit or the main entrance in the administration unit. However, the least number of visits occur at MOR because of the geographical location.

Interactions of physical variable 6 with other variables are quite inconsistent for all facilities. COW and FL are similar in their interactions but dissimilar to those identified for DET and MOR.

Interactions with Other Physical Variables

COW	4			11		24	28	34	35
DET		7	8	10					
FL	4			11	16		28	34	35
MOR		7	8	10	16				

Physical Variable 7: resident relation space

Relaxation spaces usually relate to those spaces reserved for each resident where he can isolate himself from the remaining population. Most private spaces involve single bedrooms present at both COW and FL. MOR or DET have lower ratios because MOR has some dormitories and DET makes extensive use of dormitories. The low ratio at DET is irrelevant, however, because a resident can leave the facility for relaxation at a movie etc.

Interactions with Other Physical Variables

COW		8	10	12	25		32
DET	6	8		12			
FL		8	10	12		30	32
MOR	6	8	10	12		30	32

Physical Variable 8: resident passive recreation and entertainment space.

Passive recreation spaces are those large enough to accommodate activities such as chess, cards and billiards, which require little or no physical exertion. Watching television, listening to the radio and playing musical instruments are also included in passive entertainment. The majority of these activities can be accommodated by one larger area which should be at least 200 sq. ft. MOR and FL have similar ratios of

.083 and .07 respectively, double that of COW – .048. The smaller population of DET and the adequate provision of television rooms as well as lounging and recreation facilities produces a higher ratio of .125 (Table 11).

Interactions with Other Variables

COW					10		12				28	31	34	
DET	2	5	6	7			12	16	18	19				
FL				7	10		12		18		22	28	31	34
MOR		5	6	7	10	11	12		18	19	22		31	

Physical Variable 9: resident active recreation and entertainment spaces

Spaces for active recreation include wrestling and boxing rooms, as well as outdoor spaces for baseball, basketball, etc. Rooms for movies and drama productions are also included in this category. The highest ratio is at MOR – .010 where there is an auditorium, gymnasium and a swimming pool available (Table 11). FL and COW have very similar ratios. DET has no need for these spaces because of its high dependency on community facilities.

Interactions with Other Physical Variables

COW						13	19	20	24	32	34
DET		1	2	3							
FL							19	20	24	32	34
MOR					12		19		24	32	

Physical Variable 10: resident personal domain

The resident personal domain refers to the bedroom space allotted to each resident (Figure 37). The space is either enclosed or shared with other residents. Each resident at FL and COW has his own room while DET and MOR offer a variety of arrangements. Fifty per cent of the residents at MOR have separate rooms while the remaining 50% share nine separate compartments. DET has one single room and six dormitories to accommodate its residents.

Physical Variable 11: temporary waiting space

Waiting rooms are programmed to accommodate people for a short period of time, without hindering the circulation or activities in the vicinity. They are often needed in the areas where scheduled encounters occur. There are two such spaces at COW – side by side in the administrative unit and three at MOR. One space has been reserved for this purpose at FL. DET does not have a waiting space.

Interactions with Other Physical Variables

COW	4	5	6		14	16	19	22	24	34
DET										
FL	4	5	6		14	16	19		24	34
MOR	4	5		7	14					

Physical Variable 12: voluntary communal activity space

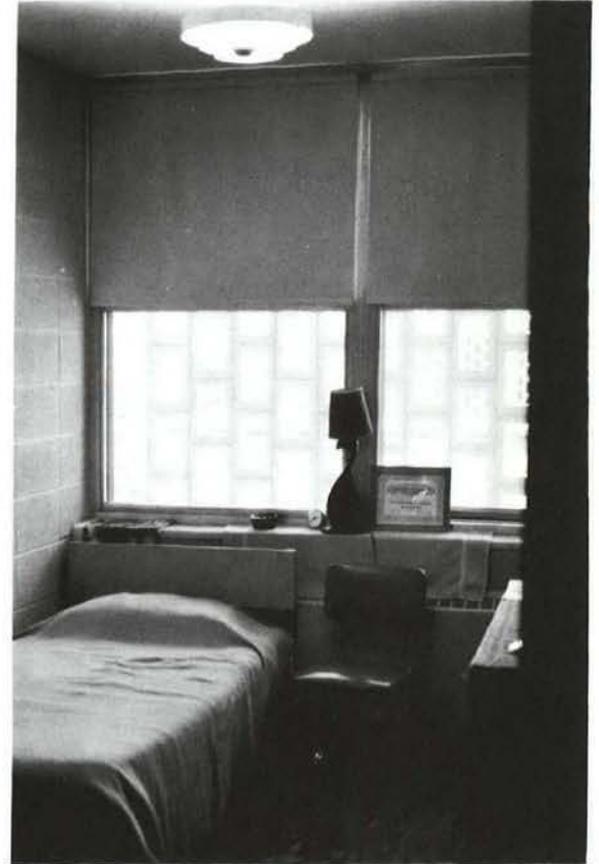
Voluntary communal activity spaces are those spaces programmed for group interaction among residents. The spaces vary from 150 to 400 sq. ft. MOR has the highest ratio – .153 followed by DET – .125, then FL and COW with .088 and .051 respectively (Table 11).



a) Dormitory at MOR.



b) Dormitory at DET.



c) Single room at FL.

Figure 37: *The Personal Domains*

Interactions with Other Physical Variables

COW	7	8		10		28	31	34
DET	7	8		10	19		31	
FL	7	8		10	19	28	31	34
MOR	7	8	9	10	18	19	31	34

Physical Variable 13: meeting space for inter-staff encounters

Meeting spaces are needed to accommodate a variety of staff meetings necessary to implement programs or operate a facility. They involve those spaces where small or large staff groups can meet without interfering with resident activities (Figure 32c). Their size can vary from 100 sq. ft. to 400 sq. ft. FL and MOR have the best ratio of .060 each, while DET and COW have lower ratios of .042 and .016 respectively (Table 11).

Interactions with Other Physical Variables

COW	5	9	14	16		20	30	33
DET	5							
FL	5			16	18	20	30	33
MOR	5				18	20	30	33

Physical Variable 14: spaces for academic training

Classrooms for academic training exist at COW, FL and MOR, while DET makes use of the community facilities. Training is applied to both individual and group interests. MOR has the highest ratio followed by FL and COW. In all cases the classrooms are designed specifically as classrooms. Occasionally they are used as meeting rooms particularly at COW where meeting spaces are at a premium. As such, variable 14 for COW varies in its interaction with variables 13 and 16.

Interactions with Other Physical Variables

COW			11	13	16		30
DET	1	3					
FL			11			19	30
MOR			11			19	30

Physical Variable 15: spaces for vocational training

Spaces for vocational training are provided within the facility at COW, FL and MOR, but DET once again relies entirely on community facilities. Great emphasis is placed on this variable at MOR and FL which have similar ratios of .033 and .028 respectively (Table 11). The vocational facilities at COW were in the planning stage during the observation period of this study.

Interactions with Other Physical Variables

COW			
DET			
FL	31	32	34
MOR	31	32	34

Physical Variable 16: spaces for public-resident encounters

Public-resident encounter spaces are usually found to occupy areas approximately 60 to 120 sq. ft. Representatives of public and private organizations need these spaces to meet with residents. FL and COW have ratios of .014 and .013 respectively while no spaces at MOR are set aside specifically for this purpose. DET makes no provision for these encounters, however the main lounge is available should the need arise.

Interactions with Other Physical Variables

COW	5		11	13	14	18	28	30	34	35
DET		8	10							
FL	5		11	13		18		30	34	35
MOR	5	6	10			18		30		

Physical Variable 17: space for resident food consumption

The residents at COW dine collectively at one sitting in two separate halls. MOR and FL residents dine in a single hall at one sitting. Residents of DET eat their meals outside the centre. MOR allows residents to obtain snacks after the regularly scheduled meals: this facility is not provided at either FL or COW except on a weekly basis.

Interactions with Other Physical Variables

COW		24	31	32	34
DET	1	3			
FL		24	31	32	34
MOR		24	31	32	34

Physical Variable 18: differentiated spaces

Differentiated spaces refer to variations in the sizes and shapes of rooms which are generally used for the same function. Meeting spaces and resident housing are the two major areas covered by this category. All resident rooms are identical at COW and FL, but FL has a greater variation in the sizes and shapes of meeting rooms. MOR uses different spaces in its programme of reinforcing behaviour, through a merit system, whereby a resident can graduate from a dormitory to a single room.

Interactions with Other Physical Variables

COW	5				16		
DET		8	10		16		
FL	5	8		13	16	22	
MOR	5	8	10	12	13	16	22

Non-Programmed spaces

4.3

Some spaces have no specific use attached to them in the development process but accommodate activities such as staff-resident or inter-staff impromptu encounters.

Physical Variable 19: spaces for resident-staff impromptu interaction

Resident-staff impromptu encounters require spaces where two or more participants can converse without interfering with any other activity. At all facilities, encounters occur at points of entry into an activity area or where circulation paths cross. MOR residents use the retaining walls near the main entrances to most buildings for sitting surfaces (Figures 38, 39, 40) and are often observed conversing with the staff as they pass through that area. Residents sometimes congregate around entrances at FL and COW, but do not have any surfaces that make it comfortable, natural and attractive to congregate. The space in the wide corridors around the administrative unit at COW is adequate for meeting informally with staff. FL has a surplus of space in the administrative unit, the main corridor of the housing unit and the court yards, which adequately accommodates informal meetings without interference with normal circulation and programmed activities.

Figure 38: *Gathering at the entrance to the housing unit.*

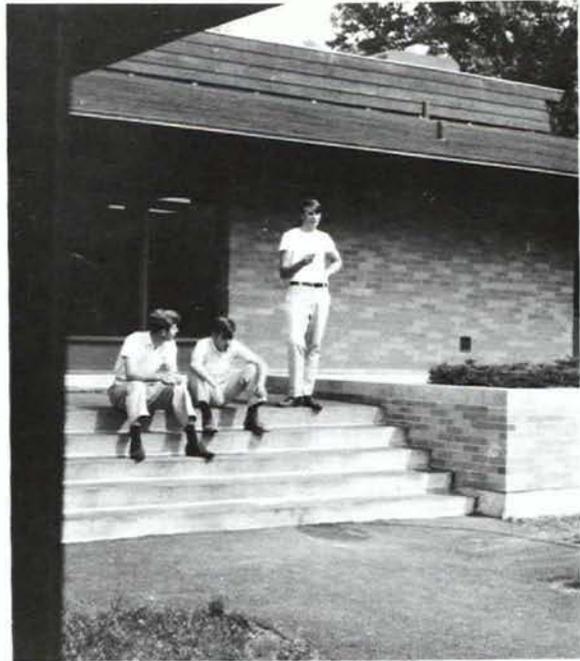


Figure 39: *Grouping outside the activities building avoiding the use of fixed benches.*

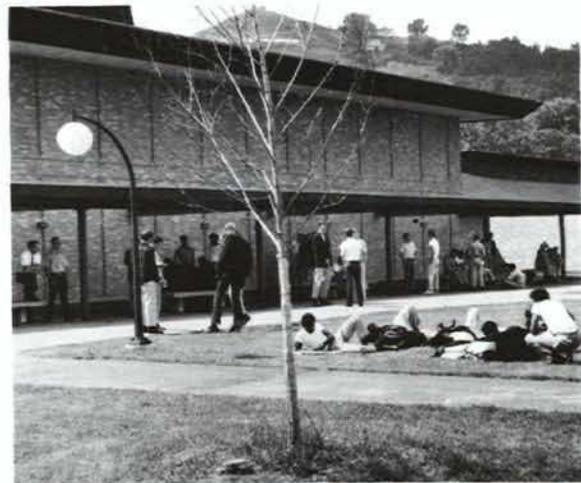


Figure 40: *Using the retaining wall as sitting surface and place to gather.*



Interactions with Other Physical Variables

COW	5	9	11			20	21	22	23	24	32	34	
DET	5	8		12		20	21	22					
FL	5		9	11	12	14	20	21		23	24	32	34
MOR	5	8	9		12	14	20	21		23	24	32	34

Physical Variable 20: spaces for inter-staff impromptu interaction

The spaces for inter-staff impromptu interaction are similar to resident-staff spaces except that they occur in staff areas near access points and circulation routes. These encounters at COW and FL occur mostly in the corridors of the administrative unit. MOR encounters occur in both the administrative and housing units. DET makes use of office space for this type of encounter.

Interactions with Other Physical Variables

COW	4		9	13	19	21	22	24	32
DET		5			19	21	22		
FL	4		9	13	19	21		24	32
MOR	4	5		13	19	21		24	32

Movement

4.4

Physical Variable 21: definition of pedestrian access routes

This variable involves the manner by which pedestrian paths are defined for staff and residents. COW restricts all travel to the main external corridors which are enclosed with concrete slats and a roof. Both FL and MOR define their major access routes by paved surfaces. However, residents can move off the paths. DET has three levels, each with a central corridor, and all linked by a main staircase (Figure 41).

Interactions with Other Physical Variables

COW	19	20	22	23	24	26	27	32	34	35
DET	19	20	22							
FL	19	20	22	23	24			32	34	35
MOR	19	20	22	23	24			32	34	

Physical Variable 22: space for user movement

Space for user movement is that space required for a smooth flow of pedestrian traffic along pedestrian routes. The main external corridors at COW are 14' wide, a width sufficient to accommodate more than existing pedestrian requirements. Internal corridors at MOR and DET are 5' and 7' wide respectively on all floors while at FL they are a pleasant 9 feet wide. Narrow circulation paths restrict any impromptu encounters that may occur.

Interactions with Other Physical Variables

COW	4		11		19	20	21	23	24	26	32
DET					19	20	21				
FL	4	8		18			21		24	26	32
MOR		8		18			21		24		

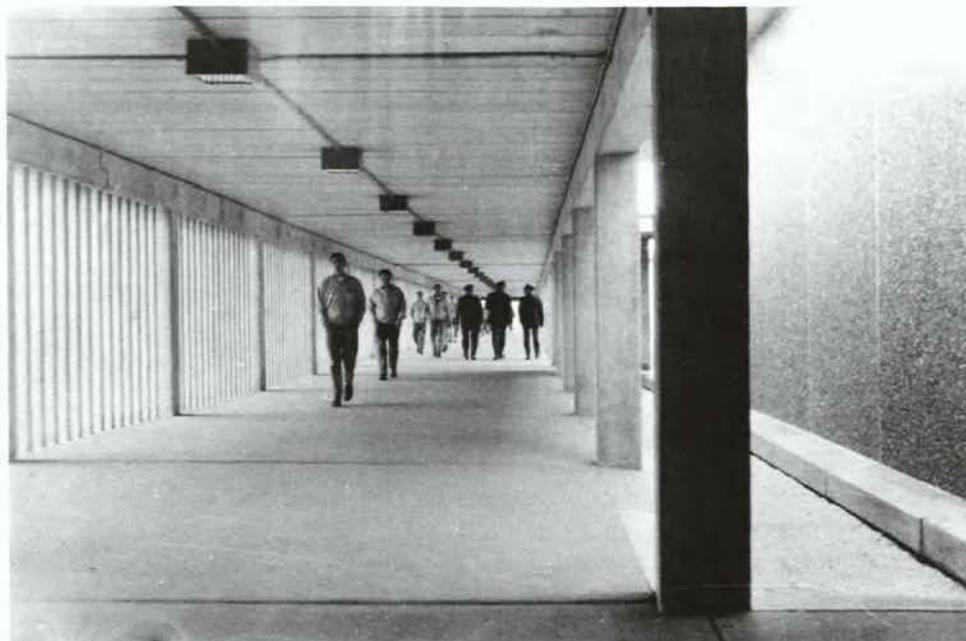
Physical Variable 23: connections between activities

Activities within the physical facilities are connected by circulation routes. These routes at COW form a pinwheel pattern, all arms of the pinwheel being straight and direct. The routes do not have any

Figure 41: External movement between buildings.



a) Going to housing unit from cafeteria at MOR.



b) Going to cafeteria from housing unit at COW.

dangerous or confusing changes in direction. Routes at MOR and FL are not well defined for they wander in a haphazard manner throughout the facility. Residents have great freedom of movement between facilities. Each floor at DET has a short, straight corridor, interconnected by the main staircase (Figure 42).

Interactions with Other Physical Variables

COW	19	21	22	24	26	27	28	32	34	35
DET										
FL	19	21		24		27		32	34	35
MOR	19	21		24				32	34	

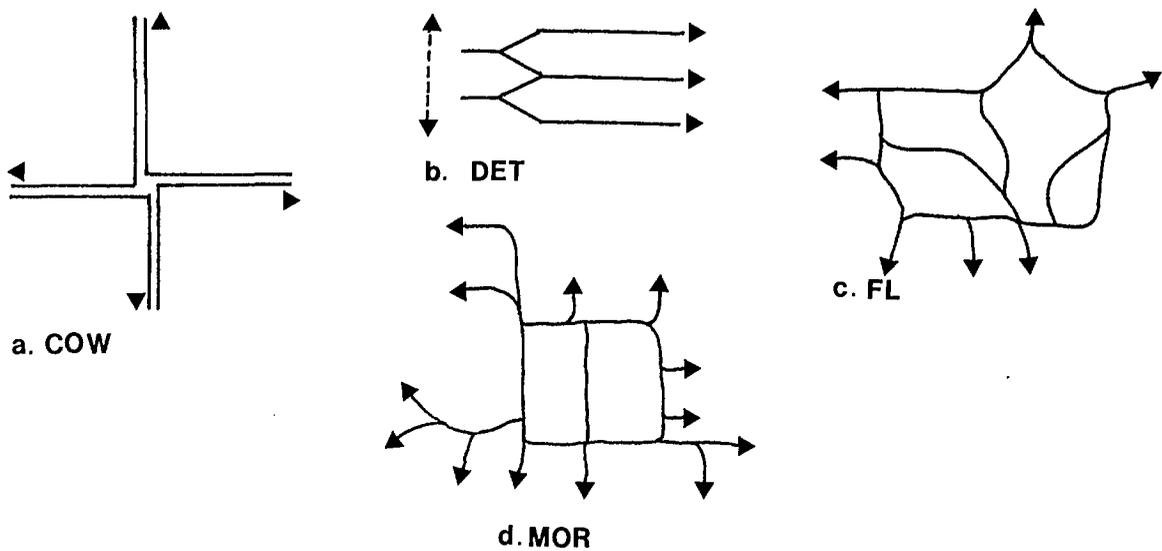


Figure 42: Circulation Patterns in the Facilities

Physical Variable 24: points of entry

Each activity has one main access point with one or more secondary entrances. All points of entry from activities at COW open into the well defined circulation routes. The points of entry at MOR and FL are all immediately evident and open into secondary circulation routes. Only MOR has a well-landscaped area around the entrances, with several subtle surfaces for seating, where the residents can gather during their leisure time.

Interactions with Other Physical Variables

COW	9	11	17	19	20	21	22	23	25	26	27	28	32	34	35
DET															
FL	9	11	17	19	20	21	22	23	25			28	32	34	35
MOR	9		17	19	20	21	22	23	25				32	34	

Physical Variable 25: access points that can be securely barred

Securely barred gates are used primarily to control movement of the residents in a facility. COW makes extensive use of security locks and reinforced doors, as well as electrically operated gates in the main corridors. The locks at FL and MOR are a normal commercial type set into wood doors. Doors at DET are left open at all times.

Interactions with Other Physical Variables

COW	4	5	7	24	26	28		34	35
DET		5							
FL	4	5		24	26	28		34	35
MOR		5		24			30		

Physical Variable 26: movement barriers

The windows at COW and FL are designed with concrete lattice over the openings which reduce vision but provide an excellent movement barrier. Concrete fencing in the corridors and courts at COW also serve as movement barriers.

Interactions with Other Physical Variables

COW	4	10	21	22	23	24	25	27	28	29	34	35
DET												
FL	4	10		22			25	27	28	29	34	35
MOR												

Physical Variable 27: tracing resident movement

Movement at COW, FL and MOR is recorded in a central control station which is connected to sub-control stations located at strategic points throughout the facility. The sub-stations at COW are at the focus point of each activity. MOR sub-stations are unobtrusive being part of the supervisor's office. DET does not use tracing methods except for close staff-resident contact. The stations at FL are located on the fringe of activity areas.

Interactions with Other Physical Variables

COW	4	21	23	24	26	28	34
DET							
FL	4		23		26	28	34
MOR	4						

Physical Variable 28: visual access

COW and FL both reflect excellent visual surveillance of the residents by the staff, which is a sign of their custodial operation. Glazed panels in the majority of spaces and corridors facilitate constant supervision from one station. This makes it easy for the COW and FL staff to remain in the office. However, this reduces resident/staff interaction.

Interactions with Other Physical Variables

COW	6	8	10	12	16	23	24	25	26	27
DET										
FL	6	8	10	12			24	25	26	27
MOR			10							

Physical Variable 29: control against external intrusion

Components to control external intrusion by outsiders involves peripheral barriers around the facility. COW has a 14 ft. fence with two access points and FL has two fences with one access point. MOR depends on two mobile stations outside the facility and the main control gate to prevent outside intrusion.

Interactions

COW	1		4		26
DET					
FL	1		4		26
MOR					

Environmental Controls

4.5

Certain variables within a facility concentrate on limiting the noise factor and thereby contribute to privacy. A description of these variables follows.

Physical Variable 30: protection of space from noise

Noise protection involves acoustical considerations within those rooms such as the conference rooms and the residents' personal domain which have a greater need for privacy. Acoustics at COW are very poor while MOR is well equipped for sound control measures. The only space at DET requiring noise protection is the meeting room or case worker's office.

Interactions with Other Physical Variables

COW	5	10	13	14	16		
DET	5						
FL		7	10	13	14	16	32
MOR	5	7	10	13	14	16	25 32

Physical Variable 31: control at source noise generated by communal activities

Noise, generated by activities within communal spaces should be controlled at its source. Special floor and wall materials to act as sound locks should be provided. Two areas in the housing unit at MOR are adequately equipped to "contain" noisy activities. The other three facilities have no effective noise controls.

Interactions with Other Physical Variables

COW	8	12		17
DET		12		
FL	8	12	15	17
MOR	8	12	15	17

Physical Variable 32: access distance between related activity areas

The distance between areas dictates the energy and time spent travelling between the activities. At COW the access distance between resident domains and general activities are shorter than at the other facilities. Distances, at FL, are extreme, exceeding 1000 feet between the housing unit and administrative unit. All activities at DET are housed within one unit.

Interactions with Other Physical Variables

COW	7	9		17	19	20	21	22	23	24	30	34
DET												
FL	7	9	15	17	19	20	21	22	23	24	30	34
MOR	7	9	15	17	19	20	21	22	23	24	30	

Physical Variable 33: arrangements to provide visual barriers

Visual barriers involve those physical components which restrict or hinder visual access into a space. The meeting space at COW and FL are enclosed with solid partitions while some glazed glass panels are used at MOR. The personal domains in the dormitories at MOR and DET are divided by low partitions to give at least a semblance of privacy.

Interactions with Other Physical Variables

COW	5			13
DET			10	
FL	5			13
MOR			10	13

Some areas are reserved for resident activity while others are restricted from resident use. The domain refers to that area to which a user has access. It represents the maximum limits to his territory in the facility.

Physical Variable 34: definition of resident domain

The resident domain at COW is defined by physical barriers and restricted to confined internal and external areas according to specific programs. The resident domain at FL is much greater because the resident is permitted to use most of the external spaces. Staff intervention, instead of stable physical determinants, is used in establishing the resident domain at MOR. The resident has free access to all parts of the facility at DET except for two staff rooms.

Interactions with Other Physical Variables

COW	6	8	9	11	12		16	17	19	21	23	24	25	26	27	32	35
DET																	
FL	6	8	9	11	12	15		17	19	21	23	24	25	26	27		35
MOR					12	15		17	19	21	23	24					

Physical Variable 35: definition to the boundaries of public domain

The outsider must integrate with the residents of a facility for specific purposes or functions. However, many facilities, such as COW, are quite sceptical of public visitors. Therefore, the public is relegated to certain areas and is prohibited from going outside the set boundaries. COW and FL restrict their visitors to a special unit designated as the visiting unit. MOR and DET are much more liberal as the public domain is almost limitless.

Interactions with Other Physical Variables

COW	4	6	16	21	23	24	25	26	34
DET									
FL	4	6	16	21	23	24	25	26	34
MOR									

Analysis

5.0

Pure Core Group Selection Efficiency

5.1

Matrices for each facility correlating the physical variables against themselves can be seen in Appendix 1.4. A computer analysis of the matrices produced 409 pure core groups for COW, 61 for DET, 284 for FL and 175 for MOR. The low incidence of groups at DET is due to the absence of 12 variables from the matrix, and at MOR to the absence of 3 variables. Two-variable groups had the largest number of groups in all facilities except COW where there were more three-variable groups than two-variable groups. Only COW and FL have at least one six-variable group.

As previously mentioned, the highest attainable B-Value for a matrix is the sum of the maximum B-Value attained by each variable in a group of variables. The total B-Value of a set of selected groups divided by the maximum B-Value possible for the matrix is the selection efficiency of the set. Table 13 lists the group selection efficiency for each facility.

The efficiency of group selection at DET is rather low because of the few interactions that occur with variables 9, 13, 14, 17, 25 and 30. Variables 13, 25, and 30 have only one interaction on the matrix, all with variable 5. Select one group, say 5 and 13, and variables 13 and 25, each with B-Values of 700 cannot be selected. Similarly, if variables 1, 2, 3 and 4 are selected, then it is impossible to select variables 9 (950 B-Value) and 14 (750 B-Value). On this premise, it may be said that the total possible maximum B-Value possible for DET becomes 25,450 – 3,850 or 21,600. The group selection then has a selection efficiency of 96.5%.

Number of Variables in group	Number of Groups (percentage of total)			
	COW	DET	FL	MOR
2	126 (30%)	40 (65%)	119 (42%)	90 (51%)
3	151 (37%)	18 (30%)	107 (38%)	66 (38%)
4	94 (24%)	3 (5%)	46 (16%)	18 (10%)
5	33 (8%)		11 (4%)	1 (1%)
6	5 (1%)		1	
Total	409 (100%)	61 (100%)	284 (100%)	175 (100%)

Table 12: Number of Pure Core Groups per Group Size for each Facility

	Facility			
	COW	DET	FL	MOR
Maximum B-Value	32,763	25,450	36,004	37,569
B-Value of Selected Groups	28,752	20,850	31,718	34,370
Group Selection Efficiency	88%	82%	88%	91.4%

Table 13: B-Value Selection Efficiency

The 86% efficiency in the FL selection is affected by the few interactions in variables 29 (with 1.4 and 26 only) and in variable 17 (with 24. 31. 32 and 34 only). Variable 29 takes on its maximum B-Value (1650) from the group 1. 29 and once group 1. 2. 3 has been selected, the highest B-Value obtainable for variable 29 becomes 660, a reduction of 890 points. Variable 17 similarly has a maximum B-Value of 1100 from group 17.31, however 31 is selected with 15 because of a higher B-Value. The maximum B-Value possible for variable 17 therefore drops to 440, a reduction of 670 points. If the maximum B-Value possible for FL is then considered to be 34,444, the group selection has an efficiency of 92%.

The group selection at COW is 88% efficient. Variable 29 has the same effect at COW as it did at FL because of its interactions with variables 1. 4 and 26 only. Variable 29 takes on its maximum B-Value (1600) from group 1. 29 and when group 1. 2. 3 is selected, the maximum B-Value possible for variable 29 becomes 492, a reduction of 1108 points. This reduces the maximum B-Value for COW to 31,655 giving the selected group an efficiency of 90.8%.

The interactions between variables at MOR are perhaps the most constant of all facilities. Variable 27 however has only one interaction, with variable 4, giving it a B-Value of 1200. Once variable 4 is selected in group 1. 2. 3. 4, variable 27 can't be selected, reducing the maximum B-Value at MOR by 1200 to 36,369. The efficiency of group selection then becomes 94.5%.

The selected groups, according to the revised B-Value, become similar for comparisons. They are all over 90% efficient, differing by 5.7%. Table 14 summarizes the revised efficiencies.

Facility	COW	DET	FL	MOR
Revised Maximum B-Value	31,655	21,600	34,444	36,369
B-Value of Selected Groups	28,752	20,850	31,718	34,370
Group Selection Efficiency	90.8%	96.5%	92%	94.5%

Table 14: Summary of Selection Efficiency According to Revised Maximum B-Value

Selected Pure Core Groups

5.2

In the pure-core groups selected at COW, 14 variables maintain their maximum B-Value and six of the 12 groups have 95% efficiency or more indicating a high degree of homogeneity. Only three of the groups have less than 60% efficiency.

Group	B-Value of Group	Variables with Maximum B-Value	Weighted B-Value	Maximum B-Value	Efficiency
*1.2.3.	3100	1.2.3.	9300	9300	100%
4.6.35.	443	—	1329	1769	75%
*5.18.	800	18.	1600	1645	97%
*7.8.10.12.	1000	7.10.	4000	4066	98.4%
9.24.	320		640	1100	58%
11.34.	267	—	534	985	54%
*13.33.	914	13.33	1828	1828	100%
14.16.30.	715	—	2145	2571	83%
*17.31.	1280	17.31.	2560	2560	100%
*19.20.21.22.32	500	21.22.	2500	2654	94.5%
23.27.28.	444	27.	1332	1618	83%
26.29.	492	26.	984	2092	47%
25.	—	—	—	581	
Total			28752	32763	88%

* Efficient Selection

Table 15: Selected Pure Core Groups at COW

Seven pure core groups were selected at DET, six of which are 100% efficient. Only group 8. 18 or 8. 16 is inefficient. Either group 10. 16 or 10. 18 can be selected giving both variables maximum value. If 10. 16 is selected, then variable 18 can't achieve the maximum B-Value, the next highest B-Value being 525.

Group	B-Value of Group	Variables with Maximum B-Value	Weighted B-Value	Maximum B-Value	Efficiency
*1.2.3.	950	1.2.3.4.	3800	3800	100%
*5.13.(25)(30)	700	5.13.(25)(30)	1400	1400	100%
*6.7.	1050	6.7.	2100	2100	100%
8.18.(16)	525	—	1050	1800	58%
*10.16.(18)	1050	10.16.(18)	2100	2100	100%
*12.31.	1400	12.31.	2800	2800	100%
*19.20.21.22.	1900	19.20.21.22.	7600	7600	100%
9.	—		—	950	
14.	—		—	750	
17.	—		—	750	
25.	—		—	700	
30.	—		—	700	
Total			20850	25450	82%

() indicates variable could have been selected

* highly efficient selection

Table 16: Selected Pure Core Groups at DET

The variables at FL are selected in 14 groups, 5 of which have 100% efficiency and 7 of which have at least 90% efficiency. 16 variables at FL achieve a maximum B-Value.

Group	B-Value of Group	Variables with Maximum B-Value	Weighted B-Value	Maximum B-Value	Efficiency
*1.2.3.	3200	1.2.3.	9600	9600	100%
4.22.	388	—	776	1486	52%
*5.13.33.	1067	5.	3201	3267	98%
*6.11.	600	6.	1200	1333	91%
*7.8.10.12.	827	7.8.10.12.	3308	3308	100%
*9.20.	660	9.20.	1320	1320	100%
*14.30.	943	14.30.	1886	1886	100%
*5.31.	1320	15.31.	2640	2640	100%
16.18	660	—	1320	1908	69%
17.34.	330	—	660	1535	43%
19.21.23.24.32.	469	—	2345	2962	79%
25.35.	471	—	942	1100	85%
26.29.	660	26.	1320	2310	57%
26.28.	600	—	1200	1349	89%
Total			31718	36004	86%

*denotes efficient selection

Table 17: Selected Pure Core Groups at FL

Ten of the thirteen selected pure core groups at MOR are highly efficient, 21 variables achieving their maximum B-Value.

Group	B-Value of Group	Variables with Maximum B-Value	Weighted B-Value	Maximum B-Value	Efficiency
*1.2.3.4.	3733	1.2.3.4.	14932	14932	100%
5.19.20.	395	—	1185	1839	64%
*6.16.	857	6.16.	1714	1714	100%
7.8.	428	—	856	1371	62%
*9.12.	600	9.12.	1200	1200	100%
*10.28.	600	28.	1200	1221	99%
*11.14.	1200	11.14.	2400	2400	100%
*13.33.	1200	13.33.	2400	2400	100%
*15.31.	1200	15.31.	2400	2400	100%
17.24.32.	458	—	1374	1904	72%
*18.22.	600	18.22.	1200	1200	100%
*21.23.34.	725	21.23.	2175	2200	98%
*25.30.	667	25.30.	1334	1334	100%
27.			—	1200	
Total			34370	37569	91.4%

*denotes efficient selection

Table 18: Selected Pure Core Groups at MOR

The selected groups for each facility are summarized in Table 19 against their individual selection efficiency.

	COW	%	DET	%	FL	%	MOR	%
	1.2.3.	100	1.2.3.4.	100	1.2.3.	100	1.2.3.4.	100
	4.6.35.	75	5.13.(25)(30)	100	4.22.	52	5.19.20.	64
	5.18.	97	6.7.	100	5.13.33	98	6.16.	100
	7.8.10.12.	98.4	8.18.(16)	58	6.11.	91	7.8.	62
	9.24.	58	10.16.(18)	100	7.8.10.12.	100	9.12	100
	11.34.	54	12.31	100	9.20.	100	10.28.	99
	13.33.	100	10.20.21.22.	100	14.30.	100	11.14.	100
	14.16.30.	83			15.31.	100	13.33.	100
	17.31.	100			16.18.	69	15.31	100
	19.20.21.22.32.	94.5			17.34	43	17.24.32	72
	23.27.28.	83			19.21.23.24.32.	79	18.22.	100
	26.29.	47			25.35.	85	21.23.34	98
					26.29.	57	25.30	100
					27.28.	89		
Variables not Selected	25.		9.14.17.(25)(30)				27.	
Variables not in Matrix	15.		11.15.23.24. 26.27.28.29. 32.33.34.35.				26.29.35.	

Table 19: Summary of Selected Pure Core Groups and Efficiency for each Facility

Common Variable Combinations

5.3

Fifteen variable combinations in the selected groups are found common in at least two facilities. Only one combination occurs in all facilities, three are found in three facilities and eleven in just two facilities. Of the fifteen combinations, 3 are composed of four variables, two of three variables and ten of two variables.

Common Variable Combinations	COW	DET	FL	MOR
1.2.3.	100%	100%	100%	100%
1.2.3.4.		100%		100%
7.8.	98.4%		100%	62%
7.8.10.12.	98.4%		100%	
13.33.	100%		98%	100%
14.30.	83%		100%	
19.20.	94.5%	100%		64%
19.20.21.22.	94.5%	100%		
19.21.32.	94.5%		79%	
21.23.			79%	98%
24.32.			79%	72%
27.28.	83%		89%	
26.29.	47%		57%	
5.13.		100%	98%	
15.31.			100%	100%
Totals	10	5	12	8

Note: % represents the group selection efficiency of the combinations in that facility.

Table 20: List of Common Variable Combinations

The Environs

5.3.1

The combination of variables 1 (existence of urban centres), 2 (transportation availability) and 3 (accessibility to transportation services) all relate to the relationship of the facility and its environs. The group was selected in all cases with 100% efficiency. At DET and MOR the combination 1, 2, 3 and 4 (pedestrian access into the facility) is selected with 100% efficiency.

This pure-core group is a nucleus of variables apparently unrelated to program. The dependency of DET on the community, however, causes interactions with variables 9, 14 and 17. As a facility becomes more community oriented, the spaces required in the facility are reduced i.e. variables 9 (resident active recreation and entertainment spaces), 14 (spaces for academic training) and 17 (spaces for resident food consumption), and variables 1, 2, 3 take on new sets of interactions. The solutions for each facility are very different and influence the program criteria and the ability to implement community-oriented techniques.

When variables 1, 2 and 3 are correlated with the social variables, interactions with variables i, ii, and iii occur in the combination at each facility. Variable iv occurs at all facilities except DET and variable ix only occurs at DET. Since this pure-core group was selected with 100% efficiency for each facility, it is assumed that variables iv (public integration in the facility) and ix (search for privacy) do not alter the relationships between variables. The inclusion of variable 4 at DET and MOR reflects the requirement in the design solution for good pedestrian entry into the facility. Variable 4 interacts with variable vi (staff-resident impromptu encounter) only at DET because the community oriented program forces residents and staff through the main entrance. This fact generated the opportunity for impromptu encounters at the entrance to the facility.

Resident's domain

5.3.2

The combination of variables 7 (resident relaxation spaces) and 8 (resident passive recreation and entertainment spaces) is found in COW, FL and MOR with selected efficiency of 98%, 100% and 62% respectively. The combination of variables 7, 8, 10 (resident personal domain) and 12 (voluntary communal activity space) occur in COW and FL with selected efficiencies of 98% and 100% respectively.

This combination centers on many aspects of the resident's domain in his search for privacy. At DET, the resident looking for privacy can leave the facility negating the need of privacy at DET. Variables iii and ix interact with variables 7 and 8 in all facilities except DET. Variable 8 at MOR interacts further with variables iv, v, and vi reducing the selection efficiency of the pure core group at MOR.

Variables v (staff-resident preplanned encounter) and vii (public-resident scheduled encounter), a direct result of correctional program at DET, affect the relationships with variable 8 causing the formation of group 8 – 16. Public integration into the facility without considerations of movement, noise and space use drastically affect the residents domain and require design considerations. MOR solves this requirement by allocating visiting space in the housing unit. DET has a lounge for visiting.

The juxtaposition of the resident's personal domain at COW and FL to the voluntary communal activity spaces, resident relaxation spaces and passive recreation space are so interconnected that the combination 7, 8, 10,12 results. The spaces are so compact in the housing unit that most treatment programs cannot be implemented in this domain. At MOR, the juxtaposition of spaces is adequate to accommodate programs of group therapy, model sessions, role playing and individual counselling, without encroaching upon normal resident activities. This is impossible at COW because the solution for 7,8,10,12 has not been adequately considered against 5 (private meeting space) 11 (temporary visiting spaces) and against the resident passive recreation and entertainment spaces.

Private encounters

5.3.3

The combination of variables 13 (meeting spaces for inter-staff encounters) and 33 (arrangements to provide visual barriers) relates to the privacy of the encounter at COW, FL and MOR with 100%, 98% and 100% selection efficiency respectively. Variable 33 does not exist at DET, eliminating the possibility of a 13, 33 combination there. In all three cases, social variables iv and vii interact with variable 13 and variables vii and ix with variable 33. The combination appears to be independent of program as the physical form solution should give the meeting spaces visual privacy for inter-staff encounters. This is further reinforced by the fact that variables vii and ix do not pertain to this specific combination.

Academic isolation

5.3.4

The combination of variables 14 (spaces for academic training) and 30 (protection of space from noise) relates to the isolation of academic facilities at COW and FL. The combination was selected with efficiencies of 83% and 100% at COW and FL respectively.

Variable 30 interacts with variables v, vii and ix in both facilities while variable 14 interacts with variable iv at COW only. Variable iv doesn't appear to influence the combination relationships at COW except to reduce its selection efficiency. The academic spaces at COW are used for some public-resident encounters however the solutions for COW and FL are similar. The academic spaces at MOR are affected by the type of operation and daily schedule. Variable 14 has a strong relationship to temporary waiting spaces at MOR. This is the result of movement freedom at MOR. Residents often arrive early and gather outside the classrooms. Noise protection for spaces at MOR is expected by access points that can be firmly sealed. Doors are 4 inches off the floor at FL and fit loosely at COW negating any noise control.

Noise control is a physical requirement which is necessary for a facility. The users of FL generate more encounters in exterior spaces where noise transmission is controlled. They can achieve the desired privacy.

The impromptu encounter

5.3.5

The combination of variables 19 (spaces for resident-staff impromptu encounters) and 20 (spaces for inter-staff impromptu interaction) occur in COW, DET and MOR with selection efficiencies of 94.5%, 100% and 64% respectively. The high efficiency at COW and DET reflect the combination of variables 19, 20, 21 (definition of pedestrian access routes) and 22 (space for user movement). The physical solutions at COW and DET for the combination reflect both direction and definition.

Social variable vi interacts identically with the combination in all facilities. At MOR, variables 19 and 20 are selected in a group with variable 5 accounting for the lower selection efficiency. The MOR combination results from operational procedures to have free movement throughout the facility. Since the staff and resident domains at MOR are so interrelated, impromptu encounters occur everywhere, in particular outside the private meeting spaces. Furthermore, with staff working in the living unit, impromptu encounters take place in the unit. The surfaces outside the entrances are ideal for sitting and bring residents together at points through which staff must pass.

DET and COW are the opposite to MOR. The impromptu encounter relies on the circulation routes because the physical solution directs movement along well defined routes. The spaces in these routes are adequate to accommodate informal encounter spaces and space for user movement.

Resident-staff impromptu encounters at FL do not reflect the other facilities due to the acoustical problem throughout the facility. Most encounters take place in the exterior spaces where sound transmission is unimportant and privacy is available.

The variables 19 and 21 form a combination at COW and FL with variable 32 (access distance between related areas). They have selection efficiency of 94.5% at COW and 79% at FL. The great distances between the activities is a good source for impromptu encounters, increasing the possibility to force an encounter.

The physical solutions for meeting spaces, access routes and distance between activities all influence the probability of informal encounters inside a facility.

Movement control

5.3.6

The combination of variable 27 (tracing resident movement) and 28 (visual access) reflects the obedience operations of COW and FL. The combination is the direct result of operational procedures and not to any social variables. Variables 27 and 28 are closely connected to the combination of variable 26 (movement of barriers) and 29 (control against external intrusion). The latter combination are, once again, the result of the inward oriented operations of COW and FL.

The relationships between the variables alters with the operational type. Variables 26 and 29 do not exist at MOR and DET while variables 27 and 28 are absent only at DET.



SECTION C

Evaluation of the Study 1.0

EVALUATION OF THE STUDY

General Comments 1.1

Early in the study, it was realized that the problem of designing correctional facilities is complex and involves several disciplines. Structuring the study into four phases however effectively accounted for the sociological and psychological issues of the problem as well as the physical issue. The preliminary, developmental, field survey and analytical phases collectively provide the continuing sequence into which a design process is structured. In the subsection, an evaluation of each phase is presented.

Preliminary Phase 1.2

It was during the preliminary phase that many of the sociological and psychological complexities became evident in their relationship to the design of physical form. The tendency at the outset of the study was to be highly subjective on many correctional issues, and this phase provided the opportunity to reduce this tendency towards a more objective viewpoint. The fact of not having useable data on the physical aspects of the problem available made necessary to investigate the physical issue, and to identify the scope and range of the problem at hand.

Development Phase 1.3

Breaking down the problem into physical, behavioral and operational issues is effective for examining the implementation of correctional goals within physical facilities. Without isolating the operational and behavioral issues from the physical issue, observations and comparisons of patterns in different facilities would have been difficult. Each selected facility, with variations in organizational characteristics and behavioural goals, generated varying user patterns. The element missing in the study, however, was the affect of management and staff characteristics on user patterns. Any subsequent study should seriously consider its impact on the physical form.

Physical Issue

The six sets of physical variables helped to provide a comprehensive examination of the selected facilities. Despite substantial variations in the physical components of each facility, the variable categories were found effective for comparing the facilities. The variables selected and identified, however, are incomplete. Some were found to involve requirement duplication while others lacked in relative importance to other variables.

The locational variables were initially identified in the preliminary phase study and were carried through because of effect on the operational program. Although these variables do not relate as directly to physical form, they indirectly influence many spaces and components with the facility.

The programmed space variables permitted a comparison of all facilities regardless of variations between facilities. Two variables however could have been eliminated in this study: "spaces for vocational training" and "spaces for resident food consumption". These two variables were found to be unimportant in relating to the remaining 33 variables. One substitution for these variables should be "defined exterior spaces".

The non-programmed space variables are not so extensive or as readily identified as the programmed spaces. They were found however to have high importance on behavior and great value to the designer. The variable, "spaces for impromptu encounters", interacts with most variables in the matrix and is linked with many of the behavioural variables. In future, these spaces should be assessed in greater detail.

Variables on movement controls adequately encompassed the necessity of confinement and control. The variables of greatest value appear to be "connections between activities" and "access points". Both variables strongly identified the circulation patterns between the programmed spaces and both were found to include a great deal of the non-programmed spaces. "Control against external intrusion" has little relative importance because of minor interaction with the other variables. In future studies, the idea of static and dynamic controls should be expanded on and the security in the physical form related more to methods of control through operational procedures. This important relationship was missed in this study.

Focusing primarily on noise criteria, the environmental control variables fail to recognize other environmental aspects such as heating, ventilation and lighting, all of which were found to influence the design of physical components. Furthermore, the selected variables failed to encompass the problem of noise within physical facilities. The variable "protection of space from local noise" could have been broken down into more explicit variables. These variables contribute the least input of all variables towards design criteria.

The last category involving user domain variables can be useful for defining the areas accessible to individual users, however the interaction with many spaces did not come through in the selection of pure core groups. Perhaps the definition of the term must be more explicit.

Summarizing the physical issue, most of the physical variables defined in the study were effective for decomposing the problem into smaller components. The variable categories of movement control and environment require better definition for interactions with other variables.

Operational Issue

The approach to identify the operational issue through operational regulations and treatment techniques needs to further consider the implications of staff management and staff characteristics. There is a wide range of management characteristics that influence user patterns within the physical facilities and the study was remiss in this area.

The regulations at each facility were often the only defined statements on operation and could subjectively be related to the behavioural and physical issues. It was more difficult, however, to identify aspects of treatment techniques with the design of physical form. Techniques relate to relationships between staff and resident and form the prime goals of the facility. Where treatment techniques were indiscernible, an examination of working manuals describing staff-functions often provided the input data.

Behavioural Issue

The four behavioural category sets were adequate to determine some user patterns inside and outside the facility but inadequate to include many of the habits of the users.

The interaction of community integration variables with the physical variables was the most direct of all interactions. It is perhaps the more important category selected for examining the behaviour patterns of staff, residents and the public outside the facility. The category, however, failed to recognize changing community attitudes, an important aspect which strongly influences these variables.

The encounter variables were found to relate most directly to programmed and non-programmed spaces. They were excellent for examining and observing staff-resident relationships within the physical facilities.

The least important variables to the design of physical form involved communal activity and retreat. Both variables are resident oriented and occur predominantly within the resident domain. Both variables, however, are important to design the resident domain.

Samples

The four selected facilities successfully provided examples of two extreme methods for confining convicted offenders. At the one extreme, the community-based program at DET adequately illustrates the requirements for a facility using community facilities. At the other extreme, COW illustrates the development of a facility almost entirely independent of the normal community. The selection of MOR as

an intermediary example provided the anticipated intermediate results of identifying group patterns with COW and DET. Because of the differential treatment program at MOR, however, many aspects of the large institution are reduced or eliminated through individual attention and resident treatment. The selection of FL proved a valuable comparison with COW. The resident characteristics and security risk were similar in both facilities. However, differences in organizational structure and personnel characteristics produced variations in user patterns.

Field Survey

1.4

Not all of the four techniques for accumulating data was successful for identifying the interactions within each facility. The user diaries were found difficult to retrieve. They were more applicable at DET than at the other facilities because of resident involvement in the community.

Interviews

The approach of interviewing on the spot within each facility, especially within the user domain, was found to be more effective than conducting the interviews in an assigned space in the administrative unit. Comments received from residents indicated a successful non-identification of the interviewer with the "Establishment". Important in this regard was the unhindered access given the interviewer at any time within the facility. Having this access, staff interviews were successfully conducted during the day, while resident interviews were given in the housing units during the evening period. The resident's schedule was least interrupted. The loose structure of the interview resulted in obtaining conflicts within the facility. It was difficult, however, to achieve consistency in the interviews. Interviewing on the spot also gave the interviewee an easier opportunity to relate to the immediate spaces.

First Hand Observations

The first hand observations were important to verifying data received through interviewing. The observations were most effective for identifying and examining the existence of an occurrence of impromptu encounters between the users. Waiting spaces, circulation routes and access points were all verified through observations as areas where most impromptu encounters occurred. A problem with the observations arose because they were made by only one person. All areas in the facility could not be covered and areas had to be selected for observations. The size of DET was more manageable than COW, MOR or FL for one person. A team of observers is necessary for obtaining data on impromptu encounters of a more qualifying nature.

Institution Records

Each facility maintained a substantial number of records of which only a small amount were useful. The methods of maintaining data and the types of data, however, varied considerably between the facilities. The security functions at COW provided a record of resident use of the facilities. This was not available at FL, MOR or DET. In all facilities, resident visiting records were well documented, while public participation in a program was available from records only at COW and FL. Resident activity at DET, recorded on activity sheets, provided a clear picture of resident movement and preferences in the community.

User Diaries

The technique of user diaries was the least effective for accumulating data on user behavioural patterns. The response from residents at each facility was unsatisfactory. The best return of diaries was at COW with 25% or 5 of 20 diaries being returned. The data in the diaries, however, reflected the highly structured routine within the facility. The diaries failed to produce any new data beyond that obtained from observations and interviews. The one diary returned at DET was extremely useful. Data was obtained on the use of community facilities, methods of transportation and routes of travel which otherwise would not have been known. The two diaries returned at MOR and the one at FL provided unqualified data on informal encounters, communal activity and retreat. Missed by the field survey was the opportunity to get data from staff through the use of diaries. Any subsequent studies should seriously consider including staff in user diaries.

The correlation sequence and the use of matrices is effective for structuring the physical variables. The relationships between the behavioural, operational and physical variables point to the next step of two and three dimensional computer space planning and to measuring the relative efficiency of space planning.

Evaluation of Correlations

By separating the problem into the three issues, those operational and behavioural variables affecting the design of physical facilities were linked with the physical variable. Although the links had a subjective evaluation in this study, they were useful in determining the interactions between the physical variables.

Evaluation of Selection Process

Using the B-Value and the number of left-over variables for grouping the physical variables, is a good method for obtaining groups of variables which have the least interaction between the groups. Although the selection process cannot obtain the set of groups with the greatest separation, the percentage efficiency of a particular set of groups is a valid base for comparing sets of groupings. MOR had the only set of groups whose total B-Value varied sufficiently from the 90% average efficiency of the remaining three samples. Comparing the sets of groups for the sample facilities is a good way to identify the common patterns between the facilities.

Conclusions from the Study 2.0

CONCLUSIONS

General Comments

2.1

Conclusions from examining the four selected facilities derive from three sets of user patterns important to the siting and design of correctional facilities. The effect of the environs to a facility has considerable impact on the implementation of correctional goals and the integration of the community into the program. At the same time, physical spaces and relationships in the facility influence staff-resident relationships through circulation patterns, separation of functions and enclosure of exterior space. Both of the above conclusions, in conjunction with the juxtaposition of spaces, dictate the ability of a physical facility to accommodate organizational change.

Impact of Location

2.2

The three variables relating to facility contact with the environs are consistent in their pure core relationships in each facility for the variables defined in the study. The trend towards community involvement and resident integration does influence the interactions between variables. A good example of this trend is DET where the most important criteria is the accessibility to public transportation service. Having access to transportation services which serve large areas, the DET resident is independent of the facility. He can leave the facility unescorted, not being dependent on someone to drive him to his destination. Staff express the evidence of trust, responsibility and self-control in the resident. Where useful transportation service is not available at FL and COW, residents leaving the facility are dependent upon institutional and private transportation which regulates them to a schedule.

The community facilities used in the urban areas at COW, FL and MOR are those closest to the facility. The opposite is true in tracing the areas from which came those community citizens who entered the facility. For example, citizens near FL travel over 100 miles one way to attend weekly evening sessions in the facility with interested residents. The cause for this action appears to derive from active participation by the Priest.

Where the facilities are isolated in rural areas, FL and COW, car pools become more in evidence than with the facility which borders on an urban areas, MOR. COW staff prefer a location served by public transportation.

The factor least influenced by the location is the quantity of visitors. Just over 50% of the residents at COW and FL received regular visits. The frequency of visits relates to the distance travelled by the visitor and to the resident's relationship with his family. MOR, was not a good example here because most visitors must come from areas of the Eastern States. The distances are too great for regular visits. Residents at DET, because of their access to the community coupled with the majority of residents having families in Detroit, visit their families as much as possible. The visiting pattern changes where travelling times exceeded 1½ hours.

Variables 1, 2, 3 are highly homogeneous in each facility while the solution varies. The implications of the environs on the remaining selected variables rest in the spaces and activities to be provided and the access to and from the facility. Good pedestrian access to transportation services is essential to the program, while good pedestrian entry into the facility becomes important as a facility becomes community oriented.

Resident-Staff Relationships

2.3

Staff and resident relationships are influenced in part by the design of the physical facilities. Good relationships existed in the DET and MOR where non-scheduled informal encounters were greatest. Where the occurrence of staff-resident encounter is more natural at FL and DET, enhanced through circulation routes, integration of user function and domains and the design of exterior space, manipulation of operational procedures was less in evidence.

Circulation Routes

The pattern of circulation routes influences the occurrence of informal interaction between users. Residents at MOR, FL and COW readily identified the movement habits of each staff member and, if the resident wished to force an impromptu encounter with a staff member, he could intercept the staff member, en route to a function, to discuss his problem. The staff movement patterns at MOR often coincide with resident movement, which produced more interaction between staff and residents in these areas. Interaction occurred most often at entrance points to activity areas, in the community square and in the communal areas of the housing units. FL reflected MOR, which may have been because both facilities permit unrestricted movement within the facility. Interaction areas at COW were observed in the main exterior corridors and near the entrance to the administrative unit. The areas adjacent to staff spaces at DET were found to accommodate most encounters.

Integration of User Functions and Domains

Staff and resident interaction increases when both staff and resident domains are integrated. The fact that staff at MOR have space to operate within the housing unit without restricting normal resident activity, resulted in more interactions than at COW where spaces in the housing unit accommodate residents only. Both COW and FL have physical separation of administrative and resident functions which decreased the occurrence of resident/staff interactions. Where the domains are more integrated at DET and MOR, the occurrence of interactions increased and became more uniformly distributed throughout the facility.

Exterior Spaces

The exterior spaces in a facility are important to the development of positive staff-resident relationships. The community square at MOR was designed as the focal point to the facility. Since all circulation routes lead to this area, residents and staff are forced together. Because the square is well defined by the surrounding buildings and the users are given free access to the square, the space is continually used. At FL, where residents have free access to the exterior spaces but where the exterior spaces are loosely defined, the spaces were not used to the extent seen at MOR. Staff and residents at FL identified the two exterior courts as an identifiable division between their domains. The use of the courts by residents at COW was restricted, leaving the space void of human movement.

In all facilities, however, residents were observed using those surfaces which are not identified with the "Establishment". Subtle seating surfaces (steps, retaining walls) at MOR were found to attract residents

and hence accommodate and enhance the informal encounter. The residents at COW expressed the dislike of institutional seating which forces its use because nothing else is available. Rules at COW restrict resident use of the lawns.

The variables relating to both resident/staff and inter-staff encounters do not reflect the program as they do the circulation routes and the operational procedures for implementing the program. They are evident in each facility and must be a prime consideration in the design of that facility.

Organizational Change and the Physical Facilities

2.4

The juxtaposition of the spaces has a great influence on the manner in which correctional programs are implemented. For example, the number and the relationship of the small personal spaces to the larger communal spaces in the housing units at MOR accommodate the treatment program in the unit itself.

Should a time come when a treatment program in the housing unit is contemplated for COW, the juxtaposition of spaces in the housing unit would inhibit its implementation. The spaces available for resident activities would be restricted by such a program. Some spaces at FL are available in the housing unit, however, the implementation of a housing unit oriented program would be somewhat restrictive to the resident due to an insufficient amount of resident communal spaces.

The resident's domain variables are constant in all facilities and seem to be independent of a program. It appears, however, that they are a key to the flexibility of program implementation in a facility. The availability of differentiated facilities was found to have an influence in the application of reinforced behaviour techniques in a facility. Varying resident domains at MOR are used in the treatment program as incentives for reinforcing good behaviour. An incentive program was restricted at COW because all resident spaces were identical. The incentive could only be implemented through operational procedures of leaving doors open and allowing residents to control light switches. The doors of one wing in the COW housing unit remained unlocked during the day and early evening.

The variables relating to movement control are highly dependent upon the organization type and vary accordingly. They are a prime influence on informal encounters in the facility.

Future Studies 3.0

FUTURE STUDIES

The design problem of correctional facilities requires further examination in several aspects. Hopefully this study has produced a base on which to extend the search of the physical components of correctional goals.

Several topics for future examination are suggested. Information on these topics will help to extend the knowledge on a forgotten aspect of corrections and give guide lines for designers to follow.

Study 1

The design process should be further examined with the purpose of obtaining a working tool for both designers and correctional administrators. A measurement of flexibility is seen in the combination of space juxtaposition and treatment techniques. It can have potential use for decision-making during the preliminary phase of correctional and physical program developments. New designs and correctional implications could be evaluated through the design stages prior to the start of construction. The study would require definition of treatment and functional activities related to combination of spaces in two or more facilities.

Study 2

The identified variables in the location of the physical facilities should be examined with a computer analysis program. There are several clearly defined variables which could be used to generate criteria for selecting sites. The more important variables were found to be

- a) accessibility of public transportation service
- b) availability of transportation services
- c) availability of community facilities
- d) acquisition of personnel housing
- e) community integration trends

Study 3

A most interesting problem to pursue is the study of staff-resident relationships within the physical facilities. From the study, it was found that the design of circulation routes, the integration of user domains and the design of external spaces all influence the relationships and user patterns within the facilities. Furthermore, the integration of domains through staff stations is an important design problem requiring input data.

Study 4

Examine the effects of the juxtapositions of spaces on the implementation of correctional goals within the physical facilities. The purpose of the study could be to identify the extent to which a physical facility can accommodate changes in correctional goals.

Study 5

The problem of designing correctional facilities should be studied with computer-aided two-dimensional and three-dimensional space planning and carried further to design simulation. The influence of proposed physical facilities could be examined according to correctional programs and philosophies.



Facility Types related to Dates of Construction
 Information was extracted from 1968 Directory of
 Correctional Institutions and Agencies of the
 United States, Canada and Great Britain.

YEAR	A		B		C		D		E		F	
5 Year Periods	USA CAN		USA CAN		USA CAN		USA CAN		USA CAN		USA CAN	
1815	4											
1816-1820	1											
1821-1825	2											
1826-1830	2											
1831-1835	2	1										
1836-1840	2											
1841-1845	2											
1846-1850	1											
1851-1855	2											
1856-1860	2	1										
1861-1865	2											
1866-1870	6											
1871-1875	2	1	2									
1876-1880	9	3	1									
1881-1885	4											
1886-1890	6		2									
1891-1895	4		3									1
1896-1900	3		3									2
1901-1905	7	1	1									
1906-1910	3	1	2									
1911-1915	5	3	3	4	1							
1916-1920	6	2	2		1							
1921-1925	3	1	1		2							1
1926-1930	3	3	3		3	1						
1931-1935	10		4				1					1
1936-1940	11		4	1	2	1						
1941-1945	3		2		2		1					
1946-1950	2		5	3	33	1						1
1951-1955	10	1	5	3	3		3					2 3
1956-1960	13	2	12	1	7	6	2					3
1961-1965	9	2	7	5	29	11	5		6			2 2
1966-1970	4	7	2	1	3	1	4		10			3 1
Total	144	29	64	18	118	21	16	0				13 9
					a.	b.						

a. 32 facilities were not provided with a date of construction

b. Camps were not provided with a date of construction

INTERVIEWS:

STAFF I

- a. Residence
 - distance
 - transportation
 - sociability

- b. Community Interaction
 - use of facilities
 - resident leaves
 - resident reaction to outsiders

- c. Participation
 - responsibilities
 - transportation
 - caseload
 - staff-resident encounters
 - staff-staff

- d. Operation
 - discipline
 - inmate participation

STAFF

- a. Residence
 - distance
 - transportation
 - sociability

- b. Community Interaction
 - use of facilities
 - education

- c. Participation
 - responsibilities
 - transportation
 - caseload
 - staff-resident respect
 - encounters
 - staff-staff respect

- d. Operation
 - discipline

RESIDENTS

- a. Residence
 - distance
 - transportation
 - visits

- b. Community Interaction
 - leaves
 - intrusion by outsiders

- c. Participation
 - staff-resident respect
 - encounters
 - resident-resident respect
 - use of facilities

- d. Operation
 - discipline

INTERVIEWS: STAFF I

Position: _____ Time employed in Corrections: _____

Status: _____ Age : _____

a. Residence:

1. Where do you live? _____
2. How many miles is that from here? _____
3. How long does it take you to come to work? _____
4. Do you drive your own car to and from the institution in the morning and at night? _____
5. If there were other transportation services available, would you change or remain with your existing arrangements?
Why? _____
6. What do you feel is the most time you would want to spend traveling to work? _____
7. When you were first employed at this institution, did you have to move your home?
(if yes) Where did you live previously? _____
8. In selecting the location for your home, did it matter how close your family would be to the institution?
(if yes) What is the closest that you would want them to live to the institution? _____
9. When you go home at night and are off-duty, do you feel that you are still available to the institution? _____
10. Do you look forward to getting away from the institution during your free hours?
(if yes) Why? _____
11. Are there any staff members that live near you?
(if yes) How many? _____
12. Do you ever meet with other staff members socially?
(if yes) How often? _____
13. In your social life, would you say that your friends or mainly a) staff, b) non-staff, and c) about half and half. _____

b. Community Interaction:

1. Do you see any clubs or recreation centers in the area?
(if yes) Which ones? _____
2. Are you an active member of the church or belong to any particular church group? _____
3. Are you presently attending any courses or giving any courses at any School, College, or University?
(if yes) Which one and where is it located?
(if yes) What are you taking or giving?
(If yes) How often do you attend?
(if no) Why not? _____
4. Have you ever attended any courses in the past while employed in the field of corrections? _____

16. Are there any staff members for whom you have greater respect than others?
(if yes) Do you try to see them more often?
(if yes) How?

17. Are there any staff members with whom you don't get along?
(if yes) Do you try to avoid them?
(if yes) How?

18. In your opinion, should a building be designed to provide alternative routes for staff members when these conflicts arise?

19. Can inmates see you to talk with whenever they wish?
(if yes) How do they do this?
(if no) Why not?

20. In your opinion, should inmates be able to meet with you right away when they have, what they consider to be, an urgent problem?

21. From your observations and experience, what facilities would you say are used most by inmates during their free time?

d. Operation:

I would now like to talk a bit about the operation of the institution and the enforcement of discipline by the staff. I am interested in the way you work.

1. Do you feel that every inmate must abide strictly by the rules of discipline, regardless of the severity of the infraction?

2. When infractions occur, are the staff members to work with the inmates involved to correct the behaviour?

3. Are all infractions reported immediately?

4. Should the staff ever work in conjunction with inmates on matters of discipline and operation?

5. Do the staff 'close their eyes' on any infractions to the regulations?

6. In your opinion, is the discipline here too severe, moderate or too lenient?

7. In your opinion, could some inmates be permitted to work along with the staff in enforcing discipline?

8. Do you feel that the staff show a consistency in the enforcement of discipline?

9. Do inmates participate in the revisions to the rules and regulations?

10. Do you feel that they should participate?

From your experience in working with inmates, I would like to have your opinions and views on the following points.

1. Is it important that the majority of inmates receive visits from friends and family?

2. Is there any perceptual change in most of the inmates before and after the event of a visit?
(if yes) In what way?

3. Would it be worthwhile to increase the number of permissible visits?
(if yes) In what way would it be worthwhile?

4. For the majority of inmates, what do you consider to be the ideal visiting arrangements?

7. From your observations, which facilities tend to be used more often by the inmates during their free time?

8. I would like you to place a value on the following characteristics as you feel the inmates would value them. Some of them perhaps can't be applied here, others may already exist.

- a. to have periodic leaves into the community
- b. to dine seperately in small groups
- c. to operates the lights to his area
- d. to control the heating and air-conditioning in his area
- e. to be able to lock up his area
- f. to make his own meals
- g. to control the sports program.

8a. Do you feel that there are incentives that will cause behavioral change in inmates?

(if yes) What?

Do you feel that the change would be permanent?

9. Are there any features of the building which hinder your program?

10. Are there any ways which you feel the present operation and physical plant could be improved?

INTERVIEWS: RESIDENTS

Age: _____ Length of Sentence: _____
 Status: _____ Time Served to Date: _____
 Time Served Here: _____
 Previous Commitments: _____

a. Residence:

1. Where is your home? _____
2. How many miles is that from here? _____
 Do you feel that you are far away from there? _____
 Is it important to you just how close you are to your home while serving your time? _____
 Why? _____
3. Do you receive visits from friends or family? _____
 How often? _____
 How do they travel to the institution? _____
 Do they ever complain about getting to and from the institution? _____
 (if yes) What is the common complaint? _____
4. Are visits important to you? _____
 (if yes) In what way? _____
 (if no) Why not? _____
5. Could you explain your reactions to the visits, both before and after the visit? _____
6. Are you content with existing visiting regulations and conditions? _____
 (if no) Why not? _____
 (if no) Should the number of visits be increased? _____
9. When the staff are off-duty at the end of their shift, do you feel that they are on call at any time? _____
 (if yes) In what capacity? _____

b. Community Interaction:

5. Have you ever left the institution since your arrival? _____
 (if yes) For what reasons? _____
 (if yes) Was it a pleasant change from the routine of the institution? _____
 (if yes) Were you accompanied by anyone? _____
6. Would you want the opportunity to periodically leave the institution? _____
 (if no) Why not? _____
 (if yes) What for? _____
7. When outside groups, social workers, entertainers, lecturers, etc. come into the institution, do you make the effort to talk with them? _____
 (if yes) Do you like meeting outsiders? _____

- 19. Can you talk to staff members whenever you wish?
(if yes) How do you do this?
(if no) Why not?
- 20; In your opinion, should you be able to meet with any staff member right away when you have what you consider to be an urgent problem?
- 21. How often do you watch television?
Do you play cards very often or any other games?
Do you have any hobbies?
(if yes) Will you continue it on the outside?
Do you often listen to the radio?
What sports do you play?
How often?
- 22. What would you say is your major interest during your free time?
- 23. Where do you spend most of your free time?

d. Operation:

I would like to talk now a bit about the operation of the institution from your point of view.

- 1. Do you have to abide by every rule of discipline, regardless of its magnitude?
- 2. When you have caused an infraction, do the staff members work with you to correct the offense before making any reports?
- 3. If you have caused an infraction, is it always reported immediately?
- 4. Have you ever worked in conjunction with the staff on matters of discipline and operation?
- 5. Are there any infractions for which you have noticed staff members 'closing their eyes', feeling that the infraction is too insignificant?
(if yes) For what infractions?
- 6. In your opinion, is the discipline here too severe, moderate or too lenient?
- 7. In your opinion, should you be permitted to work along with the staff in enforcing discipline?
- 8. Do you feel that there is a consistency in the enforcement of discipline by all staff members?
- 9. Have you participated in any revisions to the rules and regulations?
(if yes) How?
- 10. Do you feel that inmates should participate?
- 11. Have you ever suggested any changes to existing rules and regulations?
(if yes) What?

From your experiences in this institution, I would like to have

your views and opinions on the following points.

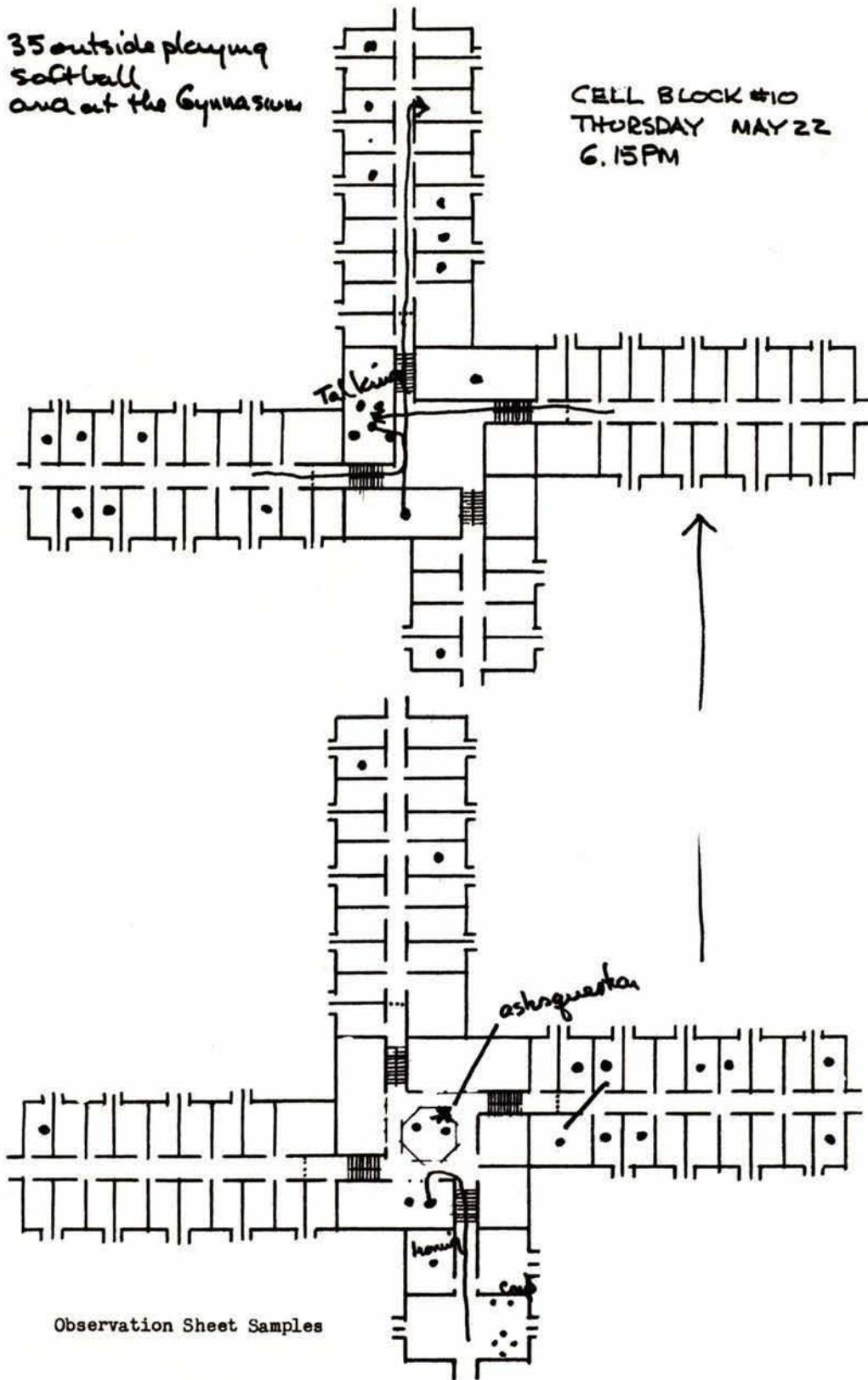
8. Do you feel that there can be incentives for which you will personally change in order to obtain?
(if yes) Would this change be permanent do you think?

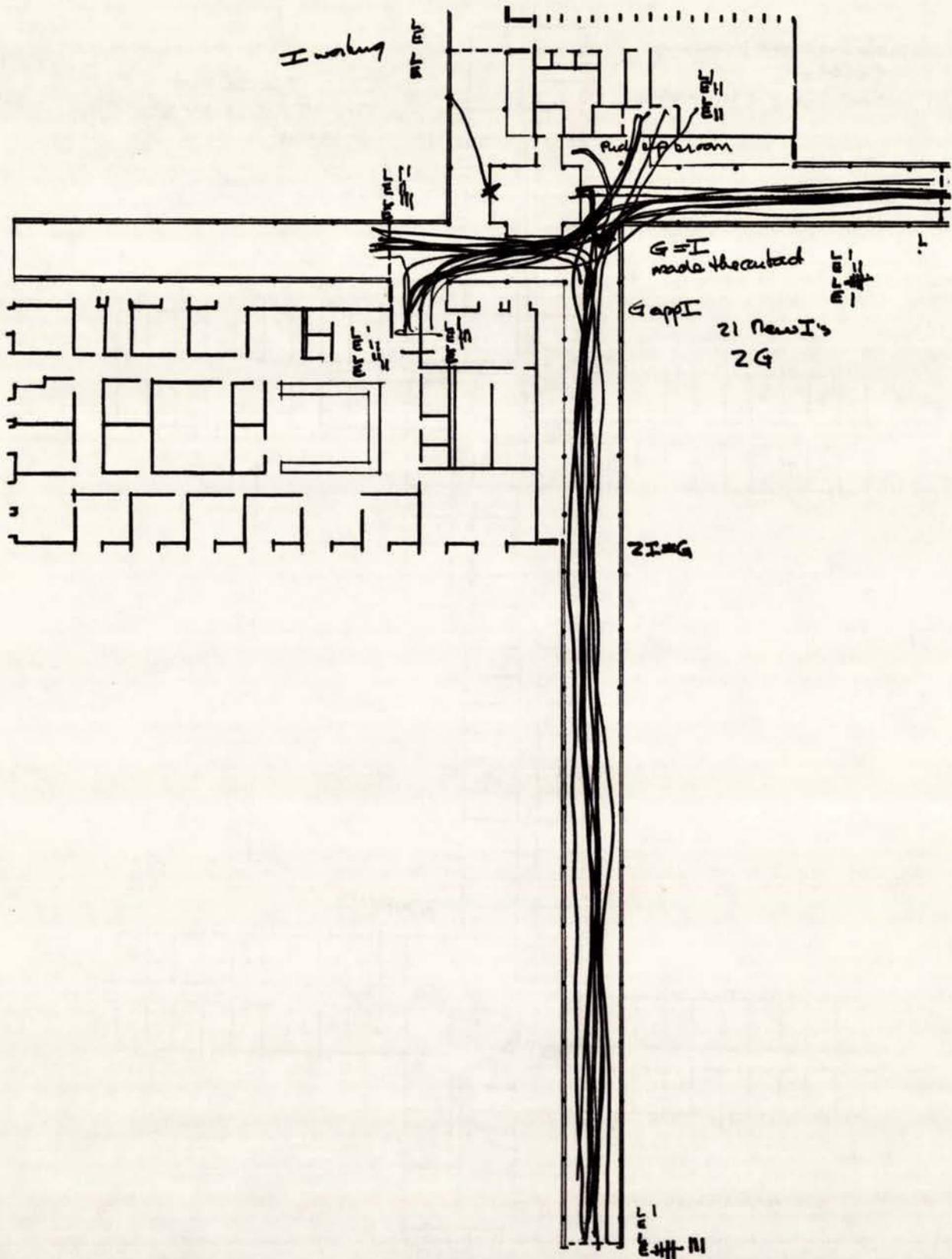
8. I would like you to place a value on the following characteristics as they are valued by yourself. Some of them perhaps can't be applied in this building, others perhaps you already have.

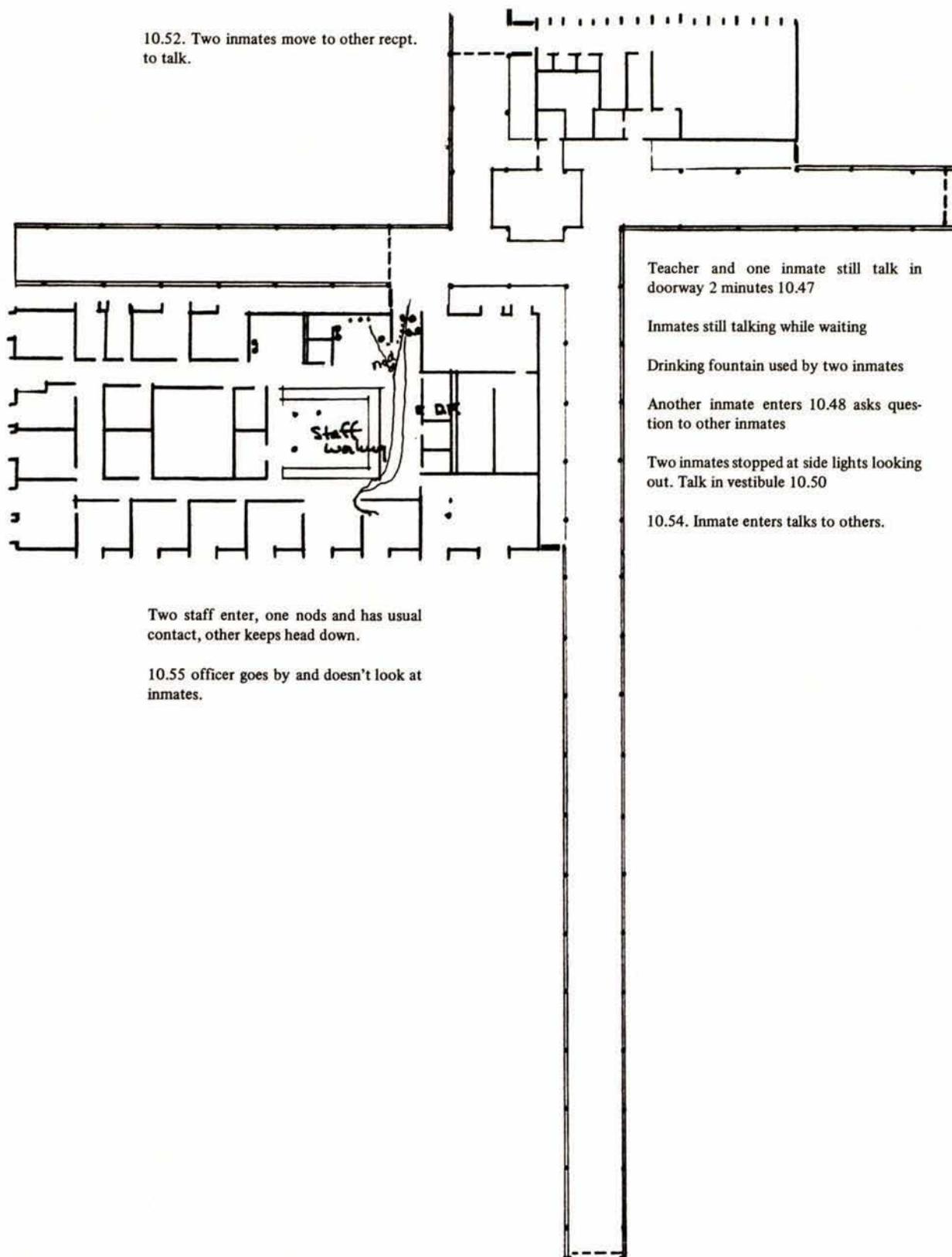
- a. to have periodic leaves into the community
- b. to dine separately in small groups
- c. to operate the lights in your area
- d. to control your heating and cooling
- e. to be able to lock your own area
- f. to make your own meals
- g. to control the sports program.

9. Are there any features of the building which you feel are irritating and distracting?

10. Are there any ways in which you feel the present operation and physical plant could be improved?







Data Sheet Sample

Diary

FRI

SAT

SUN

time	no. of persons	PERSONS OBSERVED				TYPE OF TRANSPORTATION					PURPOSE	OCCURENCE												
		staff	inmate	visitor	service or delivery	other	private car	company or Gov't car	taxi	taxi and bus		other	place of departure	time to make trip	to work in the institution	to visit an inmate	to visit staff member	other	more than once daily	daily	weekly	monthly - 2 -	less than once monthly	
23 7			✓			4272	✓				Quebec			✓								✓		
23 1			✓			4325	✓				Quebec			✓									✓	
23 2			✓			4138	✓				Montreal			✓									✓	
23 2			✓			2092	✓				Bridford			✓									✓	
23 2			✓			3911	✓				Washin. Mill			✓									✓	
24 4			✓			3011	✓				Montreal			✓									✓	
24 2			✓			4377	✓				Montreal			✓									✓	
24 4			✓			3011	✓				Montreal			✓									✓	
24 1			✓			4081	✓				Montreal			✓									✓	
24 2			✓			3840	✓				Montreal			✓									✓	
24 3			✓			3992	✓				Verdun			✓									✓	
24 3			✓			4497	✓				St. Anne			✓									✓	
24 2			✓			6025	✓				Verdun			✓									✓	
24 7			✓			2614	✓				Quebec			✓									✓	
24 2			✓			4129	✓				Montreal			✓									✓	
24 5						4392	✓				Montreal			✓									✓	
24 5						2195	✓				Denville			✓									✓	
24 6						4126	✓				Exp. Lami			✓									✓	
25 1			✓			2881	✓				Mont			✓									✓	
25 2			✓			3600	✓				St. Anne			✓									✓	
25 1			✓			2141	✓				Mont			✓									✓	
25 3			✓			4282	✓				Quebec			✓									✓	
25 3			✓			3357	✓				Mont			✓									✓	
25 1			✓			4075	✓				Mont			✓									✓	
25 2			✓			2038	✓				Mont			✓									✓	
25 2			✓			3701	✓				Stromby			✓									✓	
25 3			✓			1297	✓				Mont			✓									✓	
25 4			✓			3443	✓				Dorval Mont			✓									✓	

g. Bourdet

Staff Residence Distribution

COW

City or Town	Distance From Complex (miles)	Corr. Staff	Treat. Staff	Admin.	
Cowansville	4	52	22	19	93
East Farnham	4	2	1	1	4
Adamsville	6	4	—	1	5
Brigham	7	4	1	2	7
West Brone	8	2	—	1	3
Dunham	8	1	1	1	3
Brone	11	—	1	—	1
Farnham	11	14	8	7	29
Stanbridge East	13	1	—	—	1
Knowlton	15	1	—	—	1
Ange Garden	16	3	—	—	3
Granby	18	15	4	8	27
Waterloo	21	—	—	1	1
Bedford	21	—	—	1	1
St. Cesaire	24	—	2	—	2
Bromont	20	1	—	—	1
St. Jean	31	2	—	—	2
Iberville	31	1	—	—	1
Sabrevois	31	—	—	1	1
		103	40	43	186

Staff Residence Distribution

MOR

City or Town	Distance From Complex (miles)	Corr. Staff	Treat. Staff	Admin.	
Morgantown	1 to 5	27	48	23	98
Westover	5	6	1	2	9
Star City	6	2	—	—	2
Granville	8	—	1	2	3
Everettville	9	—	1	—	1
Maidsville	10	1	1	1	3
Reedsville	12	1	—	—	1
Others	13 to 20	9	3	5	17
Others	21 to 30	10	6	6	22
Others	Over 30	—	2	1	3
		56	63	40	159

Staff Residence Distribution

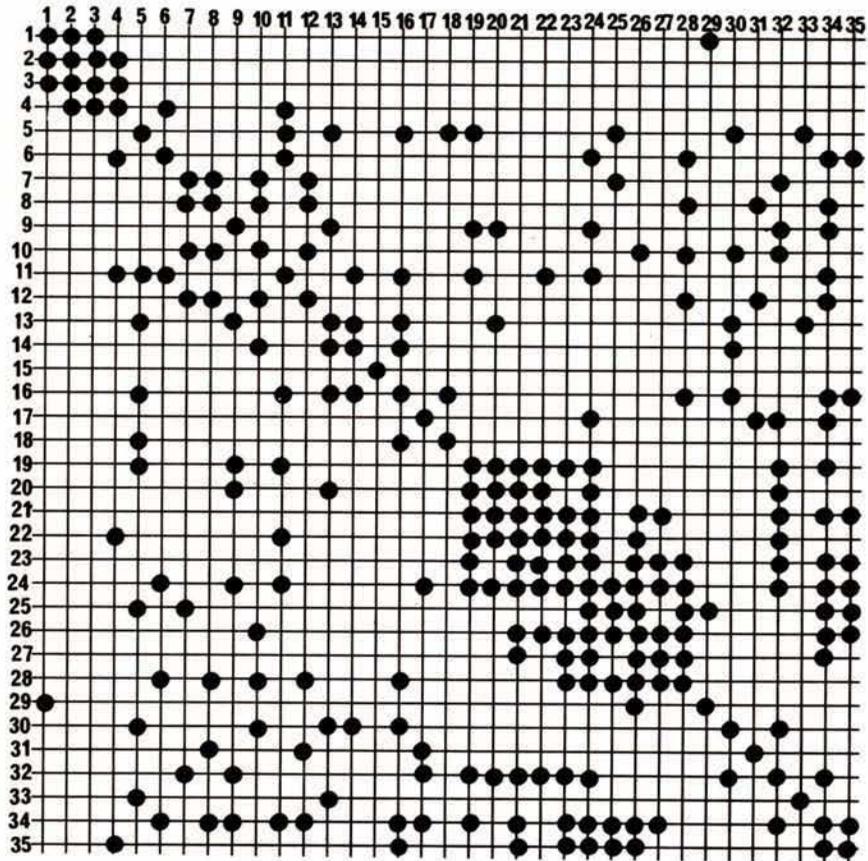
FL

City or Town	Distance From Complex (miles)	Corr. Staff	Treat. Staff	Admin.	
Fox Lake	7	19	10	7	36
Wanpun	10	22	13	9	44
Cambria	12	—	—	1	1
Markesan	15	7	3	1	11
Randolph	15	3	3	5	11
Dalton	17	2	—	—	2
Beaver Dam	20	12	17	6	35
Brandar	20	6	2	3	11
Kingston	20	2	2	—	4
Others	21 to 30	12	3	—	15
Others	Over 30	4	2	1	7
		89	55	33	177

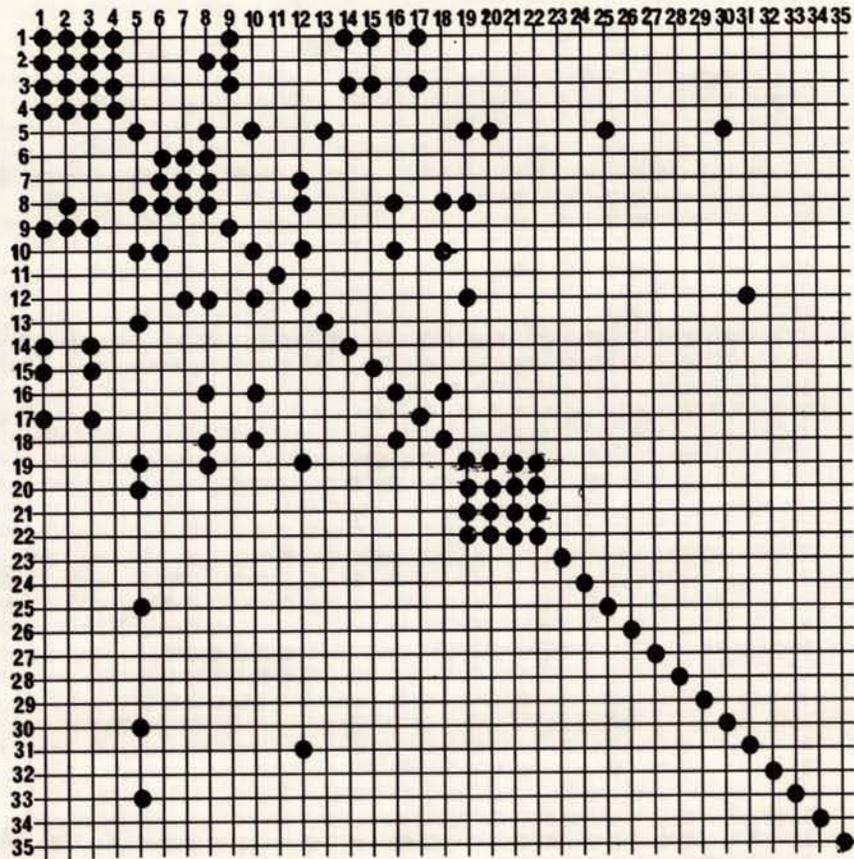
Matrix correlation between physical variables
and behavioural variables.

		physical variables																																			TOTALS																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35																									
I	C						•																															•	3																						
	D																																									1																			
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II	C																																														2														
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III	C																																																		1										
	D																																																			2									
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	M																																																			1									
IV	C																																																				6								
	D																																																				0								
	F																																																				5								
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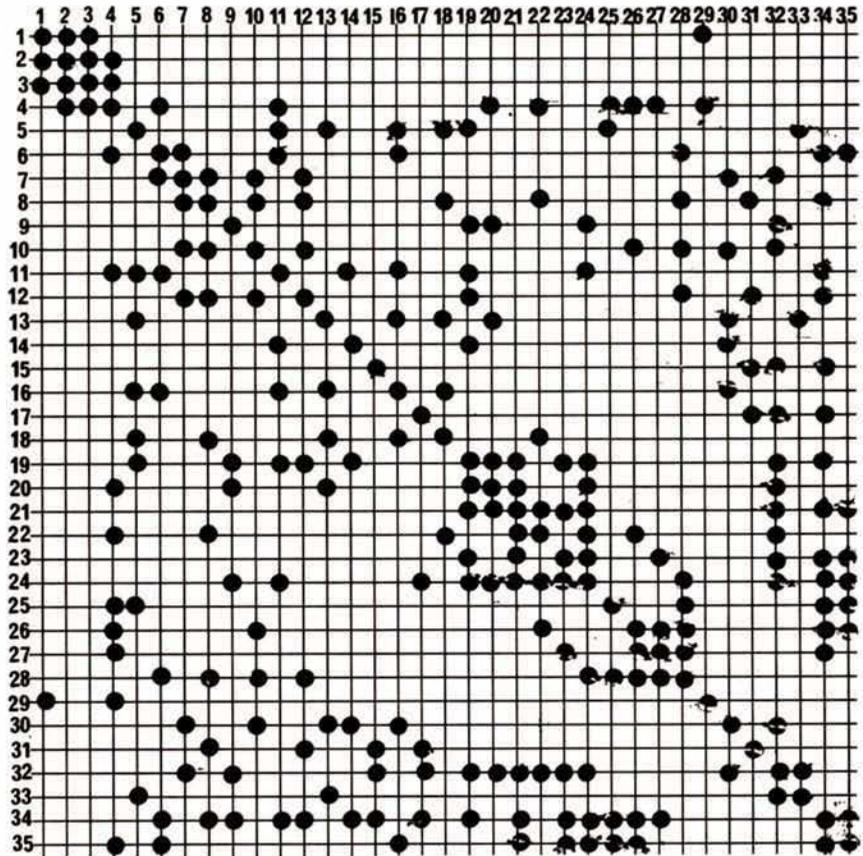
physical variable correlation matrix for COW



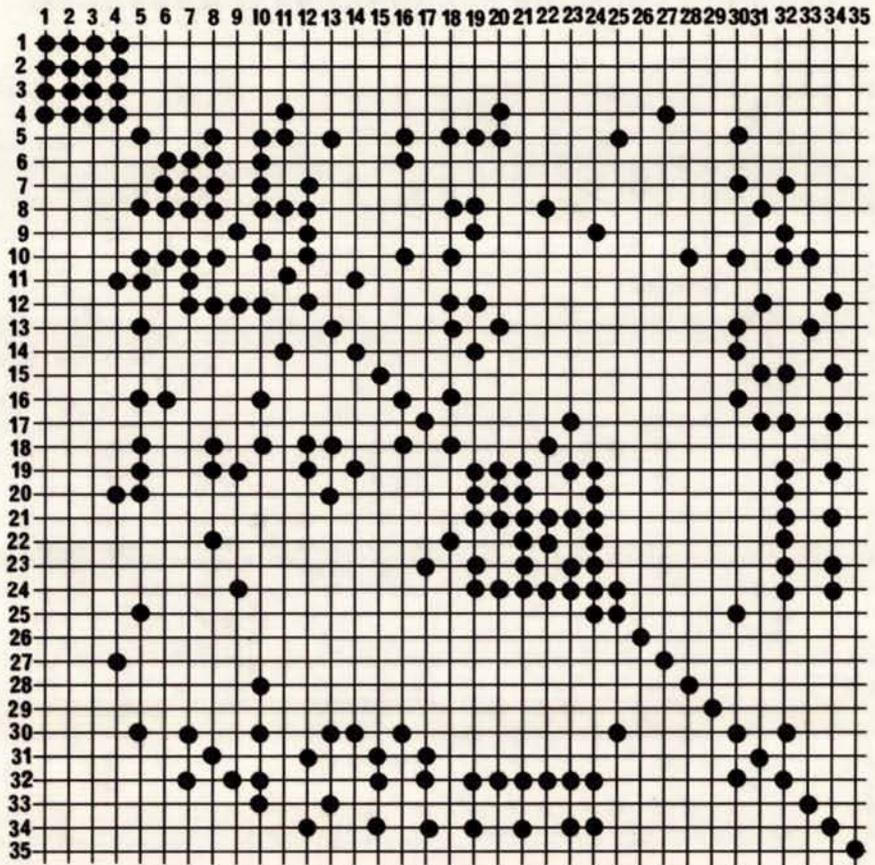
physical variable correlation matrix for DET



physical variable correlation matrix for FL



physical variable correlation matrix for MOR



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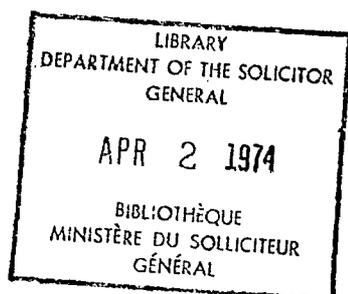
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