

THE SOCIAL MEANING OF DOMESTIC SPACE : Notes on a suitable research methodology for southern African architectural studies.

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A Thesis submitted to the School of Architecture and Planning,
University of Cape Town, for the degree of Doctor of Philosophy.

Cape Town, 1986

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SUPERVISOR'S REPORT

CANDIDATE: G.T. MILLS

DISSERTATION TITLE: The social meaning of domestic space:
towards a suitable research methodology for
southern African architectural studies.

This research has been conducted from the Spatial Archaeology Research Unit, in conjunction with the School of Architecture, and is a product of our concern to develop new research methodologies appropriate for the examination of domestic space.

The candidate's aim has been to develop a sociological approach to architecture, using as a starting point Anthony Giddens' concept of structuration and Hillier's work on "Space syntax". Mills' theoretical model is designed to understand how spatial design is integrated with the wider aspects of domestic social life, and the concept has been applied systematically to two dwellings in the Cape Town metropolitan area over a sustained period of study. From this empirical basis, the candidate has developed a critique of the ideas that dominate contemporary architectural practice: the categorization of African architecture as 'traditional', the notion that post-colonial design is somehow 'modern', the design concepts behind mass housing, and so on. In addition, the empirical study shows clearly that many of the narrow functionalist concepts of domestic space, which dominate disciplines such as architecture and archaeology, are inappropriate.

Signed

MARTIN HALL

"A whole history remains to be written of spaces - which would at the same time be the history of powers."

Michel Foucault in Gordon, 1980: 149.

PREFACE

The impetus for the investigation and interpretations which constitute this dissertation was initiated in 1979 in remote northern Namibia while I was engaged in the design of low cost houses. In that context I began to take critical account of architectural theory, of its apparent inability to go beyond aesthetic posturing as the resolution of an appropriate 'African style'. Design lore, it seemed, abounded with intuitive speculations about the importance of incorporating, more or less selectively, aspects of the physical and non-physical context in the design of buildings in order to make them meaningful.

The authority of such-like architectural thinking is pervasive and rests more on concepts of appearances that are interpreted by the observer/architect to be meaningful, than on rigorous theoretical demonstration. Yet, as Bill Hillier and Julienne Hanson emphasise throughout their influential book, The Social Logic of Space, the most far-reaching practical effects of buildings are not at the level of appearance at all, but at the level of space. It is more the system of spatial relations in buildings that materially constitutes and gives form to the social relationships that pervade everyday experience, than their visual characteristics. The linkage between architectural and social form is consequently direct and necessary, rather than an indirect and contingent one.

In this sense my dissertation exposes a central interest I have held in the social nature of architecture, its production, and the way it is integrated with the activities and beliefs of its users. Since this relationship is a complex one, the primary writings and concepts I have used, especially in the chapters that deal with the theories of structuration and syntax, are themselves difficult, densely articulated and sometimes obscure. Consequently, my exposition of them may sometimes be abstruse or fail to simplify them sufficiently. However, in order to remain closely wedded to the meanings intended by the authors, I have chosen to use original terminologies, which, although these may appear to be highly jargonised, are retained as a necessary shorthand for complex concepts.

The probe for a better understanding of the interaction between people and their dwellings has taken me far beyond the domain of the architect. Anyone who is foolhardy or vain enough to embark on a large piece of theoretical research, especially when it takes him further than the boundaries of his original training, accumulates debts - the acknowledgement of which is poor repayment to all who have assisted with their minds and hands.

Primarily, I wish to acknowledge greatly my colleagues in the Spatial Archaeology Research Unit, University of Cape Town, from where this research was carried out. The chief of these are Dr Martin Hall, who helped initiate the project, Professor John Parkington, Royden Yates, Tony Manhire and David Halkett to whom I owe much in terms of

intellectual debts. Their enthusiasm and commitment to my work has been extraordinary.

Extremely useful discussions were also held with, and comments received from, Professor Ivor Prinsloo, John Moyle, Derek Japha and Julian Cooke, all of the School of Architecture and Planning, University of Cape Town. In this respect my thanks are also due to Patricia Davison of the South African Museum and Dr Robert Thornton of the Department of Social Anthropology, University of Cape Town. I also want to mention my research assistants: Sedica Davids, Gaby Ritchie, Dylan Gower and Thato Qhojeng. My thanks are also due to Jeanette Wood for her intelligent word processing ability and patient struggle with my language, rough notes and drafts.

Financial support for this project was provided by a major grant from the Chairman's Fund of the Anglo American Corporation Limited. Without this funding this investigation would not have been possible. The Human Sciences Research Council awarded a post-graduate scholarship and the Institute of South African Architects provided some funds for fieldwork expenses.

Finally, I am indebted to the two households in Crossroads and Newlands, who allowed me to intrude their private lives and who volunteered their time to be interviewed. Although they shall remain anonymous, it is from them that I have learnt a great deal.

ABSTRACT

The thesis is primarily a proposal for a research methodology. Its concern is with the analysis of southern African domestic architecture, which, it is argued, has become separated from the study of social systems and human behaviour. It is suggested that architectural research needs to be grounded in a coherent theoretical framework of a sociological nature if the meaning of buildings in society is to be adequately understood. By combining Bill Hillier et al.'s theory of 'space syntax' with Anthony Giddens' theory of 'structuration', a set of concepts and techniques for the study of domestic architecture is formulated. This model is demonstrated using two dwellings in the Cape Town metropolitan area. The emphasis throughout is with understanding systematically how spatial design is integrated with the wider aspects of domestic social life. To reach this understanding, a major theme in southern African architectural studies is examined. This relates to a persistent categorisation, based on formal and functional criteria, of African architecture as 'traditional', against which is counterposed the more modern or 'designed' architecture of western cultures. As such, two approaches to the study of African architecture on the sub-continent are identified. On the one hand there are those writings that study aspects of built form by focusing on stylistic and technological details. On the other, the emphasis is on the function of buildings, focusing mostly on the non-physical principles of social organisation.

Both approaches have as their objective the explication of the social meaning of built form, and each generally excludes the subject and approach of the other. The view adopted in this investigation is that each form of analysis on its own is inadequate. Theories of form and theories of function must, it is argued, necessarily incorporate each other if a rounded and systematic analysis of meaning is to take place. The problem for research is thus one of establishing an adequate methodological basis for understanding in theory that which is materially realised in built form already, namely the integration of society and space. The concern in this dissertation is consequently with an attempt to answer two seemingly simple questions: How do buildings affect behaviour and activity patterns? and, how do interactions among people affect the form of buildings? By integrating the methodological and descriptive procedures in space syntax with the interpretive framework for social system analysis in structuration theory, an attempt is made to provide some answers to these questions and thereby to contribute towards a non-functionalist theory of architecture. The conclusions are firstly that the pervasive distinction between 'traditional' and 'modern' architecture is unnecessary and misleading. Secondly, theoretical aspects of both syntax and structuration are identified that may be useful to the development of both.

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SECTION ONE

BACKGROUND TO THE NEED FOR A REVISED FORM OF
ENQUIRY INTO THE MEANING OF ARCHITECTURAL SPACE

CHAPTER 1

INTRODUCTION AND ORIENTATION

This dissertation is concerned with the nature of the analysis of southern African domestic architecture which, it is argued, has become separated from the study of social systems and human behaviour. The aim is to develop an interpretation of domestic architecture in South Africa by examining in a way that is not tied to the precepts of conventional functionalism the way in which the form, use and idea of domestic space relates to the people who produce it. In this way it is intended to demonstrate the relationship between built form and social form, so that fundamental architectural similarities and differences may be better understood.

To reach this aim, a sociological perspective is adopted in which the spatial component of architectural form is isolated as the main focus of study. By wedding Anthony Giddens' theory of 'structuration' to Bill Hillier et al.'s 'space syntax' concept, an analytical model is proposed for showing how social relations and spatial organisation in domestic buildings are mutually reinforcing and complementary (Giddens, 1981; 1984; Hillier and Hanson, 1984; the reader is referred to Chapters 4 and 5 for a review of these concepts).

The 'household' is used as an appropriate behavioural unit of occupation, or scale of social system, for study. Building upon the

theory of structuration, the nature of social relations among household occupants and between them and outsiders is identified and corroborated by exploring the syntax of spatial relations in their buildings.

Contemporary domestic buildings, where the occupants are the designers, are systematically studied to indicate the extent to which the buildings are the outcome of social ideas and patterns of behaviour. An observational study is made of the design and use of two selected domestic buildings situated in the Cape Town Metropolitan area. Referred to as 'Cypress' and 'Crossroads' in this study, they establish the main set of data upon which the syntax/structuration model is demonstrated and the research questions are refined.

With this information, theoretical guidelines are established for clarifying society-space relationships at the level of the household. In this way it is shown how the morphological characteristics in domestic architecture in widely different social, economic and ideological contexts may be more clearly understood beyond the limitations of functionalism normally associated with concepts such as ethnic or cultural 'traditionalism'. This dissertation will therefore attempt to demonstrate an analytical approach that could be of use to architectural research in showing that domestic architecture in southern Africa is not merely the imprint of tribal or ethnic identities but a crucial part of a set of social processes which cannot be viewed apart.

The wider concern is therefore to contribute towards the development of a spatial theory of the domestic group in an attempt to interpret more precisely the role that domestic architecture plays in the lives of people who occupy it. There are, firstly, theoretical and, secondly, practical advantages related to this endeavour, especially insofar as the provision and design of mass housing and the crisis surrounding theories about the 'housing question' in South Africa are concerned (see Kentridge, 1986).

Theoretically there are benefits in that the social processes to which house form both contributes to and emerges from may be effectively understood in relation to modern concepts in social theory. The benefits to architectural practice flow from this understanding in that the conceptualisation of house form as an 'enabling device', that is, what it does for people, will be greatly enhanced. An improved grasp of the principles and theories surrounding social processes within the household will perhaps clarify the limitations and potential of domestic architecture within it. Here it needs to be emphasised that this is not in the strict sense a 'housing' dissertation in which current debates surrounding the wide range of issues to do with the topic could be tackled.

The central theme and general realm of research indicated by the above objectives are perhaps best rendered in the following key questions:

- (a) Why and how do households from different social settings produce different spatial designs?

- (b) What is the social function and meaning of domestic buildings and what role do they have for establishing, maintaining and transforming the social realm of their designer/occupants?
- (c) How can domestic buildings best be understood by observing and studying the people who produce and live in them?

The de-emphasis on the formal characteristics and surface appearances of architecture invoked by these questions, whilst not denying the importance of embellishments upon the external features of built form, establishes the point of departure for this enquiry: That the organisational models, used by architectural theorists in southern African settlement studies, which draw heavily on functional and symbolic distinctions surrounding the aesthetics and expressive qualities of form, obfuscate society-environment relationships and thereby make more difficult a deeper understanding of the social dimensions of architecture. [See, for example, Kuper's (1980) and Huffman's (1981) structuralist writings that deal with the symbolic codes and the underlying cultural features of 'Bantu' architecture in southern Africa. For studies that employ a more crude form of functionalist interpretation of these data, in that style and form are emphasised, see Denyer (1978), Frescura (1981), Larsson and Larsson (1984), etc. These writings are discussed more fully in Chapter 2.]

Implicit to these writings and others is an acceptance that the fundamental characteristics of 'traditional' society and of 'modern'

// society are known. Linked to these social characteristics, it is argued, are sets of matching architectures. In southern Africa, 'traditional' architecture is usually associated with Bantu-speaking Africans and is consequently perceived to have its origin in an exotic world of 'tribes' and ethnic groups. More specifically it is seen to lie beneath a fixed set of primitive traditions, the roots of which are embedded in the depths of historical time.

The ethnic view of African society and its cultural products is consistent with that of the (white) minority that presently holds, or held, power in the region and whose social and political designs dominate ideologically: All of South Africa is seen as being occupied by a mass of basically undeveloped, black-skinned tribesmen who are bonded by various traditional practices and kinship relations (see Leatt et al., 1986: 44-45). They are conceptualised as occupying a divided world as if it were a cadastral map with clear ethnic boundaries separating the 'territory' of the Tswanas, Zulus, Ndebele, Xhosas, Sothos, and so on. Just as conventional cadastral maps show zones of urban areas - residential, industrial commercial, etc. - so does this view see the region culturally as a splintered mosaic of Bantu-speaking ethnic groups, spatially compartmentalised and functionally bonded.

A deterministic relationship is consequently assumed to hold between society and architecture, one in which the latter, both formally and functionally, 'reflects' the former. The theories underlying these writings are however not particular to them, but may be seen as local

expressions of a wider paradigm to do with the way social meaning in architecture is interpreted (see Knesl, 1979). The problem central to this paradigm is the manner in which architects use the 'paraphernalia' of social science to give shape to their interpretation of built forms. Targetted for discussion here is that architectural theory selectively refers to parts of the context - historical and contemporary, physical and non-physical - and, in an attempt to ground interpretation in a culturally meaningful way, draws on social theory (see Chapter 4). Subsumed under much social theory are concepts relating to the processes of change - the nature of transformation and development; or, more precisely, the evolution from one form of society to the other.

'Underdeveloped' societies are thus characteristically related to 'developed' societies as though change is halted once the society becomes modernised or industrialised. Traditional, African society, replete with its architectural forms and modes of social practice, is consequently viewed as 'developing' towards a more sophisticated state. This recognition asserts that the 'evolving' peasant majority is one of the major structural determinants which make the so-called "developing countries" into what they are (Shanin, 1971: 289-290).

The goal of development, translated into practical architectural terms, such as in mass housing and new urban designs, is thus taken to be the reconciliation of the old with the new - the tribal with the advancements of modern western culture. In their endeavour to do this, architects have set about blending the styles of tribal

architecture with modern technologies and, subsumed by contemporary architectural theories, have produced environments that attempt to achieve an 'African' character (see Chapter 2). Contemporary architectural design is consequently reduced to a pastiche of formalistic borrowings from ethnic, or tribal, aesthetics in an attempt to be meaningful. Recent environmental designs in South Africa as well as in the State's tribal homelands, or Bantustans, adequately illustrate this tendency.

Here, urban centres and buildings appear to extend the modernist theories of the 1920s in which built form is functionally and formalistically categorised into a range of classes, or types (cf. Steadman, 1979). Buildings are thus seen as finite object-types that are organisationally the same as, and conceptually equivalent to, other humanly produced artefacts, and are governed by the same design principles:

"an exercise in applying the same method at three different scales: the household object, the architectural object, the urban object" (Rykwert, 1982: 103).

The emergent 'objects' reflect a general preoccupation and concern with issues relating to the formal representation and expression of tribalism which the observer sees and interprets intuitively as socially significant. This approach was illustrated in a recent investigation on the 'Africanisation' of western European and North American design theories and methodologies (Van Schaik, 1982). Here, it is shown that the emphasis on the functional/typological approach, when coupled with an awareness of indigenous architecture at the level

of formalism, ignores historical process and fails to incorporate effectively the underlying and dynamic dimensions of socio-economic form. Thus the social meaning of built form and, indeed, the goal of architectural design are construed to lie primarily in the aesthetics of the built object-type. The result is a spurious architectural discourse in which meaning and form are superficially related.

In a penetrating essay, Elias Constantopoulos has provocatively argued from Hillier et al.'s 'space syntax' point of view, that by conceptualising the built environment as a deterministically moulded object, architectural discourse actually opposes and contradicts architecture as the material organisation of society:

"In order ... for architecture to deal successfully with its specific design issues, it needs to examine its own morphology and try to understand it by discovering its structural laws as they relate to society. Only by seeing its physical organization not merely as the 'expression' of society but as its concrete 'realization', can it hope to recover its lost ground."
(Constantopoulos, 1983: 13).

Architecture is therefore regarded by Constantopoulos fundamentally as the concretisation, spatially, of social form: The creation of social and spatial organisation. This relation is seen by Constantopoulos as the only basis of a credible theory of architecture that is able to conceive and anticipate its own physical manifestation in terms of the (social) relations and forces of production that it constitutes.

Thus it is argued, any attempt to appropriate theories of architecture by referring to concepts of expression beyond that which architecture fundamentally does, has the effect of mystifying not only its origins

and intentions, but provides it with a credibility it may not necessarily have.

It would therefore appear that the problem for architecture generally is one essentially related to a lack of appropriate theory of socio-spatial relations. For southern Africa that problem is exacerbated by the 'burden of ethnicity': In a region tense from the effects of a heightened awareness of concepts of ethnicity and group differences, and where these distinctions form the cornerstone of discriminatory policies, the political and social implications of such-like functionalist environmental practice may be viewed as materially entrenching an ideology of domination and control.

Although formal principles and functional criteria, including the reduction of cultural characteristics to symbolic codes, or templates, can be erected and applied in the analysis of the full range of domestic architecture in southern African society, such theory tends to demand restricted concepts of transformation in socio-spatial relationships. There is, therefore, the need for a new form of enquiry, one that critically 'deconstructs' or 'disaggregates' these fundamental concepts and accords to them the fluidity which the realities and complexities of social and historical processes demand. In other words, the paradigmatic foundations surrounding the relationship between society, built form and time need to be reformulated in order to break with the static functionalism inherent in structural-functionalist techniques and the tenets of environmental and social positivism.

In short, therefore, the underlying objective of this dissertation is theoretical and methodological: To indicate the suitability, applicability and effectiveness of the combined concepts of structuration and syntax in identifying and explaining complex socio-spatial relationships in domestic architecture.

The basis for the argument that is presented may be illustrated by outlining several salient theoretical features that are proposed in this dissertation. These are perhaps the best description of the orientation of this investigation.

- (1) In the recent past, problems of architectural theory to do with settlement studies in southern Africa have been masked by oversimplified comparisons between 'tribal' and 'advanced' societies - or whatever equivalent terms might be used to convey the same meaning (see, for example, Frescura, 1981).
- (2) Such comparisons are deeply engrained in positivist social theory from the 19th century onwards. Because contemporary social theory has advanced beyond these outdated concepts and because architectural theory has a tendency deterministically to typecast African house form as a function of tribal identity, it may be surmised that the analysis of settlement has become critically severed from the analysis of social systems.

(3) What is at fault is not so much the creation of these typologies but their application as interpretative models. Two assumptions, perhaps more tacit than discursive, have guided and given thrust to their application:

- (a) That the characteristic nature of any given society is determined by the observer to lie in its level of technological, economic and intellectual development. These factors are generally used as an index, or measure, of civilisation and cultural output, including the design and production of artefacts.
- (b) That consequently, the most developed society - whatever that might be - at any given point in time, presents to other societies an image of their future in the present. In settlement studies this image is highlighted in the architecture that is produced. Buildings are mostly conceptualised in terms of the degree of sophistication by which they, as physical objects, provide shelter from the elements. It is at this level that the social nature of architecture is primarily perceived to lie: Upon the externally engrained manifestations of abstract social meanings. The material constitution of society in architecture is overlooked by stressing the primacy of expression (semantics) over organisation (syntax).

- (4) Each of these assumptions must be rejected in the form stated above. That they have prejudiced the progress of architectural theory which might be suitable for southern Africa is illustrated by the contrasting treatments of the relation between architectural form and social meaning by architects and others outside the discipline, including archaeologists and social anthropologists. The former (i.e. the architects) have been notable in their focus almost entirely on the object-like qualities of form where ethnic identity is stressed as socially essential and perceived to lie in the details of appearance and the mode of construction. The latter have teased out and interpreted the social functions and cultural principles, or determining templates, of form as the symbolic communications of social organisation, world view, myth and social custom. Both viewpoints have thus offered causal explanations from a functionalist perspective.
- (5) Buildings constitute social meaning rather than merely expressing it. Social organisations are inherently dynamic: Constantly transforming and adapting to respond to the changing conditions of existence - economic, political, legal, environmental, and so on. Social systems are thus spatially and temporally structured in architectural form. Analysis of buildings in terms of social meaning should therefore be concerned with identifying and understanding the ways in which patterns of spatial relations structure social relations in time (see Giddens, 1979, 1981, 1984, etc.).

- (6) Time is therefore a critical dimension in socio-spatial system analysis. Rather than referring to the existence of (largely static) structures of tribal or advanced societies and their architectures as functionally determined artefacts, reference should be made to the ongoing reproduction and transformation of social systems in space-time and the role that architecture plays in that process.
- (7) In order to avoid reification in architectural analysis, the spatial, temporal and social axes of daily life need to be theorised conjointly. Thus the enduring characteristics of social systems that are normatively seen to be slow-evolving and structural, must be integrated with the day-to-day activities of individuals and the buildings they use.
- (8) Following this, differences and similarities in domestic architectural form are not simply to be understood as a result of the influence of divergent ethnic values or, cultural 'forces'. The differing conditions of existence that form the wider context for social life are meshed within the actions and structure of households and are realised in the design of houses, among other things. It is not the purpose of this enquiry to classify these in any way, or to identify types. Rather, by illustrating the two selected case studies, emphasis will be placed upon the usefulness of examining the relationship between social process and house form in an attempt to overcome problems associated with

functionalist techniques. The emphasis throughout is therefore upon demonstrating an approach rather than stressing only statistical proof.

- (9) Following D'Arcy Thompson's (1975) observation that "growth creates form, but form limits growth", the concern is to contribute towards the development of a technique in which house form can be understood in relation to the ongoing reproduction and transformation of the patterns of relations that exist between social behaviour and social structure.

These concerns and propositions rest upon the premises that built form is mostly a product of social processes and is a crucial dimension of these processes. By social processes is meant the organisation and dynamics of cultural systems and the relationships among people who produce, among other things, the spatial configuration of buildings (Root, 1983).

This means that the physical shapes of domestic buildings result not only from the environmental determinants such as climate, technology and topography, but also from the activities, interactions, experiences and values of people in the households who produce them. It is therefore extremely problematic, if not unwarranted, to make clear-cut analytical distinctions between symbolic and functional regularities in either architectural form or social form, especially as the social characteristics that relate directly to architecture are difficult to identify.

This dissertation will therefore attempt to show systematically that the meaning of domestic architecture in relation to its wider social context can be properly understood only in a sociological perspective that fully integrates both symbolic and functional regularities. By combining sociological theory with an architectural theory of 'social' space, an approach will be demonstrated that views the design of houses as temporally and contextually situated.

This approach involves discarding those assumptions in which analysis is used to explain architectural design as the stereotypical product of social entities, such as tribes. In southern African settlement studies, the latter approach tends largely to prevail (e.g. Walton, 1956, 1965; cf. Rapoport, 1969: 47). In the theories displayed in these analyses the creativity of the collective 'indigenous' builder appears to be reduced to a set of cultural co-ordinates surrounding the urge to express abstract concepts in architectural forms that, as ideal environments, are symbolically viable (see Rudofsky, 1964 and Duly, 1979).

There is an inherent danger in such-like cultural and functionalist approaches that make them potentially misleading. By stereotyping and stressing the societal collective or tribe as a unique creative agent, important insights into the nature of co-operative effort and participation by others in the design and production of architecture is overlooked. Attention is thereby steered away from the social constituting and determining processes to which architecture is

inextricably tied. The risks are consequently high that an oversimplified, incomplete interpretation of the social significance of built form will be advanced.

In order to obviate these risks, a concept is posited in this enquiry in which the design of domestic buildings, or the creative practice involved in producing them, is seen as a form of work that is fundamentally no different from other kinds of human practice: The production of house form arises out of human needs and the motivations of people to engage - consciously and with the aid of abstract thought or knowledge - with nature and their surroundings.

From the transformation of context and nature emerges, in effect, a creative product that, in varying degrees, matches the goals and purposes of individual and group social life. Marx's writings on the creative characteristics of practical activity, or social production generally, are particularly illuminating here. By analogously comparing the work of the architect to that of the bee, all types of work are argued to be socially creative:

"We are positing labour of a form that is exclusively characteristic of man. The operations carried out by a spider resemble those of the weaver, and many a human architect is put to shame by the bee in the construction of its wax cells. However, the poorest architect is categorically distinguished from the best of bees by the fact that before he builds a cell in wax, he has built it in his head. The result achieved at the end of a labour process was already present at its commencement, in the imagination of the worker, in its ideal form. More than merely working an alteration in the form of nature, he also knowingly works his own purposes into nature; and these purposes are the laws determining the ways and means of his activity, so that his will must be

adjusted to them." (Marx and Engels, 1973: 53-54; original emphasis).

It is immediately apparent from this comparison that there is no conceptual divide between architectural creativity and the other more ordinary or common tasks that constitute social life. Architectural creativity, or production, is therefore a particular kind of social practice that, as a form of intervention in nature, is 'legitimised' only through the social purposes it aims to fulfil.

Yet, at the same time as those purposes are fulfilled and cradled, architecture helps to sustain the very processes that call those goals into being. It is therefore not only a product of those processes but also a form of instrumentality that helps to activate the social realm: A realm that is reciprocally dependent upon its material embodiment which in turn derives social meaning from the social processes and social relations it accommodates.

It is at this juncture that domestic architecture, irrespective of its size, appearance or scale, takes on its original archetypal quality which is as much ontological as it is social (see Marc, 1977). The social constituency of the household it accommodates and permits to be, provides the domestic building with its only form of legitimacy.

A sociological perspective of architecture is perhaps one of the more effective means of systematically disentangling these reciprocal relationships. All individual and group action, such as by the household as a whole, arises in a complex conjunction of numerous

structural determinants and conditions of existence and have to do with the mediation between ideological, material and social processes (Giddens, 1981; 1984). By viewing the household as the locus of mediation, the design of domestic buildings must be seen to be situated within specific social surroundings and historical moments. Domestic architecture is therefore not mystifyingly linked to its producers, but grounded in the practicalities and organisation of domestic life. Its social meaning is consequently indivisibly anchored to that organisation and thus entirely within the reach of systematic and rigorous analysis.

Analysing and understanding domestic buildings in this way, as the material constitution of households, necessarily involves highlighting the ways in which their forms have social value ascribed to them by the households and individuals that produce and use them in particular surroundings. This dissertation is therefore concerned with indicating some of the ways in which this meaning is created, sustained and changed in relation to both the social structure of the occupying households as well as the behaviour of participating individuals.

In order to locate this dissertation in the context of southern African settlement studies, the argument has as its starting point the conceptual basis for describing and analysing the meaning of buildings produced in 'traditional' societies. The structure of the argument is thus as follows.

Chapter 2 examines different approaches to the study of African traditional architecture. These studies are reviewed as part of an attempt by architects in southern Africa to narrow the gap of understanding, or the lack of 'common knowledge', between themselves and the designed-for (see Musgrove, 1984).

Chapter 3 focusses on concepts of space historically in the philosophy of science and in social thought, and notes that the problem of 'common knowledge' can be traced to a perceptual and conceptual separation of society and space: A deeply rooted dualistic notion of the society-space relation (Hillier and Leaman, 1973a; Sayer, 1984, etc.).

Section II establishes the theoretical and methodological framework for describing and investigating domestic buildings as socio-spatial systems. Chapters 4 and 5 present a review of the theories of structuration and space syntax respectively. These are brought together in Chapter 6 in a comprehensive model that is based on the key concepts in both.

Section III demonstrates this model using the selected case studies. These are described in Chapter 7 which includes notes on their broader context, architectural design and the results of observations made on the way the dwellings are used. Chapter 8 then analyses these data in an illustration of the syntax/structuration model. The investigation is concluded in Chapter 9 where the results of the

analysis are reviewed in the light of the aims of the study and an assessment is made of the suitability of the model.

CHAPTER 2KRAALS AND NATIVES : THE INVENTION OF TRADITIONS AND
ENVIRONMENTAL DESIGN

Architectural design in the industrialised countries was, for at least the first half of this century, dominated by the principles of the so-called 'International Style' or 'Modern Movement'. The principles underlying this approach were social in character, and had as their basis an optimistic vision of man entering a new scientific age.

Nineteenth century industrialism was to be replaced with positivist/empiricist science, which was to inspire a new architectural ideology, the cornerstone of which was functionalism.

Thus, if society could be rationally analysed and its functions objectively identified and described, then a matching, equally functional and objective architectural form could be defined. The promise of predictability, of marrying form with function, coupled with new technologies and construction techniques, inspired architects to design stereotyped 'solutions' that were based on the principles of mass-production and standardisation (see Smithson and Smithson, 1981; Frampton, 1980; Benton and Benton, 1975 for an outline and critical historical review of the tenets of modernist architecture).

Largely since World War II, the response to the 'functionalist revolution' and the 'scientifically neutral' approach, has been a

critique directed at the sterile, monotonous and dehumanising environmental designs that emerged with it. Buildings and estates were criticised by some architects not only for being unrelated to particular environmental contexts but also for failing to incorporate the social, cultural and historical milieu in which they were situated (see Richards, 1950 and Zucker, 1944). This critical attitude was evident throughout much of the western world. Commenting on modernism in Switzerland, Paul Meyer wrote the following:

"We are convinced today that it is not right, unless under absolute compulsion, to plant a flat-roofed cube in the middle of a well-preserved village or an old street; we feel that it is wrong to imitate historical details, but we believe that a modern building should take account of its surroundings" (Meyer, 1946: 66).

This kind of response was widespread among some British and European architects who were disillusioned with modernism and who wished to advance from it. The way towards an improved architectural ideal, they felt, was to stress the 'non-utilitarian' aspects of built form. In Sweden, for example, there was a turn to 'romanticism' and 'social architecture' (Halford, 1943: 62). In Britain a similar response was evoked by several leading scholars and architects who proposed a re-evaluation of architectural history in their search for a 'new monumentality': Historical styles, it was argued, effectively expressed, in their own contexts, architecture's "moral and emotional functions in addition to its material functions" (Paulsson, Hitchcock, et al., 1948: 117).

An alternative, parallel advance from modernism was suggested by reasserting the value of examining European 'traditional' buildings. If architectural design could only be more relevant, if it recognised the importance of economy, social values, political organisation, religious beliefs, etc. in shaping form, then place, people, time and architecture had to be viewed holistically, as part of the same reality. Without these assumptions and without this concept of holism integrated with the analysis of precedent, all attempts to design and construct humane environments would fail: Therefore, there had to be,

"... a new appreciation of the traditional, of the hand-made, even of the primitive as a compensation to the world of technology, which has passed beyond the grasp of the individual. What is sought is not what once existed in history, but the fundamental and simple for its own sake." (Meyer, 1946: 66).

However, the rallying point for the protagonists of these alternative studies was not only European and British traditional architecture - such as the study on Monmouthshire houses by Fox and Raglan Lord (1951) - but was later also to include the buildings and settlements of non-western societies (see Rudofsky, 1964; Fraser, 1969; Oliver, 1969; etc.). For example, Rapoport's 'built form and culture' overview of domestic architecture confirmed the belief in this approach by emphasising social and cultural 'forces' that shape houses:

"... what finally decides the form of the dwelling and moulds the space and the relationship is the vision the people have of the ideal life. The environment sought reflects many socio-cultural forces, including religious beliefs, family and the clan structure, social organization, way of gaining a livelihood, and social

relations between individuals ... Buildings and settlements are the visible expression of the relative importance attached to different aspects of life and the varying ways of perceiving reality ... The forms of primitive and vernacular buildings are less the result of individual desires than of the aims and desires of the unified group for an ideal environment. They therefore have symbolic values, since symbols serve a culture by making concrete its ideas and feelings." (Rapoport, 1969: 47).

Thus it was suggested, important theoretical and practical lessons could be learnt by architects in non-western countries who wished to design better contextually meaningful buildings. As a consequence, a place was made for the analysis of 'indigenous' architectures, in the search for principles which would aid design, alongside the modern and classical 'greats'.

The discussion in this chapter examines recent contributions to this body of literature, particularly that which focuses upon African architecture. Following this, a limited selection of buildings in southern Africa that demonstrate the attitudes adopted in these studies is illustrated. This is in an attempt to demonstrate that despite their overt 'African' style, the positivist attitude to the society-environment relation and ultimately to design, persists. The ideological distance, or lack of common understanding between African users and professional designers which has been noted by Manganyi to exist in southern African urban environments, tends consequently to undermine any new form of architectural intervention (Manganyi, 1981).

A similar understanding was recently argued by Prinsloo:

"Concerning the acceptance by African people of African architecture as a model for present day buildings and

settlements it is really a matter of the terms under which it is put forward ... buildings and settlements acquire positive meanings through spontaneous and structured processes that are appropriate to cultural and material tasks : ultimately life-enhancing and identity seeking. If an 'African' architecture is seen to be a style used only for people who are in a situation of unreasonable dependency (and who are aware of it) then obviously it will be rejected" (Prinsloo, 1982: 19).

Several alternative forms of enquiry into southern African settlements and buildings from disciplines such as archaeology are then examined. This is done following the insights shown by these studies into the social significance of architectural space.

2.1 Responses to a Vulgar Environmentalism : Traditions, Tribes and Buildings

Attempts in South Africa to come to terms with the austere, modernist inspired environments, such as the African townships, did not evolve in isolation. From the mid-1960s considerable research into non-western architecture and philosophies emerged from within the critical debates and assessments surrounding social norms and values. Aspects of western life which had apparently failed to provide a suitable framework for a more humane existence were bitterly and systematically attacked (Habermas, 1970; Adorno and Horkheimer, 1979).

One of the targets for this critique was the harshness of the urban environment, in particular the theoretical tenets and practical

achievements of architecture and urban design which, it was argued, represented the interests of the ruling class (see Jacobs, 1964; Goodman, 1971). Passionate in their indictment of urban life and its physical setting, some architects who were drawn by the criticisms levelled at the tensions and stresses associated with urbanism, turned to socio-environmental analysis and theoretical research instead of practice (Pieper, 1980: 1). Their theoretical enquiries into the social and economic bases behind the state of the built environment emerged largely upon a materialist view of the problem, where the harshness of the built environment was attributed largely to capitalism (see, for example, Schnaidt, 1967; cf. Tafuri, 1976).

This critique - of the built environment as the instrument of manipulation in the hands of the ruling classes - identified product design generally with architectural and environmental design:

"Utility quickly became synonymous with profitability. Anti-academic forms became the new decor of the ruling classes. The rational dwelling was transformed into the minimum dwelling, the Cite Radieuse into the urban conglomeration and austerity of line into poverty of form. The architects of the trade unions, co-operatives and socialist municipalities were enlisted in the service of the whisky distillers, detergent manufacturers, the bankers, and the Vatican. Modern architecture, which wanted to play its part in the liberation of mankind by creating a new environment to live in, was transformed into a giant enterprise for the degradation of the human habitat." (Schnaidt, 1967: 30).

According to this view, power, control and profit were seen as the sole purpose in western social life and of the development of urban life. As a result, the peasant societies of non-western origin

increasingly became the focus of enquiry, as these were perceived to be less affected by capitalism and the environment it produced:

"Since about 1948 ... and especially during the 1960's (the years of the Chinese Revolution, the Vietnam War and of formal independence but continuing dependence in much of Africa and Asia) there has been a great resurgence of interest in peasants ... Scores of articles and monographs in a number of disciplines broadened empirical foundations and sharpened analytical approaches; by 1972 the study of peasants and rural problems had 'become one of the biggest growth sectors in the social sciences'; and in 1973 the appearance of the Journal of Peasant Studies simultaneously celebrated and furthered this renaissance" (Bundy, 1979: 4).

Thus, interest in 'traditional' societies, conventionally the subject of historical and anthropological research, widened in academic circles to include architects and planners among others. Within this climate of questioning and the growing doubts about western ideas and the dissatisfaction with a seemingly meaningless, over-organised environment, architects seriously began to investigate what Guidoni referred to as the 'primitive', or archetypal, relationship between social life and architectural form in African, Asian and Middle Eastern peasant communities (see Guidoni, 1978). This attention was fostered by the impression that in these communities, the primitive relationship between culture and architectural form was least affected by modern modes of socio-economic organisation. An ideal opportunity therefore presented itself for explicating the design process which was 'unselfconscious' and whose form-making was "learned informally, through imitation and correction" (Alexander, 1964: 36).

The analysis by Glassie of house-forms in a region of Virginia in the United States is an example of the commitment to this approach (Glassie, 1975). By examining spatial design, the geometric and compositional rules that generate the plan-shape of dwellings are extrapolated. Factors such as room-shape and size, and the location of windows, chimneys and doors are integrated to develop a model which Glassie uses to identify 17 house types in the region. Different combinations of the compositional rules, Glassie argues, are drawn on discursively or unselfconsciously by the designer/builders when they construct their houses.

- The widened interest in the architecture and settlement patterns of 'traditional' societies was also influenced by explorations into the existential qualities of built spaces. Eliade, for example, contrasted sacred space - one that involves the 'manifestation of something of a wholly different order, something that does not belong to our world' - with profane space (Eliade, 1959: 11). He argued that in modern society the profane spatial experience has replaced the sacred, hallowed one. Modern space is thus viewed as being without structure or consistency (Eliade, 1959: 24).

Rolph later drew on these distinctions in his characterisation of authentic and inauthentic environments: Where authentic places are genuine, unselfconscious and well suited to context, inauthentic places are contrived, artificial, selfconscious and unrelated to context (Rolph, 1976: 63 ff.). The former places were to be found in

traditional societies while the latter characterised modern western society.

The analysis of the relations between spatial organisation, ritual and the behaviour of people was thus stimulated and sustained by a willingness to understand the symbolic and 'authentic' dimension of form: When seen as the indices to the emotional linkages between people and place, these characteristics could be used to identify and scrutinise the deeper meaning of built form (cf. the analysis of the 'poetic' experience of house space by Bachelard, 1969). These studies grew largely around discussions concerning the communicative value of buildings.

Semiotic interpretations of form consequently gained influence as they tended to highlight buildings and urban spaces as architectural 'languages' (see, for example, Lagopoulos, 1972). Using structural-functional techniques, the 'mystical' qualities and symbolic nature of 'primitive' communities that were embodied in built forms, could be retrieved (Oliver, 1969: 25-26; Guidoni, 1978).

More than anyone else, perhaps, the methods of the French anthropologist Claude Levi-Strauss began dramatically to influence the analysis of the 'totality' of social life - including the relationship between architecture and culture (Leach, 1970). Deep-structural models were identified for demonstrating the topological connections between dual structures in social organisation and village plans (Levi-Strauss, 1963: 132-142). In this way social life could be

systematically viewed as an integrated entity in which all aspects of culture were organically inter-related. Thus the whole of the built environment could be related to other aspects of life, such as cosmology and religion, by reference to the underlying deep structure or 'code' of society.

Building on these methods and concepts it became possible to postulate clear ideas as to the broader significance of architecture in relation to its particular cultural context. Pierre Bourdieu's ethnographic analysis of space in and around the Kabyle house is a well-cited demonstration of this approach (Bourdieu, 1973). The rules which organise spatial design are understood by analysing the social system of the Kabyle and reducing this to a set of homologous oppositional categories - between males and females, day and night, shadow and light, high and low, etc. Domestic space and the world of ideas, he argues, have their origin in the same set of oppositional structures, or rules.

The exact nature of these structures was later clarified by Bourdieu in his 'theory of practice':

"... objective structures are themselves the product of historical practices and are constantly reproduced and transformed by historical practices whose productive principle is itself the product of the structures which it consequently tends to reproduce" (Bourdieu, 1977: 83).

Social systems are, in other words, acknowledged to be self-reproducing. This concept matches precisely Giddens' notion of

recursion which is more fully dealt with in Chapter 4. At this stage it is sufficient to note that Bourdieu's analysis stands out as perhaps one of the few applied studies that incorporates a coherent notion of material and social change. As will be highlighted in the remainder of the discussion in this chapter, the element of change is clearly lacking in most architectural studies that deal with traditional buildings. Why this is so is perhaps best clarified by examining the concept of 'tradition' itself.

Cross-cutting most of the studies mentioned so far and those that form the bulk of architectural studies under review in this chapter is the concept embodied by the term 'traditional'. Also referred to as 'indigenous', 'folk', 'primitive', 'vernacular', 'tribal', etc., it is used, in architectural studies, in a more or less regular manner to denote an interpretation of society where it is perceived that a direct correspondence exists between all aspects of context, including architecture, and social life. It is thus a concept which is,

"opposed to 'modern' [and] implies a balanced and steady development of the societal potential, of playful as well as productive elements, and of both rational and irrational behaviour. In this sense 'traditional' also denotes a more humane cultural setting which has not yet lost contact with elementary constituents and archaic needs inherent to the human mind. This correspondence is reflected in architecture and urban space, and - most obviously - in a range of societal reactions to the built environment. In investigating this complex we meet universal architectural principles, in culture-specific articulation, seen here more clearly defined, more obviously reflected and reacted to, than in our own urban environment." (Pieper, 1980: 7).

Inherent in this concept is an implicit reference to a model of an extra-European world which attempts to codify and promulgate 'traditional' values and beliefs as essentially timeless. Terence Ranger has perceptively traced the origin of this model to 19th century Europe where values and norms of behaviour, usually of a symbolic nature, were 'invented' in order to

"give rapid and recognisable symbolic form to developing types of authority and submission" (Ranger, 1977: 70).

Ranger's discussion provides a useful background to the nature and origin of the concept of 'tradition'. His argument demonstrates how this concept was appropriated and used by colonial administrators, as well as how it has persisted in present day beliefs which stress tribalism and ethnicity as inherently changeless characteristics unique to African societies (Ranger, 1977).

One result of this tendency is the propensity to generalise about all aspects of African social life and material culture from a narrow and restricted base of experience and understanding. Insofar as architectural form is concerned, its meaning is confined to intuitive insight, speculation and vague generalisations. For example:

"As a rule traditional African houses are round in shape, built around the village compound so that if there are several houses in one compound, they also form a circle or semi-circle ... It is difficult to say dogmatically what this round shape of houses and villages may indicate ... one can only speculate the symbolic meaning of African villages which so remarkably resemble one another all over tropical and southern Africa." (Mbiti, 1969: 108).

According to Ranger's thesis, the traditions that were invented by observers helped define and mould models of subservience into which were drawn African and Asian subjects in the overseas empires. This was largely because of the self-perceived roles of soldiers, traders, settlers and administrators who, because they themselves held respect for 'tradition', (old school ties, regimental club rites, and so on), were favourably disposed to what they took to be 'traditional' or customary amongst various tribes in the colonies. By building symbols of African chiefly or royal power into the new traditions of European colonial structures, new rituals, symbols and ceremonies were invented. One result of this process, Ranger stresses, is that much of what Africans themselves take to be traditional is, in reality, the invention of the colonial and post-colonial period. As independent Africa emerged, so did it draw upon the traditions and political structures which it inherited from its colonial governors.

At work here, suggests Ranger, are two ambiguous legacies from the colonial past. Firstly, there are the atrophied invented traditions of 19th century Europe which persist in many African states in exercising influences on governmental structures. Secondly, there is the whole body of reified traditions invented by anthropologists, missionaries and colonial administrators who relied on accounts by elders which were then 'frozen' and stressed as changeless customs. For Ranger, this represents a fundamental misapprehension, in that the invented European traditions are marked by their inflexibility, such as the royal Christmas broadcast in Britain or the annual May Day demonstrations, African society was likewise viewed as:

"profoundly conservative, living within age-old rules which did not change; living within an ideology based on the absence of change; living within a framework of clearly defined hierarchical status - all this was by no means intended as an indictment of African backwardness or reluctance to modernize. Often it was intended as a compliment to the admirable qualities of traditions. But it was a quite misconceived compliment.

Customary Africa certainly valued continuity but custom was loosely defined and infinitely flexible" (Ranger, 1977: 73-74).

Responses to these legacies by contemporary ideological positions in Africa have taken various forms (cf. Hall, 1984b: 464). Radical liberation movements in South Africa, for example, wishing to break with interests of the colonial past, have declared themselves the enemy of ideologies that stress 'tribal order' and 'traditional' life. They are consequently viewed as reactionary concepts that serve to disrupt the development of a national consciousness in which all Africans are viewed as Africans and South Africans, and not merely as subjects who owe allegiance to various tribes or ethnic groupings (Suttner, 1985: 51. See also references to the de-emphasis on racial, ethnic and other differences in 'The Freedom Charter' in Leatt, Kneifel and Nurnberger, 1986: 96-97).

On the other hand, in southern Africa, constitutionalised political power bases have been secured by policies of re-tribalisation, which through the Bantustans, draw on and reinforce the invented traditions as a source of authenticity in order to secure sectional power positions. The white minority government of South Africa, for example, is characterised ideologically by emphasising ethnic or

tribal diversity. The Bantustans and the cultural, legal, political and economic structures that have been erected for them (by the State and co-opted 'traditional' leaders) may consequently be construed as resting on the assumptions of invented concepts of tradition, custom and ethnicity. These European or white interpretations of African 'traditions' have been described by Garlake as a feature of the 'settler paradigm' (Garlake, 1982). This is characterised by a mixture of Victorian evolutionary theory, intuitive speculation about African society and a form of cultural determinism which has had the effect of typecasting African societies as static, closed and unified wholes: Societies in which how things are now is analogous with how they were in the past.

In this sense the concept of tradition incorporates a particular view of social system reproduction in that it is seen as,

"... an indefinite series of repetitions of an action, which on each occasion is performed on the assumption that it has been performed before; its performance is authorised - though the nature of the authorisation may vary widely - by the knowledge, or the assumption of previous performance. In a pure state, as it were, such a tradition is without a conceivable beginning ..."
(Pocock, 1972: 237).

Traditions of this kind are thus prescriptive and presumptive.

Implied here are societies that are traditionally invariant in the sense that practices, beliefs and routines remain unmodified by the processes inherent in the circumstances of social reproduction. An important aspect of such-like societies is that the past to which they

refer imposes fixed, sometimes formalised, practices (Hobsbawm, 1983: 2).

The reality of life in southern Africa (as in the rest of the continent) is, however, such that Africans do not generally live as 'pure' tribespeople any longer (Suttner, 1985). The power of tradition, or the authority of the past over the present, has, as it were, been constantly diluted by a wide range of socio-economic and environmental conditions. Western European models of education, a highly competitive wage economy, urbanisation and increasing literacy, for example, have greatly transformed the meaning of previous social practices but have not necessarily undermined the forms they adopt (Mayer, 1971).

Therefore, just as social practices such as law have retained outwardly certain formal references to the past - in, for example, the tribal courts - their meanings have been drastically altered by changed living patterns and political structures (Suttner, 1985).

The relationship between social meaning and architectural form may consequently be seen in the same way, especially since the production of buildings is itself a social practice that is highly specific in its aims, yet fully integrated with other aspects of social life (see Lerup, 1977 and Prinsloo, 1977).

Recent contributions to the study of African traditional architecture have, it would appear, been haunted by a lack of an adequate, critical awareness of this form/meaning relationship. Rather, the dominant

interpretive mode has been descriptive, in which aspects of form, such as decoration and style, have formed the focus: An approach in which meaning has been investigated at the level of the geometry of house form or wall graphics and explained in terms of a tribal typology. Thus it may be argued that studies which have examined 'traditional' buildings in Africa, have tended to reflect the characteristics inherent in the settler paradigm of the theorists and architects active in such research.

It is from this critical perspective and against this background of the architectural preoccupation with indigenous or traditional people that the recent work by architects and theorists working in Africa needs to be reviewed (Frescura, 1981; Beinart, 1975; Larsson and Larsson, 1984; Denyer, 1978). Essentially, these publications are analyses of precedent of buildings and settlements as they occur on the continent. As such, they make useful contributions in putting on record the forms, appearances and styles that may be changing. However, while this is good material for the ethnographic record, there is little exploration into the relation between daily and longer term experience, behaviour, belief and architectural form.

The work of Denyer is a sophisticated and extensive compilation of documentary material drawn from many regions and societies across sub-Saharan Africa (Denyer, 1978: ix-xii). Numerous case studies are classified and arranged into sections and chapters according to physical features, functions and the external appearances of built form such as 'Taxonomy of House Forms', 'Distribution of Styles',

'Decoration' and 'Sacred Ceremonial and Religious Buildings', etc. Using the notion of 'tribes' as its starting point, the work systematically unfolds as the exposition of ethnic styles related to ecological and historical forces. This has the effect of reinforcing the idea that African architecture results from within culturally discrete and socially defined entities with clear boundaries and social edges.

The dominant mode of interpretation is pictorial, biased ultimately on the aesthetic and formal properties of dwellings. This preoccupation with building forms from diverse regions on the continent results ultimately in an inadequate understanding of what these buildings mean or why they were designed and constructed in the first place. Thus, although Denyer notes that economic, social and political 'forces' contribute to the forms that the dwellings take on, the scant and unsystematic treatment given to the wider cultural context results in a blurred understanding of the relation between social and spatial form.

Frescura's concerns and point of departure are similar and the results equally obscure. His analysis uses as its social and political framework the Bantustanisation of South Africa which in turn is rooted in a strong ethnic view of society. The focus is consequently on rural African architecture which is profusely illustrated throughout the book as the work of tribal subjects such as the Tswana, Venda, Xhosa, and so on. In the case of the Xhosa, this typological sub-

division goes further so that the reader is presented with both Transkeian and Ciskeian Xhosa architecture.

African society on the sub-continent is thus viewed as a set of closed entities that are 'given' in the descriptions of architecture that follow. For example, the descriptions of the 'cone on cylinder' form of architecture are elaborated using as a distribution matrix the different Bantustans (Frescura, 1981: 53-74).

Systematic enquiry into how and why architectural spaces change and develop is arrested by a consistent focus upon technology and the external appearances of form. Interpretation of the data does not, therefore, proceed beyond the conception of architecture in South Africa as a physical projection of ethnicity - the implication being that social meaning is tractable through an analysis of form.

The concern for the evolution of architectural styles and technology goes further. In describing the historical development of 'rural house form', an elaborate tree-like evolutionary diagram (Fig. 1) is proposed, beginning with a 'cave dwelling' under the general category of 'pre-historic' and ending with a contemporary 'highveld house' (Frescura, 1981: 20).

As a result of this somewhat simplistic outline and the detailed examination of various house forms that follow in Frescura's book, a chronological framework is erected for understanding the emergence of 'Bantu' material culture and architecture. Coupled with the features

of the settler paradigm in southern Africa, African society and its mode of building appears to 'evolve' from a primitive stage of development to a sophisticated, contemporary form. What follows is a misleading characterisation of architecture, and consequently African society, which is rooted in an evolutionist/functionalist approach that has the effect of stressing Bantu traditions as fundamental principles, timelessly inherent to their ethnic identity.

Beinart's study of Western Native Township (WNT) outside Johannesburg represents a different approach to the tribal theme surrounding house form and surface appearances (Beinart, 1975; see also Beinart, 1966 and 1971, in which the same data are modified and presented under different titles; the 1975 publication is referred to here as this represents the final and probably the most worked or refined version of these data).

Here the emphasis is on examining how the inhabitants of a planned workers' settlement transformed their environment into what was to them, a meaningful place. In doing so the inhabitants adapted their houses in two ways.

The first method was by changing the spaces and functions of the buildings. Front porches were added using permanent as well as temporary materials. To a lesser extent, the internal arrangement of rooms was altered by breaking down walls and redesigning the interior layout. Because these methods were expensive and because they had to

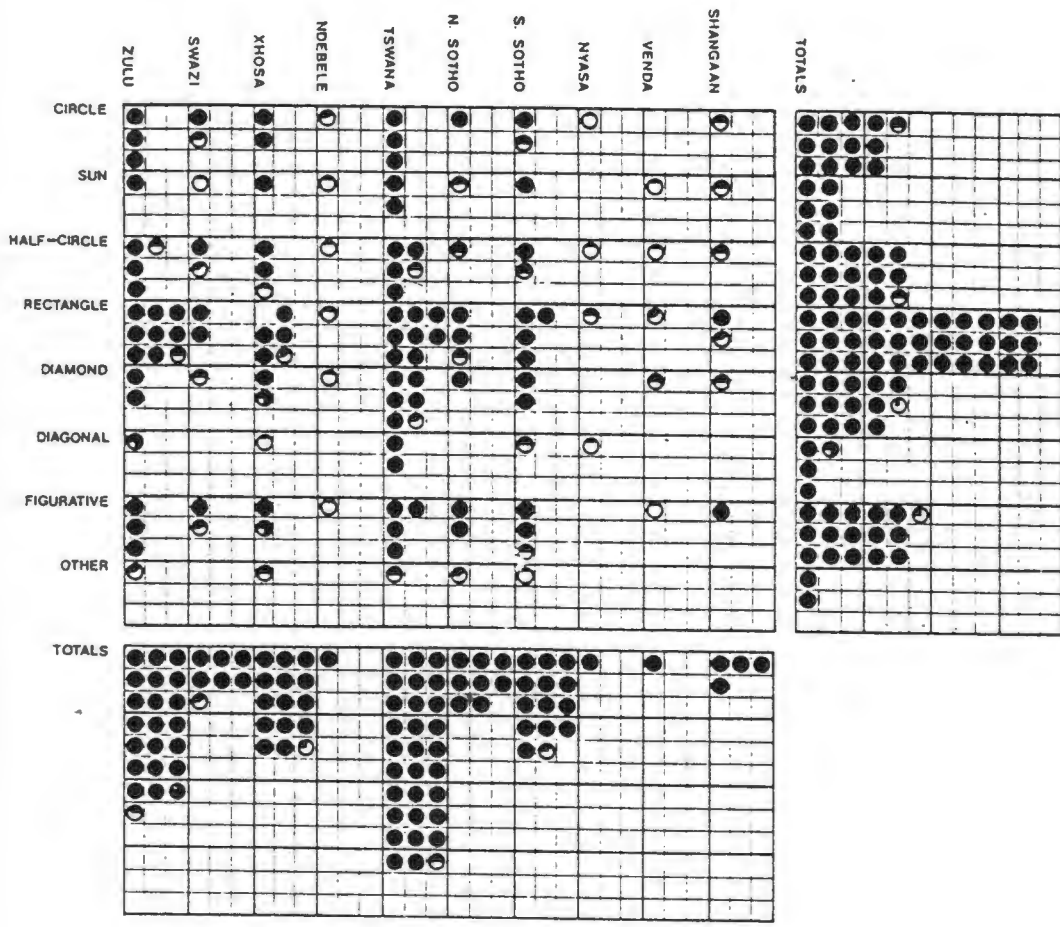
be scrutinised by the authorities in order to get building permission, they were not very popular.

The second consisted of decorating the street-facing facades of the houses and it is the description of these responses to which Beinart devotes much comment. The inhabitants, according to Beinart, wished to achieve 'aesthetic diversity' among their custom-built houses. To do this they resorted to graphic designs which consisted of painted and engraved symbols and geometric patterns.

Beinart systematically describes the distribution of these graphics. Using a series of bar charts and matrices, various characteristics of the population in WNT are displayed and related to the facades. Thus, categories of decoration such as those based on motifs from urban and rural images are correlated with household income, house density and, ultimately, tribal distribution. For example, the distribution of tribes such as Tswana, Xhosa, Swazi, etc. are related, using a matrix, to decorative and geometric elements such as rectangles, half circles, suns, figurative designs, and so on (see Fig. 2).

The result is an overwhelming emphasis on tribal diversity in relation to graphic design :

"If some tribes did not decorate more frequently than others, certain tribes however seem to have preferred certain modes of decoration ... While the rectangle and its derivatives were the most popular shape family and the one used by all the tribes in the township, the Nguni group of tribes seemed to have preferred the circle as the basis for their decoration and the Sotho-



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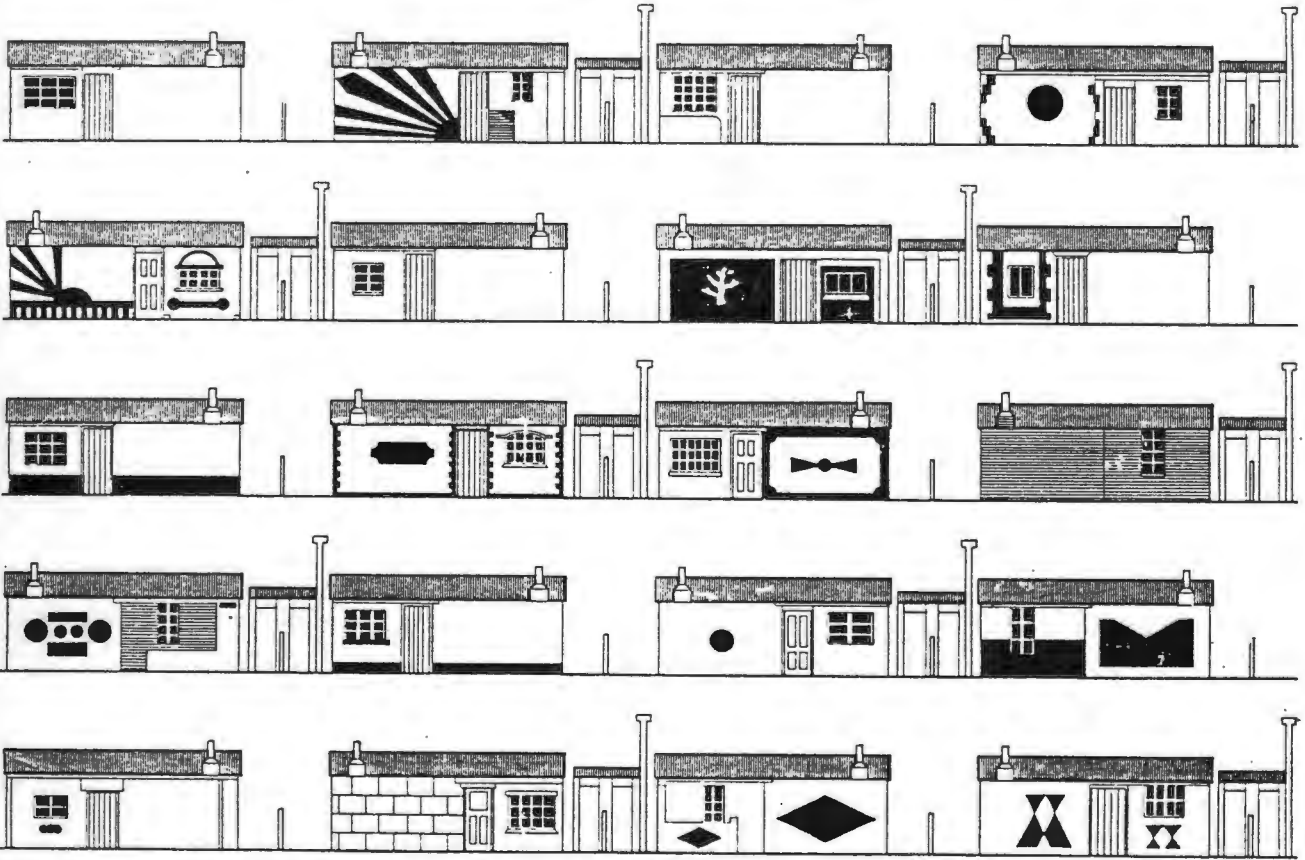


Figure 2
The Relationship between Home Decoration and Tribal Category in
'Western Native Township', Johannesburg

Source: Beinart, 1975

speaking group to have inclined towards the sun family while the Tswana, the most numerous in the township, accounted for most of the diamond and diagonal shapes" (Beinart, 1975: 179).

What emerges from this study is a strong association between tribalism and artistic characteristics: Material that, whether intended to or not, reinforces the perceived role that ethnic traditionalism plays in separating and clarifying groups of Bantu-speaking 'tribes'. The result is a highly superficial and formalistic interpretation of ethnicity and an uncritical analysis of what these buildings mean within their broader political and economic context. As such, this work parallels that of Denyer and Frescura especially insofar as the interaction between people and their environment is not adequately explored.

This approach also underlies a recent survey of house design in Botswana. The purpose of the study of 'traditional' Tswana housing by Larsson and Larsson (1984) is to explicate design features that could be useful in modern developments of low-cost housing in Botswana. In order to do this, the authors establish criteria which they use to distinguish between 'modern' and 'traditional' dwellings. Here, the sources of the specifications used for the implied ethnographic model of the 'typical' dwelling unit are not spelled out. Instead, the reader is presented with a set of contrived principles which were used to select typical case studies. For example,

"(w)e considered a layout of the dwelling with several houses (usually one room houses) together with some different simple structures to be a traditional one, while one multi-room house in the yard we considered

modern. Houses with mud walls and a thatched roof were considered traditional, while houses built of cement blocks or with a roof of corrugated iron (so-called zinc roof) were not considered to be traditional ... Furthermore, the houses and structures in the yard had to be well maintained to be included in the investigation. Proper maintenance, besides emphasising the positive qualities of Tswana housing, was regarded by us as evidence of Tswana housing traditions being kept alive by the household." (Larsson and Larsson, 1984: 42).

In this scenario, the Tswana are presented as a cohesive 'ethnic group', including standard modes of behaviour, economy, social organisation and architecture. What results is a profusely illustrated empirical study consisting of a survey of building techniques, layout patterns, construction materials, environmental variables, and so on, all predicated upon narrow cultural assumptions concerning the divide between 'traditional' and 'modern' society.

Evidence for this approach is restricted to the authors' own interpretation of custom. Consequently, their findings match their initial assumptions regarding the relevancy of integrating rural construction techniques, layouts and materials in contemporary urban designs. By doing this, they insist that

"the existing skill and knowledge of housing of the Tswana people will be recognised and, at the same time, their culture will be kept alive." (Larsson and Larsson, 1984: 14).

Thus, traditional Tswana attitudes, beliefs, values and norms which are 'disappearing' may be rescued and preserved using architecture. Once again, underlying this attitude is the invented concept of

tradition in which the material culture of a changeless, fixed society is perceived to be threatened by the advances of modern development.

Several other earlier and more recent published contributions concentrate on African settlements in much the same way, varying only on regional location (Walton, 1956; Biermann, 1971; Rich, 1982). Cross-cutting all these descriptions are their straightforward technological and aesthetic criteria (Fig. 3) which, when selected cultural and social characteristics are noted, have the effect of reinventing tribal traditions. Differences among groups and communities are consequently emphasised at the same time as regularities are largely ignored or suppressed. Thus, for example, Walton in his description of an early settlement in Lesotho, argued that cultural groupings were determined by

"tribal differences ... any classification must therefore be based on a tribal rather than a geographical basis" (Walton, 1953: 10).

In southern Africa, as in other 'less developed' regions where the study of the colonised is practised mostly by descendants of the settlers, the production of knowledge appears to be particularly ethnocentric (see Hyden, 1980: 4). Influenced strongly by the settler paradigm and invented traditions, the dominance of this published source material has the effect of typecasting African society so that the possibility of transformation and progress is denied.

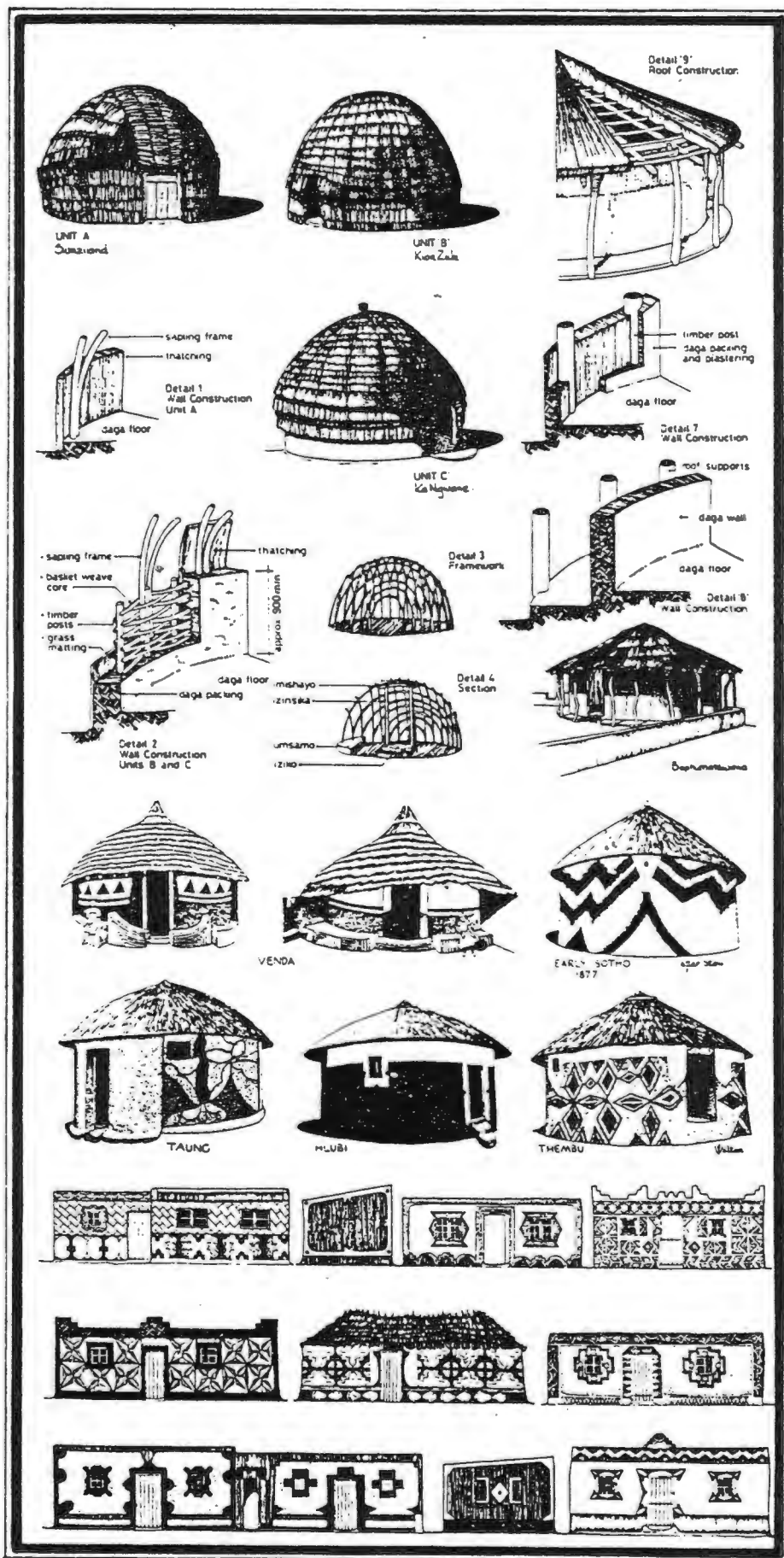


Figure 3
Styles and Tribes

Sources: Frescura, 1981 and Walton, 1965

One of the consequences of the inadequacies of this source material is the danger that an inherently fallacious myth is established which, if perpetuated, is eventually admitted to be fact. Traditions, tribes and the concepts surrounding material culture are subsequently reified as object-like creations. Normative accounts of 'kraals' and 'native villages' are therefore assumed to provide information on the cultural traditions of their occupants; the static ethnographic model is applied, and the past is automatically recreated in present-day settlements and architectural designs.

Any perceived deviance from this model of settlement which may exist, such as, for example, square huts in a straight line instead of grass-clad beehive domes laid in a circular pattern, is dismissed as 'untraditional' and therefore not worthy of study. In this regard, the study by Hall on the 'myth' of the Zulu homestead provides a useful contribution to the critique of the use of ethnographic models in interpreting archaeological situations in Zululand (Hall, 1984a).

If one of the aims of architectural enquiry is to contribute to a wider understanding of society, then the stereotypical models of settlement that are rooted in ethnic perspectives must be reassessed and revised. The dominant tendency within all these writings and interpretations appears to be predicated upon positivistic maxims typical of 20th century modernism. Architectural classifications have largely depended upon stylistic and technological features of design which have been seen in the same way as the social context in which they exist. In southern Africa, this is viewed as an

environment consisting of people belonging to definite and compartmentalised ethnic or tribal communities, replete with invented traditions, including a wide array of architectural typologies.

2.2 Architectural Practice in Developing Regions : The Effects of 'Traditional' Precedent

If the scope of African settlement studies is to be extended beyond the recording of stylistic and ethnographic information, then the question of methodology and analysis implied by the selection and organisation of case study material within these writings needs to be examined.

Frescura, in his "Introduction" proposes that

"... one solution to the world's housing shortage lies in the harnessing of the tremendous energy inherent in rural building" (Frescura, 1981: 3-5).

And again,

"Also such a chart [showing the development of house form] can serve as a pointer to the future to those who wish to harness rural architecture as a means of solving our growing housing shortage" (Frescura, 1981: 21).

Similarly, Denyer suggests that architects "turning to the vernacular architecture for inspiration" will do so by using the information presented in her book (Denyer, 1978: 4). These, and similar suggestions by other writers urging architects and planners to draw

inspiration from their documentary material so that their designs may have more 'African meaning' (see, for example, Larsson and Larsson, 1984), present a major problem. This is because the material that is illustrated and described is dealt with in the style of an ethnographic presentation. The buildings and settlements are typologically classified according to external, surface manifestations of house form, style, decoration and technology, which at first glance can easily be copied, recreated and modified to suit an architectural brief. (For a critical and detailed analysis of this mode of interpreting architectural precedent, see Van Schaik, 1982.)

If the architect's responsibility and task is to respond appropriately to place, time and social environment, then there is no indication in these writings of user attitudes to enclosure, no analysis of social meaning and consequently no adequate understanding of spatial organisation in relation to the people who produce and use it. Thus potentially useful design principles based upon environment-society relationships are not extrapolated. Instead, this literature has the effect of tending to inspire new designs which copy technological and formal features such as plan-shape and wall decoration, in the belief that these are genuinely, or meaningfully, suitable for the African setting.

Thus, it may be argued, design principles, identified and isolated by a systematic description and analysis of precedent that is based upon a sound theoretical framework, become more useful than the external appearances of architectural form. Principles of social and spatial

organisation develop practical importance and sharpen theoretical insights into the changes in division of labour, economy and social organisation attendant upon the processes of rapid urbanisation and industrialisation that are symptomatic of the 'less developed' regions, including southern Africa.

Thus, rural technologies, construction processes, available materials and the architectural styles that emerge, become inappropriate within a high density urban environment and a consumerist/wage economy (cf. Turner, 1976). In a situation such as in southern Africa, the crucial issue becomes whether the organisational principles that correspond with the behavioural patterns, social relations and spatial designs that are present in African society can be clarified and accommodated in the (new) urban context.

None of the writings presented above have placed any emphasis on the organising principles that might assist the design of new buildings. Although mention is made by Denyer of the value of examining buildings in relation to the non-physical context, there is no rigorous treatment of the data as social and spatial systems.

Consequently numerous new buildings, urban designs and housing projects in southern Africa which display physical and decorative features in order to achieve an 'African' character, have been influenced by this mode of observation in the analysis of precedent. These include the Government Square and Group Housing at Mmabatho (the 'capital city' of the Bophutatswana Bantustan in South Africa), the

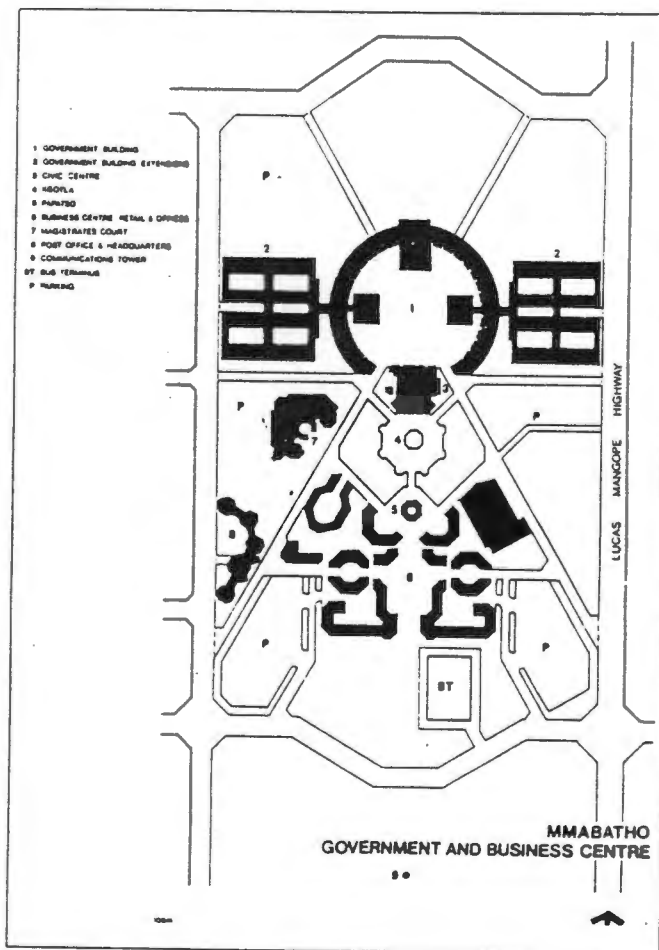
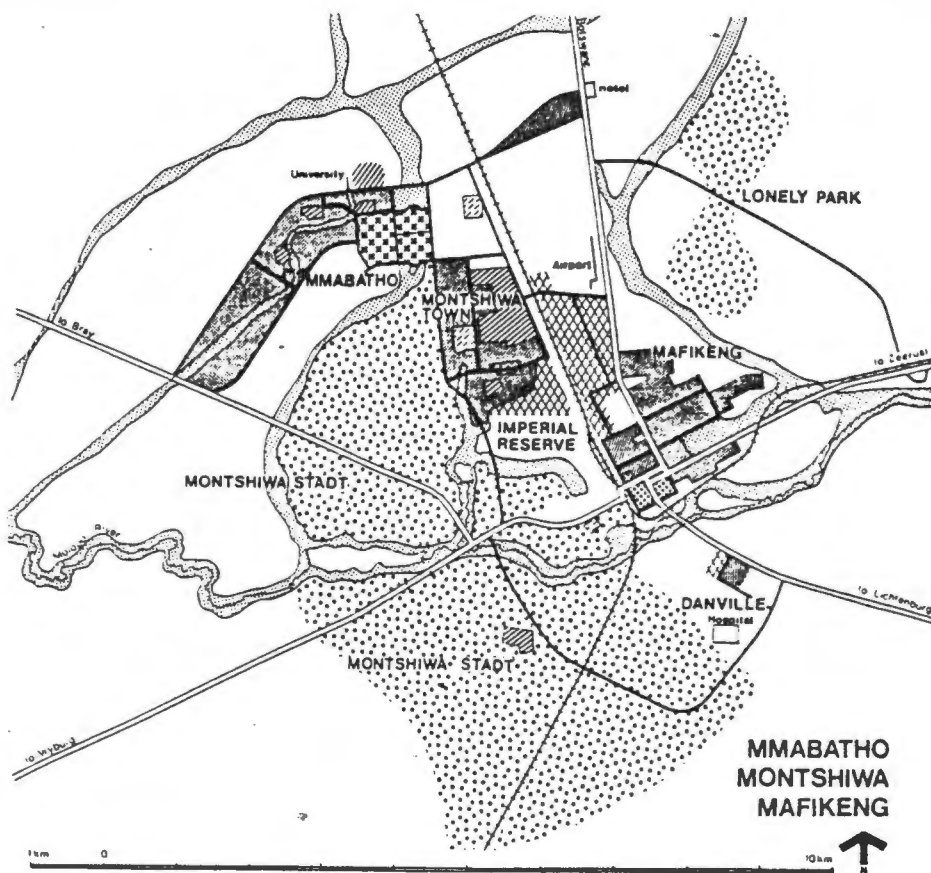
Teachers' Training College at Ongwediva (northern Namibia), the University of the North at Turfloop (Bantustan of Lebowa in South Africa), House Nkwe in Soweto, the Basotho 'Hat' building at Maseru (Lesotho), and so on (see Figs 4 and 5).

These examples (amongst several others) illustrate the effects upon architectural practice of the social and political environment within which it is practised. Most mass housing and development projects that include some architectural component are, in South Africa, for the majority African population (Wilkinson, 1983).

Here, the settler paradigm, replete with invented notions of ethnicity and tradition, and propelled by a positivist worldview, generates an architecture which, as Suttner (1985) has demonstrated in the case of legal practice, may be seen to contribute to the 'national oppression' of the African people in the region.

Ethnic images, lifted from the published source material as well as from first hand observation, are meticulously noted, categorised and reproduced in new houses, government buildings, schools, community centres, and so on.

In short, architectural practice of this kind, based as it is on a strong ethnic view of society and on the assumption that reproducing tribal images in buildings makes them meaningful, operates to ensure its own ('meaningful') reproduction: A process from which the users are inevitably alienated. The nature of the separation and the



'By combining aspects of formal baroque planning with ethnic Tswana architectural forms and village structures, a modern government centre is being developed that will reflect the strength, tradition and essential humanism of the Bophuthatswana nation'.

Source: Hutton-Squire, 1981: 41.

Figure 4
 New 'Capital City' for Bophuthatswana

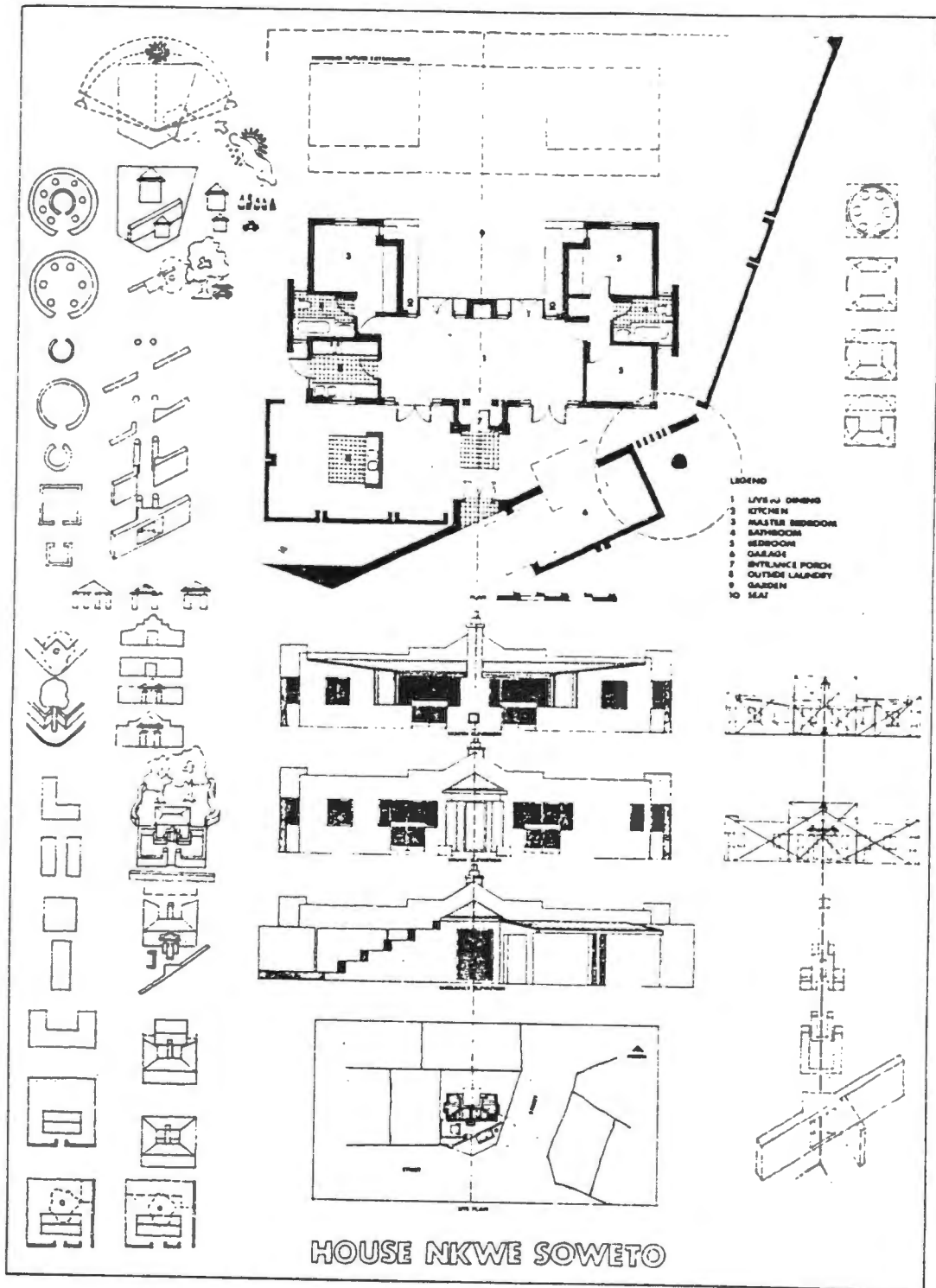


Figure 5
An Architect-Designed House in Soweto

Here, 'gables and other traditional elements were used to achieve a sense of continuity with the traditional architecture of the Ndebele' (Institute of South African Architects Award of Merit, 1983). Architect: J. Noero

'distance' implied by this alienation in southern Africa, given that the concepts of ethnicity and tribalism are challenged at the political level by the forces working for democracy, has acquired a particular (reactionary) meaning in the region. The gap between users and designers consequently needs to be further clarified with regard to architectural design.

2.3 A Lack of Common Knowledge : Ideological Distance and the Burden of Ethnicity

In a critical commentary on the work of architects in southern Africa, Manganyi has provocatively and perceptively argued that

"it is more likely that the architect's dream will become for me a symbol of the materialism which stands as a barrier between my humanity and that of my white countrymen" (Manganyi, 1981: 135).

Following Manganyi, professionally designed environments and values rooted in the dominant ideology demonstrate aesthetic and practical preferences which frequently mirror the architect's interpretation of the (mass) client's ethnic identity and needs. This, argues Manganyi, appears to be generated by class distinctions, substantial differences in education and perceptions of socio-economic issues. It is not surprising, therefore, that designers and users have different ideas on the meaning and function of space in the built environment.

This represents somewhat of a profound paradox. Underlying the design and implementation of many of the recently built 'African' buildings and urban designs are analyses and studies undertaken by anthropologists, sociologists, economists and others, each contributing in their own way to the theory which the architect has used in the design. Yet, judging by the user responses to these environments, in particular housing projects, there is little understanding of 'how to go on' in terms of the designer's initial intentions and specifications. The new housing project at Ongwediva, northern Namibia, demonstrates this. (This project is referred to below in greater detail.)

Here, the issue of appropriate practice may be effectively approached by investigating the role of the architect in southern Africa. The function of the expert or consultant in the context of a developing region is usually viewed in terms of physical accomplishments. These are informed by models of development where professional practice is essentially product-oriented (Tschannerl, 1982).

Experience in Tanzania has shown that the specialised knowledge brought by consultants into developing rural regions tends to promote the idea amongst peasants that projects and tasks would not be achieved without this 'sophisticated' skill (Tschannerl, 1982: 94; cf. Hyden, 1980). One result of this is that the role of consultants fosters a dependency relation with peasants and consequently legitimises technocratic structures of domination and bureaucratic control.

Furthermore, the insistence among consultants on a rigid and hierarchical professional channel of command, 'proper' professional procedures and giving the client - usually a bureaucrat appointed as a 'representative' of the community - what he wants, all allude to an institutionalised concept of high professional standards (personal experience: northern Namibia, 1979-1983). A dominant aspect of this concept is that it automatically elevates the requirements articulated by the 'client' above those of the community, who are regarded as unknowledgeable. Consequently, the syndrome in professional circles of 'they-don't-know-what-they-want-because-they-don't-understand', perpetuates and haunts inappropriate interventions.

The following are some observations of dweller responses to the 80 formally provided houses at Ongwediva, situated approximately 7 km west of Oshakati (northern Namibia). This investigation was undertaken during 1983, three years after the first occupants had moved in and is described in detail elsewhere (Mills, 1987: in press). Information recorded is based on informal interviews with government officials at Ondangwa, the occupants, the architects concerned, as well as from examining working drawings of the house-types and photographs taken of the environment in use.

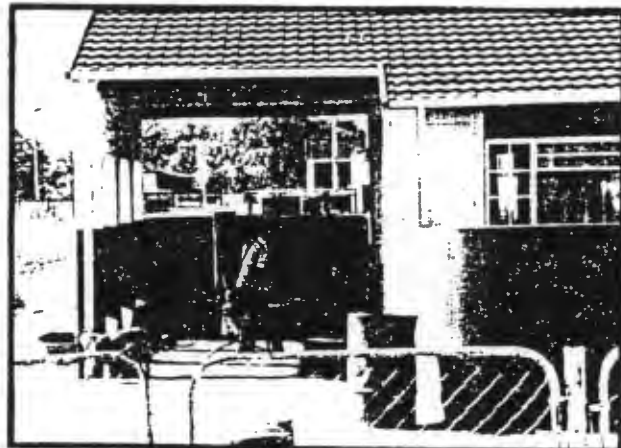
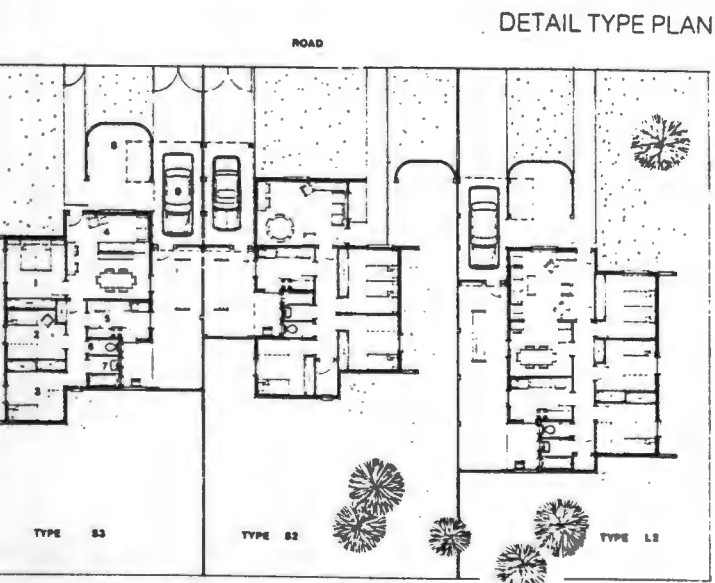
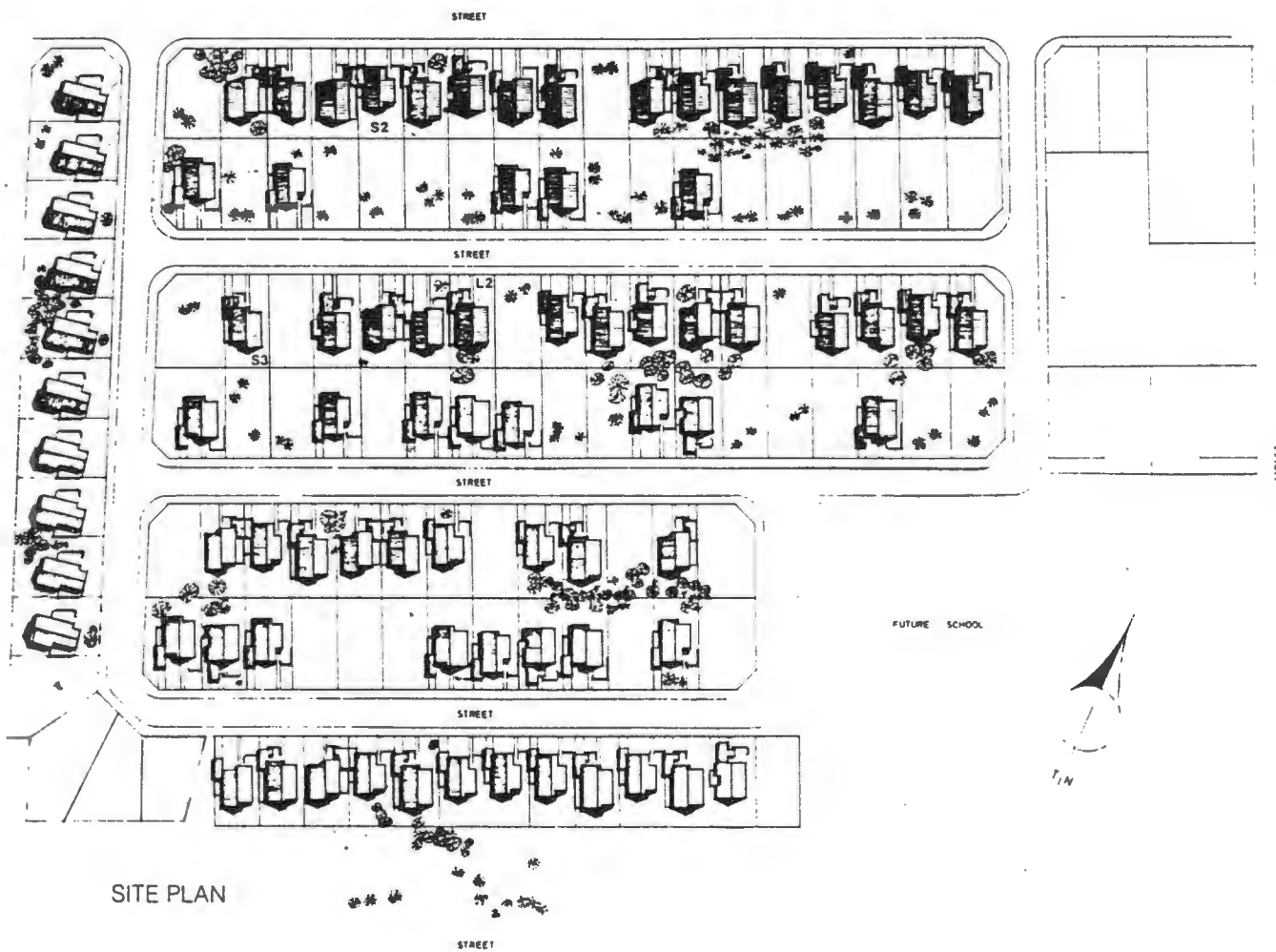
The settlement, intended to become the new 'capital city' of Ovamboland, was designed by South African government planners in Pretoria. This concept was initiated in line with the recommendations contained in the Odendaal Commission's Report, in

terms of which Namibia was to be carved up into 11 ethnic Bantustans (Odendaal Commission, 1964). A private firm of architectural consultants was appointed to design the house-types which were to be of a standard befitting the status of a capital city (see Fig. 6).

The project consisted of six variations of three- or four- bedroomed house designs which were placed more or less randomly on the allotted stands which were bought or leased by the occupants. Most of the occupants were families who had recently migrated to the urban centres from the rural areas and were employed by the state as semi-skilled construction workers, junior clerks, administrative assistants, police and military personnel.

The client - in this case the 'Government of Ovambo' - insisted that the people wished to be 'westernised'. Accordingly, their houses had to reflect this aspiration, while still maintaining some elements of their 'tribal tradition' in order to secure their ethnic identity.

Wall graphics 'solved' the tribal tradition problem while the schedule of accommodation, including a 'Car Port', 'Conversation Area', 'Front Garden' and 'Lounge-Dining Room' took care of providing a 'westernised solution'. All this was realised using high-quality, expensive building materials and finishes, and main and sub-contractors from South Africa and Windhoek.



Car port is used as a lounge.

Figure 6
Housing at Ongwediva, Namibia

The most common response by the occupants was to use the houses in a manner for which they were not designed. In some 80% of the houses, one or more of the following 'misuse' of spaces was recorded :

- Car Port used as the main living area (see Fig. 6). Many families do not own a motor vehicle and consequently the car port, a cool, shaded area in full view of the street is used for cooking, eating, entertaining, socialising, etc. In this way the house is visually and intentionally 'opened up' to encourage the free flow of people between houses in the community.
- Laundry yard as kitchen. Fire places, paraffin stoves, cooking utensils, etc. are located in this space which is well ventilated and screened off from the wind. It is thus an appropriate place for cooking especially since most of the households visited did not own a conventional (gas or electric) stove.
- Kitchen as a granary. Bags and baskets of grains are stored in this space together with pestles and mortars. A major reason cited for this was that the kitchen, with its two lockable doors, was a secure area for the storage of food and other valuables.
- Lounge/Dining Rooms. Of these spaces, several were found to show very few signs of use. In most cases little or no furniture filled the room which was generally an empty space.

In such-like, presumably well-intended, projects, architects and other professionals have expected the occupants to understand and internalise all those concerns that form the very essence of what is the subject matter of much socio-environmental research and professional education. It is perhaps here that the issue of a lack of common understanding lies between designers and designed-for. Musgrove puts the problem succinctly :

"The dilemma therefore is to what extent a substantial body of knowledge classified and understood in one way, may be transformed into another; or alternatively, how we may usefully reclassify environmental knowledge in a way which recognises the environment as a manifestation of society, rather than as an instrument for its manipulation" (Musgrove, 1984: 6).

As suggested in Chapter 1, in southern Africa, the problem is exacerbated by the burden of ethnicity.

A lack of common understanding in the southern African context consequently becomes one not only of building design, but also the way reified concepts of tradition inform on new designs. At a more fundamental level, the problem confronting any attempt towards reaching a united understanding between designers and designed-for has been identified as one surrounding the relationship between society and its environment or, the "man-environment paradigm" (Hillier and Leaman, 1973a: 507-511).

Essentially this problem is distinguished by differences between functional positivism and logical interpretations in science and the dominating effect that the 'dogmatic rationality' of the former has on

socio-environmental perceptions in the theory and practice of architecture (Musgrove, 1984; Hillier and Leaman, 1973a). Because of this dominating effect, pursuance of the man-environment paradigm results in manifestations of one kind or another, of the dualism between society and its built environment: the one merely 'reflecting' the other. (Chapter 3 examines this theme in greater detail.)

The problem for environmental theory and practice confronting the design professions in southern Africa is thus twofold. Firstly, untested, value-biased assumptions concerning the concept of 'tradition', its cultural locus and the way this is materialised in buildings, need to be examined. Secondly, the issue of common environmental knowledge needs to be addressed in a systematic and precise way.

If the only common grounds there are between designers and society are buildings and settlements, then an in-depth analysis of the built environment would be one way of confronting the problems facing theory and practice. Furthermore, understanding socio-environmental relations within designer/occupier buildings could be usefully achieved by adopting two techniques. First, the design, layout and arrangement of buildings and settlements would need to be described in relation to the social organisation of the producers as well as the context in which they are situated (see Hillier and Hanson, 1984). Second, the performance of these environments would need to be

monitored by in-depth observations of their use. (The reader is referred to Chapter 5 for an outline of both these techniques.)

In this way, those social features that relate to architectural morphology might be discerned so that a deeper understanding of society-environment relations may occur. The nature of these relations has recently been examined by researchers and theorists outside the disciplines of architecture and planning, who have been working predominantly in southern Africa. These are examined briefly below.

2.4 Archaeology and Anthropology : Society, Space and Codes

Architectural variations among different cultural groups in southern Africa have recently been studied by archaeologists and social anthropologists who have identified fundamental regularities that transcend specific social and environmental contexts. Their aim has been an attempt to understand how the organisation of space in settlements relates to the cultural and behavioural aspects of society. From these studies have emerged a set of interpretive models which have greatly improved understanding of the deeper meaning of past and contemporary man-made environments. This has been achieved by exploring the symbolism of settlement design, in which homesteads, huts and whole villages have been regarded as metaphors for social relationships (cf. Bordieu, 1973; Bourdier and Minha-ha, 1983: 44).

In an attempt to extrapolate the organising principles which generate material culture, the African world-view has been studied so that so-called 'symbolic codes' may be identified (Huffman, 1981; Kuper, 1980). Here, the set of principles has been referred to as a cultural structure that acts to control and organise interactions between people and their environment. In addition, by building on structuralist tenets, the study of symbolic codes has shed light on the way relevant cultural values and belief systems relate to architectural and settlement morphology.

In an anthropological study of the space in the settlements of Bantu-speaking people in southern Africa, Adam Kuper has suggested structural regularity that is independent of local context and therefore defines a southern African cultural pattern (Kuper, 1980: 8-23). The 'symbolic dimension' of the homesteads of groups such as the Mpondo, Zulu, Swazi and Sotho is explicated and defined using three sets of binary oppositions : Left vs Right, Up vs Down and Centre vs Sides.

The social organisation of these groups is explored to identify the common cultural pattern that is externally projected in architectural space and which,

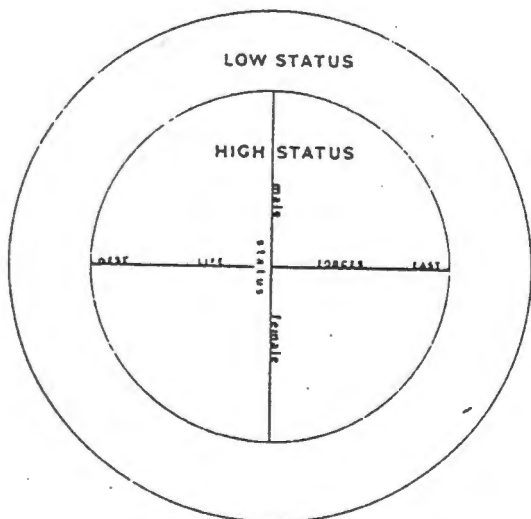
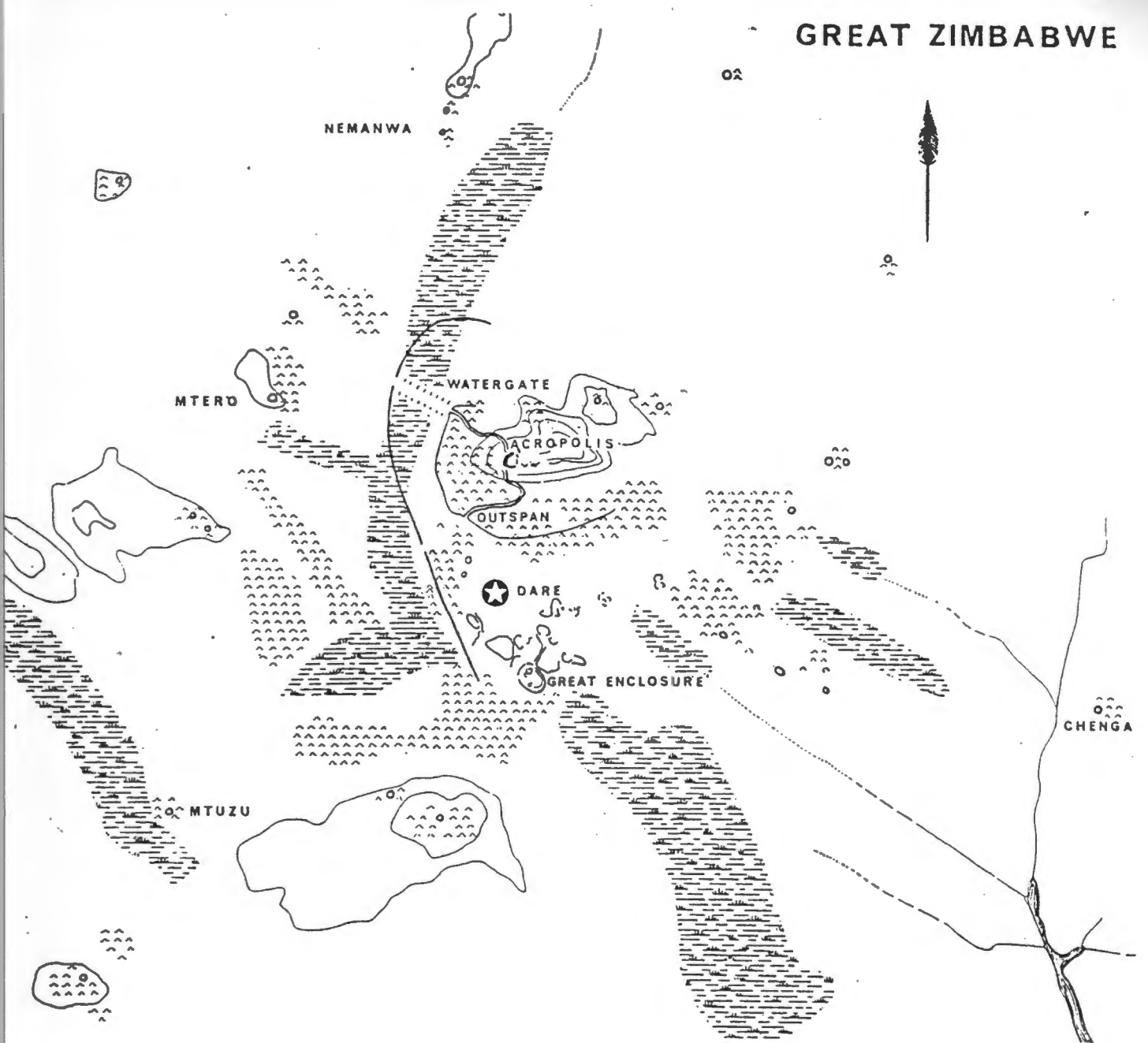
"... gives meaning to, and governs, their [homesteads'] physical arrangement. Indeed, the variations themselves help reveal the ordered nature of the underlying structure ... (Kuper, 1980: 15).

Using these oppositional sets, Kuper sets out to codify spatial patterns in huts and homesteads in an eloquently argued attempt to show how man-made space interlocks with other symbolic and social codes.

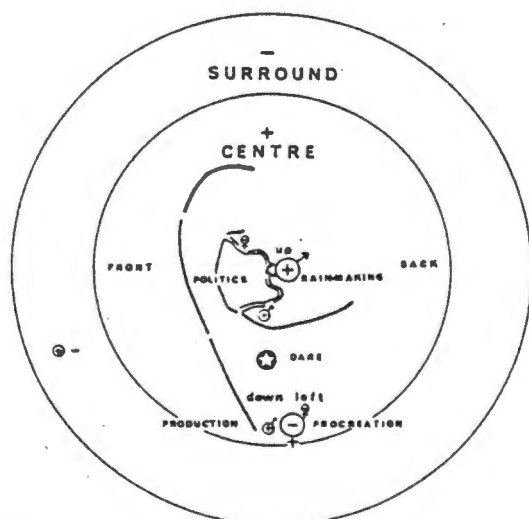
For example, in the Nguni homestead, the relative positions of the wives' huts are located according to seniority, the pattern of which follows the left/right opposition. This oppositional set is also expressed in the male/female sides within huts. Similarly, the centre/sides opposition finds expression in the way huts of kinsfolk are located in relation to one another. The up/down division is consistent with west/east directions, and, on sloping sites, finds expression in the positions of the 'great hut' and cattle kraal. This symbolic scheme, Kuper argues, coincides with a similar pattern found among the Sotho.

Finally, similarities in these conceptual structures are identified to suggest that, among Bantu-speakers south of the Limpopo, there exists a common, deep structure concerning the organisation of space.

This model has inspired archaeologists in their interpretation of southern African settlements dated to the last two millennia (Huffman, 1982). In a provocative and stimulating re-examination, the so-called 'expressive space' of the key site of Great Zimbabwe (Fig. 7) and its architecture has been systematically analysed using a cognitive model (Huffman, 1981).



(A) Life Forces and Status Model.



(B) Life Forces and Status dimensions.

Figure 7

Contemporary Cultural Codes That Structure the Organisation of Early Bantu Architecture

Source: Huffman, 1981

In this analysis, contemporary Shona values, myths, social patterns and world view are integrated in a model which is then applied to the material remains of the settlement in an argument which assumes historical and ethnographic continuity. The spatial arrangement of architectural features, their meaning and function, are explained using a two-dimensional model which articulates and elaborates 'life-forces' and 'status'. Along these dimensional axes are applied, in typical structuralist form, binary oppositional categories such as east/west, male/female, centre/periphery, up/down, and so on, which summarise the values, experiences and behavioural pattern in topological form.

A further contribution to the analysis of 'expressive space' is Hardie's investigation of the Tswana's house and settlement form (Hardie, 1985; see also Hardie 1980 and 1982 in which the same theme is explored). In this study, the spatial expression of cultural concepts, such as cosmology, social status and political organisation are detailed. By examining architectural and settlement morphology historically and in present-day towns and buildings, Hardie is able to identify those cultural ideas that have endured over time as well as those which have undergone transformation.

In this way, following Rapoport (1969), the core cultural influences on built form are viewed in a context of transformation and continuity. Using case studies from Botswana, Hardie attempts to show that when cultural values change so too does the material 'expression' (Hardie, 1985: 30; cf. Glassie, 1975).

In an archaeological model which is culturally less specific, Parkington has proposed the existence of a universal 'underlying structure' of hunter-gatherer groups in the western Cape in an analysis of man-environment interactions of the late Stone Age (Parkington, 1972: 224). Patterns of behaviour, technology, seasonal mobility and the exploitation of natural resources are probed in an effort to suggest that different groups and communities behave as if there is a set of rules which interact to form a common structure or code. This universal or prototype is transformed unselfconsciously into a particular form when each individual band of hunter-gatherers interacts with the environmental setting in which it is located, thereby generating unique patterns of land use and habitation.

The process of social interaction in Swaziland is explored by Hilda Kuper by identifying it empirically through political disputes over particular sites, and symbolically in the arrangement and layout of sites (Kuper, 1972: 411-425; cf. Kuper, 1946, in which the formal characteristics of Swazi architecture are emphasised). Using this model, the spatial configuration of settlement is interpreted through an examination of the social values and functions that are 'mapped' into the features and relations among houses, cattle byres and whole villages, which are termed 'key structures'.

Although these key structures are physical, tangible objects, they are (socially) less important than the timeless, enduring and idealised mental blueprint that, as a model, guides their layout.

Topologically less specific than the work by Huffman and Adam Kuper, this investigation into Swazi space is nevertheless similar, although the intentions and approach differ.

2.5 Socio-Spatial Relations : Towards a Relevant Environmental

Theory

Underlying all of these studies is an attempt to understand the behavioural and cultural features behind the formal characteristics of architectural and settlement morphology. The emphasis on the cultural or 'symbolic dimension' has provided a major new contribution to the understanding of settlements in southern Africa. These writings by no means exhaust the many analyses present in the archaeological, anthropological and architectural literature that deal with social systems elsewhere in the world, but they do indicate the central concerns and focus of such-like studies (for example see Kent, 1984).

A common concern unites all these research endeavours. It is an attempt to integrate holistically material culture - in this case architecture - with patterns of behaviour and culture. A theoretical description emerges from these writings which deals speculatively at least with the interpenetration of society and the built environment. It is possible to abstract and represent diagrammatically the essential features of this relationship (see Fig. 8).

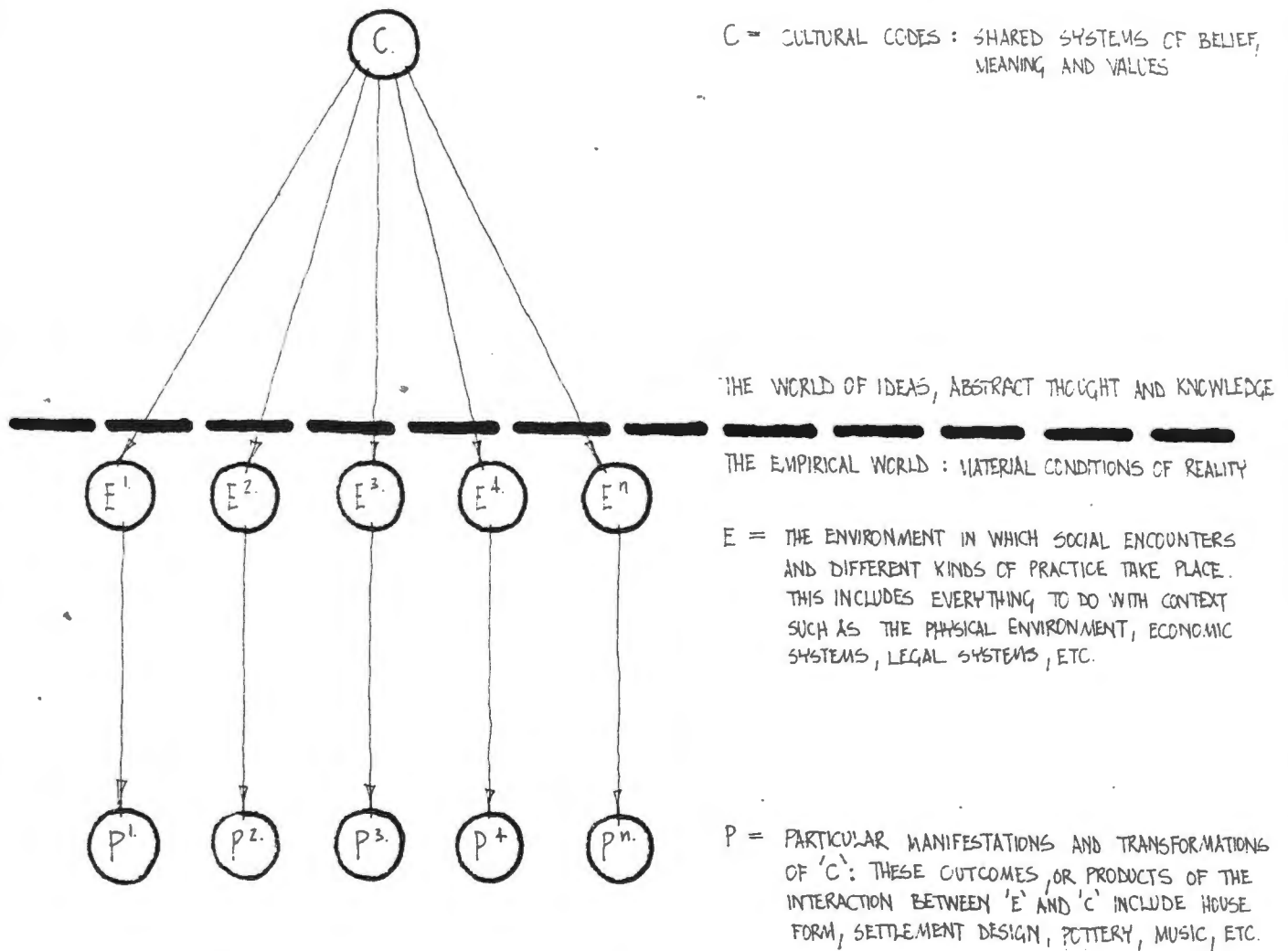


Figure 8
Model of the Interrelationship Between Culture, Environment and Material Culture

Source: Adapted from Parkington, Huffman, Kuper, Kuper and others

The results of the research carried out by these researchers, in particular the work of Parkington, Huffman and Adam Kuper, refer to three levels which constitute the holistic integration of culture, human action and architecture. Thus, in terms of this model, culture, as a shared system of meaning and values, informs social action which, as goal-directed practices within the system of meaning, shapes social products and vice versa (cf. Kent 1984: 12). A useful framework for studying the design and use of designer/occupant environments is provided by this model which, through the clarification of increasing levels of abstraction, permits systematic enquiry into the problems surrounding the ideological distance between designers and users.

This relationship has been clarified by means of emphasising cultural structures or 'codes', which control the nature of the interaction between form and social action. Here, an important characteristic is the emphasis on similarities between communities in the identification of codes (e.g. Adam Kuper, 1980). Yet, underlying these codes is an implied timeless quality that assumes cultural continuity and a changeless society where social transformation is denied.

Very little attempt has been made to integrate systematically time as a crucial dimension of socio-environmental intersections, although Huffman does allow for changes in the external manifestation of the underlying structure (Huffman, 1982). There is consequently a danger in the analysis of architectural precedent of perpetuating the myth of the 'ethnographic present' - precisely the tenets upon which

ethnically biased analyses are based (Hall, 1984a: 76). In addition, the stress laid upon codes has shifted attention away from the constraints and enabling characteristics of the built environment, the day-to-day and longer term requirements for living, and the need to accommodate social relations, as important criteria that contribute to the design of environments.

A new form of enquiry, relevant to settlement studies and to southern Africa in particular, is therefore needed so that the social meaning of buildings may be better understood. Broadly, this would imply the following assumptions :

- that built form can provide information on the society that produces it;
- that the template for settlement morphology goes beyond the mere explication of function and the symbolic dimension;
- that the organising principles of form - and not only the external appearances - become the main objectives of the enquiry.

Using these assumptions as guidelines, the structures that characterise the relation between the built environment and society may be more fully explored towards demonstrating the relationship between social form and built form. Furthermore, by examining how

people conceptualise, produce and use their built environments, an understanding of the framework which structures environmental knowledge may be advanced. In this way the problems surrounding the lack of common knowledge as well as those which haunt architectural theory may be approached.

In other words, there is the need for a new approach to the way buildings and settlements are observed, described and analysed - one which sees built form as a crucial part of the establishment, maintenance and transformation of social ideas, and influential in the structuring of social relationships. Underlying this approach is a conceptualisation of the relationship between built form and society as an interdependent and necessary one (Hillier and Hanson, 1983, 1984).

Thus, in contradistinction to architectural theories and modes of analysis which are preoccupied with representation, this conceptualisation rests on the assumption that form is the concrete realisation of society and not merely its 'expression'. Largely as a result of prevailing positivist or empiricist paradigms in much architectural and social theory the relation between society and built form is seen as one where the two phenomena are mutually exclusive - the one 'determining' the other (Hillier and Leaman, 1973a).

The conceptual separation of society and environment, and the reciprocal relation that appears to hold between buildings and other artefacts, together point to the problem of a lack of common knowledge

as a deep and fundamental issue that needs to be understood in terms of the pervasive problematic of the society-environment relationship. Put slightly differently, this means that in order to improve understanding in the environmental design disciplines, the conception of the nature of socio-environmental relations needs to be reconstituted as an integrated whole.

In order to further these objectives, the conceptual separation of society and built form, which apparently obstructs the development of architectural theory, needs to be examined critically. In terms of the promise held out by that understanding a relevant theory of architecture must integrate society and built form so that the latter is not merely seen to reflect the former.

2.6 Summing Up

The discussion in this chapter has presented a review of some recurrent interpretations of African traditional architecture in southern Africa. Two approaches stand out as dominant in this body of literature:

- (a) The formalist approach stresses technology and the external appearances of buildings. Social meaning is seen to be intrinsic to built form which emerges under the influence of cultural 'forces'.

- (b) The structuralist approach emphasises cultural codes that builders employ in the design and construction of buildings.

Each approach thus largely downplays what the other stresses. A dual methodological problem is therefore presented since the morphology of buildings is inherently inseparable from its meaning and the way it is used. Consequently, a fundamental change of theoretical perspective is needed. For while environmental professionals may have theoretical or conceptual problems in achieving an integration (or unity) of space and society, buildings and settlements achieve it in reality already. What is achieved is, in fact, the production of man-made space as the material constitution of society (see Hillier and Hanson, 1984).

In an attempt to develop a more relevant theory for environmental design, this achievement needs to be explored towards a more systematic and complete conceptual integration of society and space. Not only do buildings and settlements produce space generally, they produce particular and real relations among different kinds of spaces that give society its coherence.

In order to discuss the nature of socio-spatial relations, its conceptual cleavages and analytical potentials, it is to the examination of space - how it is integrated with social ideas and the wider condition of existence - that this discussion now turns.

CHAPTER 3SOCIAL RELATIONS AND SPACE

The intellectual makeup and the conceptions of space within the doctrines of modernist architecture, as well as in contemporary post-modern positions, contain within them a key assumption that built form is connected with society in a simple one-to-one relationship. This connection, formulated around functional and formal criteria and translated into spatial terms, reversed the commonly held belief that space was something negative - the in-between stuff defined by material surfaces - to declare space the essential component of architecture.

No longer did the decoration and embellishment of the surfaces matter. Architecture, in the spirit of the new scientific, empiricist age, became the expression of abstracted ideas in which the very notion of style was rejected. Interpreted as non-physical, abstract space, architecture (and urban design) became the spatial reflection of the new society - a spatial art with society as its idea. Using industrial technology and construction methods, modernists materialised this idea in forms which may now be artefacts of history, but their way of thinking, ideas and assumptions persist in present-day practices using different modes of expression: Society, that intangible mysterious entity, is still 'out there', being reflected in

the changing forms and objects designed within the central tenets and legacies of the modernist position.

The purpose of this chapter is to survey ideas and notions of space in an attempt to develop a clearer insight into the conceptual uncoupling of, and efforts to recombine, society and space. This objective will perhaps best be achieved by focussing on the production of space and by examining the history of ideas about space, developed primarily by philosophers influenced by mathematics and physics, who in turn have influenced social and environmental theories. An attempt will therefore be made to demonstrate that the problem of common environmental knowledge is mostly a consequence of the conceptual separation of society and space - a problem of the way in which the social production of architectural space is conceived.

The argument rests on the assumption that the relation between society and space, especially insofar as the environmental disciplines are concerned, is poorly understood. Social dimensions of spatial form as well as the spatial dimensions of social organisation are not systematically stated. Consequently, theoretical speculation about socio-spatial order tends to abstract social systems, conceptually separating space. This appears to be largely a feature of western science and industrialised societies. (For example, see Harvey (1973) for a critical analysis of relations between society, capitalist development and space.) Robert Sack has labelled this the 'civilised' conception of space (Sack, 1980: 177 *ff.*). Here, abstraction is central and because the conceptual fusion between

society and space is severed, space and society tend to take on separate conceptual existences.

In contradistinction, studies such as the one made by Thornton on a small, rural community in Tanzania, tend to show a lack of such speculation, and relations between the temporal, social and spatial dimensions are shown to be holistically bound together (Thornton 1980). Sack defines this as the "primitive" conception of space - all physical places have social meaning grounded in immediate experience (Sack, 1980: 170-176). Thus there is no abstract space beyond place and no physical setting beyond society. Society and space are consequently fused together into a united whole.

Questions about recombining society and space, about speculations concerning socio-spatial order - such as within the doctrines of the Modern Movement - and about the spatial distributions and configurations of social organisations, are widely and numerous covered in social history. Perhaps the best way of covering comprehensively the conceptual separation of society and space and influential attempts to link them would be to concentrate on space, the environment upon which and through which all activity occurs.

3.1 Nature and Space : Society and Production

Space pervades and establishes problems for numerous disciplines such as cosmology, physics, psychology, mathematics, logic, geography and

economics (Jammer, 1960; O'Keefe and Nadel, 1978; Davies, 1977). Interpreted in terms of human activity, space plays a crucial role. It brings to fore an ability to make sense of, and realise, more or less accurately, an individual's position in relation to the environment, other people and objects. Space is lived in, valued, explored, moved through and somewhat easily identified and described : the gap between two buildings; the place left behind in a parking bay once a motor vehicle has driven off; an area defined by the walls of a room; and so on.

These descriptions and identifications do not present much of a problem for analysis and are not difficult to understand. The problem lies in the taken-for-granted and unproblematic attitude underlying the concept of space itself, while it is in fact an obscure concept loaded with widely varying, differently formulated meanings.

The concern in this dissertation is with space produced by architectural form - the space of human activity. This distinguishes it from other treatments and meanings such as the focus on the nature of distance (Shreider, 1974), the neurological correlates of space perception (O'Keefe and Nadel, 1978), the evolution and development of spatial awareness in children (Piaget and Inhelder, 1956), the psychological or mental space in the study of the geography of perception (Gould and White, 1974), to mention but a few of the detailed and specific studies of aspects of space to have emerged recently. These will not be discussed in any great detail, although

there may well be overlaps with the treatment of space under consideration.

The following discussion attempts to clarify essential issues surrounding the philosophical basis of epistemological and metaphysical arguments that shape contemporary western-held comprehensions of space and socio-spatial relations. In order to achieve clarity it will be necessary to draw the distinction between universal or contextual space and created or man-made space which results from a process of production (cf. Hillier and Hanson, 1984: 66-67).

Implied here is a view of created space as a product that emerges out of the transformation of nature in a form that is designed to suit social purposes (see Whitehead 1920: 33). Before going on to a closer examination of the spatial context of the product of this transformation, it is necessary briefly to examine the concept of production in general. This is because, despite its abstract quality, the notion of production fuses together the material relation between nature and human beings, and in so-doing, provides a useful starting point for conceptually bridging the gap between space and society (cf. the 'sociological imagination' in Mills (1959) and 'spatial consciousness' in Harvey (1973)).

Marx described production as a process whereby the quality and form of nature is changed (Marx and Engels, 1950). Through labour, the producer alters the natural environment and materials 'furnished by

nature', so that in producing useful artefacts, human needs are fulfilled. Thus labour, as a regulating and controlling device, mediates between nature and human beings. It is the means of acting upon nature in order to appropriate from it some form of value.

Furthermore, this process of interaction, while producing useful artefacts, also alters the state of human consciousness of the producer (Hamilton, 1974: 21). In this way, the emergence of ideas concerning needs and the means to satisfy them (as well as problems associated with these imperatives), such as by planning, occurs through a process of productive activity (cf. Berger and Luckmann, 1966).

In order to produce, people participating in the process of production need to be brought into particular relationships with one another so that the appropriation and distribution of products may be controlled (Sefali, 1978: 10). Mechanisms of control in the form of social relations of production thereby order or intervene in the balance of man-nature relations and take on various forms: gender division of labour, class distinctions, social institutions such as professional bodies, social organisations in the form of households, and so on.

In this way, these controlling mechanisms mediate and alter the social relation with nature. No longer does man, as a natural or biological organism, simply slot into and fit an equally natural environment. This is because, unlike animals, man's relation with nature is

mediated through social devices as the necessary means of controlling relations between individuals and groups.

Thus, the production of social control through the interaction with nature develops concretely by the 'production of space' (Lefebvre, 1976a; Soja, 1980). In other words, unless space is conceptualised differently and viewed separately from nature, the social production of space, and spatial relations in line with social relations of control, are a logical corollary of the production of nature. This assumption does not appear unreasonable since, from a materialist perspective,

"... the organization, use and meaning of space is a product of social translation, transformation and experience. Socially produced space is a created structure comparable to other social constructions resulting from the transformation of given conditions inherent in life-on-earth ..." (Soja, 1980: 210; my emphasis).

Created space and social organisation are consequently assumed to contain each other because of, and not in spite of, production and the transformation of given conditions or nature. The problem is not so much with simply asserting the idea of this mutual containment, but with demonstrating it. Building on the argument developed thus far, one way of demonstrating the unity of society and space would be to focus on the idea of the social production of space as a particular aspect of production in general.

Here, it is necessary to formulate a clear understanding of socially created space and to distinguish it from the other treatments space

receives. Underlying this necessity is an ontological argument that addresses a seemingly commonsense question, 'What is space?'.
Furthermore, from this question arise several related questions. Is space a container that receives and holds objects of the world? Is it possible that these objects could exist without space? Conversely, could space exist without the existence of objects? Is space an invention of the mind? Or is it a characteristic of the universe? and so on (cf. O'Keefe and Nadel, 1978).

The approach adopted in this discussion develops from the point of view that once it is understood what socially produced space is and ways of representing it have been discovered, then it becomes possible to examine and understand more accurately the social dimension of architectural form, by wedding together concepts of social behaviour and space. (The reader is referred to Chapters 4 and 5 where techniques for theoretically conjoining behaviour and space are discussed.)

This bias de-emphasises the immense philosophical breadth associated with concepts of space and allows the question 'what is space?' to be replaced and sharpened by the more specific question, 'in what way and why do different social organisations and practices produce and use distinctly different configurations of architectural space?'.
The problem then becomes one of understanding architectural form in terms of relations between spatial arrangements and social organisation. This in turn requires a full comprehension of how

"daily social practice solves with consummate ease seemingly deep philosophical mysteries concerning the nature of space and the relationship between social processes and spatial forms." (Harvey, 1973: 14).

3.2 Society and Space: Towards a Theoretical Understanding of Social Space

Unlike the philosophical treatment space receives in the physical sciences, the development of a clear idea of 'social space' - or the meaning of space in relation to the society that produces it - is difficult. (The term 'social space' stems from Durkheim who argued that it was different and separate from physical space (Durkheim, 1964).) However, space in the physical sciences has long been the object of considerable investigation, and so it is perhaps appropriate to turn to these studies in order to understand the origins, as well as the nature, of the conceptions of space in present day social thought. In this way the conceptual separation of society and space may best be illustrated.

A hallmark of scientific thought is its conceptual separation, classification and analysis of empirical data, followed by a process of synthesising these facts and relationships. Scientific thought about space follows the same pattern (Sack, 1980: 55). The scientific conception of space is centred upon how its characteristics, subject to laws and theories, are related to categories of matter and time.

Historically, space has nearly always been viewed in relation to nature. Epistemologists and metaphysicians have dwelt on questions concerning the idea and characteristics of its existence in the universe, from the sub-atomic to the astronomic scale (Jammer, 1960; Capek, 1976). Recurrent has been an emphasis on two antithetical themes or conceptions of space : relative space and absolute space. Within each of these two controversial ideas is a different attitude towards material objects, nature and the relationship between them.

Newton's concept of absolute space embodies the notion of space as an emptiness - a vast universal framework or container which exists independently of objects and within which exists all reality (Jammer, 1960: 93 ff.). Movement of bodies and events occur within this framework but do not alter its condition nor the relationship of other objects to the framework. In short, absolute space means that the continuum called space cannot be altered or changed by energy or matter and that its rigid structure is totally immune to external influence.

In order to make clear his conception of absolute space, Newton also speculated on the existence of a 'relative space' which could be defined only in relation to matter. This conceptual scheme of space was elaborated by Newton in his Philosophiae naturalis principia mathematica :

"I do not define time, space, place, and motion as being well known to all. Only I must observe, that the common people conceive those quantities under no other

notions but from the relation they bear to sensible objects. And thence arise certain prejudices, for the removing of which it will be convenient to distinguish them into absolute and relative, true and apparent, mathematical and common ...

Absolute space in its own nature, without relation to anything external, remains always similar and immovable. Relative space is some movable dimension or measure of the absolute spaces; which our senses determine by its position to bodies and which is commonly taken for immovable space; such is the dimension of a subterraneous, an aerial, or celestial space, determined by its position in respect to the earth." (Jammer, 1960: 97).

The 'common' view of space in contemporary industrialised societies persists, in terms of Newtonian concepts, as a given universal for the existence of all matter (Sack, 1980; Soja, 1980). There is an almost uncritical, unproblematic acceptance of absolute space which is consistently drawn upon in the formulation of ideas concerning the world as a frame of reference or a co-ordinate system for events and objects.

In contrast, the conception of relative space is one where space is not independent of the existence of objects. Space is defined as the product of the relationship between specific items of matter which are themselves inherently non-spatial (O'Keefe and Nadel, 1978: 7).

Thus, the composition of matter determines spatial relations - 'a dimension or measure of the absolute spaces'.

It is this view that tended to prevail prior to, and shortly after Newton's distinction between these two concepts was made clear.

Archaeological and anthropological research suggests that previous

societies did not abstract the concept of space from the experience of space (Jammer, 1960: 5). However, since Newton, and despite Einstein's relativity theory which, in the physical sciences, has had the effect of restating the priority of the relative concept of space, the absolute treatment has prevailed in social thought (Sack, 1980). Reasons for this are complex, for while there is no simple translation from concepts of space in physics to social theory, the relative concept underlying much twentieth century physics is distinctly different to pre-Newtonian relativity of space (cf. van de Ven, 1978). Reasons for this centre upon the degree of abstraction that characterises these two concepts and will be dealt with later in this chapter.

In order to understand these concepts and the differences between them more fully, as well as to comprehend their influences on social theory and architectural design, it is necessary to review the history of these ideas, particularly as represented by Jammer, Sack, Capek and van de Ven.

Two related themes emerge upon examining the historical development of the conceptualisation of space. In the first place, the relationship between space and nature is central, and, secondly, the nature of the history of this relationship tends progressively towards increasing abstraction.

As pointed out earlier in this chapter, Sack's so-called 'primitive' conception of space characterises the relationship between meaning, space, nature and society as a particularly holistic one :

"Both private ownership of land and the territorial state (in twentieth-century capitalist systems) contrast with societal views of space in primitive societies. In the primitive view, land is not a thing that can be cut into pieces and sold as parcels. Land is not a piece of space within a larger spatial system. On the contrary, it is seen in terms of social relations. The people, as part of nature, are intimately linked to the land. To belong to a territory or a place is a social concept which requires first and foremost belonging to a societal unit. The land itself is in the possession of the group as a whole. It is not privately partitioned and owned. Moreover, it is alive with the spirits and history of the people, and places on it are sacred."
(Sack, 1980: 22).

Here, the connectedness between man and his surroundings establishes a close, intimate bond with place - the physical and qualitative dimensions of human experience. In this sense, space, as a generalised abstraction from unique places and events, does not yet exist: Nor does time. For a parallel discussion on the 'primitive' concept of time see Pierre Bourdieu's essay on Algerian peasants, entitled 'Simple Reproduction and Cyclical Time' (Bourdieu, 1979).

The notion that being is place-bound lies at the heart of this concrete conception of space and time. Social space and physical space are synonymous, and awareness of space and time extends beyond this conception only insofar as it flows out of immediate and goal oriented human practice. Thus :

"Ethnology shows us that primitive tribes usually are gifted with an extraordinarily sharp perception of

space. A native of these tribes has an eye for all the nicest details of his environment. He is extremely sensitive to every change in the position of the common objects of his surroundings. Even under very difficult circumstances he will be able to find his way. When rowing or sailing he follows with the greatest accuracy all the turns of the river that he goes up and down. But upon closer examination we discover to our surprise that in spite of this facility there seems to be a strange lack in his apprehension of space. If you ask him to give you a general description, a delineation of the course of the river he is not able to do so. If you wish him to draw a map of the river and its various turns he seems not even able to understand your question. Here we grasp very distinctly the difference between the concrete and the abstract apprehension of space and spatial relations. The native is perfectly acquainted with the course of the river, but this acquaintance is very far from what we might call knowledge in an abstract, a theoretical sense." (Cassirer, 1944: 45-46).

The idea of space, insofar as the space of human activity and movement is concerned, thus remains inseparable from the events, experiences and time that constitute that activity. The conceptual cleavage developed only when the earliest Greeks began to abstract and enunciate patterns of thought which no longer emerged as a consequence of, or were tied directly to, social practice (Jammer, 1960: 5-7). As a subject of philosophical enquiry, space was still confounded and linked conceptually to matter. However,

"the Pythagoreans, or some of them, certainly identified 'air' with the void. This is the beginning, but no more than the beginning, of the conception of abstract space or extension" (Burnet in Jammer, 1960: 7).

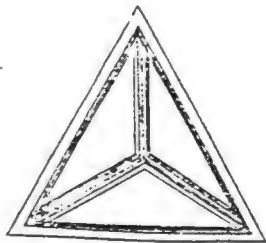
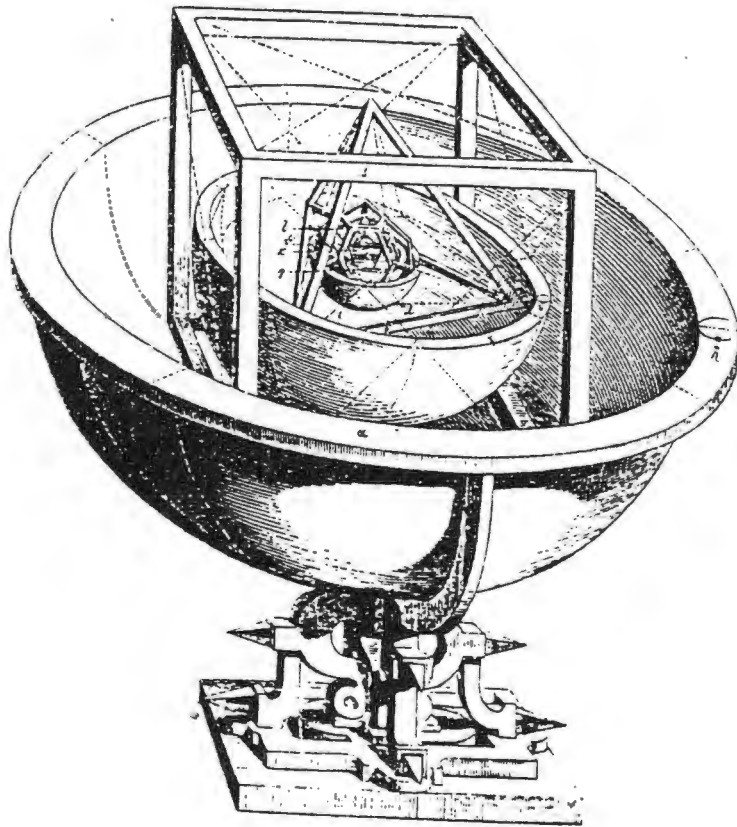
Similarly, the Pythagoreans were responsible for accrediting numbers with a sort of spatiality, further assigning to space a more abstract conceptual tone, yet because numbers refer to the discreteness of

objects by virtue of being separated by the void, space retains its link with matter. It is only later with the theories of Plato and Aristotle as well as the Greek Atomists, that space begins to take on an independent status, distinguishable from matter :

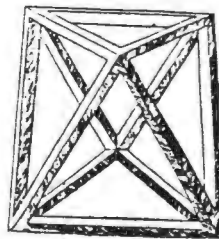
"The first idea of space and matter as belonging to different categories is to be found in Gorgias. Gorgias first proves that space cannot be infinite. For if the existent were infinite, it would be nowhere. For were it anywhere, that wherein it would be, would be different from it, and therefore the existent, encompassed by something, ceases to be infinite; for the encompassing is larger than the encompassed, and nothing can be larger than the infinite; therefore, the infinite is not anywhere. Nor on the other hand, can it be encompassed by itself. For in that case, that wherein it is found would be identical with that which is found therein, and the existent would become two things at a time, space and matter; but this is impossible. The impossibility of the existence of the infinite excludes the possibility of infinite space." (Jammer, 1960: 11-12).

Building on these ideas, Plato explored the idea that space was an undifferentiated material substratum, thereby reducing all matter to space. In this way Plato not only asserted the differential characteristics between various kinds of space and matter but also attempted to define them, eventually identifying the world of physical bodies with the universe of geometric forms - or, the 'Platonic solids' (van de Ven, 1978: 9-11). Thus Plato conceived the elements as consisting of definite spatial forms : To air that of an octahedron, water the icosahedron, fire the pyramid and to earth the cube (see Fig. 9).

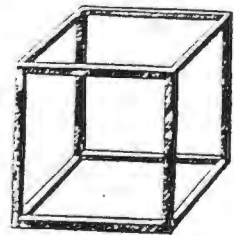
Aristotle took a different view. He propounded the idea that space was a kind of force-field where every object has a position which it



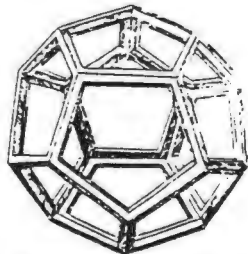
Fire: the Pyramid (4 planes)



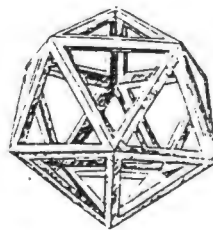
Air: Octahedron (8 planes)



Earth: Cube (6 planes)



Cosmos: Dodecahedron (12 planes)



Water: Icosahedron (20 planes)

Figure 9
Johan Kepler, 1571-1630. The Platonic Solids That
Compose the Universe

occupies as a distinguishable 'place' (Capek, 1976: xx). In this way, space, as a containing receptacle, is defined as a reference system which

"is conceived as the sum total of all places occupied by bodies, and 'place' (topos), conversely, is conceived as that part of space whose limits coincide with the limits of the occupying body" (Jammer, 1960: 15).

Here, the important aspect to note is not so much the different approaches to the idea of space which Plato and Aristotle adopted, but more the similarity surrounding the conceptual connectedness between space and matter. Both philosophers were in agreement with this relationship. And geometry provided the conceptual tool for probing, defining and confirming the link between space and matter (Jammer, 1960). Euclidean geometry, confined to the plane, is a description of the features that define space, at the same time as it is an abstraction from real physical objects.

These related prototypical themes - Plato's undifferentiated material substratum and geometrical solids, and Aristotle's theory of adjacent places in a containing receptacle - survived alongside each other, undergoing slight changes and various interpretations, thereby giving rise to numerous other theories, disputes and debates among philosophers concerned with space, matter and being in the universe (van de Ven, 1978: xi-xv).

Theological thinking, centred upon man's place in the universe, strongly influenced notions of space in the sciences and philosophy

until the late eighteenth century. Jammer traces the development of the effect of religious ideas on physical theories of space from the rise of Greek science to the Newtonian era (Jammer, 1960: 25 ff.). Space, during the rise of European medieval scholasticism, came to be identified with the theological vision of an omnipresent God. Coupled to the idea that God was light, space took on divine characteristics which were reflected in the design of 12th and 13th century Gothic cathedrals (see Fig. 10) - the material expressions of the scholastic idea of God which, as space and light, reached vertically towards the heavens (Panofsky, 1957).

Platonic and Aristotelean theories of space stood their ground until during the 16th century when ideas surrounding concepts of place and the finiteness of the Cosmos began to fall from grace (van de Ven, 1978: 29). Copernicus argued in 1543 that the earth itself was in motion and that it was not the outer circle of the universe that turned; earth was no longer the static centre of the Cosmos. This idea challenged theological thinking and ecclesiastical figureheads who were not convinced until Galileo Galilei's discoveries nearly a century after Copernicus. Based on telescopic observations, Galilei confirmed that the sun was at the centre of the universe, and the way towards a notion of absolute space began to be formulated.

The 1700s saw the refinement of several ideas surrounding the nature of space and matter. One of the most dominant and influential was the concept of the 'extension' of reality or matter, which according to Descartes, a French philosopher, was synonymous with space (Jammer,

1960: 40). The development of an idea of Cartesian space - a geometric concept of three-dimensional space - together with the notion of extension in physical space, provided at least some of the inspiration for the design of Baroque towns (Fig. 11) and buildings (cf. Norberg-Schulz, 1971).

Newton's concept of absolute space and its relationship to a relative space was clarified during the late 1700s and had the effect of bringing together as it were, into a single abstraction, all these various concepts. Thus space became a thing itself, finally abstracted from matter and placed in the 'front line' of the philosophical enquiry into the nature of the universe.

Although this notion endured for nearly two centuries, it did not go unchallenged. For example, in the letters that passed between them, Leibniz and Clark intensely debated the merits of absolute and relative concepts of space, with Clark in favour and Leibniz opposed to the absolute theory (O'Keefe and Nadel, 1978: 10-11). Controversy raged over Newtonian concepts as the rival Cartesian theories began to lose popularity and succumbed to the strength of Newton's propositions.

Kant, on the other hand, took a compromising stand between Leibniz and Newton. His resolution was grounded in an assumption that space was indeed absolute but that this was an organising principle, or a concept in the mind, and not a property of the material world. In other words, space was not a reality that could be perceived, but was

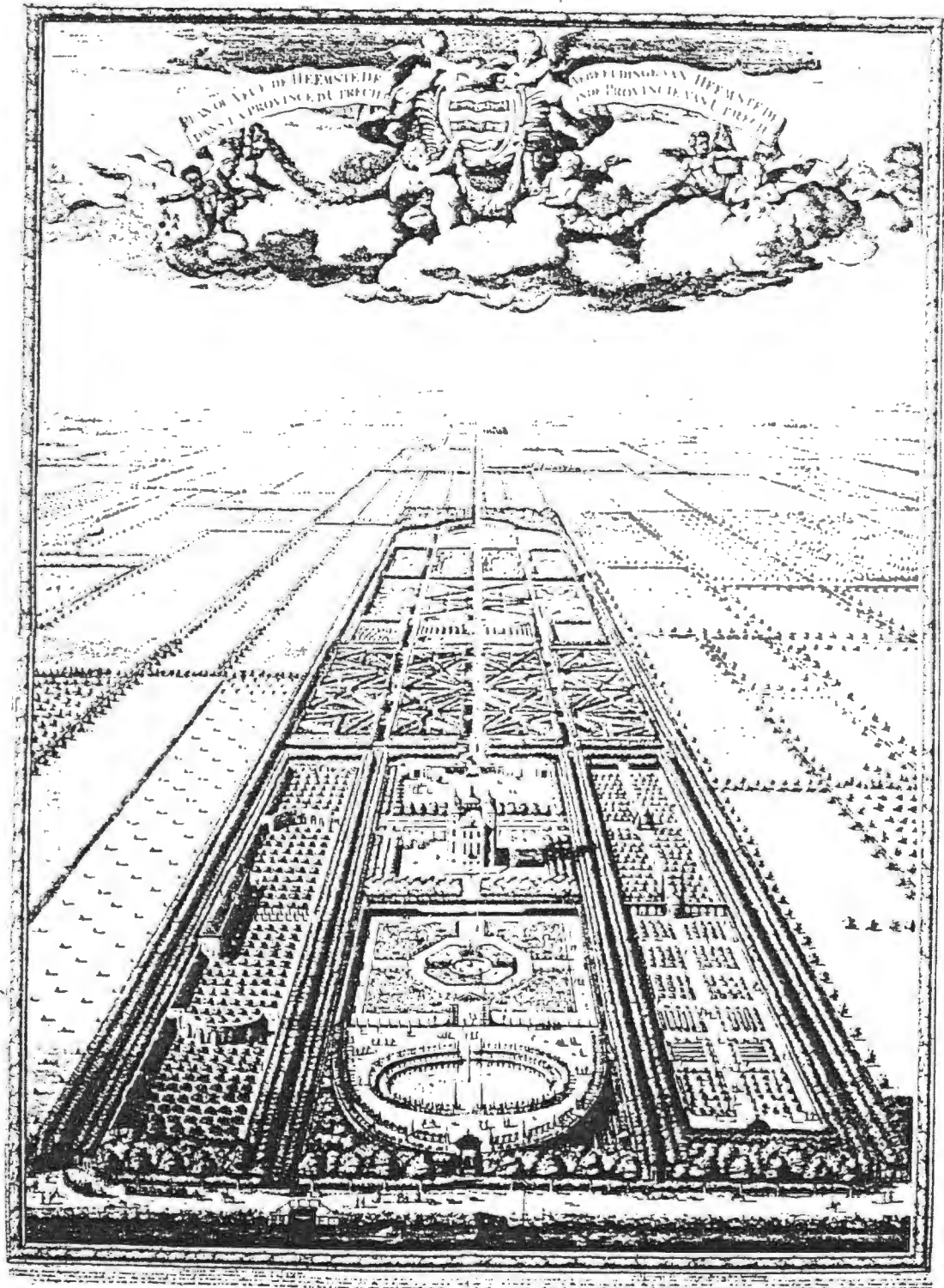


Figure 11
Extension and the Cartesian Concept of
Space in Reality

Source: Van de Ven, 1978: Engraving by D. Stoopendaal of Heemstede, Utrecht

a way of perceiving and making sense of the universe. Relative space, argued Kant, was derived from the interaction of matter by virtue of Newtonian forces :

"It is easily proved that there would be no space and no extension if substances had no force whereby they can act outside themselves. For without a force of this kind there is no connection, without this connection no order, and without this order no space." (Kant in Handyside, 1928).

Abstracted physical space opened up the possibility of defining other kinds of space that were different to it. By assigning to physical space an absolutist status a conceptual 'space' remained - to be filled eventually by concepts such as 'symbolic space', 'perceptual space', 'mental space', etc. (Cassirer, 1944; Sack, 1980; cf. Harvey, 1973: 30). Referring to Sack and Cassirer, it appears that for as long as the relation between matter and space is a blurred one, then human activity could not be viewed separately from physical space. Therefore, given that the space of human action is part of the physical or material world of objects and events that define that activity, the absolute concept of space could not logically permit this to be defined as a social space - its independence of the material would prevent this. The purity of absolute space and its near-perfect abstraction, imbued it with a sense of immunity, such that although all human activity occurred in it, it could remain objectively removed from the spatial dimension of social action.

It was only with the conceptual separation of relative space from its absolute counterpart that the means for prising apart social space

from physical space was established (Harvey, 1973: 30). In Lefebvre's terms, the resultant social space emerges in relation to a socially produced 'second nature' and not to an independent 'first nature', or absolute space (Lefebvre, 1976a). Just as Newtonian relative space results conceptually as a category of absolute space, so does social space emerge as a related part of socially created physical space. For the idea of social space, this probably marks the origin of its detached status in social theory (cf. Durkheim, 1964; Buttner, 1969).

The construction of a concept of social space has thus emerged largely under the influence of scientific concepts of space, at least since Newton, as the illustration of absolute space has shown. However, with the later concept of Einsteinian relativity and the emphasis on relative space, it could be argued that the process of increased abstraction had been reversed. Yet underlying the theory of relativity is a far more profound abstraction, especially as this affects geometry and its linking function between space and matter. Jammer explains:

"space, no longer an absolute entity, retained one property in common with such an entity : it was Euclidean in nature. Even in the theory of special relativity, the space-time continuum by which every observer identifies the events in his physical world was held to be Euclidean ... The question whether the space of experience was Euclidean or not was already a subject of discussion before the rise of general relativity. To Newton and his immediate successors, with no alternative before them, absolute space was naturally thought to be Euclidean. The discovery of non-Euclidean geometry led to the elimination of this last traditional characteristic of space, and modern physics came finally to base its conception of space

upon the Riemann notion of an n-dimensional manifold" (Jammer, 1960: 143).

Later, with Einstein's general theory of relativity, published in 1916, the concept of space, or space-time, as an 'n-dimensional manifold' developed into a mathematical relationship (van de Ven, 1978: 44-45). Physical space was finally superceded by a mathematical space - a complete abstraction beyond absolute space, beyond human experience. Reality was ultimately reduced to a structure, the description of which could only be retrieved mathematically.

This marks a qualitative change in the progression from Sack's 'primitive' space to a highly developed and sophisticated abstract space totally removed from matter. Whereas pre-Newtonian space was at the same time both social and physical, the concept of space which followed Einstein is profoundly mathematical and extremely abstract.

The mathematization of space, or the abstract n-dimensional spaces of the physical sciences, however, does not bear any resemblance at all to contemporary social space: The two concepts are mutually exclusive, regardless of what the historical relationship between them has been. Space in the sciences attempts to abstract from objects and social activity while space in social thought is generally held to be the setting for that action (cf. Sack, 1980).

As has been suggested earlier, the emergence of a separate social space lies in the Newtonian conceptual separation of absolute and

relative space. In line with Newton's absolute space, reality, in the form of physical objects and events, could be viewed as the natural format of physical space. On the other hand, social space could be viewed merely as an aspect of absolute space in which it exists - its relativity being a product, or dimension, of the social relations of production that characterise the society that creates it at a particular moment in time.

Thus the social space referred to by Durkheim, and the conceptual distinction that separates it from physical space, emerges as a feature of the production of nature. Once society is separated from nature, social space can be conceptually distinguished from the 'given conditions' on earth in which nature and physical space are synonymous. In this sense, social space appears to have metaphorical meaning in that society is already conceptually separated from nature. What mathematical space does for representing and interpreting the field of natural phenomena, social space, as an abstract field for human action, achieves for society. The interpretation of society in social thought becomes a metaphor for relating it to its spatial dimension.

3.3 Socio-Spatial Relations: Architecture and the Spatiality of Social Organisation

If architecture is a product of social processes then it is necessary to examine it in relation to the argument surrounding concepts of space presented so far. Two strands of the argument stand out.

Firstly, scientific understanding and concepts of space have greatly influenced man's social grasp of space and society's relation to it. Secondly, within these ideas is an implicit domination of absolute space.

Space that results from architectural design is obviously physical space - connected rooms, passages, courtyards, and so on. It is also more than natural space, in that, in addition to being a bounded piece of natural space and therefore separate from it, it can also be socially defined, the meaning of which may relate to cultural values and relationships (see, for example, the analysis of space in village layouts in relation to mythology by Levi-Strauss (1963)).

Architectural design and architects have therefore to understand and deal effectively with not one kind of space but two apparently contradictory concepts of space : physical space and social space. As socially relative patterns of production, consumption and architectural design come to be identified within absolute concepts of space, so does the relation between physical and social space emerge as a problem, resulting in the possibility to make detached interpretations on their linkages and a more confused meaning of physical space. In other words, in that architectural theory has historically and philosophically drawn on the debates surrounding the relation between matter and space, it has been unable to escape the separation and abstraction inherent in the formulated concepts of space, nature, society and their interrelationships.

For many environmental professionals the implicit, taken-for-granted methodological positivism, and the conceptual separation or dualisms* such as between man/environment, nature/society, object/subject, etc. present no problem for architectural design: Since these dualisms are more paradigmatic than theoretical, no problem is perceived. As a result, social space/physical space relations are dualistically perceived and no contradiction between them is identified.

Architectural space is simply given on the one side, society on the other. What architectural theory does is speculate on the formal and material implications of their 'interaction'. Hence, for example, the notion that somehow there had to be a relation between society and architecture, became an important principle in not only the Modernist tradition but also in architectural movements preceding it, such as the romanticism of Morris and Ruskin (Pevsner, 1960).

Although architectural design has been wholly meshed into a positivist paradigm, there have been attempts by theorists and practitioners critically to review and reconstitute society-space relationships. As was noted in Chapter 2, the attempts by some architects to advance from modernism, coupled with the debates surrounding western life in the 1960s gave rise to much critical interest in the nature, form and meaning of urbanism and modern culture, including architecture. At the heart of this criticism was the conceptual separation of society and space. The research tradition which focussed on non-western societies and which gained momentum at that time, helped pave the way

*In this investigation the terms dualism and dualistic are used to refer, generally, to a world permeated by the dichotomy between opposite principles. This is in contradistinction to the use of the term duality which is used in a monistic sense.

to a wider social concern among some architects. In this way perhaps, the adulation of 'anonymous' architecture without architects contributed to the introduction of a better understanding of architecture in relation to its wider social and historical contexts (Habermas, 1982: 14).

The projects of Guidoni, Oliver, Rapoport, et al. tried to demonstrate that architectural form was a complex social phenomenon into which various layers of symbolic meaning and social experience were woven. Within this tradition, social space was adopted and viewed as architectural, and in this way was appropriated so that the conceptual divide, which it helped to establish and confirm, could be confronted and solved. The concern was not to deny the objectivity of architectural space but to explain it as simultaneously objective and the result of social 'forces' (cf. Rapoport, 1969).

One positive consequence for present-day architectural theory as a result of this tradition, is that the understanding of the social dimensions of architectural space is considerably wider. The unity of society and space is, conceptually at least, closer to being asserted than has previously been recognised. However the problem remains - what to do about it theoretically and practically, and to go beyond mere assertion towards verification. It is difficult to realise this objective without first reviewing briefly an important conceptual problem surrounding the notion of architectural space itself: The fact that it is commonly perceived to reflect other cultural phenomena.

The idea that spatial arrangements 'reflect' social organisations or that there is some sort of 'interaction' between society and space, each confined to separate realms, immediately establishes a conceptual block which arrests further enquiry into socio-spatial unity in architecture. Underlying this dualistic view of the society-space relation is the absolute conception of space and a recurring determinism that persistently underpins a seemingly harmless question: 'How does architectural form express or mirror society or human behaviour?'. .

Tied to the traditional approach by the burden of this conceptual cleavage, architects and other environmental designers start off paradigmatically from a dualistic perception and definition of society and space; the relationship between them is superficially interrogated; new social or environmental metaphors are invented or chosen; formal 'solutions' to the 'problem' are prescribed and designed which 'reflect' the chosen metaphor; and the problem of a lack of common knowledge is perpetuated. It is here, at the level of the conceptualisation of society-space relations, that the idea of the production of space provides a useful clue for the way out of this seemingly impossible dilemma (see Lefebvre, 1976a and 1976b).

If the production of the consciousness of space, of knowledge of space and consequently of the environment, is bound up with the material production of space, then architectural design is a product that emerges out of social practice at the same time as it contributes to

the consciousness and knowledge of space. In this sense, the production of space and human practice - the agency responsible for the conceptual abstraction of space in the first place - are integrated at the level of space itself.

How then can socially produced space, in the form of buildings, be understood and interpreted so as to :

"demonstrate the homologous and dialectical relationship between the social and spatial structures arising from the mode of production and concretely expressed in particular social formations?" (Soja, 1980: 231).

- In other words, there is the need for an understanding of built form that takes cognisance of the common set of generative structures from which social and spatial systems emerge (homology), at the same time as recognising that each shapes and is shaped by the other (dialectic) in an interrelationship that may vary from society to society.

Suitable candidacy for a theoretical model that fits these requirements must obviously be sought. Excluding the 'space syntax' model developed by Bill Hillier, Julienne Hanson et al. in the Unit for Architectural Studies at University College, London, there is as yet no adequate theory that analyses and describes as objectively as is possible the relations between society and its spatial organisation (Hillier, Leaman, et al., 1976; Hillier, 1980; Hillier and Hanson, 1983; Hillier and Hanson, 1984). The reader is referred to Chapter 5 where this analytical model, together with its theoretical underpinnings, is outlined.

The literature surveyed in this dissertation so far indicates that there are probably two main reasons why no fully integrative technique exists for describing and investigating socio-spatial systems:

- There is no coherent means of describing, analysing and comparing as systematically as possible, the spatial designs that constitute buildings.
- There is no means of identifying and rigorously analysing those features of society that may relate to spatial organisation.

To a far lesser extent, the various 'built form and culture' studies advanced by Rapoport (1969; 1980; 1982; 1983a; 1983b) and King (1974; 1976; 1980) are relevant only in that they are aware of cultural 'determinants' in built form. They fail to specify how, and to what extent, these determinants shape spatial organisation and because they rely largely on specific ethnic perspectives of communities, they are of little or no comparative or analytical use.

The influential and highly systematic approach or system theory of man-made space developed in Christopher Alexander's 'pattern language', appears on first inspection to be a useful conceptual device for exploring the social dimensions of space, and thus closely allied to Hillier and Hanson's 'space syntax' model (Alexander, 1964; Alexander and Poyner, 1967; Alexander et al., 1968; 1977; 1979). Although extremely useful for making explicit the qualitative aspects

of built environments, from the scale of rooms and small spaces to metropolitan regions, the presentation of 'patterns' lacks a theoretical scheme for helping to decide which patterns contribute and which do not contribute towards the form of specific environments. Detailed examination reveals that the inherent and overriding concern with a hierarchical view of environmental 'systems' is simplistic, precluding it as a viable account of what is fundamentally a non-hierarchical and complex relation between society and space. (See Chapter 4 for a more detailed discussion of this aspect of a 'systems theory' approach.)

The question which remains for this enquiry then, hinges around the problem of how to go about identifying and studying socio-spatial patterns. In other words, what theoretical and methodological models to adopt in order to study buildings so that the homologous and dialectical structure underlying socio-spatial systems may be better understood.

Obviously two sets of interlocking relations need to be simultaneously examined. The first has to do with social relations among people, while the second concerns the spaces they use and the relations between those spaces. However, how people relate to one another must be ultimately indexed and shown in what they do, where the action takes place, when it occurs and with whom they interact.

Action, in the form of encounters and interactions must consequentially be grounded in the social differentials among people,

such as in class, status, gender and age distinctions. Therefore, in order to reconcile spatial form and social process, in terms of their dynamic and dialectical interplay, it becomes necessary to integrate the short-term features of every day social life with the slow-evolving, large scale aspects of society to do with principles of cohesion such as class, kinship, the division of labour, and so on.

This requires that the relation between social structure and individual action be adequately resolved. The implication this has for the analysis of domestic buildings is therefore crucial, and the theoretical resolution of this relationship in sociological analyses should be noted. Consequently it is to contemporary social theory that this enquiry must now turn.

SECTION TWO

A MODEL FOR THE ANALYSIS OF SPACE IN USE

CHAPTER 4DOMESTIC ARCHITECTURE, SOCIAL STRUCTURE AND
HUMAN ACTION

As a fulcrum for discussion, this chapter addresses one of the main problems with which this dissertation is concerned, namely the divorce between architectural practice and theory. More specifically, this discussion is concerned with the theoretical basis of the analysis of domestic architecture which, as mentioned in Chapter 1, has become separated from contemporary social theory and the study of social behaviour.

Architectural theory, particularly that which is related to housing in southern Africa, is mostly still wedded to the positivistic outlook characterised by the functionalism of post-World War II concerns, centred as they are upon behaviourism and 'user needs' that are in turn determined by different ethnic entities. Although research techniques have improved and observations have been grounded in a greater awareness of the complexities of social systems, the emphasis is still on quantifiable, statistical data - on what can be observed, measured and ultimately reduced to terms that are compatible with structural models based on ethnicity or cultural tradition.

The functionalist cornerstone upon which this concept depends is the belief that an improved understanding of human behaviour, when coupled

with the 'given' conditions of ethnic structure, will improve design which in turn will improve social behaviour. The essence of environmental positivism, however it is re-phrased, is not so much its inherent tautology but its compelling rationalism, and the attraction this has for architectural theorists and practitioners. The issue under discussion here is not with the need to make sense of human behaviour or social structure, but to ground that understanding within the ambit of sound theoretical principles and in that way to contribute towards its applied understanding in architectural practice.

The purpose of this chapter is therefore not to erect a polemical argument against either behaviourism or structuralism but, by examining contemporary sociological theory, to work towards a more realistic conceptualisation of the interactive process that takes place between people and their domestic buildings. The wider concern is to situate architectural design securely within the discourse of social science to which it can contribute positively as a discipline in its own right that is defined by a distinctive body of information and knowledge.

A crucial assumption, therefore, in this discussion, is that the design and use of domestic architecture cannot be viewed apart from social practice: Architectural design is a social product tied to both human action and social structure. Consequently a sociological approach to architectural design is adopted. There are two important reasons for this.

Firstly, questions surrounding the nature of the interplay between individuals and societal structures have recently been under the spotlight and have been reconceptualised in much 'mainstream' sociology (Bhaskar, 1979; Bourdieu, 1977; Giddens, 1984, etc.; see also Berger and Luckmann, 1966). It is clear from this literature that the relationship between social organisation and individual behaviour is complex and cannot simply be posited in functionalist terms such that the one is offset against the other in an oppositional relationship.

Secondly, as mentioned earlier, architectural theory has always assumed links between built form and society (Knesl, 1979). Associated with this assumption has been a reasoned - mostly highly selective - 'borrowing' of concepts from sociological and anthropological theory. These ideas have been subsumed by architectural theorists and practitioners without necessarily fully comprehending the origins, limitations and architectural potential. (The modernists' idealist view of society has one of its main origins in the holistic sociology of Durkheim; cf. the writings of contemporary rationalists such as Krier (1979) where a similar idealism underpins motivations of the 'reconstruction' of European society through urban design.) The problem for architectural theory and design is thus not the assumption of links, but the socio-environmental paradigm itself - the deterministic relation between society and the material environment, where architecture is seen to be the 'external projection' of society (see Chapter 3).

In order to address these concerns the chapter is arranged in the following way. First, a general synopsis of modern social theory highlights the concerns around which the concept of 'structuration' has recently evolved in which social structure and human action are interpreted. Secondly, the key concepts of structuration theory are presented and examined drawing heavily on the writings of Anthony Giddens. Finally, the household - a concept not entirely free of problems - is justified as a suitable behavioural unit, or scale, for studying domestic space.

A theoretical basis is therefore established for systematically exploring domestic buildings in use. However, the methodological potential of structuration is only fully realised, when, in Chapters 5 and 6, it is 'operationalised' by wedding it to the 'space syntax' technique of Hillier and Hanson (1984). In this way, perhaps, the combined concepts permit a better grasp of domestic architectural design as part of an ongoing social process.

With the information gained from the theoretical concerns of structuration, the relationship between human action, social structure and spatial structure may be closely examined and guidelines erected for demonstrating these relations. Using these principles, the social meaning of domestic buildings in widely different social and geographical contexts may be more clearly understood beyond the limitations of functionalism associated with concepts such as ethnic 'traditionalism'.

Thus, the point of departure for this discussion is that the organisational models used in southern African settlement studies which rely on formal, functional and symbolic distinctions, obfuscate society-environment relationships, thereby making more difficult a deeper understanding of the social dimension of built form.

This reiterates the need, therefore, for a new form of enquiry which goes further than reliance on the social metaphors that are derived from the tenets of structural or functional determinism.

4.1 Determinism and Voluntarism: An Outline of Propositions Concerning the Relationship Between Structure and Agency

In a very general sense, since the replacement of concepts of cosmic order with science and the systematic substitution of myths and fancy with reasoned knowledge, the intellectual programme of the Enlightenment has left its philosophical mark in two tendencies which are characterised in modern social theory:

"The true nature of schematism, of the general and of the particular, of concept and individual case reconciled from without, is ultimately revealed in contemporary science as the interest of industrial society ... Everything - even the human individual, not to speak of the animal - is converted into the repeatable, replaceable process, into a mere example for the conceptual models of the system ... It (reasoned thought) allows no determination other than the classifications of the societal process to operate. No one is other than what he has come to be: a useful, successful, or frustrated member of vocational and national groups. He is one among many representatives

of his geographical, psychological and sociological type." (Adorno and Horkheimer, 1979: 84; my emphasis).

Thus, in their critique of the Enlightenment and positivist science, do Adorno and Horkheimer underline attempts in western thought to reconcile 'conceptual models' with the detailed nature of things: A reconciliation between a tendency towards a seemingly ever-greater scale and its antithetical atomism - the small-scale. These tendencies have been marked off in social theory as programmes that have focussed on both themes.

Largely since the Enlightenment and in particular since the Modern Movement, architects have become increasingly aware of, and sometimes involved with, social theory (Dickens, 1981; Benton and Benton, 1975). This has centred largely upon the problem of structure and agency - the societal versus the individual - and the associated poles of determinism and voluntarism. Although these two positions are conventionally represented in the sociological and philosophical literature as two oppositional 'camps', it would be simplistic to argue that any unitary view is associated exclusively with either. In reality, most social theories that are presented by particular ideologues consist of both, biased one way or the other, so that they are best conceptualised as positions along a continuum between the two poles (see Layder, 1985). However, it is possible to draw out the essential ingredients surrounding both arguments and in that way to locate architectural theory, in particular its positivist leanings, in the broader context of sociological thought.

The deterministic approach stresses the societal whole over individual components. In other words, the totality of social organisation is not reducible to the sum of the people who compose it (see Durkheim, 1964; 1976; Badcock, 1975).

This conceptualisation is fundamentally grounded in the holism of biological anatomy which has led to a concern with 'structural' explanations. Social structure is treated in a totally naturalised way - its reification denying the relevance of individuals in social change which occurs 'behind their backs'. Individual people are therefore excluded as of secondary importance in the analysis of social organisations (Anderson, 1971; Berger, 1963).

This tradition did not grow up in an intellectual vacuum devoid of the realities of day-to-day life, but within the changing circumstances experienced in the wake of the Industrial Revolution and the dawn of the 'new era' (Held, 1980). The concentration of industrial wealth, the migration of people to the cities, the growth of urban centres, improved transport systems, etc. all contributed towards a new social and economic order that emerged as a 'mass' experience to be conceptualised in social theory as an immediate and real problem that required urgent attention. (The critical theory of the Frankfurt School confronted, among other things, the formation of ideologies and values surrounding the emergence of the large-scale experience - mass culture, mass education, mass housing, etc. - and the associated cultural aspects of domination and control. See

Slater, 1977, Held, 1980 and Bottomore, 1984 for an overview of these writings.)

Clues to the resolution of the 'mass' societal problem centred around the concept of 'order' - of the nature of the cohesiveness, or glue, that makes the very idea of society possible (Berger, 1963: 81-108). Or, in other words, how is society possible given the conflict and unequal balance of power among people who are in competition with one another? The determinist position resolves this by reference to the consciousness of the individual who, it is argued, internalises the social values, rules, norms or regularities that obtain at any given point in time, thereby establishing a motivational reference frame for individual behaviour :

"the ideal is for the man to act without dislocation because dislocation, as opposed to permissive disjunction, results in an act which communicates a set of contradictory values - capable of causing confusion, loss of cohesion and ultimately social anarchy" (Clarke, 1968: 97).

Human agency and social practice are thus largely determined by social structure. This conceptualisation ultimately presents itself to most contemporary architects as 'systems theory'. Associated with this is the 'design method' approach to architectural analysis and problem solving that emerged during the early 1960s (see Broadbent and Ward, 1968; Alexander, 1964; Alexander and Poyner, 1967; Whyte et al., 1969).

During this period, highly systemised design methodologies, in particular those developed by Alexander et al., caught on among practitioners, students and theorists, as they tried to lay bare the complexities of environmental structure. Replete with performance specifications, venn diagrams, statistical data, intricate feedback loops, subset decompositions, and so on, the models that emerged permitted a more rational evaluation and approach to designing the built environment.

By isolating the conflict inherent in the relations among competing 'forces', or 'atoms', in socio-environmental systems, the problems confronting design could be resolved by re-aligning these 'forces' and by altering the geometry of environment. The maxim used was that the whole is greater than the sum of its parts; understand the relations among the parts and the nature of the competition between them, and the conceptual order it requires in the real world is revealed.

Although since eschewed by Christopher Alexander et al., this work has left its mark in their more recent writings (Alexander et al., 1977; 1979). The environmental 'atoms' have become conceptually modified and broadened into 'patterns' which together, interact semiotically in the form of a 'language'. By focussing on the essence, technique and ideology of designer/occupant buildings, in particular houses, Alexander and his co-workers have systematically de-mathematised environmental systems and recast them in laymen's terms. The result, paradoxically, is an overwhelming re-emphasis on design methodology,

merely reformulated and ultimately not much further away from the hierarchical determinism of 1960's systems theory.

Counterposed to this position in social theory is the voluntarist approach. This tendency asserts that social organisations can be analysed and understood in terms of human will - the wants, motivations, intentions, and so on - that characterises individual members of those organisations (Lukes, 1970; 1974; Popper, 1966; Berger, 1963: 110 ff.). The emphasis is thus on individuality and motivation in social system analysis:

"all social phenomena, and especially the functioning of all social institutions, should always be understood as resulting from the decisions, actions, attitudes, etc. of human individuals ... we should never be satisfied by an explanation in terms of so-called 'collectivities'" (Popper, 1966: 98).

Cohesion in society is consequently viewed as being determined by the motivations among individuals that underly their activities and interactions. There is little emphasis placed upon wider structures such as in ritualised and standard norms for social behaviour.

Individual behaviour, its meanings and causes, is made the object of social knowledge where the underlying epistemology is based on the diagnosis of symptoms. Here, social structure is regarded as the mere backdrop or conceptual model of collections of individuals, against which roles are examined (Berger, 1963: 111).

Human existence, including its material correlates such as built environments, is consequently probed from the perspective that 'society exists in man'. This approach leads directly to various 'role theories', to the deciphering of behavioural signs, and to the psychology of social action which is centred upon the acting self (see Giddens, 1984: 7; Mills, 1959).

Crucial to the voluntarist interpretation of social systems is the use of empirical data and analysis. Translated into architectural terms, this approach presents itself as one or other form of 'behaviourism' - its paradigmatic locus clearly within the field of environmental psychology (Hall, 1959; 1969; Sommer, 1969; Honikman, 1971; Canter, 1977; Proshansky et al., 1970; Lang et al., 1974; Downs and Stea, 1973; Bechtel, 1977).

Targeted for analysis is mostly the 'territory of the self' (Goffman, 1959) and the nature of human spatial behaviour. Numerous variants exist of this approach where the concern is on the characteristics of spatial organisation and behaviour, interpreted as territorial messages within which are subsumed the personal spaces of individuals. A fundamental assumption that cross-cuts these studies is that people behave according to strongly internalised models of interpersonal space. Briefly, this means that as human beings approach one another, each person is at some point located at the edge of the other's territory.

Adopting this approach, whole communities have been analysed according to each's territorial principles (see Newman, 1973). Environments, from the scale of small individual rooms to city precincts, are consequently viewed as sets of interlocking territories that are confirmed by empirical observation of the repetitious behaviour of people who are apparently unaware of their proxemical models. The analytical procedure is therefore clear: Decipher the territorial message according to various classes and entities to do with behaviour, and the complex relationships that characterise the space of human social organisation will be clarified.

- Here a major problem with the voluntarist/territorial approach is revealed in that it views people too closely as mere biological organisms (cf. Ardrey, 1966). If the design and layout of settlements are correlated with the universal territorial model then this concept falls short of accounting for differences that exist globally (cf. Hillier and Hanson, 1984: 6). In short, it would appear as if the contents of the model are incompatible with its objectives when these are construed to be explanations of morphological variations in relation to social organisation.

4.2 Structuration Theory: A Non-Functionalist Integration of Agency and Structure in Space and Time

It would appear therefore that both tendencies are equally unsuitable. On the one hand, in the determinist approach, the individual is

effectively screened off from analysis and is powerless in the face of structural causality. Human practices and the products of social action, such as the design of houses, are consequently treated as mechanical, lacking a quality of creativity.

On the other hand, the individual is cast as a free agent where social structure results entirely from the intentions and motivations for situated actions. By focussing on action and interaction this approach misses the fact that:

"interpersonal relations are never, except in appearance, individual-to-individual relationships ... the truth of the interaction is never entirely contained in the interaction. This is what social psychology and interactionism or ethnomethodology forget when reducing the objective structure of the relationship between the individuals to the conjunctural structure of their interaction in a particular situation or group" (Bourdieu, 1977: 81).

An uneasy and ambiguous situation in social theory is therefore presented surrounding the conceptual links between agency and structure which, for the practice of architecture at least, proves difficult to handle. There is a simple reason for this. It is difficult to relate what are mostly highly abstract generalisations surrounding social systems, to the specific details of design and layout of particular buildings and to the activities and encounters among particular people.

Indeed, insofar as socio-spatial investigations are concerned, the problem is exacerbated when it is realised that societies do not all invest the same social features in the buildings they design and use.

Kinship relations, for example, may be strongly embedded in the layout and arrangement of domestic compounds of particular cultural groupings, whereas in other communities social status would be of overriding importance (see Schwerdtfeger, 1982; cf. Bourdier and Minh-ha, 1985). Similarly, the study by Labelle Prussin in northern Ghana which focussed on six different societies, showed wide variations in architectural form in a region characterised by very little climatic and geographical diversity (Prussin, 1969).

Clearly some resolution is required between these two tendencies. A hypothesis concerning the dialectical recombination of the dualism of structure and agency forms the basis of several contemporary social theorists (Bourdieu, 1977; Bhaskar, 1979; Giddens, 1984).

Put forward in different ways, these authors are variously tied to the emergent theory of 'structuration': In which the relationship between agency and structure is recast as a duality in an attempt to avoid the pitfalls of both structuralism and voluntarism. There are several key themes around which they are united.

In the first place, both the determinist (structuralist) and voluntarist (behaviourist) tendencies in social system analysis are discarded as equally functionalist and therefore unsatisfactory. The two positions need to be reconciled such that neither structure nor agency is emphasised at the expense or exclusion of the other. Indeed, the two approaches need to be linked in a dialectical synthesis that stresses the dynamic, ongoing nature of social life as

a continuing process out of which social structure emerges simultaneously as a product of, and medium for, action.

Secondly, the stance adopted is fundamentally non-functionalist and anti-positivist. Here, Max Weber's supposition concerning the conceptualisation of man in social theory is adopted :

"(men) are cultural beings endowed with the capacity and the will to take a definite attitude toward the world and to lend it significance" (Weber, 1959: 81; original emphasis).

The very idea of positivism rejects this position. However it is presented, the functionalist/empiricist programme which is the hallmark of positivism, ignores motivation and intentionality, and consequently people, in that human nature is not physical but psychological and social.

Thirdly, in response to this, the structuration project is posited upon the need for a theory that can take account of motivation and intentionality in social systems analysis. A theoretical concept surrounding the actions of people and the consequences of activities is therefore required in order to grasp the interactive process that exists between social practice and structure, and the products that emerge out of that process (see Bhaskar, 1979: 44).

Finally, a major concern - which is crucial for architectural analysis - is that both space and time are integral to the establishment, reproduction and transformation of social systems. Space and time, in other words, need to be integrated into the heart of social theory

which is obliged to acknowledge that the co-ordinates of space and time are logically part of all social existence (Giddens, 1979).

Indeed :

"All social activity is formed in three conjoined moments of difference : temporally, structurally (in the language of semiotics, paradigmatically), and spatially; the conjunction of these expresses the situated character of social practices. The 'binding' of time and space in social systems always has to be examined historically, in terms of the bounded knowledgeability of human action Time-space relations are portrayed (in structuration theory) as constitutive features of social systems, implicated as deeply in the most stable forms of social life as in those subject to the most extreme or radical modes of change" (Giddens, 1981: 30; original emphasis).

These, broadly, are the features that define the theory of structuration as presented by Bhaskar, Bourdieu and Giddens. In order to present an outline of the essential details of structuration, this discussion will concentrate on the writings of Anthony Giddens whose work is widely acknowledged to be representative of the structurationist project.

In defining structuration, Giddens has written that

"'structuration', as the reproduction of practices, refers abstractly to the dynamic process whereby structures come into being. By the 'duality of structures' I mean that social structures are both constituted 'by' human agency, and yet at the same time are the very 'medium' of this constitution" (Giddens, 1976: 121).

This parallels similar 'transformational' models and concepts surrounding social activity developed by Bhaskar (1979) and Bourdieu

(1977). Formulated in this way, structuration theory builds upon and involves the systematic investigation of Marx's now-famous pronouncement that "men make history, but not in circumstances of their own choosing". This is interpreted as leading to the need for a theory of 'structuring' - one that is neither about social action nor a theory of social action - in an attempt to recast the interactive and transformative process between social structure and human agency as a 'recursive' process that takes place in space-time. Thus, a major theorem surrounding the 'duality of structure' is proposed :

"structure is both medium and outcome of the practices which constitute social systems" (Giddens, 1981: 27).

In other words, the existence of social structures and institutions both constrain and enable people to act - such as, by analogy, speech by language. Hence structures only exist where they are reproduced as 'situated' social practices. Their reproduction or transformation is not automatic but contingent upon the activities of people and groups. Giddens elaborates this notion in his critique of Saussure's linguistic theory as follows :

"The recursive character of language - and, by generalisation, of social systems also - cannot be understood unless we also understand that the means whereby such systems are reproduced, and thus exist as systems, contain within them the seeds of change. 'Rule-governed creativity' is not merely (as Chomsky's linguistics suggests) the employment of fixed, given rules whereby new sentences are generated; it is at the same time the medium whereby those rules are reproduced and hence in principle modified." (Giddens, 1979: 18).

Presented in this way, the structuration concept rejects not only the voluntaristic man-makes-society idea and the deterministic society-makes-man idea of human behaviour, but also Berger and Luckmann's dialectical notion where man-makes-society-then-society-makes-man-then-, and so on (see Berger and Luckmann, 1966). Instead, the structuration/transformation model emphasises the ongoing and dynamic, recreative/reproductive nature of an inherently mutual causal relationship between social structure and human action :

"Human social activities, like some self-reproducing items in nature, are recursive. That is to say, they are not brought into being by social actors but continually recreated by them via the very means whereby they express themselves as actors. In and through their activities agents reproduce the conditions that make these activities possible." (Giddens, 1984: 2; original emphasis).

A seemingly simple proposition is presented here, which on first inspection is not difficult to grasp. Yet underlying this idea is a set of revamped meanings surrounding the concepts of agency, structure and system, that diverge from mainstream social theories. In order to gain a fuller understanding of structuration and its relevance to the analysis of the spatial dimension of households, it is necessary to distinguish between the various terms used and to tease out their specific meanings.

A central tenet upon which the structuration model for social system analysis is founded, is the concept of agency. In terms of this concept, human action (agency) - as constrained but enabled by structures - entails a view of social systems in which people produce

and reproduce social structures in an endless series of acts, the origin of which consists of a unique combination of 'enabling structures' in which they operate. What emerges most clearly is an emphasis on the social actor as neither a fully autonomous, free agent nor a cultural dupe. Instead, in the sense that s/he participates in the dialectic of control, the social actor has power - hence the concept of an agent as 'one who exerts power' (cf. the Oxford English Dictionary definition of an agent).

In developing this concept, several familiar themes in social theory are targeted for discussion: The inadequacy of Marx's evolutionary schemata and outdated anthropology; the shortcomings of functionalist categorisation and explanation, including the attribution of 'needs' to social systems; structuralist reification; the absence of appropriate theories of power; and so on (Giddens, 1981: 1-25). From this critique emerges a substantive emphasis on agent causality, anticipated in earlier writings:

"If actors are regarded as cultural dupes or mere 'bearers of a mode of production' with no worthwhile understanding of their surroundings or the circumstances of their action, the way is immediately laid open for the supposition that their own views can be disregarded in any practical programme that might be inaugurated" (Giddens, 1979: 71-72).

Giddens thus dispenses with the conception of human beings as either 'free subjects' or 'determined objects' by crediting actors with greater independence and insight than either the voluntarist or determinist social schools would have. This provides structuration theory with an important analytical principle:

"All human action is carried on by knowledgeable agents who both construct the social world through their action, but yet whose action is also conditioned or constrained by the very world of their creation. In constituting and reconstituting the social world, human beings at the same time are involved in an active interplay with nature." (Giddens, 1981: 54).

However, knowledgeable ability and action and the degree of control which may be exercised by actors, are always 'bounded' by the structural properties of social systems. Giddens then proceeds to interpret the consequences of social activity using a 'stratification model' of personality, or the 'acting self', which consists of a set of relations, namely the unconscious, the practical consciousness and discursive consciousness (Giddens, 1984: 3, 41). As a result, human activity always has intended and unintended consequences. For example, when a house is designed, the agent expresses and draws upon the full range of the stock of knowledge s/he has accumulated surrounding questions of layout and detail. Here, the theoretical base or knowledge that informs action - in this case, space-making - is of two sorts: 'knowing that' and 'knowing how' (Ryle, 1949: 30-34).

'Knowing that' refers to the body of knowledge which the agent can articulate by reasoning that is not intuitive. It informs on action that is discursively formulated and constituted by a "moment of attention to the *durée* of lived-through experience" (Giddens, 1984: 3). By '*durée*' is meant the continuous flow of human conduct that is experienced from day-to-day. Thus action does not consist of a series of conjoined 'acts', but an ongoing stream, or flow of events

that occurs from birth to death: The finite biographical time, or life-course, described by Giddens (following Heidegger) as 'Dasein'. In contradistinction to *durée* is the 'longue durée' of institutions. These are practices which outlive individuals and which 'stretch' over long space-time distances in the reproduction of social systems (see Giddens, 1981: 28). In using these concepts, Giddens is explicitly drawn by the writings of Heidegger (see Heidegger, 1977).

'Knowing how' is implicit knowledge that agents possess which cannot be articulated in propositional form, and encompasses both the 'unconsciousness' and 'practical consciousness' aspects of Giddens' acting self. There is a state of unawareness of the theory upon which the agent draws and practises in the constitution of her/his daily life. This does not mean that such actions are unreasonable or illogical, only that they are deeply consolidated, or sedimented, in the stratification model. Specific reasons for relations among rooms in a house may, for example, not be 'rationally' articulated by the designer/occupant, yet insofar as accommodating social relations is concerned, the design would be perfectly logical. In other words, the result, although not outwardly articulated, may unintentionally recreate a specific pattern of spatial relations and architecture in a particular society.

The possibility likewise exists for knowing and capable agents, intentionally or otherwise, to transform the structure which is simultaneously drawn upon and reconstituted in the continuous flow of social activities. For Giddens this is crucial to the theoretical

programme of structuration, for it posits the concept that social life is fundamentally recursive (hence Bhaskar's 'transformational' model of social activity). It also posits the notion that actors are highly skilled practical theorists. Their knowledge - whether implicitly or discursively formulated - is not incidental to the patterning of social life but integral to it. Architecture by 'non-architects' is therefore created by intentional activities but may not necessarily be an intended or contrived form - it persistently eludes efforts to bring it under conscious direction.

Thus, although purpose and motivation may characterise human behaviour, they do not necessarily have to be a feature at the level of structure or transformations in it insofar as the actor is concerned. Bhaskar clarifies this further :

"... people in their conscious activity, for the most part unconsciously reproduce (and occasionally transform) the structures governing their substantive activities of production. Thus people do not marry to reproduce the nuclear family or work to sustain the capitalist economy. Yet it is nevertheless the unintended consequence (and inexorable result) of, as it is also a necessary condition for, their activity. Moreover, when social forms change, the explanation will not normally lie in the desires of agents to change them that way, though as a very important theoretical and political limit it may do so." (Bhaskar, 1979: 44; original emphasis).

Coupled with this concept of social action, or agency, is a distinctive notion of 'structure'. Strongly rejected by Giddens is the idea that social structure is conceptually equivalent to organic structure in biological systems - an idea central to earlier

structural-functionalism (see Giddens, 1979: 60). For Giddens social structure is

"... basically a descriptive term employed by analogy with anatomy as equivalent to something like 'fixed pattern'" (Giddens, 1979: 23).

The point stressed is that structure refers to 'structuring properties' that are specifically limited to 'rules and resources' which actors draw upon in interaction, and which are "recursively implicated in the reproduction of social systems" (Giddens, 1984: 377). By 'rules' is meant normative sanctioning, and the communication of meaning of those rules, through interpretative schemes, or modes of signification, incorporated within the stocks of knowledge which actors apply during the process of interaction (Giddens, 1984: 29). (The analytical model developed in Chapter 6 elaborates upon the nature of rules, which together with resources, are seen as modes in social interaction.)

The meaning of 'resources' is formulated around the concept of power (the implication of power in social system analysis is elaborated later in this discussion). Here there are two related components of power to do with allocative resources and authoritative resources, broadly the same as economic and political power respectively (Giddens, 1981: 51-52). Where allocative resources have to do with power over the material world, authoritative resources are involved in the dominion of people over others.

The erection of these two concepts, centred as they are around the idea of recursion and agency, replaces large-scale and slow evolving concepts such as Durkheim's 'mechanical' and 'organic' solidarity principles and the 'mode of production' in materialist theory. This permits different types of society to be characterised accordingly :

"My thesis ... is that these two types of resource interlace differently in different types of society. Whereas Marx gave primacy to allocative resources in his materialist conception of history, I argue that in non-capitalist societies' co-ordination of authoritative resources forms the determining axis of societal integration and change. In capitalism, by contrast, allocative resources take on a very particular significance ..." (Giddens, 1981: 4).

This 'thesis' is crucial to the way social cohesion is critically interpreted in Chapter 5, especially when architectural space is viewed as a dimension of the degree of cohesion in social systems.

An important point that needs underlining here is that because the concept of structure refers to sets of rules and resources which are recursively implicated in social system reproduction, its existence (i.e. structure) is only by virtue of the activity of actors. Thus although its meaning is by reference to real entities which are temporally present when constituted and reconstituted in concrete instances, the description of structure is inherently abstract: It has only a 'virtual' existence (Giddens, 1981: 26) or exists as a 'memory trace' (Giddens, 1984: 25). Structure does not therefore exist in space-time, nor does it exist independently of the knowledge which agents possess.

However, allocative resources such as buildings have a 'real' existence in a way that at first appears to contradict the 'virtual' properties of structure. In a sense this is true - buildings do have a space-time presence - but their materiality does not affect the fact that they become resources only when incorporated within structuration processes. Therefore, analysing the structuration of the household means studying the modes in which that system is reproduced in interaction; that is, how actors draw upon the rules and resources in context.

The recursive nature of structure, in the sense that it refers to reproduced power (social) relations both between particular social groups and within them, emphasises the organised, continuous and enduring characteristics of those relations. Here, Giddens is explicit that this meaning does not convey the notion that these relations are congealed into some or other pattern of functional interdependencies (Giddens, 1981: 29-41). Social structure may possess stable and enduring features, in that it is subject to the imperatives of change and development, but it is not historically invariable.

A further point about structure is that it is not scale-specific. At its largest it may be used to explain whole societies, for example, by referring to the 'class structure of capitalist society' or the 'economic structure of peasant communities', and so on. Similarly, it can refer to more localised sets of reproduced social relations, such as the structure of domestic groups (cf. Giddens, 1981: 40) -

this becomes important later on when the 'household' is tackled as a convenient unit of social system analysis. It is necessary therefore to distinguish the term 'system' from structure and to make explicit its meaning in structuration theory.

Giddens refers to social system as

"equivalent to 'groups' or 'collectivity'. 'Social system' has some advantages over the latter two terms, however, in so far as it is more precise; the 'systemic' nature of relations of interaction can be examined from various different aspects, and may take various guises. Social systems are composed of interactions, regularized as social practices, the most persisting of these being institutions" (Giddens, 1981: 41-42).

Thus, in contrast to structure, social systems have an existence in space-time in that they are constituted by social practices that may be subjected to empirical observation.

The distinction between the terms 'structure' and 'system' may be thought of as the former in an explanatory role - in the way that 'deep structures' explain surface phenomena - for systems, which are identifiable patterns of external details (Giddens, 1984: 377). It is possible therefore to speak of the 'structure of systems'. Furthermore, since structures are 'recursively implicated in the reproduction of social systems', the same set of criteria must govern the existence of systems, which :

"only exist in so far as they are continually created and recreated in every encounter, as the active accomplishment of human subjects" (Giddens, 1977: 118).

It is here, in the creation of systems, that power is integral. Since encounters, or interactions, among people are connected to the resources aspect of structures - either people or material objects - in order to reinforce their power and consequently their 'transformative capacities', social systems can be analysed as sets of power relations :

"...as relations of autonomy and dependence between actors in which these actors draw upon and reproduce structural properties of domination" (Giddens 1981: 28-29; original emphasis).

- All social interaction therefore may be thought of as consisting of a process of domination and resistance among actors - power not being equally distributed between different categories of people by virtue of class, gender, age, status distinctions, and so on. This process lies at the heart of the structuration of social systems which occurs via the duality of structure, which in turn links,

"... the production of social interaction, as always and everywhere a contingent accomplishment of knowledgeable social actors, to the reproduction of social systems across time-space" (Giddens, 1981: 27).

In short, through the way it helps expose social relations as the dialectic of control, or reproduced asymmetric power relations, structuration theory provides a valuable key concept for prising apart and exploring the nature of social systems. However, in that "power is instantiated in action", it is logically associated with, and tied to, human agency and not to structure (see Giddens, 1979: 91).

Social system analysis must therefore be tied to the analysis of power at the level of agency.

4.3 The Household: A Working Model for Spatial Analysis

The research agenda suggested by the concept of structuration is not explicitly stated by Giddens. In order to 'operationalise' structuration theory for analysing social institutions, the scale and scope of analysis needs to be specified. In particular, the institution, agency and structure need to be spelled out.

The methodology elaborated by Giddens allows the household to be adopted, which, as a set of institutionalised social practices is deeply embedded or persistent, in space-time. This means that it is temporally enduring and spatially pervasive, in the sense of being well distributed in a particular society or community.

Any enquiry into the social institutions and patterns of behaviour which are accommodated by domestic architecture demands a working concept of the residential unit. Here, insofar as structuration theory is concerned, the household is useful in drawing attention to activities and encounters, despite problems surrounding its lack of definitional precision (Guyer, 1981). Yanagisako, for example, has criticised the concept of the household for, among other things, its failure to come to terms with the wide range of human behaviour and has warned against the belief that

"we can construct a precise, reduced definition for what are inherently complex, multi-functional institutions imbued with a diverse array of cultural principles and meanings" (Yanagisako, 1979: 200).

Approaches to formulating precise notions of the household are diverse and generally fall into two categories that deal with variations in the domestic group. Firstly, the morphological features of households can be described according to size, kinship composition, coherence and location (Netting, Wilk & Arnould, 1984).

Secondly, in each social setting, the household is a locus, or site, that needs to be defined in terms of the activities that take place within it. In other words, the household may be conceptualised as a task-oriented group where various activities or tasks are clustered together. Hammel and Laslett have defined the domestic unit as

"those who share the same physical space for the purpose of eating, sleeping and taking rest and leisure, growing up, child rearing and procreating" (Hammel and Laslett, 1974: 76).

Here, Wilk and Netting have stressed activity definitions - roughly, patterns of co-operation and work - in favour of morphological descriptions that focus on composition (Wilk and Netting, 1984).

This conceptual bias, which stresses the household as essentially a behavioural unit in which the activities of production, consumption, distribution and the transmission of resources and roles takes place, is crucial to understanding power relations.

Thus the household

"is a fundamental social unit. Households are more than groups of dyadic pairs. They have an emergent character that makes them more than the sum of their parts. They are a primary arena for the expression of age and sex roles, kinship, socialization, and economic co-operation where the very stuff of culture is mediated and transformed into action. Here, individual motives and activities must be co-ordinated and rendered mutually intelligible ... Decisions emerge from households through negotiation, disagreement, conflict and bargaining" (Netting, Wilk and Arnould, 1984: xxii; my emphasis).

Building upon this model and given that in different societies it is the locus for a wide range of activities, the process of domination and resistance, and asymmetric power relations among interacting individuals the household may be viewed as a universal phenomenon: The minimum social structure that enables maximum co-operative function through a process of 'negotiation, disagreement, conflict, and bargaining'. By emphasising what people do, this conceptualisation does not entirely neglect form. Following Hammel and Laslett it takes into account the activities performed by household members as well as spatial proximity. Children who have left home as well as relatives who live in close proximity - even though they may contribute to the household's economy - are therefore excluded.

In asserting that what households actually do is logically prior to size or compositional descriptions, Netting, Wilk and Arnould emphasise households as primary 'sites' for interaction (Netting, Wilk and Arnould, 1984). (Giddens (1981 and 1984) uses the term 'locale'

to convey the same meaning as 'site' or 'arena'.) This allows the domestic group to be viewed as one that co-operates, on a day-to-day basis, in the production of food, its preparation and consumption, and takes primary responsibility for child care and socialisation. This approach, although somewhat broad, fits the requirements of architectural analysis where the spatial co-ordinates of social activities need to be clearly identified and delineated. It is consequently the one adopted for this study.

From the point of view of the concept of structuration, the household - as a set of institutionalised practices that are centred around domestic activities which have historical duration and spatial breadth - needs to be seen in terms of the structures which recursively organise such behaviours. Given the cultural diversity associated with southern African society, different economic, political and social conditions surround the existence of various communities, the households that characterise them, and the houses they produce. It is here that structuration theory, in that it relies on the concept of recursion and returns control to individuals within institutions, avoids the reductionism normatively associated with the 'built form and culture' approach to explanations in architectural and settlement studies. Stereotyped models of explanation in architectural theory that are based on concepts of ethnic or cultural 'tradition', and that seek territorial, spatial or architectural correlates of these 'traditions', may consequently be avoided. (See Chapter 2 for the discussion on the invention of traditions by settlers and colonial powers in Africa, and the implication this has for contemporary

perceptions of African societies, their behaviours and material culture.)

Instead, a revised approach is permitted - one that, in emphasising power relations in the exploitation of allocative and authoritative resources, integrates different aspects of domestic activities. Cultural continuity, or 'tradition', associated with household practices may similarly be understood and anticipated not as the need to mechanically preserve for posterity practices associated with the past, but as a result of the routinisation of recursively recreated domestic practices that sustain or preserve ontological security :

"Ordinary day-to-day life - in greater or lesser degree according to context and the vagaries of individual personality - involves an ontological security expressing an autonomy of bodily control within predictable routines" (Giddens, 1984: 50; original emphasis).

Thus roles, routine, division of labour, etc. and the setting, or more precisely, the houses where household interactions take place, all integrate to establish patterns of conformity that provide security.

Giddens goes on :

"All social interaction is situated interaction - situated in space and time. It can be understood as the fitful yet routinized occurrence of encounters, fading away in time and space, yet constantly reconstituted within different areas of time-space. The regular or routine features of encounters, in time as well as in space, represent institutionalized features of social systems. Routine is founded in tradition, custom or habit, but it is a major error to suppose that these phenomena need no explanation, that they are simply repetitive forms of behaviour carried out 'mindlessly'. On the contrary, ... the routinized character of most social activity is something that has

to be 'worked at' continually by those who sustain it in their day-to-day conduct" (Giddens, 1984: 86; my emphasis).

It is possible to surmise then, that there are socially logical and practical reasons for maintaining household customs, including the design of houses, as well as for transforming them - bearing in mind that action has intended as well as unintended consequences. If space (and time) is integral to maintaining a sense of ontological security, then it is rescued from status as merely a backdrop or 'container' for activities, and recast as a crucial dimension, or resource, within the household which may be thought of as a 'security system'.

A major component of structuration is that space and time are central to the construction of social interaction. Social structure cannot therefore be divorced from spatial structure. The two need to be viewed conjointly, as a duality, and not as merely interacting together, or as the impact of one upon the other. Two things only 'interact' if they are theorised and conceptualised apart from each other. Consequently, the social constitution of households is simultaneously spatial.

A chief aspect of space that concerns Giddens' structuration theory is 'distanciation' and the 'regionalisation' of social systems in time-space (Giddens, 1981: 39-41). By this is meant that various parts of social systems are separated from one another in time-space. Social systems consequently differ in their levels of 'time-space

distanciation' and 'presence-availability' - meaning that the presence of others is readily 'available' on a direct contact basis (Giddens, 1981: 39-40). For example, the household and the house that shelters it can be conceptualised as :

"a small-scale locale, with presence-availability of short distance, and ... strongly regionalized internally by modes of activity. Rooms are usually categorized in respect of their characteristic usage in time-space, as 'living rooms', 'kitchens', 'bedrooms', etc." (Giddens, 1981: 40).

Giddens thus hints at developing topological models for socio-spatial analysis. His discussion of this theme, although highly provocative, is extremely cryptic and abstract. An exciting prospect is suggested, where, from the whole perspective of structuration, socio-spatial continuity and change, as characterised in architectural form, may be explored. However, very little in the way of parameters and methodological techniques for describing continuity and change in socio-spatial relations, and consequently built form, is provided.

In order to grasp better the contextual or fundamental spatiality of household life, it is necessary to be able to describe the material component of such households. Domestic buildings must therefore be seen as the concretisation of social relations and social practice - the material substantiation of household life - and not simply 'the reflection' of household organisation. A technique is needed in order to consciously apply the structuration/transformation model in the analysis and appreciation of domestic buildings as a vital component of 'Being in Space' (in the sense used by Heidegger).

Indeed, given the dialectical synthesis of agency and structure, embedded as it is in the production of household socio-spatial relations, structuration theory denies as reification, the reduction of those relations into temporally and topologically static domestic building types.

This approach rests on the assumption that the ways in which social practices and spatial organisations in domestic buildings recursively mesh together, vary with particular historical circumstances, and are not the result of functionally deterministic or reified structures 'out there'. In this way, the morphological similarities and differences in the domestic buildings of households in various cultural settings constantly unfold - and are consequently never 'complete' - in ways that are socially logical (cf. Lerup, 1977).

In order to capture and fully investigate that logic, a technique is required for describing domestic buildings which is compatible with structuration theory. The method provided by Hillier and Hanson's syntactical model for spatial system analysis is one that fits these requirements (Hillier and Hanson, 1984). Without much adaptation the descriptive/explorative tool provided by their concept of 'space syntax' meshes perfectly with, and complements, Giddens' theory of structuration.

In this way, by augmenting the theory of structuration with the concept of space syntax, a set of data gathering and methodological

techniques is proposed that will enhance understanding of the social meaning of domestic buildings. The promise offered by this effort is worthwhile if architectural studies are to develop as a social science, critically aware of people as social actors who participate in a collective social world apart from which the material culture they produce - including their houses - may be neither explained nor understood.

The following chapter builds on the discussion so far by presenting the concept of space syntax as well as isolating the kinds of data that are required to make a structurationist study of buildings in use.

CHAPTER 5

THE HOUSEHOLD AS A SPATIAL SYSTEM

The purpose of this chapter is to describe a comprehensive approach for studying the dynamic interrelationships between the spatial characteristics of domestic buildings and the social organisation of the households that occupy them. In particular, the research methodology that is outlined is intended to be applied in the analysis of case studies in order to develop a model (in Chapter 7) which will aid a structurationist understanding of domestic architecture. To achieve this goal, a set of descriptive/explorative techniques has been adopted according to two complementary features.

The first concerns a survey of spaces that are delineated in the layout and design of domestic buildings. Here, the syntactical approach developed by Hillier and Hanson et al., is adopted for describing, representing and analysing the morphology of architectural space in terms of its social meaning. In doing this, key features are identified which closely parallel the main characteristics of Giddens' structuration theory, thereby substantiating the augmentation of the two concepts.

The second aspect of method builds upon the first and is concerned with the systematic observation of the use of domestic space. A technique for participant observations of activities and encounters

among people, and the translation of these data into a form that is useful for corroborating them with the spatial syntax of buildings, is described.

Despite the growth in recent years of 'environment-behaviour' or 'man-environment' studies from a wide variety of disciplines, there has not been a significant development of theories and conceptual frameworks for interpreting the results (see Zeisel, 1984; Proshansky et al., 1970). The problem, it appears, is both conceptual and perceptual, and has to do with the division of the world of analysis into discrete entities and categories. In other words, the problem is mainly one of transcending dualisms between society and space, object and subject. Following the discussions in Chapters 3 and 4, a major task confronting this field of research is to reconceptualise architectural space such that both people and their built environment are simultaneously accounted for as a duality.

A key concern must therefore be the erection of a dynamic model that can take into account the ongoing process of structuration which involves a complex meshing between the temporal, social and spatial co-ordinates of household life. Presumably, the pivotal arbiter between what constitutes a dynamic, and what constitutes a static model, is time. If the shortcomings of both functionalist tendencies in social and environmental systems analysis are clear, so is their inherent static nature, and the need to build dynamic models that can describe and account for the temporal behaviour and genesis of socio-spatial systems.

A fundamental presumption for the construction of dynamic models must therefore be that socio-spatial systems are inherently 'unstable': They must be seen to be prone to fluctuations, oscillations and discontinuous changes in structure due to adaptations and evolution from 'within'. The essence of dynamic modelling techniques must consequently be to illustrate how socio-spatial systems are transformed, as opposed to only showing what they look like under determinate conditions. This is crucial to the concept of recursion where analysis needs to extend beyond definitions of modes of action and interaction to propose socio-spatial structures as mechanisms out of which they emerge and to which modes of action in turn contribute.

A dynamic model is therefore synoptic and far-reaching in that it is concerned with the total effect of the interaction between buildings and people. Put slightly differently, the form of investigation that is steered by a dynamic model stresses the following question: What precisely are the structures - their specific processes and linkages - that reproduce in situated practices at one instant the mechanisms they are supposed to exert on practices at another? The concern is therefore to understand the recursive relationship between buildings and people.

Indeed, this approach is, analytically at least, a two-tiered one. It seeks to understand the 'external' socio-spatial system by way of identifying and investigating its 'internal' transformations and workings. By suitably abstracting from the social and spatial

systems their homologous internal structure, including its workings and transformations, a methodological stance is taken that favours a dynamic model to be representational: one that seeks to explain the phenomenon of the spatial morphology of domestic buildings, and the actions and interactions among household members, in terms of one another.

Following Giddens (after Marx), social action takes place under conditions that were not chosen, and uncertainty as to what all the consequences and outcomes will be. Therefore, a major assumption concerning time is that it should not be treated as an abstract or logical dimension (in the absolutist sense) but as a real and historical component of social life in which exists an unchoosable past and an uncertain future. This means that the motivations, intentions and activities of individuals can presumably be related or linked to previous motivations and activities, and to the events and outcomes to which those earlier decisions directly or indirectly contributed. Time, like space, is relative and not a neutral background to behaviour. If not neutral, it follows that time must be regarded as a resource itself.

This approach, in contrast to the static nature of functionalist modelling techniques, gives thrust to the concept of structuration in that it stresses both structural and agent causality such that neither is excluded by the other, and thereby highlights the recursive/transformational nature of households, including their buildings. It is consequently inherent that one of the aims of a

dynamic model is to capture the transformational and constantly emergent qualities of domestic socio-spatial systems. However, if their structures are constantly and discontinuously changing - doing "a weaving dance through time-space" (Hagerstrand in Giddens, 1981: 37) - then this goal is merely the starting point of an endless task for examining domestic architecture as forever becoming always open and never 'finished' (cf. Pred, 1984; Lerup, 1977); see also Heidegger, 1977: 320-339).

In order fully to advance the concept of structuration in the analysis of domestic architecture, the principle starting point for case study analysis must be the provision of information. As mentioned above, two techniques have been used. The discussion in this chapter is therefore grouped according to these two techniques which are summarised and presented below.

Finally, a word on perspective and orientation. In that the concern is to develop an abstract, dynamic representation of socio-spatial structure, its form and process, the stimulus for such an approach may be sought in mathematics. There is no doubt that working within a frame of research that focusses specifically on sets (of rules and resources) and relations (among spaces and people) and the associated variables and constants, tends towards setting up combinational systems that are inherently mathematical (in an elementary sense). There is also no doubt that a fascination with mathematics, in that it necessarily formalises all input data, can lead to an obfuscation of crucial details and consequently to the object of study. Thus,

although the approach and attitude to model development in this enquiry is syntactical, empirical and theoretical - in that the principles underlying formal systems are considered - the product is not a branch of mathematics.

5.1 Space Syntax: A Description and Exploration into the Spatial Logic of Social Systems

One of the most fundamental characteristics of architecture is that it is the spatial organisation of social activities and relationships. Recently, Ian Hodder, writing from the perspective of archaeological theory, has demonstrated how material culture (read architecture) takes on active roles in developing and giving meaning to social activity (Hodder, 1982). It is consequently relevant to the study of power relations in that

"unlike much action and speech, it has duration. It lasts, and so, in a very direct way, it channels and organizes perception and behaviour it is through material culture and its spatial organization in homes that individuals come to grasp meanings and relations in society. Material culture is itself, then, an important force in the regeneration of ideology and power" (Hodder, 1984: 352).

Space in domestic buildings, as a component of material culture, is thus always and everywhere social - just as households are always and everywhere spatial. 'Symbolic' and 'functional' distinctions in settlement and architectural analysis thus become obsolete concepts that mask the full potential for buildings to inform on the nature of

the people who produce and use them. Buildings are not the mere imprint of social structure nor do they occupy any autonomous realm of existence. Instead, following Hodder's assertion that all material culture communicates symbols of power relations, domestic buildings play an active role in creating society through ideology, which,

"is the framework within which, from a given standpoint, resources are given value, inequalities are defined, and power is legitimated. Ideas are themselves the 'real' resources used in the negotiation of power. And material resources are themselves part of the ideological apparatus" (Hodder, 1984: 351).

This allows the conceptualisation of the social role of buildings to be reassessed beyond the views that they are material objects moulded by the templates of 'advanced' or 'tribal' societies. By considering domestic buildings as significations of power relations brings to the fore the role they play in the generation of ideology and power among (competing) individuals within households and between household members and outsiders. In short, buildings may be seen as part of the reference system, or ideological apparatus, that societies use in order to make sense of the conditions of their existence.

A crucial question thus emerges for the description and analysis of domestic buildings: How can buildings be understood and explained in terms of the extent to which they materially constitute the social organisations that produce and use them? More specifically: What are the features of domestic buildings that relate to, and inform upon, power relations within the household?

Working within a field of research that is concerned with the relationship between built form and society, Bill Hillier, Julienne Hanson, and others, have recently developed a set of techniques which can be used to suggest answers to these questions (Hillier et al., 1976; Hillier, 1980; Hillier et al., 1983; Hillier and Hanson, 1983; 1984). Space syntax, as their theory is known, is essentially a descriptive and explorative tool that is centred upon socio-spatial systems in buildings and settlements. The question that leads their enquiry is concerned with what it is about different societies that causes them to produce different spatial arrangements in built form.

Underlying all the writings of Hillier and his co-workers is an appreciation that neither space nor the society that produces it can be understood independently of the other. There are three broad areas of concern that unite around this theme.

In the first place, at a metatheoretical level, it is suggested that social organisations and spatial arrangements are members of what are known as 'morphic languages' (Hillier and Hanson, 1984: 48). Morphic languages, whilst distinctly different from natural and mathematical languages, borrow aspects of both:

"From mathematical languages, morphic languages take the small lexicon ..., the primacy of syntactic structure over semantic representation, the property of being built up from a minimal initial system, and the property of not meaning anything except its own structure (that is to say, they do not exist to represent other things, but constitute patterns which are their own meaning). From natural languages, morphic languages take the property of being realised in the experiential world, of being creatively used for social purposes, and of

permitting a rule-governed creativity." (Hillier and Hanson, 1984: 49).

Thus, space, as a morphic language, constitutes, rather than expresses, social form through its 'syntax' - the systematic production of pattern, realised in terms of spatial relations.

Social meaning is conveyed not in the sense of representing aspects of society but in the constitution of patterns of social interaction and spatial relations. On the basis of this a major theorem concerning socio-spatial relations is proposed:

"if ... both space organization and social structures are morphic languages, the construction of a social theory of space organization becomes a question of understanding relations between the principles of pattern generation in both." (Hillier et al., 1976: 152).

A fundamental difficulty is raised by this proposition. This forms the second area of concern in syntax and has to do with theoretical concepts about the way socio-spatial systems are to be described, analysed and interpreted. Hillier et al. resolve this by discarding the conceptual equivalence between buildings and other artefacts that seems to hold in the normal approaches to architectural theories and analyses. The problems for analysis are identified from first principles.

All built form and all human material productions are viewed as consisting of three basic constitutive 'disciplines' - space, technology and style (Hillier and Hanson, 1983). However, Hillier and Hanson argue, the fact that built form can be observed and

described does not mean that it can be easily analysed in terms of the social patterns and processes that generate it. All artefacts such as pots, paintings, furniture, buildings, and so on, make use of technology to arrange materials into a spatial form that suits a specific purpose. This is then, intentionally or not, imbued with style through its embellishment with symbols that have cultural 'meaning'.

Sculpture can therefore be described and analysed according to any one of its three disciplines: For example, wooden hand-carved statuettes may be classified and categorised according to a taxonomy of form based on stylistic features that relate to size, shape, composition, etc.

If socio-spatial relations in buildings are necessary, in that form is not merely a 'reflection' of society but is a crucial material aspect of society, then of the three disciplines only space is systematically analysable, in that buildings (and settlements) alone organise space in terms of human occupancy and social relationships (Hillier and Hanson, 1983; 1984).

In all artefacts, the meaning which they represent and communicate is on the surface, or at the level of appearances exclusively and therefore open to subjective interpretation by whoever is 'experiencing' them. However, in buildings, because they arrange space to order social relations, they embody society within their own morphology in what they are, regardless of their technological or

stylistic make-up. This does not deny that decoration, shape, colour, etc. do not express specific kinds of meaning, but suggests instead that these are of secondary importance. In this sense Peter Eisenman has similarly argued:

"Architecture, unlike painting, is constrained by the presence of actual 'objects' - with the real dimensions of form and space. Whereas in painting, the relationship of the forms can be used to create the illusion of space, in architecture the relationship of the forms is the space." (Eisenman, 1971: 38).

Any attempt therefore to make sense of built form by viewing it in the same way as other artefacts renders the results of such analyses unsuitable if that knowledge is intended to inform on buildings as social products. How then is space in buildings to be understood?

Arguing in favour of spatial analysis alone, as the index of how and to what extent the social exists in the form of buildings, presents a major conceptual difficulty. Firstly, because buildings consist of connected and related spaces - passages, courtyards, rooms, etc. - they are not simply the assemblage of spaces, but are, more importantly perhaps, 'discrete systems' which embody patterns of relations among spaces:

"Discrete systems, composed of nothing but mobile individuals, can quite easily form themselves into global systems whose existence as objective realities need not be doubted ... (W)e can (then) begin to build a picture of how such systems may arise, be lawful and have different types of structure." (Hillier and Hanson, 1984: 33).

Secondly, if socio-spatial systems are a product of social practice and human activity, then, following Giddens, their ordering principles must be described in terms of rules and resources which are drawn upon by actors in the constitution of daily life. A domestic building is, therefore, a set of rules in that the internal relations among its various spaces are constituted by way of normative social sanctioning: In other words, in that space constitutes social patterns, it is a form of material legitimation of those social relations. Indeed, if the formation of discrete systems - how they arise in the real world and constitute form and order - are viewed as products of dynamic processes, then it follows that:

"global order emerges of its own accord from a purely locally ordered system. The system in effect requires both a spatio-temporal embodiment, and a randomly operating background process in order to produce its order.

Seen in this way, discrete systems can both be objectively real and have definite structure, even though that structure is neither determinative nor at the level of the global system itself. Moreover, the system is fully external to individuals, while at the same time being entirely dependent on individuals for its existence and composition. The system depends on abstract rules; but it also depends on the embodiment of these rules in a dynamic spatio-temporal process." (Hillier and Hanson, 1984: 34; my emphasis).

Therefore, in that 'abstract rules' are a part of structure, then the relationship between it and the process whereby it is constantly re-created, must be conceptualised as a duality. This closely matches the concept of recursion and the duality of structure principle in structuration. More precisely, 'structure generation', as it is labelled in syntax, is seen in terms of a dynamic interplay that

occurs among a set of localised abstract rules which "restrict a random process" (Hillier and Hanson, 1984: 34, 205). Thus buildings and the structure that organises their layout ceaselessly emerge out of that process. However, at the same time, they constitute it and consequently must be analysable as both process and product if their social meaning is to be fully understood.

Space is also very obviously a resource in that people and objects occupy it in relation to one another. Its use is ultimately social, although this may be, by virtue of economic or political imperatives, to do with control. As such, it is an important variable in the integration of social systems by the way it is used (together with time) in the enactment of power relations among actors (Giddens, 1984).

Indeed, space is a vital component of social structure that enables/constrains action and consequently the ability for actors to know 'how to go on'. Knowledge of socio-spatial structure is thus recursively reproduced as that which people think with, rather than of.

For example, in that domestic buildings are discrete systems, they reproduce distinctive sets of ordering principles. However, because ordering principles are in effect 'abstract models', they do not have a real existence nor do they exist prior to the establishment of built form. Indeed, their existence is virtual. To clarify this meaning, they are referred to in syntax as 'G-models'. This is an entirely

analytic term which is borrowed from theoretical biology's 'genotype', and then modified and adapted to convey more precisely the elementary and abstract meaning of structure in spatial systems (Hillier and Hanson, 1984: 42-45).

Thus, G-models are theories or 'compressed descriptions' that can account for maximum morphological variability as transformations upon a set of organising principles. A G-model is a universal that is reproduced in particular situations:

"(it) must be constantly re-embodied in social action if it is not to vanish or mutate. In other words, the self-reproduction of a discrete system will require a good deal of work" (Hillier and Hanson, 1984: 45; my emphasis).

This coincides with structuration in that the re-embodiment of structure in buildings needs to be 'constantly worked at' (cf. Giddens, 1984). Thus, insofar as real buildings - the 'P-models', or 'phenotypical' variations - are material transformations of underlying G-models, their existence is spatially constituted as a consequence of work. In contradistinction, G-models are wholly transpatial principles:

"All human social formations appear to exhibit this duality of spatial and transpatial, of local group and category. A member of a university for example is a member of two fundamentally different kinds of group, the one spatial, the other transpatial, by virtue of his position. On the one hand he is a member of a particular university, which is more or less spatially defined; on the other he is a member of an academic discipline, which is transpatially defined. Different aspects of his total behaviour will be concerned with reinforcing the descriptions of both groups. The dialectic between the two types of grouping is one of

the principal generators of local spatial patterning."
(Hillier and Hanson, 1984: 42; my emphasis).

Here the dual nature of structure is clearly and comprehensively revealed. The means whereby behaviour reconstitutes ('reinforces') the description must obviously be the description itself: Without description there can be no activity that is institutionally or socially logical. Hillier et al. refer to this property of structure as a 'description retrieval mechanism' (Hillier and Hanson, 1984: 43). The parallels with Giddens' concept of recursion are precise:

"At the foundation of an arrangement there is no predetermined structure: only randomness. For syntax to appear requires not that the rule precedes the event, but that an initial description is retrieved from spatio-temporal reality and then applied consistently in the succeeding events in the process. Syntax is a consistency in description retrieval and re-embodiment from one moment to the next. The process itself is guaranteed by the random underlying system." (Hillier and Hanson, 1984: 205; my emphasis).

These, in brief, are the main working propositions which form the cornerstone of syntax. However, in formulating these concepts, a number of problems are presented for practical analysis.

In order to come to terms with these difficulties, a highly systematic approach is adopted for describing the spatial composition of buildings. Starting with real buildings, two levels of increasing abstraction - the floorplan and a translation of the floorplan into a graph numerical form - are used to represent the layout and arrangement of spaces embodied in their design.

Firstly, the standard notation of the architectural floorplan - an abstract representation of the horizontal distribution of spaces - is drawn up. This provides essential information on the most durable and permanent characteristics of a building, in that floorplans represent the delineation of spaces and relations among them that embody its social meaning. Thus although experiential aspects such as colours, textures, finishes, constructional systems and heating, lighting and ventilation systems are important, these are omitted in favour of a representational technique that captures the fundamental social nature of buildings.

Each floorplan is therefore the representation of the geometric and formal configuration through which the building localises agents and modulates their interaction. It is, in short, a representation of the spatial constitution of social order. The socio-spatial principles embodied in the floorplan are therefore the temporally and contextually specific responses to a particular set of organisational issues to do with social order. Floorplans are thus critical devices for investigating the spatial outcome of complex social processes.

However, because floorplans and the architectural design which they represent are usually highly idiosyncratic, personal interpretations, or Phenotypical variations (P-models) of social order, a problem is presented to the analyst intent on investigating their social meaning. This is perhaps why analysts and architectural critics alike tend to persistently focus upon the surfaces that define space - on the

'cosmetic artistry' that embellishes form - rather than on the space itself:

"The architectural critic is, of course, handicapped by the representations of architecture with which he works. The only representative of spatial order in the armoury of the critic is the plan. But from the point of view of words and images, plans are both opaque and diffuse. They convey little to the image-seeking eye, are hard to analyse and give little sense of the experiential reality of the building. They do not lend themselves easily to the art of reproducing in words the sentiments latent in images which so often seem the central skill of the architectural critic. Accordingly, the plan becomes secondary in architectural analysis. With its demise, those dimensions of the buildings that are not immediately co-present with the observer at the time that he formulates his comment are lost to discourse. In this way, architectural discourse conceals its central theme." (Hillier and Hanson, 1984: 3).

If one of the goals for analysis is to look for patterns in the relationships between separate rooms and activity areas in an attempt to identify socio-spatial structure, then the analyst is left with the problem of trying to find a way in which architectural space can be studied. The response in syntax is to translate the relational patterns among spaces into a graph (Hillier and Hanson, 1984: 151). By numerically elaborating a set of graph applications and operations, the description of building layouts is de-coded in an elementary way so that the resulting patterns can be easily analysed and compared. (It is worth pointing out that this technique, rather than opposing, actually complements the standard approaches to architectural analyses that infer the social relevance of buildings by focussing upon their external properties or qualitative and aesthetic qualities.)

Called a 'permeability map', this technique translates the morphology of buildings into a syntactical diagram by using circles to represent the largest and fewest discrete, or 'convex' spaces that are necessary to cover the building's surface, and lines to represent the connections (such as doorways) between them. Besides being a graphic representation that exposes relations of permeability between all the convex spaces in the system, this technique permits the layout of buildings to be interpreted numerically. This allows cross-comparisons to be made without the morphological 'noise' such as shape, mode of construction, stylistic features, etc., to unnecessarily obfuscate the object of the enquiry.

The fundamental assumption upon which is based the analysis of buildings in this way, is that they transmit social information through their underlying organising principles - the internal association (structure) and categorisation (social meaning) of spaces:

"Each society constructs an 'ethnic domain' by arranging space according to certain principles. By retrieving the abstract description of these principles, we intuitively grasp an aspect of the social for that society." (Hillier and Hanson, 1984: 48).

And again,

"It follows that (a descriptive theory of spatial organization seen as a system of transformations) is ... an attempt to represent spatial arrangements as a field of knowables, that is, as a system of possibilities governed by a simple and abstract underlying system of concepts. If human beings are able to learn these concepts then it is reasonable to expect that more complex cases are understood through the recursive and combinatorial application of these concepts." (Hillier

and Hanson, 1984: 66; original emphasis; see also Hodder, 1984).

There are three major properties of spatial organisation that can be described and that permit a deep social analysis of buildings to be made. Two are centred around the question of control of space while the third describes the overall pattern of spatial design and the extent to which this is comprehensible to users. Details of all three measures are extensively described in Hillier and Hanson (1984).

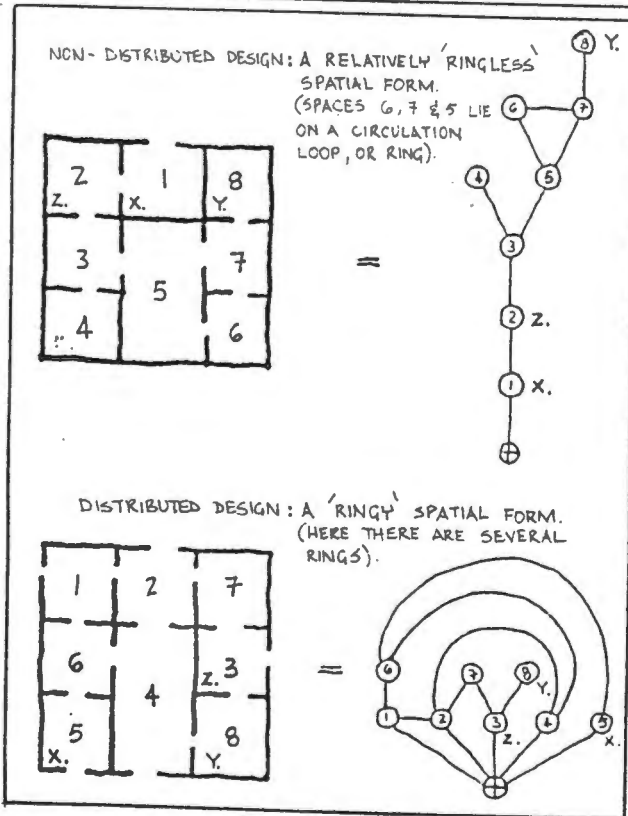
The first, referred to as 'relative assymetry' (RA), integrates and articulates the relations of each specific principal, or 'convex', space*, such as bedroom, kitchen, etc., with all other spaces in the building (see Fig. 12). This it does by measuring precisely the 'depth' of the space relative to other spaces:

"Relations of depth necessarily involve the notion of asymmetry, since spaces can only be deep from other spaces if it is necessary to pass through intervening spaces to arrive at them. The measure of relative asymmetry generalises this by comparing how deep the system is from a particular point with how deep or shallow it theoretically could be - the least depth existing when all spaces are directly connected to the original space, and the most when all spaces are arranged in a unilinear sequence away from the original space, i.e. every additional space in the system adds one more level of depth." (Hillier and Hanson, 1984: 108; original emphasis).

*In syntax the mathematical definition of convexity is used so that no straight line drawn between two points in a space passes through the perimeter of the space, or goes outside it at any point. The convex description of a groundplan is therefore two-dimensional in that the least number of the fattest spaces in the system are delineated.

SYNTACTIC PRINCIPLES IN JPM ANALYSIS. Two spaces will be: SYMMETRIC if A is to B as B is to A with respect to C, where neither A nor B control permeability to each other; ASSYMETRIC if A is not to B as B is to A, where one controls permeability to the other from a third space; DISTRIBUTED if there is more than one independent route from A to B including a route through a third space; NON-DISTRIBUTED if there is some space C through which any route from A to B must pass.

	<p>A and B are in a <u>symmetric and distributed</u> relation with respect to C.</p>
	<p>A and B are in a <u>symmetric and non-distributed</u> relation with respect to C.</p>
	<p>A and B are in an <u>assymmetric and non-distributed</u> relation with respect to C.</p>
	<p>A and B are <u>symmetric</u> to each other with respect to C, but D is in an <u>assymmetric</u> relation to both with respect to C.</p>
	<p>A and B are <u>symmetric</u> to each other with respect to D or C, but D is in an <u>assymmetric and non-distributed</u> relation to A and B.</p>



Two theoretical floor plans with similar geometries but different permeability characteristics are shown. By considering particular categories of space and their relation to the spatial arrangement as a whole, certain structural regularities may be identified: Space X is always as shallow as any other in the system. Space Y is always as deep as any other. Space Z is always randomly located in relation to other spaces.

Figure 12 Principles of Spatial Analysis

In other words, the permeability map is 'justified' from each principal space in the system. For example, a justified permeability map (JPM) which takes as its original (justifying) space the external space that surrounds or 'carries' a building (Hillier and Hanson, 1984: 66), would be constructed in the following way.

Every space in the system is assigned a depth value according to the minimum number of moves (or 'steps' or 'jumps', from one space to another) that must be made to arrive at that space, beginning from the 'carrier' space. All spaces with the same value are aligned horizontally above the carrier space and all the lines which connect the spaces, drawn in. (To calculate the RA from any space in the system requires a set procedure. This is given in Appendix A.)

RA measures thus express the extent to which each space in the system is integrated with all the other spaces: Where low measures indicate a 'shallow' space that integrates the system, high RA values express spaces that are deep and segregated from the system. Since RA measures incorporate all other spaces in the system they indicate the extent of 'global' control within it.

The second syntactical parameter is the measure of 'local' control which each space is able to exert relative to its neighbours. The measure of 'relative ringyness' (RR) does this by expressing the extent to which each space is distributed within the system. This is established by examining the number of alternative routes or 'rings' there are for moving from one space to another. Rings are defined in

syntax as sets of sequentially connected spaces, that form distinct circulation loops, or lines, in the system (see Fig. 12). The introduction of a ring thus means that it is possible for one to move from a space through several others in the system and return to the original point without the need to retrace one's steps.

Thus, the RR measure of a space is calculated as a function of

"... the number of independent rings that pass through that point over the maximum that can pass through it, which will be $p-1$ for p points since any further lines from any particular point will only repeat a link that has already been made" (Hillier and Hanson, 1984: 154).

As with RA measures, RR values will vary between 0 and 1. Here, high values indicate distributed spaces - that is, spaces that have many rings and therefore exert a great deal of control over other spaces adjacent to them. Low values, on the other hand, express non-distributed spaces that exert a weak degree of local control.

Procedures for calculating the RR of the building complex as a whole are given in Appendix A.

The third property of spatial organisation clarifies the overall structure of the ground plan. This is a one dimensional, graphic description of the degree of axial articulation or 'axiality' of the design (Hillier and Hanson, 1984: 17, 91, 99).

To make an axial map of the ground plan requires that the fewest and longest straight lines be drawn in so that all the principal spaces are covered at least once (see Figs 32 and 33). This captures the

degree of connectivity or axial linking, among different spaces and therefore exposes continuities that transcend local differentiations (see Hillier, Peponis and Simpson, 1982).. Thus, the extent to which plans are fragmented and complex or structured and simple may be identified using this technique. The analysis in Chapter 8 applies all three modes of description.

Using the measures of RA (or RRA), RR and axial descriptions, a great deal of socio-spatial information is immediately made visible. This procedure allows the building to be 'opened up' or dissected, so that the syntax of the plan - the system of spatial relations - is revealed and clarified in terms of the properties of integration and control. Thus the clarification of a building's structure, or G-model, requires an understanding of the building in use. A building's underlying G-model,

"can be defined in terms of associations between labels of spaces and differentiations in how those spaces relate to the complex as a whole, in terms of the syntactic dimensions." (Hillier and Hanson, 1984: 154).

But this in turn implies associations among people who use the building. Following Giddens, these may be seen as the pattern of power relations among agents. Thus, when the pattern of encounters is identified, information becomes available that makes it possible to demonstrate not only socio-spatial structure, but also the mesh between social form and spatial form.

The social interactions that take place in households may be understood in terms of the categoric distinction among actors as occupants and visitors. An occupant is defined as an actor whose social individuality is mapped into the category of space created by its boundaries (Hillier and Hanson, 1984: 146). In this sense, an occupant is more an inhabitant of the social knowledge embodied by the category, or meaning, of space than of the physical enclosure itself. Control of spatial categories within domestic buildings is therefore a function of the extent to which occupants form part of, or are wedded to, the social identity embedded in the categories, such as the parents' bedroom, kitchen, studio, etc. This ultimately relates back to the distribution of power relations and the degree of social integration among household occupants in lieu of rules and resources, of which space is a fundamental part.

The status and effect of visitors is the opposite. Visitors are those actors, chosen from a universe of non-occupants, who are permitted to cross the boundary into the building. Guests, visiting relatives, salesmen, doctors and so on, fall into this category. They have no control of boundaries and their social individuality is not integrated or mapped into the categories of space that constitute buildings (Hillier and Hanson, 1984: 146).

The erection of these principles allows comparisons to be made between buildings where different living conditions obtain. These principles further permit a universal, abstract definition of a building:

"as a certain ordering of categories (of spaces), to which is added a certain system of controls, the two conjointly constructing an interface between the inhabitants ... and the visitors whose relations with them are controlled by the building ... In the sense that it is some ordering of space, then, a building is at least some domain of unitary control, that 'unitariness' being expressed through two properties: a continuous outer boundary, such that all parts of the outer world are subject to some form of control; and continuous internal permeability, such that every part of the building is accessible to every other part without going outside the boundary." (Hillier and Hanson, 1984: 147).

Domestic buildings are thus variations on the abstract syntactic themes outlined in Hillier and Hanson's definition. More specifically, domestic buildings characteristically take these basic structural relations and, in relation to the requirements of household descriptions (morphological implications) and definitions (activities), transform the basic model in order to conform with the logic of household practice and to develop certain interfaces between occupants and visitors. In southern Africa, the diversity of economic, political, legal and environmental variables generates a wide array of conditions, the responses to which by households result in several typological distinctions based mostly on architectural styles - 'compound', 'kraal', 'village', 'homestead', 'house', 'hut', and so on. In order to avoid terminological confusion in this investigation, household shelter of whatever morphological characteristics, will henceforth be referred to as a 'dwelling'. This distinction helps overcome any definitional dilemma surrounding domestic shelter that depends on culturally stereotyped concepts such as, for example, that 'house' must be under one roof, or that a 'kraal' consists of a collection of grass and mud huts.

The third area of concern for the syntactic theory of space is the attempt to bridge the gap between social process and spatial form by modelling the interpretation of space on social theory. Here, space syntax relies heavily on the sociology of Durkheim, and, in terms of structuration, is potentially problematic.

Although highly suggestive and on first inspection, compelling, the use of Durkheim's concept of 'mechanical' and 'organic' solidarity ultimately blurs the effect of the *duree* of daily life - the continuous flow of those 'small scale' activities in which description retrieval occurs and power relations are produced (see for example the analysis by Hanson, 1976). Day-to-day social practices to do with systems of production, co-operation and the duration and frequency of activities, are consequently overlooked by Hillier and Hanson in the analysis of dwellings and the reproduction of socio-spatial systems. The distinction between two kinds of solidarity - which refer to the modes in which society realises cohesion - is central to the way spatial structure in buildings is de-coded in syntax. Both conceptions of solidarity refer to modes of social cohesion which, on the basis of rules and measures of control, relate to kinship systems and the division of labour in society (Durkheim, 1964; 1976).

The overriding emphasis placed on principles of coherence therefore tends to screen off individual and group differences in social analysis. In this way, by assigning stereotypical features to social entities, the analysis runs the risk of producing (distorted)

interpretations of reality which may not coincide with those of the sub-groups or individuals whose actions or practices are being studied.

It is not necessary critically to outline in detail the two types of Durkheimian cohesion as this has been adequately and comprehensively done by others (see, for example, Barnes, 1966 and Giddens, 1971; 1972; 1978). It is nevertheless, necessary to point out the salient features.

By opposing mechanical solidarity to organic solidarity, Durkheim is able to distinguish between 'tribal' society and 'advanced' society respectively. In the former, individual members are bound directly to society in a formal relationship that is inherently stable.

(Hence the analogy to the integration which unites the parts of a mechanical or inanimate body.) Cohesion is therefore conceptualised analytically and ascribed to a common set of beliefs, kinship patterns and tradition based on a pattern of face-to-face encounters, where a gender division of labour is the most prominent axis. Social actions are stressed as being temporally enduring and spatially extensive in societies with clearly bounded social and geographical edges.

This reproduction of social structure and material culture, including the design of dwellings, is consequently explained in terms of the need to express overtly a sense of collective belonging. Individual expression that breaks with this need is automatically suppressed.

In that mechanically solid societies require strictly controlled modes

of social practice, their form of cohesion is largely transpatial (Hillier and Hanson, 1982: 20). This means that the form of settlement that is produced is highly structured, where P-models do not vary greatly from G-model principles. Thus, in one important sense, the traditional/advanced distinction is recreated, where 'traditional' societies are viewed as being mechanically organised.

In contrast, organic solidarity is derived through differences, interdependence and co-ordination based on a diverse division of labour. The term 'organic' stresses the analogy to 'developed' or advanced organisms in natural history. Accordingly, these societies function holistically such that the removal of any one sub-unit, or 'organ', in the division of labour, will interfere with the society as a whole.

The distribution of different and specific activities into a particular pattern of relations thus contributes to the continued existence of others. There is greater individual variability and choice, so that often those whose responsibility it is to produce social or cultural artefacts, such as artists, may be at variance with society.

Conformity through diversity is consequently highlighted. This form of cohesion is essentially spatial. The generation and diversity of social events are stressed rather than controlled and thus rely on a weakening of boundaries in spatial systems.

Durkheim argued that both kinds of solidarity are manifested in every real society, but in varying degrees, and that it was possible to distinguish them analytically. This proposition is used in syntax to show how buildings embody social meaning. From this emerges a major interpretative theme that is pervasive throughout the syntax theory of space:

"spatial organization is a function of the form of social solidarity" (Hillier and Hanson, 1984: 142).

By viewing built form as carrying or 'transmitting' social determination through its organisation of space, it is primarily conceptualised as a reduction to, or as a codification of, solidarity. Solidarity is seen as a structure having a uniquely determining effect: Supra-individual in the sense that it outlives individuals (i.e. slow evolving) and large scale in that it is spread well beyond the scope of their actions.

In terms of structuration, the stress laid upon space as an index of solidarity, whilst not entirely misleading or 'wrong', is both partial and restrictive. Important insights into the nature and power of agent causality are confined to a reductionist view subsumed by principles of solidarity and ultimately, a functionalist approach, that stresses structural determinism. As a result the finely balanced relations of interaction among agents and routinisation are at best conceptually truncated, at worst, ignored, by the erection of restricted models of social integration, continuity and change. The lead provided by Giddens and others concerned with the

recursive/transformative approach suggests one way of usefully recombining agency and structure.

As invoked by Hillier et al., but not explicitly stated as such, syntax is indeed concerned with the establishment, reproduction and transformation of structure in action. More precisely, it is concerned with the 'structuring of structure' as a ceaseless process of production (Giddens, 1979: 30, 61). The continuous structuration process goes beyond the dialectics of practice where society produces space, then space produces society, then, and so on. The duality of structure principle ensures that the two questions of determination are simultaneous. The problem for analysis is consequently to preserve this theoretical principle in practice, that is, in research (see Chapter 6).

Insofar as research into the meaning of domestic space is concerned, there are two reasons that are important for adopting this theoretical stance, which are worth reiterating.

Firstly, space and time are integral to the development of a theory about structures in social action. Giddens is explicit that any attempt to recast social process in terms of the duality of structure must take into account the spatial and temporal co-ordinates of social practice. In other words, time, space (the site of social reproduction) and society must be theorised simultaneously so that the analysis of the meaning of any one of these attributes of existence must take into account the others. The analysis of the meaning of

comprising an arrangement - but must constantly be created through practice; the process by which descriptions are retrieved and controlled.

5.2 Activity Analysis: A Research Agenda for Studying the Structuration of Households and Dwellings

So much for the conceptual augmentation of space syntax with the theory of structuration. Demonstration and elaboration are more difficult.

It is perhaps easier to go beyond high-degree generalisation by clarifying the object of socio-spatial analysis in the form of a simple question: To what extent and how do the establishment, reproduction and transformation of power relations in the household contribute to the architectural form that accommodates it?

From Giddens' theory surrounding social action it is important to note that the process in which human agency is produced must be seen in terms of the context for interaction. As such the household and its dwelling provide the opportunity for action as well as constraints upon it. In other words, the dwelling, as an enabling/constraining mechanism, is a major socialisation site (together with others such as school and workplace) for what is known about the world and a device with which to act upon it. The focus of analysis - in terms of both syntax and structuration theory - is thus the transformative/

generative structure: The set of rules and resources that is simultaneously the product of this process as well as the means for this process to occur in the first place.

A programme of empirical enquiry is required to address the research question. Obviously worked examples of real households and their use of space must form the basis of enquiry (see Chapters 7 and 8). Two specific kinds of data are required in order to develop fully an account of dwellings as part of the structuration of domestic life.

Firstly, the plan of the dwelling needs to be described in terms of the syntactical properties given above. This set of techniques reveals more than the dwelling's inner workings. It is also a means of predicting the occupancy and use of space. Indeed, a syntactical description may be seen as a hypothesis that can be used to examine the degree of correlation between the relative position of spaces and their control, with their observed use.

In this way, the assumptions surrounding occupancy and anticipated patterns of use that are indexed in the syntactical measures may be systematically investigated and verified. This leads to the second aspect of method: Making recorded observations of the use of space.

If, as suggested earlier, power relations are the 'glue' that binds together agents, and integrate the household and dwelling, then in what way can the 'invisible' properties of power relations be conceptualised and linked to architectural morphology? The clue to

this question hinges around a crucial variable, the control of resources.

If social integration, through the medium of power, is somehow linked to structure, then this must be by way of resource control:

Integration that stresses resource authorisation on the one hand, and, on the other, integration that emerges upon resource allocation.

These two types of resource may be combined in various forms in different household situations (see Giddens, 1981: 92).

According to structuration, power is generated in and through the reproduction of structures of domination, including dominion over the social world (authoritative resources) and dominion over the natural world (allocative resources). Syntax, concerned as it is with structure, is therefore a measure of the relations between the two, realised spatially in lieu of the distribution of power amongst agents.

Institutionalised power relations are, by definition, deeply embedded and always involve one or more people doing something. Therefore, however elusive power relations are, whatever they are, or look like, they are ultimately inseparable from the everyday actions and behaviours of people. Likewise, they cannot be separated from the control of material objects and from who does what, with what resources, where and when. Households, in other words, may therefore be seen as systems of interlocking power relations among parents and

children, men and women, and visitors, situated within a complex mosaic of links that integrate them with society at large.

Connected to the concept of resource control is an important variable, that of capacity. The syntactical parameters of depth (RA) and ringyness (RR) may therefore be more explicitly interpreted as measuring the capacity of a space to define its contents and meaning in terms of the storage of specific material resources and activities involving others. The accumulation of resources (such as furnishings, work surfaces, ornamental artefacts, food, etc.) and when and where they are used, by whom, therefore emerges as a fundamental index of the potential of individuals and groups to exercise a wide range of power relations, including the ability to exclude others during particular activities or to break with routine and established practices.

This immediately establishes the methodological basis for making critical observations of the production of everyday household life, power relations and consequently the reproduction of socio-spatial structure in dwellings:

"The structuration of every social system, however small or large, occurs in time and space, but none the less also 'brackets' time-space relations. This intermingling of presence and absence is inherent in the nature of the constitution of social systems: every society participates in some form of dissolution of the restraints of time and space. The study of how such dissolution is achieved is the proper concern of the analysis of time-space distanciation." (Giddens, 1981: 91; my emphasis).

A proposition is invoked here that is important in two fundamental respects. Firstly, the nature of social cohesion is clarified that is useful for architectural analysis. By simply inverting the object of study to one that focusses upon the disintegration, or 'dissolution', of time-space relations, the degree of social cohesion may be characterised as a function of the extent to which this is achieved through the exercise of power.

Secondly, it follows that this is entirely in line with the logical imperative of power, which is to expand through the extension of social control of time-space, as well as through the control of nature. Household integration is therefore enabled/constrained by the realisation of these imperatives among occupants and between them and visitors. Socio-spatial structure is consequently a measure of the extent to which the process of disintegration is impeded.

How this occurs must be taken to consist in regularised domestic social practices. As such, household life is not experienced as structures. Rather, it is experienced as the *durée* of day-to-day existence that is situated in the context of conventions which are ordered on the level of practical consciousness. Thus the continuity of daily household life is assured in the routinisation of domestic activities, and not as a directly motivated phenomenon with explicitly intended outcomes.

The clue to the study of the continuous flow of domestic activities is provided in the 'time-geography' approach of the Lund School

(Hagerstrand, 1970; 1978a; 1978b and Carlstein, 1982; this approach is also adopted in the writings of British and North American social geographers; see, for example, Parkes and Thrift, 1980 and Pred, 1977; 1984).

This concept is essentially an attempt by geographers at Lund University, Sweden, to erect a 'contextual' model of society in which the constraints upon social behaviour are formulated in physical terms:

"location in space, areal extension and duration in time"
(Hagerstrand, 1970: 11).

The contexts, or the settings, for behaviour are therefore delineated as three-dimensional 'regions' of space and time in which the flow of 'organisms and artefacts' can be clearly traced as continuous paths or space-time trajectories (Hagerstrand, 1970; Parkes and Thrift, 1980). This approach allows the spatial and temporal sequence of activities and the paths of individuals, including their interactions with others, to be captured and graphically represented. It is therefore, technically at least, an approach that is consistent with the aims of both structuration and syntax. The concern is ultimately to develop explanations of the ways in which different individuals interact and co-exist in the same space-time context, such as, for example, the dwelling.

Household life is simultaneously, therefore, the daily lives of agents viewed as a series of discrete space-time paths that meet from time to

time at intersections that are located in space in a continuous process that is subject to a set of constraints (cf. Hagerstrand, 1970). The concept of constraint is crucial to time-geography.

Constraints have essentially to do with resources and operate upon individuals and through individuals to affect the agent's ability to exert an influence on her environment and upon others. In other words, constraints act to impede the exercise of power. The possibility to participate in activities or to control resources is therefore contextually bounded. Opportunities to exert power within the household and by the household as a unit, are consequently limited by other agents, the dwelling and its wider setting.

The degree of social integration in households may therefore be viewed as the ability by agents to overcome the constraints which exist in the dwelling and its regional context. Three types of constraint are explicitly identified by Hagerstrand and others in the Lund School:

- " i Capability constraints limit the activities of individuals because of their biological construction and/or the tools which they can command. Some have a predominant time factor (e.g. of overwhelming importance are the needs for sleep and food), at rather strictly regular intervals. Others have a dominant space factor, limiting movement and communication.
- ii Coupling constraints define 'where, when, and for how long the individual has to join other individuals, tools, and materials in order to produce, consume, and transact and here the clock and the calendar are the supreme antidisorder devices' (Hagerstrand, 1970: 8). Coupling constraints determine the pattern of the paths which occur within an individual's daily prism. The volume of space and time which is within reach of an individual within a day is the daily prism,

having not only a geographical boundary but time-space walls on all sides

- iii Authority constraints impose limited access to either space locations or time locations. Every environmental context is replete with control areas or domains of authority. Their purpose 'seems to be to protect resources' (Hagerstrand, 1970: 9) ... For instance, the authority domain of the alcohol licensing laws puts public houses 'out of bounds' to certain age groups at all times; and out of bounds to all age groups at certain times. There is a hierarchy of authority domains which ranges from near absolute, regardless of individual attributes, to subordinate domains which can be entered given social power of one sort or another." (Parkes and Thrift, 1980: 248-249).

Thus, to return to Giddens, the study of 'the dissolution of the restraints of time and space' is the study of integration that emerges as a consequence of the power to overcome constraints: Revealed in structure and measured in syntax. It is also clear from the above that capability and coupling constraints coincide with allocative resources including time and space, while authority constraints have to do with authoritative resources.

Overcoming constraints in the reproduction of structure, must obviously be tied directly to the activities performed in households. If human action occurs in a continuous path, or flow, then the problem of classifying this path into easily discernible categories of activity is important for distinguishing types of resource control.

Basically the objective of household activity classification should be to establish a system whereby the constraints and hence the possibilities that result in the activities that are observed, are

shown up. This, however, presents a major difficulty: How are constraints to be directly observed from empirical studies?

The time-geography approach suggests one way of overcoming this dilemma. This has to do with the idea of 'project' (Hagerstrand, 1970).

A project in the time-geography scheme of things is a set of linked tasks or activities which have to be undertaken somewhere, sometime, in order to reach certain goals. In the household an example of a project might be that the group have the evening meal together. This immediately implies a set sequence of events or activities, involving particular agents, space and time, that need to be linked together and co-ordinated in order to achieve that goal: preparing the meal's ingredients, cooking the food, setting the dining table, sitting down to eat, clearing up, and so on. In short, in order successfully to achieve completion, a project must be able to overcome the constraints of context.

What this means is that particular activities take on specific meanings in relation to other activity-types. The household, if viewed as a project as a whole, is thus a system of both regularised and randomised activities that always occur at the dwelling. In terms of recursion these activities may be conceptualised in a specific kind of way.

Consider for a moment that these activities are located or nested in an omni-present 'stack'. The term 'stack', together with the terms 'pop' and 'push', are concepts used in computer science primarily to characterise the nature of recursive structures and processes.

Douglas Hofstadter explains:

"To push means to suspend operations on the task you're currently working on, without forgetting where you are - and to take up a new task. The new task is usually said to be 'on a lower level' than the earlier task. To pop is the reverse - it means to close operations on one level, and to resume operations exactly where you left off, one level higher.

But how do you remember exactly where you were on each different level? The answer is, you store the relevant information in a stack. So a stack is just a table telling you such things as (1) where you were in each unfinished task ... (2) what the relevant facts to know were at the points of interruption. When you pop back up to resume some task, it is the stack which restores your context, so you don't feel lost ... (These terms) come from the visual image of cafeteria trays in a stack. There is usually some sort of spring underneath which tends to keep the topmost tray at a constant height, more or less. So when you push a tray onto the stack, it sinks a little - and when you remove a tray from the stack, the stack pops up a little." (Hofstadter, 1979: 128; original emphasis).

Activities, systematically located in stacks are thus always available to be called upon. Some of these activities will be routinely located in space-time - such as sleeping, eating, washing, etc. These activities may be referred to as 'obligatory'; that is, they would constitute the capability constraints upon action in space and in time (see Chapin, 1965a; 1968; 1970; 1974; Parkes and Wallis, 1978).

Other activities would be more freely disposed to a much more flexible calling, both spatially and temporally. These, such as entertaining and leisure activities in the home, are the more 'discretionary' activities (Parkes and Wallis, 1978; see also Shapcott and Steadman, 1978).

In addition, certain kinds of activity tend to be consistently called upon at fundamentally different time scales. Studies by Chapin suggest that four such scales exist in the constitution of social life. These are the day, the week, the year and the life span (Chapin, 1968). Daily routine might, for example, include washing, sleeping, preparing meals, etc. Weekly routine could include going to church, work related activities, the day the car comes in, etc. Annual routines might be related to holiday periods, seasonal changes, etc., and the life scale may include changes in the household size and the size, nature and positioning of the dwelling. The household activity stack may thus be defined as the components of a set of projects that occur at specific temporal (and spatial) scales.

Now, the stack, or system of activities, very obviously does not exist as a reified entity somewhere 'out there', but, following Hillier et al., must be nested in reality itself. For a system to emerge at all, it is necessary that an initial description be 'retrieved from spatio-temporal reality': In the household this must be from the design and layout of spaces in the dwelling, as well as from the 'memory traces' of participating individuals. In other words, socio-spatial structure that is instantiated in action, further confirms the

activity stack, and in so-doing, is both the means whereby the momentum for household practice is maintained and transformed, as well as the product of that process. (This concept is taken up in the following chapter in which two modes of analysis relating to structure as 'means' and 'product' are discussed.)

Ontological security is therefore sustained in the constitution and reconstitution of both the pattern of activities as well as the interactions that structure daily household life. The dwelling, as part of that structuring process, consequently contributes towards a sense of well-being, a sense of confidence that household life is what it ought to be: a secure, enabling (and constraining) environment.

One way of understanding that process is to describe it so as to represent the paths and activities of agents in motion over space and through time. In order to model the space-time flow of agents, it is necessary to know what activities are being performed, who is performing them, where they are doing it, when they do it, for how long and in what order they are performed. The full 'stack' of major activities is given in Appendix C.

Having adopted and integrated the theoretical and methodological approaches outlined so far, this enquiry is able to proceed by attempting to demonstrate them.

To do this a model is proposed in the following chapter in which two complementary modes of analysis are adopted and elaborated to suit the aims of this investigation.

CHAPTER 6THE THEORY OF STRUCTURATION IN ARCHITECTURAL ANALYSIS

Having outlined the central concepts of the theory of structuration and having discussed the relevance of conjoining it to space syntax, the purpose of this chapter is to propose an analytical model which realises the theoretical promise and empirical viability inherent in this combination for architectural research. In order to integrate the research agenda for spatial analysis which was outlined earlier within a social theoretical framework, a methodological 'probing device' (if that is the correct terminology) will be constructed to give full thrust to the structurationist model.

The purpose in doing this is to interpret systematically domestic space in the context of the relationship between household structure and social behaviour. Central to this endeavour is the view that both the agent and the social system under investigation are equally and critically important in the understanding and explanation of social products, including domestic architecture.

Since the shape and manner in which this is to occur is not very obvious from what has been discussed in previous chapters, some theoretical development of structuration theory first needs to be made. This is essential if only to broaden the main concepts in

structuration so as to situate syntax in the context of an analytical framework, or model, of the structuration of domestic space.

Concerning the application of structuration theory in empirical research, Giddens has suggested that analysis should focus on three major themes if the full potential of the concept is to be realised and developed (Giddens, 1984: 284-286). These are, firstly, that the nature of enquiry should be 'hermeneutic', that is, interpretive. This idea stresses the importance of 'getting into' the phenomenon under investigation, such as the household, which is already constituted as meaningful (by the occupants). In this sense analysis should not merely be "an experimental science in search of law but (also) an interpretive one in search of meaning" (Geertz, 1975: 5). Therefore, understanding should not only be sought from some external vantage point, but also from 'within' the structure of households by posing the question, 'what is the meaning of the dwelling from the point of view of the occupants?'. An attempt should therefore be made to penetrate the socio-spatial system and to look outwards from its (structural) core. The challenge and difficulty confronting analysis is therefore one of making an "interpretation of others' interpretations" (Geertz, 1975) thereby underlining the importance of gaining 'mutual knowledge' (see Giddens, 1984: 285; cf. Musgrove, 1984).

Secondly, it is important to examine and emphasise the day-to-day conduct of individual agents as critical to an understanding of the reproduction of social systems. This involves placing an emphasis on

individuals as skilled and knowledgeable agents who know how 'to go on' in the daily activities of household life. Although the outcomes of purposeful human activity are made 'to happen' by agents, it is the study of unintended consequences and unacknowledged conditions of activity that should form a major part of the investigation, and

"... we should nonetheless stress that such consequences and conditions are always to be interpreted within the flow of intentional conduct" (Giddens, 1984: 285).

The third theme which Giddens emphasises concerns the space-time constitution of social life and the analytical role that context plays. For sociologically grounded architectural research, one of the most important implications of the concept of structuration is that it is crucial for analysis to become contextually oriented:

"In part this is a plea for a disciplinary coming together. Social scientists have normally been content to let historians be specialists in time and geographers specialists in space, while they maintain their own distinctive disciplinary identity, which, if not an exclusive concern with structural constraint, is bound up with a conceptual focus upon 'society'" (Giddens, 1984: 286).

A broad-fronted, eclectic approach is tacitly proposed in this guideline. Invoked here is the principle that any analysis of the spatial and temporal co-ordinates of domestic activities necessarily demands that contextual details be enunciated if the concrete practices of household life are to be adequately theorised and explained. The analytical significance attached to context means that it should not be viewed as an object in itself, but rather it should be seen as the totality of other objects and practices that are

causally relevant. This includes the entire range of entities and events that together constitute the determining conditions for the structuration of domestic space.

Insofar as human agency is concerned the accurate identification of the context becomes a necessary pre-condition for the proper specification of an activity type, and is therefore crucial to explanation. For example, the daily activity in most middle class South African households of dining at home necessarily integrates and involves members of the household, prepared food, perhaps a dining room, dining table, a set time, crockery, cutlery, and, may be, some table wine. In this case the context is not simply a set of physical and non-physical props divorced from the activity, but is absolutely integral to its identity and social meaning.

Giddens has introduced these themes in the hope that they will guide the practical application of the theory of structuration in research. In this sense, any research endeavour that is founded upon the tenets of the structuration model needs to proceed carefully:

"The concepts of structuration theory, as with any competing theoretical perspective, should for many research purposes be regarded as sensitizing devices, nothing more. That is to say, they may be useful for thinking about research problems and the interpretation of research results." (Giddens, 1984: 326-327; my emphasis).

Thus the guidelines (and warnings) are established for a structurationist understanding of social systems - 'nothing more'.

It is consequently clear that in order to proceed with applied

research and analysis it is necessary to formulate a working model of the structuration of domestic space using these guidelines. From the point of view of architectural research this is essential if spatial syntax is to be theorised more effectively through a social theoretical framework that attempts to transcend the agency/structure dualism.

It is therefore crucial that the model resolves from the outset the issue of causality or determination, in order to escape in applied research the dualism that is avoided in theory. The problem is essentially one of integrating an analysis of syntax in domestic architecture with the daily and longer term flow of individuals' life paths so that the explanatory essence of the duality of structure may be captured.

6.1 The Concept of Structuration and Architectural Design: A Working Model

According to structuration theory, human activity, social structure and, by implication, social systems form a dialectical, on-going relationship in which each presupposes the other (see Giddens, 1979: 53). At the root of this conceptualisation is a balanced notion of determination that does not suggest or specify in advance which of the three attributes should be accorded priority when analysing social phenomena. This concept of determination is due to the recursive nature of the duality of structure principle in which there is no pre-established sequence of causality that determines the outcome of the

intermingling between agency, structure and system. In order to understand the consequences for empirical research that this notion of causality carries, it is necessary to develop an integrated framework in which is clarified the interconnections between the three main attributes and their relationship with domestic space.

There are two main reasons for constructing such a framework. The first is that it explicitly attempts to extend, in a practical way, the structurationist concept of causality. It is therefore wholly methodological in that a technique for architectural enquiry into domestic groups as spatial systems and (vice versa) dwellings as social systems is established. This is essential if the analysis is to remain closely wedded to the theory of structuration and that neither the household nor the dwelling is accorded prior explanatory status in which the form of the one is determined by the form of the other in a simple one-to-one relationship.

Thus, whilst it may be true that architectural form constitutes social form, such a truism is not an explanatory principle at all - it merely calls for one to be made. With regard to methodology, what this implies is that the object of enquiry should focus on the way the one system becomes the other; how social processes and spatial arrangements mutually become one another. Indeed, if domestic space is the material constitution of reproduced patterns of interaction and power relations, then dwellings are essentially the physical embodiment of transactions of social meanings - the material manifestation of how the circumstantial conditions of existence are

negotiated. In this sense, the dwelling may be viewed as a kind of 'spatial strategy' that is deployed by the household in order to deal with its surroundings and so come to terms-with, and mediate between, the social and physical worlds:

"Adaptation to, or mastery of, the material environment is a functional exigency of human society; therefore understanding how such adaptation occurs is the key to analysing the institutions of that society" (Giddens, 1981: 21; my emphasis).

This must not be seen to imply that social meaning is simply contained in or expressed by dwellings, but that these emerge as a consequence of the attempts by agents to 'make sense' of their environment by responding to it in specific ways.

The second reason for adopting an analytical framework with this conceptualisation of causality flows from the first in that analysis must stress the recursive/interactive nature of the relationship between agency and system. This is necessary in order to rescue the analysis from the potential dangers to do with determinism and voluntarism that are inherent in syntax and the study of the space-time trajectories traced by individuals, respectively.

The causality that underlies Hillier et al.'s work tends to give primacy to social structure (or solidarity) which determines spatial outcomes. Hillier and Hanson (1984) are, however, aware of the problem from the outset in their concern for the dynamic nature of the linked concepts to do with "restrictions on random processes" and "description retrieval mechanisms". Similarly, the question

surrounding how space in turn 'determines' society is also raised (Hillier and Hanson, 1984: 22-23). These, as discussed in Chapter 5, are concepts that match Giddens' notions of the space-time constitution of social life, social system reproduction and transformation, and recursion. However, in the final analysis it is social solidarity that is given explanatory prominence, pointing ultimately to a separation or dualism between social structure and agency.

Conversely, the concept of causality implicit in the Lund School approach is effectively voluntarist. Here, importance is attached to the individual paths that agents thread through their space-time context (see, for example, Pred: 1983, 1984). Social systems, indexed by patterns of reproduced interactions among agents, are explained in terms of the duree of the life paths of individuals, replete with their particular and idiosyncratic motivations and intentions. This approach ultimately neglects or fails to adequately come to terms with the longue duree of institutions.

It is, therefore, imperative that, in developing a structurationist analytical framework, a balanced notion of causality be maintained. Here, as mentioned above, the critical hinge point around which agency and system are integrated is structure; more precisely, the duality of structure. The effect of this principle, through which agency and system are refracted to one another, is to ensure that two separate sets of data - the one focussing upon individual space-time trajectories (agency), the other upon spatial syntax (system) - are

not analysed separately and then superficially combined, but are linked and mutually complementary in analysis from beginning to end. Any investigation that does not incorporate this objective will effectively fail comprehensively to explain the (dynamic) relationship between domestic groups, domestic architecture and the behaviour of household members.

In order to address this objective, the following model is proposed as a guide to analysis (see Fig. 13). The identification and elaboration of the distinctive nature of each of the key characteristics or elements of this model is directly relevant to its application since this clarifies the relationship among its elements which, in effect, prescribes the methodology or type of architectural analysis in this study.

The empirical focus of analysis, the dwelling consists of two interrelated components to do with context:

- In the first place, the architectural design of the dwelling accommodates a complex and specific web of social associations that are embedded in its form. Here, details of form such as the schedule of accommodation, construction technology, architectural style, including the internal decoration, furnishings, activity surfaces and other acknowledged or unacknowledged environmental parameters, or 'conditions', concerning the qualitative aspects of the dwelling's physical environment, provide visible indications of the kinds of

LONGUE DUREE : ONGING REPRODUCTION OF THE HOUSEHOLD AS A

FORM OF INSTITUTION.

STRUCTURE

SETS OF RULES AND RE-SOURCES RECURSIVELY IMPLICATED IN THE REPRODUCTION AND ARTICULATION OF HOUSEHOLDS

THE VIRTUAL EXISTENCE OF STRUCTURE IS REPRESENTED AS THE G-MODEL OF DOMESTIC SPATIAL SYSTEMS.

THE DUALITY OF STRUCTURE

AGENCY

INTERACTIONS AMONG INDIVIDUALS AND THE DIALECTIC OF CONTROL OF RESOURCES (IN THE CONSTITUTION OF PATTERNS OF SOCIAL RELATIONSHIPS BETWEEN OCCUPANTS AND VISITORS IN HOUSEHOLDS) REPRESENTED AS FINITE LIFE-PATHS IN SPACE/TIME : DASEIN.

DUREE : DAY-TO-DAY REPRODUCTION OF DOMESTIC LIFE.

SYSTEM

THE SPATIAL AND TEMPORAL CONSTITUTION OF REPRODUCED DOMESTIC PRACTICES. THESE MAY BE SEEN AS THE CONDITIONS AND OUTCOMES THAT BOUND ACTION.

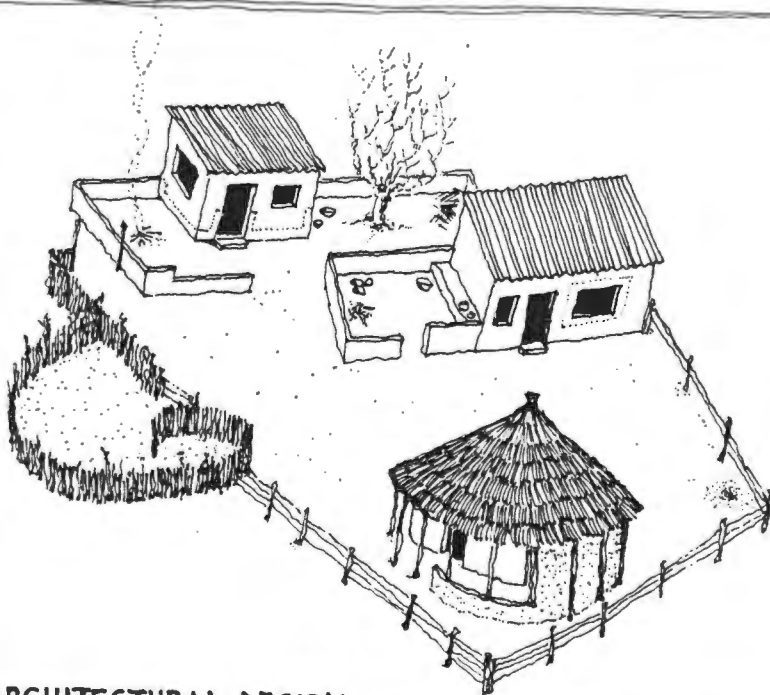
DWELLING

THE EMPIRICAL PHENOMENA UPON WHICH THE ABSTRACT MODEL IS BASED.



ACTIVITIES

THE EVENTS AND THE THINGS PEOPLE DO IN DOMESTIC SETTINGS.



ARCHITECTURAL DESIGN

PHYSICAL DISTRIBUTION OF ACTIVITY AREAS.

Figure 13

The Relationship Between Architectural Design and Domestic Activities : A Model

associations inherent in the form and need to be described. An accurate description of these parameters is therefore important for a proper explanation and understanding of the social logic underlying the distribution and relations among spatial categories - as measured in syntax.

- Secondly, the dwelling is the setting for action, including encounters among occupants and visitors in which is located the 'lived through' experience of domestic life. The day-to-day happenings that occur in domestic space-time each constitute an aspect of the duree of that experience: watching television, washing the dog, writing, entertaining guests, etc. Enunciating these activities is therefore important for identifying activity types and broader patterns of routine behaviour. It is consequently also important for understanding how the continuity and change of household reproduction and the duality of structure actually operate in domestic buildings. In a sense, where domestic behavioural routine prevails, the rationalisation of activities may be construed to be the locus of the household's social and spatial order. Invoked here is the question of 'tradition', which for southern African settlement studies is critically important for the following reason:

"Routine is strongest when it is sanctioned, or sanctified, by tradition: when 'reversible time' is invoked in connecting past and present in social reproduction. Although the term 'traditional society' may often be used in an umbrella-like way to cover any kind of society short of those which have become substantially industrialized, the hold of tradition is clearly likely to be firmest in the smaller, more isolated types of society: in those

types of society which have today virtually disappeared from the world. (The term 'traditional society' can be doubly misleading insofar as the influence of tradition never wholly evaporates, even in the most mobile or fluid of contemporary societies.)" (Giddens, 1979: 219; my emphasis).

Related to these two components of context are the two separate sets of data that describe:

- firstly, the system of spatial relations as measured in syntax, and
- secondly, the space-time paths and activities of agents.

The isolation of these data sets is justified only on methodological grounds since both are necessary for demonstrating the structuring of domestic life in which is implicated the *durée* of spatial system/human agency interaction.

These sets of data allow the design of dwellings to be studied by focussing on each set in turn. It is here, however, that great care needs to be taken if the agency/system dualism is to be avoided in analysis.

One technique which overcomes this problem at the same time as it expresses the duality of structure principle is what Giddens has termed 'methodological bracketing' (Giddens, 1979: 80ff.). This technique and its usefulness for analysing and interpreting the social meaning of dwellings is more fully discussed and adapted to suit the

aims of this study further on in this chapter. It is first of all necessary to complete the description of the model.

The final component of the model concerns the abstract structure that is implicated in, and which affects the interaction between system and agency. This represents the most enduring characteristics of the household - the structural features of the domestic group that enable and constrain actions and events, and which are embedded in the *longue durée* of household reproduction.

Since one of the fundamental objectives of this enquiry is to understand how social relationships in the household are patterned in domestic space and time, the identification and study of structure may be regarded as only partially fulfilling that goal. In order to provide a full structurationist account of dwellings, the analysis needs go beyond the (static) description of sets of rules and resources that constitute socio-spatial structures and must necessarily focus upon the (recursive) instantiation of structure in social system reproduction.

This involves understanding how structure acts as the medium for interaction to occur as well as how it reconstitutes or reforms the social system or outcome of interaction. The basis for this understanding is provided by Giddens' identification of three universal dimensions of structure which, combined, constitute all human interaction and social systems and which are consequently inherent in all domestic groups: signification, domination and

legitimation, as indicated overleaf (see Giddens, 1979: 107; 1981: 47; 1984: 30-31).

This schema derives from an elaboration of the two basic characteristics of structure, namely rules and resources, by specifying the modes by which they are instantiated in interaction. (Giddens refers to these characteristics as "modalities".) Here, rules are theoretically separated into dimensions of signification (S) and legitimation (L).

'S' refers to rules that communicate meaning via the stocks of (common) knowledge which agents draw upon and apply discursively during interaction. As such, an agent's stock of knowledge acts as an 'interpretive scheme', or framework, through which she is able to make sense of and provide reasons for particular events and actions (see Figure 2 in Giddens, 1984: 29). It is largely through this framework that mutual knowledge is sustained and communicated among people.

'L' refers to rules that are inherent in social transactions and encounters in the form of sanctions or prohibitions. These act to justify and regulate the pattern of relationships among individuals and groups via social norms. Included here are codes of conduct that are formally (e.g. the legal system) and informally (e.g. socially accepted behaviour) laid down in order to express rights and obligations in society.

STRUCTURAL PROPERTY	THEORETICAL DOMAIN	INSTITUTIONAL ORDER
Signification (S)	Theory of coding	Symbolic orders/modes of discourse
Domination (D)	Theory of resource authorisation Theory of resource allocation	Political institutions Economic institutions
Legitimation (L)	Theory of normative regulation or sanctions	Legal institutions

Figure 14
The Modalities of Social Structure

Source: Giddens, 1984: 31.

Resources enter social system reproduction through the deployment and operation of power in interaction. As discussed in Chapter 4, structural domination (D) refers to the capability of agents to exercise control over resources. People and physical material are thus objects of control and domination that provide the means for the exercise of power (see Giddens, 1979: 69).

All three dimensions of structure may therefore be viewed as the vehicles by which the structuration of social systems takes place. In effect, S, D and L, as 'modalities', are simultaneously exhibited in varying degrees in domestic groups and govern their character or institutional form, and consequently the principles of dwelling morphology (see Giddens, 1979: 106). The extent to which they are blended or interconnected provides the basis for the categorisation of institutions:

"... we can analyse how 'deeply-layered' structures are in terms of the historical duration of the practices they recursively organise, and the spatial 'breadth' of those practices: how widespread they are across a range of interactions. The most deeply-layered practices constitutive of social systems in each of these senses are institutions." (Giddens, 1979: 65; original emphasis).

Thus all households, as social and spatial systems, are constituted of regularised and persistent social practices and may be considered as institutions which can be grouped and analysed according to the broad sequence of the dimensions of structure given below. For the analysis of dwellings and for the purposes of this enquiry this is important for the following reasons. Domestic architectural space,

in that it constitutes relations among occupants and visitors in the reproduction of the *longue durée*, must itself be regarded as an institution that is enmeshed with domestic life. How this occurs and the extent to which it is integrated, must inevitably be related to the cultural and environmental conditions of existence. The spatial analysis of dwellings must consequently inform not only on the system of social relations accommodated in them but also on the nature of household structure and therefore on the effects of institutional outcomes on the patterns of interactions and household practice.

The scheme shown overleaf (Fig. 15), indicates four possible directions which an institutional analysis of dwellings may follow. The lines linking S, D and L do not indicate causal linkages but show their interdependence, while the (underlined) structure heading each sequence indicates the institutional focus and direction of study. For example, a study of the institutional form through which signification is spatially and socially organised in a household implies analysing the symbolic orders and modes of discourse inherent within it. However, in order to comprehend fully the household in relation to its dwelling from this point of view, the analysis must also examine how symbolic orders and modes of discourse mesh with forms of domination and legitimation.

The abstract, compressed description covering these relationships is captured in syntax's spatial genotype, or G-model. But, the precise nature of the means by which G-models come to be manifested in reality is largely overlooked in syntax (see Hillier and Hanson, 1984). This is due mostly to the overwhelming emphasis and attention given to the

SEQUENCE OF STRUCTURAL INTERDEPENDENCE	INSTITUTIONAL FOCUS OF ANALYSIS
(1) <u>S</u> - D - L	Symbolic orders/Modes of discourse
(2) <u>D (auth.)</u> - S - L	Political institution/ Control over people
(3) <u>D (alloc.)</u> - S - L	Economic institution/ Control over nature
(4) <u>L</u> - D - S	Law/Modes of sanction

Figure 15
The Structurationist Categorization of Institutions

Source: Giddens, 1984: 33.

concept of solidarity in explaining social and spatial reproduction; events in which the relationship between human activity and social systems is inadequately theorised and demonstrated.

In one important sense, the S, D, L sequence - whatever local or particular form it takes - is in itself the principal means whereby social systems turn into spatial arrangements. According to structuration theory, real domestic spatial systems are in effect grounded in and created via the S, D and L modalities inherent in G-model descriptions. This conceptualisation of modality together with the duality of structure principle allows the difficulties surrounding the nature of structure, as emphasised by Hillier and Hanson, to be avoided:

"It could be objected that, in arriving at relatively autonomous descriptions of the genotypical structures of space organisations, we may have inadvertently removed some of its most important dimensions of social content and meaning (cf. S and L), in particular those which have to do with the broad economic (cf. D alloc.) and political (cf. D auth.) structure of society. ... (Consequently) there is a danger that space is thereby split off from the main fabric of society." (Hillier and Hanson, 1984: 199; my emphasis).

Thus, as a methodological device, Giddens' abstract scheme showing S, D and L as dimensions of structure has the potential for restoring as well as illustrating the real world linkages between social and spatial systems. At the same time the principles surrounding the means by which description retrieval (of reality) both restricts and enables an otherwise random set of processes into regularised and 'deeply-layered' patterns of interaction, that lead to spatial

outcomes, are described in S, D, L sequences. This transformational process is anticipated by Hillier and Hanson:

"Without embodiment and re-embodiment" in spatio-temporal reality, structure fades away. Even though structures have internal laws, they are only made real as abstractions by the physical and mental activity of many individuals. Thus structure is not a global abstraction ... (but) is both derived from and depends on reality." (Hillier and Hanson, 1984: 206; my emphasis).

That reality is historically and contextually rooted in patterns of signification, domination and legitimation. Thus not only is the nature of G-models described by the S, D, L - scheme, but also their origin, effect and locus within real socio-spatial events. A more concrete form is given to the duality of structure principle by S, D and L relations contained in G-model descriptions: As 'modalities' of structuration, G-models are central dimensions in the constitution of interaction - being both medium and outcome of social practices. The question for analysis then becomes one of methodologically breaking into that recursive cycle without distorting the notion of causality inherent in structuration theory. An effective analytical model is therefore one that allows the analyst to 'get into' the structuring of social systems in space and time. A methodology for reaching that objective is proposed and described in the following section, which examines the concept of 'bracketing'.

6.2 Analysing the Spatial Constitution of Social Encounters in
Domestic Architecture: Institutional Analysis and the
Analysis of Strategic Conduct

Giddens' concept of bracketing allows the model to be applied by providing the basis for penetrating the structuration of domestic social relations in architectural space. In short, bracketing is a technique that allows system analysis and agency analysis to be (methodologically) separated without according primacy of explanation to either (see Giddens, 1979: 80-81 and 94-95).

However, in that agency and system are integrated via structure, both components necessarily play a crucial part in the analysis of the other, where structure is the common denominator. Thus, the different 'layers of temporality' implicated in the structuration of social systems which Giddens notes - from the *durée* of day-to-day life and the finite *Dasein* of human life, to the *longue durée* of institutions - are placed 'on hold' in analysis (Giddens, 1979: 80 uses the term 'epoché' to convey this meaning). For example, by bracketing the activity of agents (*durée* and *Dasein*), analysis can focus on the system of practices which they interactively reproduce and institutionalise (the *longue durée*) whilst not ignoring the former. The duality of structure, as both the medium (for activity to occur) and the product (in the form of a real system in space and time) of action, ensures this. Bracketing expresses that duality in which the modalities of signification, legitimation and domination

provide the coupling elements within structure that acknowledge the interrelation between agency and system (see Giddens, 1979: 81).

The essential difference between agency and system analyses is thus the character which rules and resources - as represented by S, D and L - take on as medium and product respectively: In other words, how household G-models, as modalities, allow interactions within domestic groups, and systems of spaces within dwellings, to become one another and thereby enunciate the social meaning of dwellings. The process through which this comes about is best illustrated by considering each of these two types of analyses in turn.

The central objective underlying institutional analysis is an understanding of how institutions affect patterns of interaction among individuals: In other words, how spatial organisation, or design, affects social encounters. Here there are two key elements of the model that are crucial to meeting effectively this objective. Both elements treat institutions as modalities, firstly in relation to the *durée* and secondly to the *longue durée* of social life.

The first concerns the agents who are implicated in the patterns of interaction. Continuities and transformations of the S, D and L dimensions of household structure are directly affected by the people who reproduce them in action. Institutional analysis thus examines social system reproduction as the outcome of that interactive process:

"Institutional analysis ... places an *epoche* upon strategic conduct (of agents), treating rules and

resources as chronically reproduced features of social systems." (Giddens, 1979: 80; my emphasis).

This means that the rules and resources implicated in recursive social processes are conceptually 'frozen' in order to provide some insight into the most persistent and regularised practices inherent in social systems. It is precisely here that space comes to fore as a critical index in institutional analysis since, because in architectural form it is visible and measurable, it provides access to social system organisation. Thus the extent to which architectural space is invested in the maintenance of social systems may be seen as a measure of how it brings together and systematically relates organisational features to one another. This point is clarified in syntax:

"The term structure is normally a synchronous notion: it describes a set of relations that hold at a particular point in time ... The point about investing space in particular sets of relations is that this will synchronise those relations. It will cause them to be experienced as a structure of simultaneous relations. The more space is invested in these relations, the more this synchronicity will be emphasized." (Hillier and Hanson, 1984: 92-93; my emphasis).

Relations among individuals in households are consequently 'synchronised' by the quantity of space in dwellings. But these relations are only realisable in action, in and through S, D and L modalities. Thus syntax provides a firm basis for institutional analysis since the *longue durée* of household organisation which is captured in G-models is fully embedded in institutional activity - that is, in the combined effects of interaction among individuals - all the time.

The identification and separation of the *longue durée* by focussing on the *durée* of household activities in institutional analysis is consequently an analytical convenience: One that represents an attempt not only to distill and describe the essential core structures of households, but also how they (intentionally and unintentionally) result from, and create the (acknowledged and unacknowledged) conditions for interaction among individuals.

In this sense, G-models are, from the point of view of household members, ontologically real. That is, S, D and L sequences inherent in domestic group structure may be seen as providing the basis for securing the continuity (and transformation) of day-to-day existence for individuals and for giving meaning both to their activities and the spatial designs of their dwellings.

Thus although dwelling form and households, as *longue durée* institutions, may be greater or more durable than the life-spans of the individuals who constitute them, the role of agency in the *durée* of domestic life is vital to their maintenance or reformation. Therefore, any analysis of dwellings as institutional contexts that does not recognise agency runs the risk of emphasising the household as a supra-human entity which autonomously determines spatial outcomes. Furthermore, if all regularised patterns of interaction are, by implication, reflections of the modalities of S, D and L, then analysis must consider the relationship between individual agents and the domestic group (and dwelling) as a whole.

This leads to the second concern in institutional analysis which builds upon the first by examining the relationship between G-models and particular domestic spatial systems. Here, the emphasis is on how the communicative, sanction, economic and political modalities of interaction - the *longue durée* - are manifested in different institutions. The concern in analysis is therefore:

"the long-term reproduction of institutions across the generations, the contingency of the transformation/mediation relations implicated in structural principles of system organization." (Giddens, 1981: 28).

Since the S, D and L dimensions of system organisation are not mutually exclusive in G-models, but are interrelated in all domestic groups, analysis of the effects of each in turn must consider how the others are implicated. It is therefore important to be clear about the precise nature of S, D and L modalities in domestic groups in order to understand how, via these modalities, they affect patterns of interaction and consequently the systems of spaces in dwellings. This is essential since it is the combined effect of domestic activities by occupants and visitors on the form of dwellings that is being sought; an effect that creates the (incorrect) impression that households act independently of individuals. The diagram shown overleaf (Fig. 16) summarises the properties of S, D and L in relation to the proposed model of Institutional Analysis.

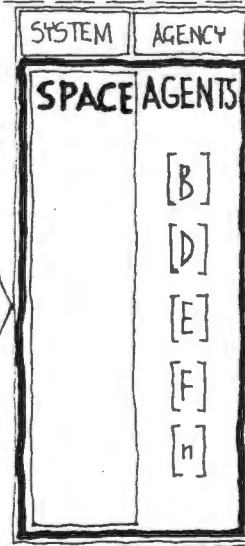
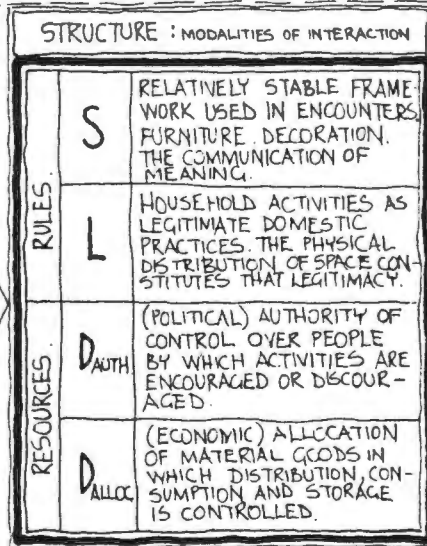
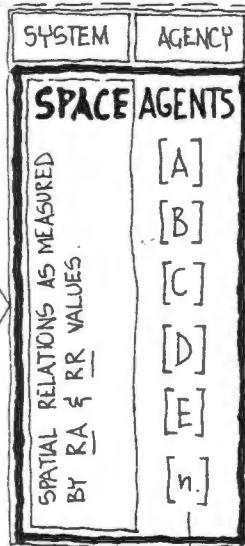
Signification: Analysis of this property of structure is concerned with how the household and the arrangement of spaces in the

INSTITUTIONAL ANALYSIS

THE AIM IS TO UNDERSTAND HOW HOUSEHOLDS, AS SOCIAL INSTITUTIONS THAT INCLUDE THE DWELLINGS THEY OCCUPY, IMPINGE ON THE PATTERNS OF DOMESTIC BEHAVIOUR. AS SUCH, HOUSEHOLDS ARE FOCUSED ON AS MODALITIES THAT EXPRESS RULES AND RESOURCES. STRUCTURE IS THEREFORE TREATED AS THE OUTCOME OF DOMESTIC ACTIVITIES. AGENCY, AS THE BASIS OF THOSE ACTIVITIES AND INTERACTIONS, IS CONSEQUENTLY A CRUCIAL DIMENSION IN THIS FORM OF ANALYSIS

ANALYSIS OF STRATEGIC CONDUCT IS SUSPENDED

FOCUS OF ANALYSIS IN WHICH THE RULES AND RESOURCES OF STRUCTURE ARE SEEN AS REPRODUCED FEATURES OF SOCIAL AND SPATIAL SYSTEMS.



INTERACTIONS AMONG PEOPLE REPRODUCE THE LONGUE DUREE.

THE ONGOING REPRODUCTION / TRANSFORMATION OF DOMESTIC LIFE.

INDIVIDUAL AGENTS ARE 'BRACKETED' IN ORDER TO VIEW INTERACTIONS AMONG OCCUPANTS AND VISITORS AS SOCIALLY CONSTRUCTED SYSTEMS OR PATTERNS OF ORDER.

Figure 16
Institutional Analysis

This form of analysis places in suspension the skills and awareness of agents and treats the household as a chronically reproduced set of rules and resources.

dwelling - as an integrated socio-spatial system - affect domestic architecture via the communicative modality. As such, social and spatial organisation may be seen as a well-established, interpretive framework that, through physical and other formal means in the dwelling, affects encounters among occupants and visitors. Thus, through the interior design, distribution of activity areas, furnishings, decoration, etc., the dwelling, as a communicative modality, provides the basis through which collective behaviour is mediated and controlled. At the same time, social status and class aspirations or identities are established, maintained or transformed through the arrangement, control and categorisation of space. In this way not only is interaction projected or encoded within particular social and environmental contexts (e.g. working class or middle class, urban or rural), but also the way in which economic and political power and sanction structures are shown to be implicated in the communicative modality of interaction.

Political Domination: This area of analysis is focussed upon how institutionalised control over people within domestic groups affects interaction, and consequently the layout and organisation of space. Here an understanding of the authoritative power invested in particular categories of people, such as household head, parents, important relatives, etc., is crucial. Strong, entrenched structures of political control affect interactions through the way particular individuals or groups of people encourage/discourage activities by others. The enactment of

control via people as resources establishes patterns of domination and resistance which, as social relations, may come to be spatially manifested. Thus, through the status of, for example, a parent or occupant, authoritative control enters dwelling form through the way it balances and co-ordinates categories of space. At the same time, the co-ordinating effect of authoritative power is both tempered and encouraged by the structures of economic control, communication and sanction.

Economic Domination: Institutional analysis here involves the control and allocation of economic resources. Included is the accumulation and distribution of material items that are necessary for maintaining patterns of subsistence as well as the comforts of domestic life. The storage of commodities such as food, household implements, capital investments, surplus goods, etc., establishes vital reserves that are used to ensure particular patterns of living and routine, including relations among different categories of people. Thus control over these reserves and resources provides the basis for the continuation and transformation of particular social practices within domestic groups, such as those affecting the design of dwellings, and gives power to individuals to break with established norms. As with the other modalities, patterns of resource allocation are closely wedded to the other structures.

Sanction: This form of analysis is intended to lay bare the legitimation of household interaction and domestic spatial

relations through the sanction modality. For example, the legitimisation of domestic practices may take place in interaction through the enactment of kinship relations which, when sanctioned by routinised behaviour, inherited ideas and values, ensures that the encounters are 'normal'. Rights and obligations tied to the different categories of people such as parents and children, and males and females may be reproduced behaviourally through inherited patterns of interaction which fall within socially defined norms. Incest taboo, as a sanctioning device, places clearly defined limits on particular kinds of behaviour which, through day-to-day activities and encounters, are re-created and learned, thereby ensuring that household behaviour is socially acceptable (see Badcock, 1975). In addition, some of these behavioural patterns, as boundary-marking devices, are spatially constituted. Thus, for example, the classification of space may be conceptualised into broad and distinct zones to do with, for instance, the external presentation of image (front/back), hygiene (clean/dirty), status (parents/children), etc.

It is important to reiterate that in analysing each structural property, reference must be made to the spatial design of dwellings. Measures of RA and RR underlying the organisation of space provide key information not only for the understanding of each of the modalities but also for showing how S, D and L mesh together so as to provide an index of the capacity of dwellings to resolve spatially conflicts and differences within domestic groups. Measuring that capacity is thus also understanding the extent to which space needs to be introduced

into preserving or transforming social relations. However, in order to develop a rounded understanding of the relationship between spatial form and social relations, an analysis must be made of dwellings in use, since it is only through agency that socio-spatial system reproduction takes place.

In the analysis of strategic conduct, institutional analysis is bracketed in order to understand how G-models (S, D and L) are drawn upon by individuals in interaction:

"To examine the constitution of social systems as strategic conduct is to study the mode in which actors draw upon structural elements - rules and resources - in their social relations. 'Structure' here appears as actors' mobilisation of discursive and practical consciousness in social encounters." (Giddens, 1979: 80; my emphasis).

Thus by focussing on structure as the medium for interaction, the institutional characteristics of households are integrated into the study of agency. Here, it is important to be clear about the nature of the S, D and L modalities which are

"treated as stocks of knowledge and resources employed by actors in the constitution of interaction as a skilled and knowledgeable accomplishment, within bounded conditions of the rationalization of action." (Giddens, 1979: 81).

Insofar as rules and resources enable as well as impede action among individuals, the study of strategic conduct necessarily implies an understanding of how the exercise of power affects the relationship among them and consequently the structuration of social and spatial

systems. The focus in this form of analysis is thus the 'dialectic of control' and the operation of power in the reproduction of household life:

"the dialectic of control is built into the very nature of agency or, more correctly put, the relations of autonomy and dependence which agents reproduce in the context of the enactment of definite practices. An agent who does not participate in the dialectic of control ... ceases to be an agent." (Giddens 1979: 149; original emphasis).

In order to develop an understanding of structure as strategic conduct - via the notion of power - it is necessary to examine how activities and interactions are structured. This is perhaps best accomplished by identifying core events or projects around which the conduct of individuals is focussed such as, for example, entertaining guests, the preparation, distribution and consumption of food, and so on. The diagram shown overleaf (Fig. 17) is an attempt to illustrate this form of strategic conduct analysis.

The aim is to ensure that G-models and socio-spatial systems are part of the analysis and not treated as merely the stage settings for interactions among actors. As such, G-models feature as the on-going *longue durée* that is ceaselessly reproduced and transformed in action.

That action takes various forms depending on who is involved, what is being done and where it occurs. Action and interactions among agents in space-time may consequently be seen as a continuous flow of context-related conditions for action, interactions, consequences of

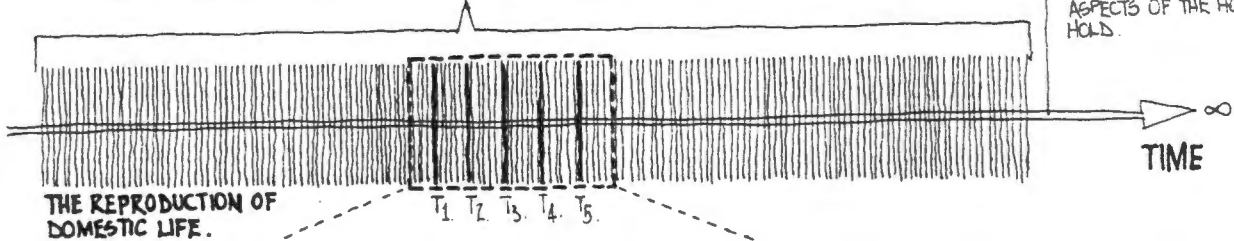
THE ANALYSIS OF STRATEGIC CONDUCT. THE AIM IS TO UNDERSTAND THE STRUCTURATION OF DOMESTIC SPACE IN WHICH THE DIALECTIC OF CONTROL AMONG AGENTS IS THE MEANS BY WHICH THE OPERATION OF POWER IS REALISED, MAINTAINED AND ALTERED. ANALYSING 'BEHAVIOURAL STRATEGIES' IS THUS FOCUSED UPON HOW RULES AND RESOURCES ARE MOBILISED IN DOMESTIC ACTIVITIES. SINCE THESE ARE CONTEXTUALLY BOUND, THE HOUSEHOLD AS AN INSTITUTION IS INTEGRAL TO THE ANALYSIS

DUREE

DAY-TO-DAY HOUSEHOLD ACTIVITIES IN SPACE-TIME

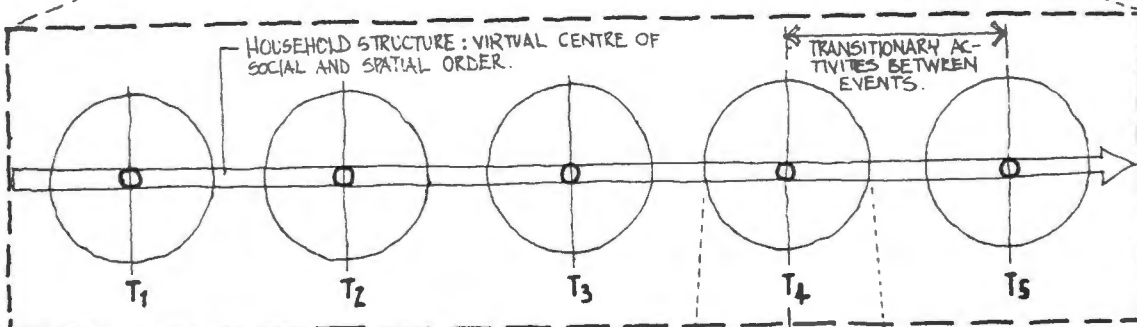
LONGUE DUREE

THE MOST ENDURING ASPECTS OF THE HOUSEHOLD.



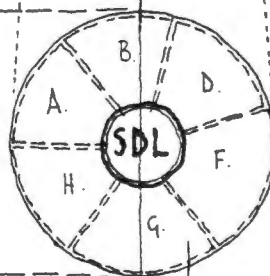
HOUSEHOLD STRUCTURE: VIRTUAL CENTRE OF SOCIAL AND SPATIAL ORDER.

TRANSITIONARY ACTIVITIES BETWEEN EVENTS.



RECURRING EVENT: REPRESENTED AS A SET OF TIME 'SLICES' IN WHICH IS IMPLICATED THE SPATIAL DIMENSION OF INTERACTIONS AMONG INDIVIDUAL AGENTS.

THE SPATIAL EXTENT OF THE EVENT. SPACE CONSTITUTES POWER RELATIONS IN DWELLINGS.



STRATEGIC CONDUCT ANALYSIS

THE DIALECTIC OF CONTROL AMONG INDIVIDUALS ESTABLISHES THE BASIS FOR UNDERSTANDING INTERACTIONS AS SETS OF INTERLOCKING POWER RELATIONS WITHIN DISCRETE EVENTS. HERE, S/D/L MODALITIES FORM THE FOCUS AROUND WHICH EVENTS AND INTERACTIONS ARE STRUCTURED.

INDIVIDUALS INVOLVED WITH THE EVENT.

Figure 17
The Analysis of Strategic Conduct

Here, the analysis of the household as an institution is suspended, concentrating on what agents do and how they draw on rules and resources

that activity, which in turn establish the conditions for more action, and so on.

By focussing upon particular events, that process is methodologically separated into a series of discrete space-time 'slices' that capture aspects of the duree of daily life. Here, the enactment of ritual, routine and roles may be highlighted as the central characteristics of particular events which provide some insight into the assymmetrical relations of dominance and resistance among agents and consequently, how patterns of control are secured, reproduced and given meaning.

In this sense, discrete events may be conceptualised as the structured and structuring mechanisms for the dialectic of control which, through S, D and L modalities, are realised around the operation and exercise of power. (As discussed in previous chapters, space constitutes the power relations among people. The extent to which these patterns are materially comprehensible may consequently be measured by examining the overall structure of spatial relations, as shown in the axial map of buildings.)

The analysis of strategic conduct around these mechanisms offers the possibility, therefore, for a more detailed or finely textured understanding of the meaning of spatial systems in domestic buildings which institutional analysis, because it holds in suspension the practical activities of agents and their interpretations, cannot achieve. Thus, although domestic architecture may be shown to be organised and spatially integrated according to certain cultural codes or values centred, for example, around cattle (Kuper, 1980), 'life-

forces' and religious ideas (Huffman, 1981), age status and gender distinctions (Kent, 1984), etc., these themes do not enable a complete understanding of the social meaning of dwellings which is continually evolving: A process in which events and activities ceaselessly produce various outcomes and consequences that in turn may transform the central G-model.

The emphasis in this form of analysis is therefore on how occupants and visitors interact via common events which, as the foci of actions and the enactment of power, reproduce and illustrate systems of social relations. As such, domestic architectural space must be seen as part of a recursive process whereby the biographical formation of individuals and the reproduction of the household system through structural patterns of signification, legitimation and domination continuously unfold as one and the same thing. At the same time, interactions among agents and domestic space and power relations ceaselessly become one another.

Through this process of 'becoming' some sense or measure is made by individuals of their social and economic conditions of existence. Since this meaning is spatially and historically related, an interpretation is made of the particular set of contextual realities in which an agent may find herself. Interpretation of spatial design thus places, or co-ordinates strategically, an agent in relation to a 'universe of meanings' - a universe that needs to be experienced as one that is orderly and secure (Bourdieu, 1977). The analysis of strategic conduct is thus the systematic interpretation of how

household members value and interpret space as a meaningful resource through the practical activities in which they engage. This form of analysis parallels closely Bourdieu's 'theory of practice' model in which spatial meaning is a function of practical action in a specific context (see Bourdieu, 1977).

The propositions underlying both institutional analysis and the analysis of strategic conduct rest upon the following assumption: That the ways in which social processes and spatial phenomena are recursively wedded together vary with particular contextual and historical circumstances and therefore are not functionally determined nor the result of reified structures 'out there'. Each form of analysis may therefore be seen as a difference of emphasis that concentrates on the duality of structure in domestic situations. It is only under these circumstances that the day-to-day and longer term activities of households can be understood, thereby establishing the basis for interpreting the social meaning of dwellings. In this way, morphological similarities and differences of domestic architecture may be seen to unfold in ways that are at once socially logical.

The description and analysis of selected case studies in the following chapters are an attempt to capture and demonstrate that logic.

SECTION THREE

DOMESTIC SPATIAL DESIGN AND SOCIAL RELATIONS

CHAPTER 7THE DOMESTIC SCENE : CONSERVATIVE VALUES AND MODERN IDEASIN TWO URBAN DWELLINGS

The next two chapters are complementary and should be read in conjunction with each other. The preceding chapters have focussed on the development of a theoretical frame and set techniques for analysing the social meaning of dwellings. Chapters 7 and 8 will bring these together in a demonstration of the model and will offer a structurationist account of domestic architecture that is aimed at the reproduction and transmission of socio-spatial form.

This chapter describes two dwellings that have been selected as case studies. These data include aspects of their design, their wider setting and the results of observations made on their use. Chapter 8 presents an analysis of these two sets of data, which, as examples of dwellings in use, will be used to illustrate the model proposed in Chapter 6. This will be done in accordance with the aim of this investigation which, as set out in Chapter 1, is to indicate how domestic space is integrated with the broader aspects of household life.

The argument therefore returns to the question of 'tradition', particularly as this concept is commonly counterposed to the idea of 'modern' when referring to the meaning and design of domestic architecture in southern African settlement studies. The discussion

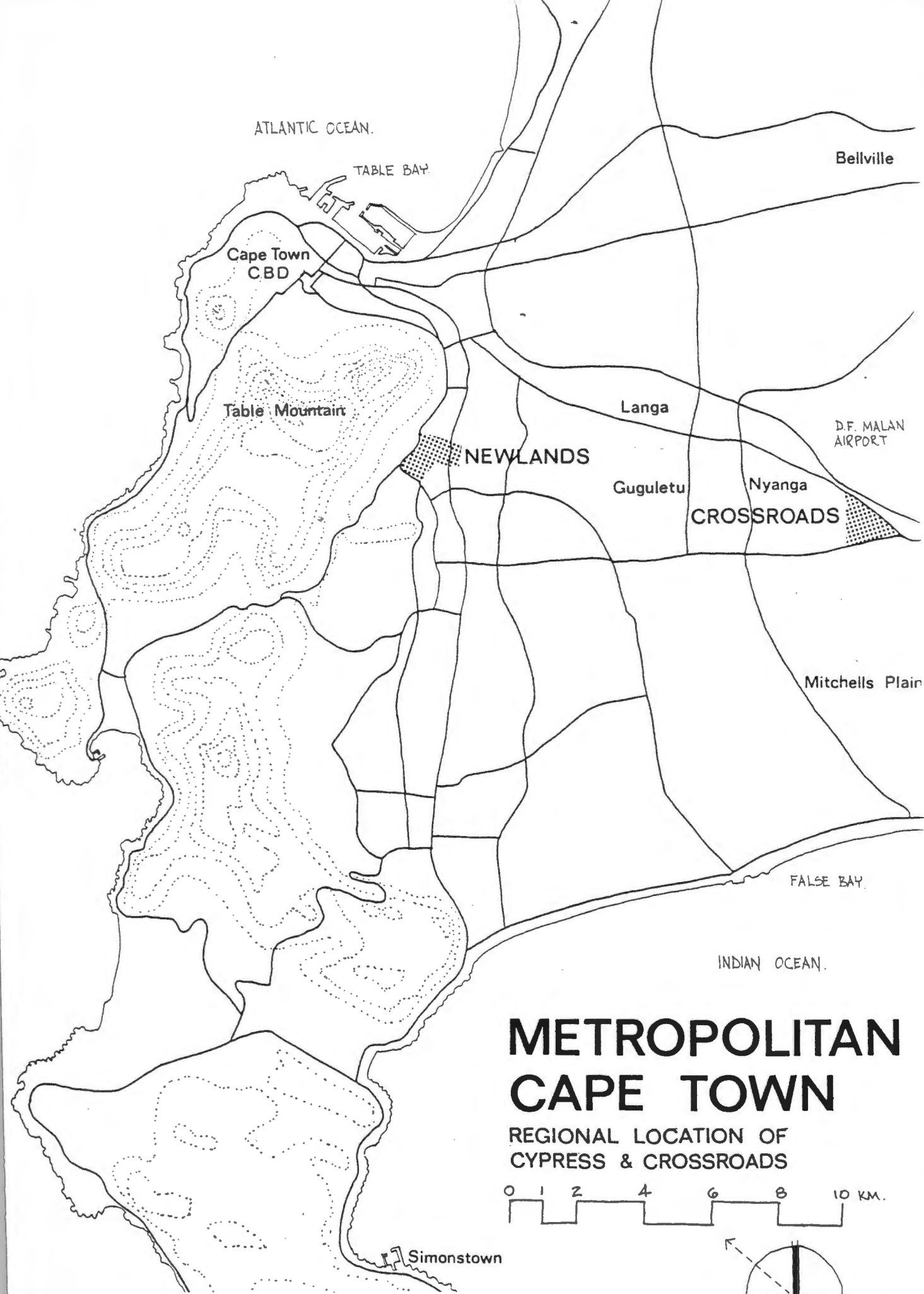
will be illustrated using two urban dwellings situated in the Cape Town Metropolitan area (see Fig. 18)

The one, designed and occupied by a 'traditional' Xhosa-speaking (African) household, is situated in Crossroads, an informally produced settlement. The other was designed and is occupied by an English-speaking, middle class household headed by a professional designer. This dwelling is situated in the (white) suburb of Newlands. In order to preserve some degree of anonymity the first household will be referred to as 'Crossroads' and the second as 'Cypress'.

7.1 Setting the Scene for Analysis: Crossroads and Cypress

Information concerning the context, architectural design, household composition and the use of the two dwellings was collected during 1984 and 1985. These data were assembled by means of making accurate measured drawings and notes, structured open-ended interviews with the designer and users in each case and by systematic participant-observations. Each household was visited two to three times a month over a period of a year when observations of activity and use patterns were made. The following is a sketch of the dwellings they occupy, as found during the data-gathering phase of this investigation.

Among the most important regularities underlying the two case studies are the following:



METROPOLITAN CAPE TOWN

REGIONAL LOCATION OF
CYPRESS & CROSSROADS

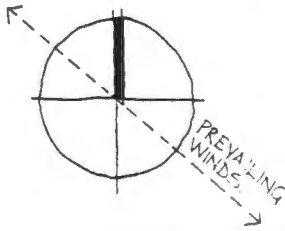


Figure 18
Regional Location of Cypress and Crossroads

- Both households took full control of the design decisions and construction of their dwellings. Thus, given the physical and economic constraints imposed by, among other things, the availability of land and the cost of building materials, the two dwellings constitute unique architectural designs that are enmeshed as far as was considered necessary by the occupants in their domestic lives.

- The two dwellings are situated in the same metropolitan area. This means that although Cypress is separated by some 15 km from Crossroads, the livelihood of both households is dependent upon the same urban infrastructure: jobs, transport system, market place, etc. Obviously, because of government policy, access to aspects of that infrastructure by the two households is varied, legislatively controlled and biased in favour of the (white) minority group that presently holds power. Cypress, as part of that group, is consequently able to exploit more freely and take advantage more easily of the resources and opportunities which the metropolitan area is able to offer.

- Both dwellings were designed and built at more or less the same time. Crossroads was built during 1975/76, the formative stages of the growth of the settlement itself, and Cypress during 1979. This is important given the fact that the two households represent two groupings that, in South Africa, are legislatively separated on the basis of race. Any large temporal distance separating the design of the dwellings would consequently increase the range of

variables which would have to be taken into account during analysis and obfuscate unnecessarily the process whereby the objectives of this enquiry could be reached.

Besides these common features however, vast differences characterise Cypress and Crossroads. The educational and cultural backgrounds surrounding both households as well as their socio-economic, political, material and environmental conditions of existence vary considerably. One way of understanding how Crossroads and Cypress are integrated into these realities is to identify those aspects of context and social behaviour that relate to and are enunciated in domestic buildings.

The attempt to reach that understanding is directly related to the objectives of this enquiry. It has been argued so far that dwellings are active in the reproduction and transmission of domestic social relations, values and ideology. Two essential features of that argument may be summarised as follows:

- Firstly, dwelling space constitutes a context for domestic social relations that are constantly emerging through the activities and interactions among occupants and between occupants and visitors. The relationship between households and dwellings is thus a necessary rather than a contingent one: The one's meaning is already an expression of the other's and is not merely its reflection.

- Secondly, dwellings structure and are structured by domestic activity patterns which, in relation to context, must be considered as strategic behaviours and interactions.

However, the social process by which spatial meaning is invoked and made possible is not immediately apparent in the form of dwellings, and is consequently difficult to expose. To argue that domestic social structures and patterns of activity are 'reproduced' is not enough. What is needed is an explication of these processes so that how and why they occur at all may be shown. Here, analytical bracketing, in that it establishes a means of applying in practice the theory of the duality of structure, emerges as a methodologically appropriate technique for research into the meaning of domestic architecture.

Primarily, this is because in this investigation it is based upon the organisation of space in dwellings, and therefore provides tangible evidence of domestic social processes that other techniques and data might fail to isolate and disclose. By making a comparative spatial study (in Chapter 8) of Crossroads and Cypress, it becomes possible to identify the architectural manifestations of social values, including the location of different kinds of 'traditional' or 'modern' ideas, and how these change and are reproduced structurally.

It is first necessary to provide some description of the architectural and urban settings that establish the context for domestic life in each of the two case studies. The descriptions that follow fall into

two main complementary parts. The first describes a survey of the physical and social properties of the dwellings and their occupants, including their neighbourhood settings. The second is a survey of activities and use patterns. These surveys are summarised and presented under the following headings:

Physical and Social Survey

1. Crossroads

- 1.1 The Settlement at Crossroads: Spatial order of an irregular kind.
- 1.2 Spatial Layout: A straightforward distribution of activities.
- 1.3 Domestic Grouping: Kinship, polygamy and migrancy.
- 1.4 Technology and Style: The appropriate shanty.

2. Cypress

- 2.1 Newlands: Privileged suburban living for whites.
- 2.2 Spatial Layout: A carefully zoned schedule of accommodation.
- 2.3 Domestic Grouping: A modern elementary family.
- 2.4 Technology and Style: A studied expression of values and tastes.

Survey of Activities

3. Crossroads and Cypress

- 3.1 A Qualitative Framework for the Interpretation of Space: Observations on the use of dwellings and the scheduling of activities in space and time.

7.2 Physical Survey

7.2.1 Crossroads

7.2.1.1 The Settlement at Crossroads: Spatial order of an irregular kind

Crossroads consists of a community of black 'squatters'. There is consequently no security of land tenure in the settlement which is situated next to Nyanga township and close to the D.F. Malan Airport. Its history is complex particularly because in recent years it has become a symbol of both black resistance to government policy and of State oppression, harrassment and intervention. (Details of the history of the settlement including its social, economic and political background have been more fully reported elsewhere. See, for example, Horner, 1983; Cole, 1986; Prinsloo, 1984; Dewar and Watson, 1981; Heap, 1986.)

Crossroads came into being in 1975 when government authorities moved squatters from several areas in the Cape Peninsula to the present location. In 1976 it was officially declared an Emergency Camp in terms of Section 6 of the Prevention of Illegal Squatting Act, 1951. Following this declaration, the Divisional Council of the Cape was obliged to provide certain services and infrastructure. These included a garbage and bucket refuse removal service and several water taps for communal use. Later, in an attempt to control the settlement and curb further growth, each dwelling was numbered so that extensions could be prevented. The cumulative effect of these

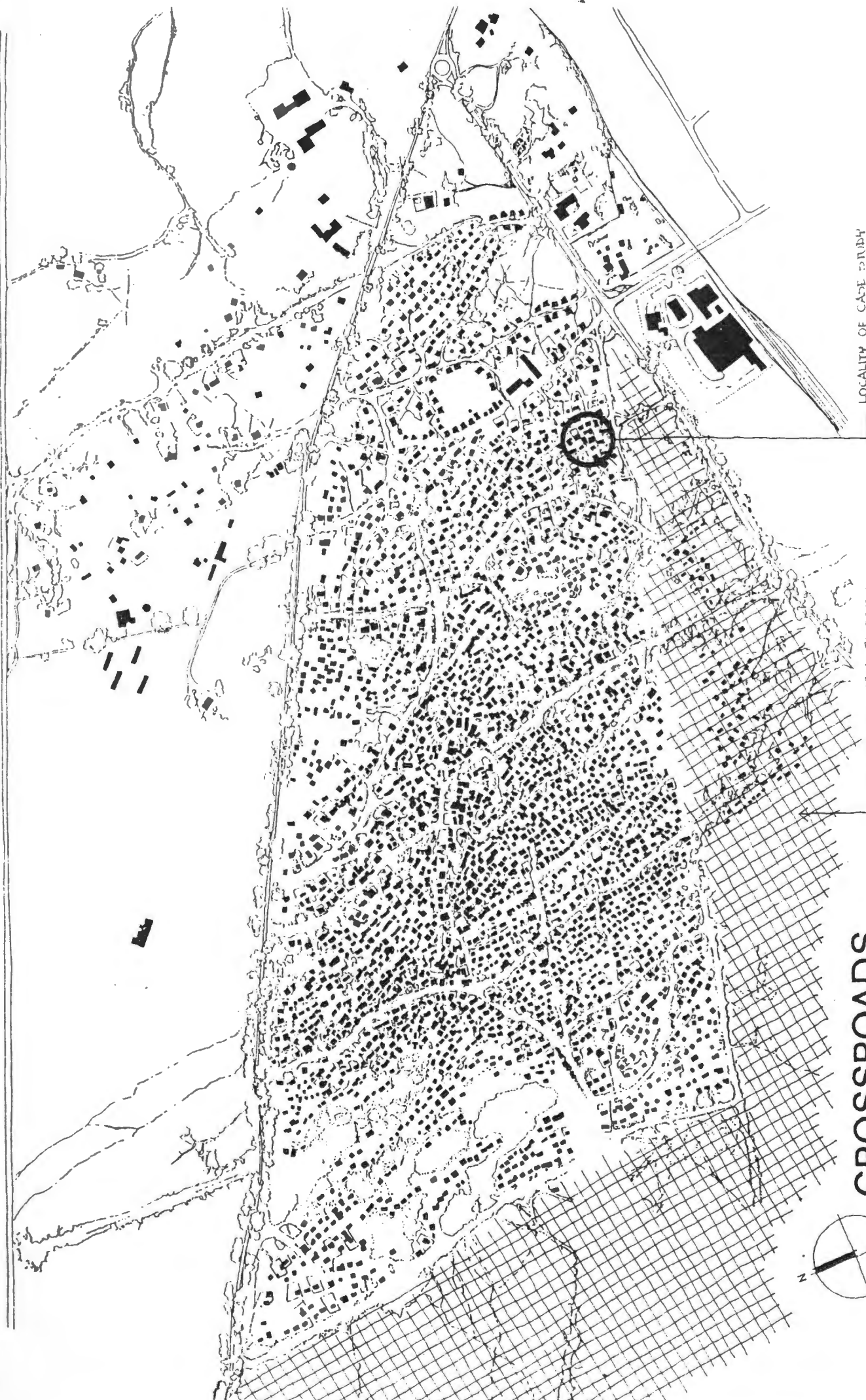
aggregations of dwellings on the morphology of the settlement is that it is seemingly 'organic'.

The settlement thus appears irregular, or non-orthogonal (Fig. 19). The overall spatial pattern is dense and reflects the large number of people who are concentrated in it. A study undertaken in 1981 shows that, on the whole, the density of population is roughly three times as many as in planned townships in the area (Dewar and Watson, 1981: 88). Surveys undertaken recently confirm this finding and indicate a population size (before the mass destruction that took place in the first part of 1986) of around 100 000 people (see Heap, 1986).

Crossroads is made up of compact clusters of dwelling units that are connected by a network of movement routes. This consists of a continuous flow of streets and walkways. The structure of this system of public space is characterised by two main features.

Firstly, entrances to dwellings always front directly on to the streets, walkways and wider spaces. There are consequently very few areas within the public spatial realm that are defined by blank building facades or walls.

Secondly, the movement network offers a selection of routes from any one point to all others in the system. It turns out that there is great differentiation or divergence in the length, width and continuity of public space and that there are no cul-de-sacs.

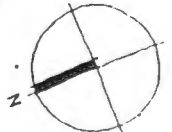


LOCALITY OF CASE STUDY

Figure 19
 Crossroads: The Settlement

THE HATCHED AREA RETIREMENT
 PART OF THE 'NEW' CROSSROADS
 SETTLEMENT THAT WAS DESTROYED
 DURING THE 1985/6 VIOLENCE

CROSSROADS



On first inspection these features seem to contribute to an apparent lack of spatial order. The settlement pattern creates an (illusory) impression of a haphazard, unplanned, unhygienic and 'unself-consciously' designed environment. It is consequently difficult to see any intelligible kind of spatial order. However, as in most spontaneously developed urban settlements in southern Africa and elsewhere, the 'deformed' pattern at Crossroads creates an extremely rich and unique quality of urban space that is inherently social.

This high degree of internal socio-spatial order is masked by a form of superficial environmental chaos. This was noted by Paul Andrew and John Western in a comparison they made with Nyanga township:

"The settlement with greater physical unsightliness may possess in fact the greater social cohesion, especially because it is a settlement of families and because it has to create itself and its institutions by community participation" (Andrew and Western, 1978: 19).

Personal knowledge of Crossroads and field observations - at least before the outbreak of political violence and its sporadic continuation since then - confirm the reputed degree of social integration and order in the settlement. There is also evidence of a strong localised economic sector that is self-reinforcing. This is constituted of dozens of small businesses, hawkers, tradesmen and 'backyard' industries that are dispersed throughout the community but are particularly located along the more dominant, easily recognisable routes (see Dewar and Watson, 1981). In one important sense, this pattern of dispersion is complemented by the public spatial network.

The combined effect is that the socio-economic and spatial system as a whole is self-reproducing.

Businesses take full advantage of the movement pattern by being located along the streets and walkways. So do some households especially those situated along the dominant streets which display their goods or services in front of their dwellings. Because there is a high degree of spatial accessibility in the system, the businesses attract greater numbers of people. This establishes the incentive for more outlets, and in this way through the agency of sellers and buyers, the system reproduces and transforms itself.

One measure of the extent to which this set of activities impacts on the community, is the level of unemployment. In this sense Crossroads represents the Cape Town Metropolitan area's lowest rate: 5,23% (Prinsloo, 1984: 49). This is ascribed to several factors of which one of the most important is the local economy which, complemented by the spatial pattern, is fundamentally at least, a job-generator.

However, underlying these 'surface' characteristics is a changing set of social circumstances to do with community leadership and control. In a recent paper that examines these issues in the context of South Africa's escalating political and economic crisis, Josette Cole has argued that Crossroads has been transformed from a democratic community in its formative years to one that is increasingly repressive (Cole, 1986). Several factors are cited as indicators and

reasons for this. Included here is the South African government's reformist initiative - a 'top-down' process in that it has been planned and propelled by the State itself. And a 'bottom-up' process in that key community leaders in Crossroads have been co-opted directly and indirectly by the State to intervene on its behalf.

Surrounding this process is the way community struggles (against government policy) at Crossroads have been able to exploit, as well as be exploited by, wider economic and political realities. One result of this process of transformation is that the social environment within the community now resembles that of a 'mini-Bantustan', replete with a concentrated emphasis on 'neo-traditional' values and structures of control (Cole, 1986: 13).

These structures were, and still are, drawn mainly from the material and ideological linkages to the ('tribal') rural 'homelands', such as the Transkei. This was done initially in an attempt to establish a sense of community and a strongly united, and popular, front to the harassment by government officials who have been relentless in their drive to have the residents moved to the newly created black 'city' of Khayelitsha (see Cook, 1986). However, as demonstrated by Cole, one of the unintended consequences of these structures has been that, once in place and entrenched in the community, they have provided the means for the state to intervene, divide and, as evidenced in the recent 'black on black' violence and destruction of the newer areas surrounding the settlement, control the entire community (Cole, 1986). (For coverage of these and other events in Crossroads, see the Cape

Times and Argus, 17/5/1986 to 30/5/1986.) The nature of these cultural 'neo-traditions' and how they have shifted in function and meaning in the present social and political climate in the Crossroads complex, is examined briefly below.

Because most of the residents are recent migrants from the rural areas (Heap, 1986: 2), earlier life experiences and cultural assumptions have been reproduced. One highly probable reason for this would be the need to sustain ontological security in the strange and new (urban) setting, and to give appropriate content and meaning to the mechanisms of coercion and exploitation which are normatively operative in the rural areas - some of these 'traditional' mechanisms having been formally institutionalised in the political and 'state' structures in several of the Bantustans (see Southall, 1982).

The 'traditional' structures of control in Crossroads have consequently assumed the same functions and forms as those in the rural areas. Among the most apparent is a heavy emphasis on the patriarchal form of authority. This is expressed in two mutually reinforcing ways.

The first relates to the wider social arena and political economy. Here, agencies of control are the headmen and wardsmen. The main functions of these leaders include tax collection, a system of (stringent) law enforcement centred around local 'courts' and, until legislatively prohibited in the late 1970s, the allocation of land for the construction of dwellings (see Weichel, 1979).

In the context of the broader struggle for national liberation these functions have assumed a changed character, especially as Crossroads (along with other similar communities) has become increasingly recognised as an important site at the vanguard of that struggle. A major current feature of the Crossroads leadership is consequently that it has mobilised and entrenched community allegiances along broad political and cultural lines. This has had the effect of splitting the residents in Crossroads and the newly settled areas adjacent to it into two (hostile) groupings.

The one group, consisting mostly of the original Crossroads settlement, is characterised by a form of social consciousness and political practice that is essentially conservative, or culturally 'traditional', in nature. This group, commonly referred to as the 'Old Crossroads' community, is counterposed to the more progressive and radically aligned grouping of 'Comrades' which, until the recent destruction, was situated mainly in the newly settled complexes known as 'New Crossroads'. A crucial, underlying reason for the antagonism between these two groupings may be directly related to the reformist initiatives of the state.

One of the South African government's recently announced 'reforms' was that the Crossroads community would not be forcibly removed to Khayelitsha and that their settlement would be formally upgraded (see Platzky and Walker, 1985). However, one of the conditions of these plans' going ahead, which was agreed between the Crossroads leadership

and local officials, was that upgrading would only apply to the original (that is, 'Old') settlement. This meant that the recently settled communities surrounding the complex would have to be removed and deported to their 'tribal homelands' or, if they qualified to be in an urban area, resettled at Khayelitsha and their dwellings demolished (see Ellis, 1984; Cook, 1986).

The effects of these decisions resulted in the 'Old Crossroads' community feeling threatened by the existence of the 'New Crossroads' settlement and its resident population of 'Comrades'. The result was closer collaboration between the state and the 'Old Crossroads' leadership; a politically and socially undermined 'New Crossroads'; conflict between the two communities and, ultimately, widespread carnage and the elimination of the entire 'New Crossroads' settlement. (This occurred during the first three months of 1986.)

These splits and tensions seem to reflect the nature of the black population as a whole in the Western Cape region. Here, as shown in an analysis of the activities of communities' resistance to state policy during 1985, although class consciousness and class formation do appear to have emerged in a particular form, there are social, economic and political practices of a conservative or 'traditional' nature that are clearly present and just as strong (see Bundy, 1986).

The second form of patriarchal authority is manifested in a smaller, more isolated and fragmented way. This is the household which in Crossroads is wholly integrated with the wider community. As a set

of localised 'traditional' power relations it is an important setting for the maintenance and reproduction of the control structures that characterise the settlement as a whole. The spatial constitution of the system of power relations that make up the household is the dwelling. Its physical and social characteristics are more carefully examined and described in the following three sections.

7.2.1.2 Spatial Layout: A straightforward distribution of activities

The following description of the layout and organisation of space in the dwelling is necessary to the discussion which follows on the household that occupies it.

The dwelling is situated in the original (that is, the eastern) part of the 'Old Crossroads' settlement (see Fig. 19). Its form is the result of a process of additions, demolitions and changes that have taken place since it was initially built as a two-room building. However, the architectural and spatial characteristics of the dwelling have not altered drastically since the introduction of stringent laws forbidding the construction of new structures. Consequently the overall form has remained roughly the same for the past six years (see Fig. 20).

The dwelling was one of the first to be built and is thus close to the outer edges of the complex and near to Lansdowne Road. Its boundaries are shared with two neighbours.

CROSSROADS

0 0.5 1 2 3 4 5 M.

CROSSROADS SETTLEMENT
CAPE TOWN METROPOLITAN AREA
MEASURED DRAWING: OCTOBER 1984.

GROUNDPLAN

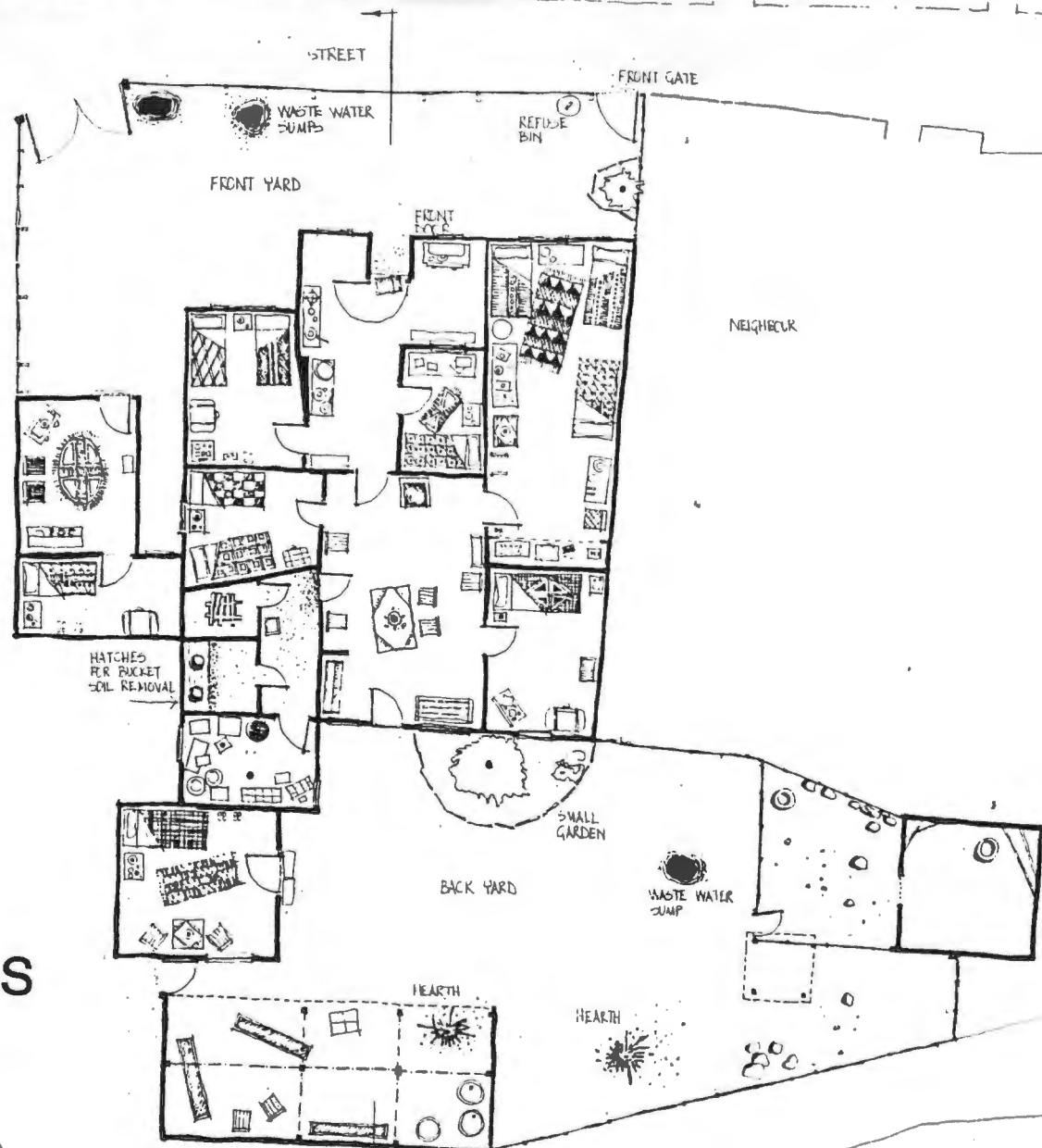
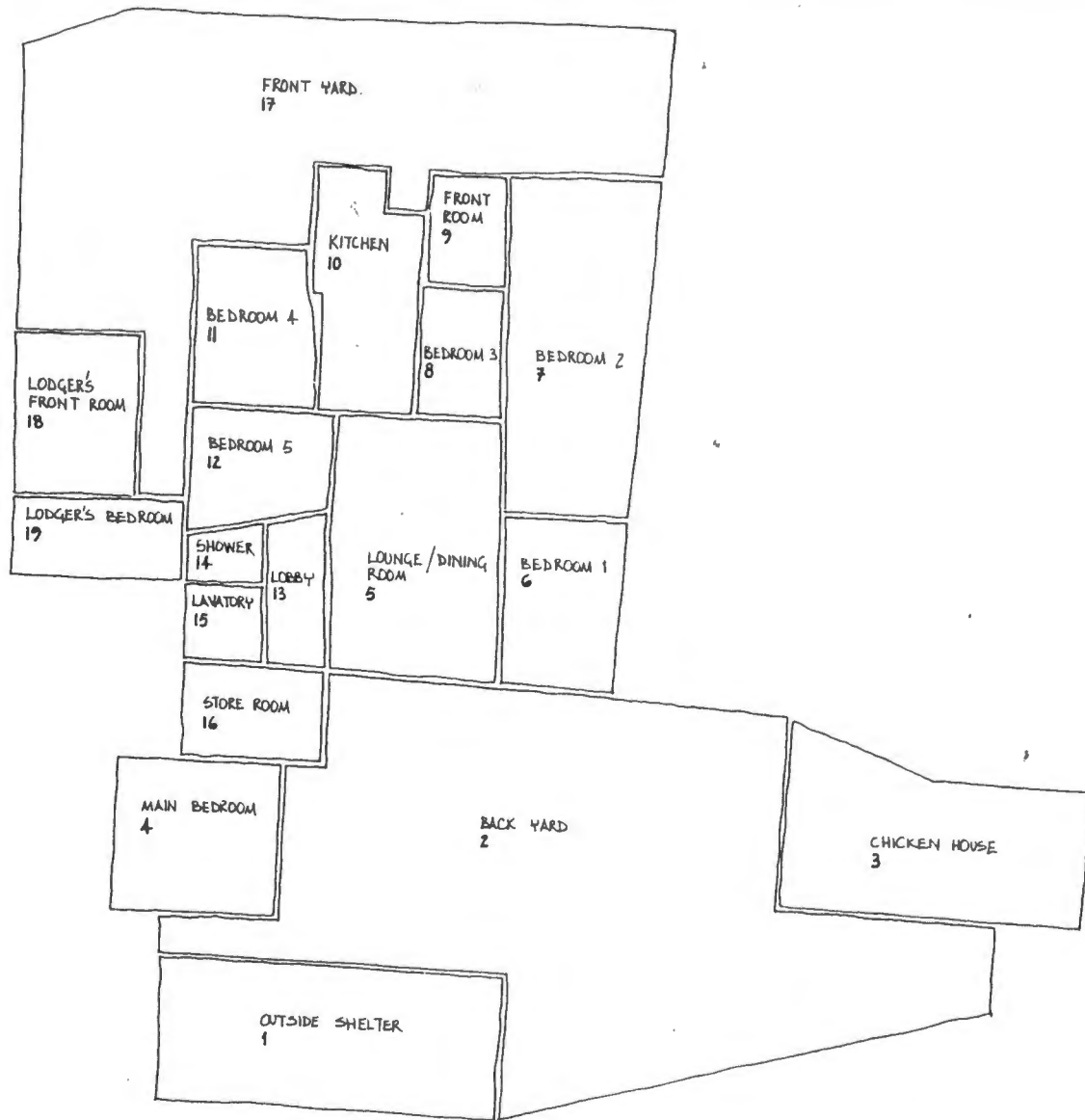


Figure 20
Crossroads: Groundplan of the Dwelling



CROSSROADS: LAYOUT OF PRINCIPAL SPACES

0 0.5 1 2 3 4 5 M.



Figure 21

Crossroads: Layout of Principal Spaces

The ground occupied amounts to some 282 m² of which 112,78 m² is roofed over. The dwelling is free-standing and consists of 19 principal categories of space or discrete activity areas. Of these, 16 are rooms, including a multi-purpose shelter situated in the backyard. Although the labels given to these spaces are typically western European such as 'kitchen', 'bedroom', 'lavatory', etc., they are those used by the occupants themselves. The following is a detailed description of the schedule of accommodation which should be read in conjunction with the ground plan of the building (see Figs 20 and 21).

Inventory of Principal Spaces and Activity Surfaces Within Them

Primary Space and Numerical Code

1. Shelter

Activity Surface*

1. Bench
2. Chicken Cage
3. Bench
4. Large Plastic Bins for Water and Beer
5. Fire Place
6. Floor Surface

2. Backyard

1. Hearth
2. Dove Cage
3. Waste Water Pit (or Sump)
4. Garden
5. Floor Surface

*In this investigation the horizontal distribution of space in a dwelling is viewed as a set of differentiated activity areas, or surfaces, upon which activities are performed. Each principal space (bedroom, bathroom, etc.) thus consists of various surfaces such as desk, bed, floor area, and so on.

- | | |
|-------------------------|--|
| 3. <u>Chicken Coop</u> | 1. Chicken House
2. Chicken Run |
| 4. <u>Main Bedroom</u> | 1. Bed
2. Table
3. Paraffin Heater
4. Chair
5. Chair
6. Clothes Trunk |
| 5. <u>Lounge/Dining</u> | 1. Dining Table
2. Chair
3. Bench
4. Bench
5. Bench
6. Table Top
7. Floor Surface
8. Kitchen Dresser |
| 6. <u>Bedroom 1</u> | 1. Bed
2. Table Top
3. Pile of Clothes
4. Rolled Up Bed
5. Rolled Up Bed
6. Paraffin Heater
7. Floor Surface
8. Bed |
| 7. <u>Bedroom 2</u> | 1. Bed
2. Table
3. Bed
4. Table
5. Bed
6. Wardrobe
7. Medicine and General Storage
8. Floor Surface |
| 8. <u>Bedroom 3</u> | 1. Bed
2. Stool
3. Table
4. Paraffin Heater
5. Table
6. Sideboard and Table
7. Floor Surface |
| 9. <u>Front Room</u> | 1. Bench
2. Stool
3. Anthracite Stove
4. Floor Surface |
| 10. <u>Kitchen</u> | 1. Worktop and Cupboard
2. Kitchen Dresser
3. Floor Surface |

- | | |
|--|------------------------------|
| 11. <u>Bedroom 4</u> | 1. Bed |
| | 2. Table Top |
| | 3. Pile of Clothes |
| | 4. Bench |
| | 5. Suitcase |
| | 6. Floor Surface |
| 12. <u>Bedroom 5</u> | 1. Bed |
| | 2. General Storage |
| | 3. Table |
| | 4. Bed |
| | 5. Floor Surface |
| 13. <u>Lobby</u> | 1. Floor Surface |
| 14. <u>Shower Room</u> | 1. Metal Basin |
| | 2. Floor Surface |
| 15. <u>Lavatory</u> | 1. Paraffin Bin |
| | 2. Floor Surface |
| 16. <u>Front Yard</u> | 1. Garbage Bin |
| | 2. Garden |
| | 3. Waste Water Hole (Sump) |
| | 4. Waste Water Hole (Sump) |
| | 5. General Storage |
| | 6. Outside Corridor: Storage |
| | 7. 44 Gallon Drum |
| | 8. Floor Surface |
| 18. <u>Lodger's Front Room</u>
(This room was
demolished on 19 June
1985 and the existing
room 19 let to another
tenant.) | 1. Sideboard |
| | 2. Table |
| | 3. Chair |
| | 4. Chair |
| | 5. Floor Surface |
| 19. <u>Lodger's Bedroom</u> | 1. Bed |
| | 2. Table |
| | 3. Floor Surface. |

As can be seen in the ground plan, the layout and organisation of space in the dwelling is straightforward and consists mainly of three zones: two outside yard spaces and a covered living area. Access to

the living area is via either of the outside spaces which relate directly to two streets.

The north-east yard is referred to as the Front Yard. This area is marked by a well made garden gate that displays prominently the number allocated to the dwelling by the Divisional Council. It functions as an intermediate zone between the public spatial realm and the centre of the dwelling. The two rooms in the front yard form a unit that accommodates the lodger.

The front door opens straight into the Kitchen and Front Room, beyond which is the Lounge/Dining Room. Together these three spaces define the central living domain. Most of the bedrooms, the Backyard and utility spaces branch off from this zone. The Storeroom houses several pieces of unused furniture, the household head's bicycle and paraffin. Bucket soil is removed regularly from the lavatory through a hatch that faces directly onto the street. The shower is a simple ground sump covered by a wooden grid.

The Backyard is the more private of the two outside spaces and the access to the street is used mainly by the occupants. Two important spaces lead off this space. The first is the Main Bedroom which is occupied by the household head and is the best furnished space in the system. The second is the Shelter which provides shade during the day and protection from the SE and NW winds. Several fowls were kept in the Chicken Coop, which, after they were sold in September 1984, was used as a general storage area.

As a dwelling, the design and layout of accommodation in Crossroads represents to the household head a unique place that he has chosen and produced for them to 'sit down' ('ukuhala', to stay, or sit down) in the city. It is therefore more than the provision of shelter. It has provided the owner/designer with an important opportunity to accommodate appropriately the domestic group, many of whom are recent migrants to Cape Town. For them this is in many ways a strange and alienating environment. As is typically the case in the settlement as a whole, the relatively flexible nature of the design of the dwelling is able to accommodate and blend together all aspects of domestic life including those relating to, and stemming from, rural life-styles, ideas and practices. It is from here that the 'advanced' or 'modern' world, represented by the industrialised metropolitan area replete with its legal, social, economic and political institutions is negotiated in terms of the migrants' universe of rural values. An important feature of the accommodation schedule is therefore the close relationship between the spatial categories and the people who inhabit and use them. The following section describes the social relations that exist among individuals who make up the domestic group.

7.2.1.3 Domestic Grouping: Kinship, polygamy and migrancy

The household is multi-generational and male-led. The key figure is the head who is Xhosa-speaking and comes from Cofimvaba, a rural district in the Transkei. He has had five years for formal schooling

and is employed as a messenger by a Cape Town bank. During his lifetime he has contracted two polygamous marriages. He supports his first wife and children in a homestead situated at Cofimvaba where they maintain his livestock. A ground plan of the homestead is shown in Appendix E. Every year he visits the homestead for at least four weeks.

The primary reason for choosing to live at Crossroads was given by the household head as the need to accommodate himself, his second wife and children (including the children of the first wife) 'under one roof'. This statement needs to be seen in the context of the South African pattern of labour migrancy and the Cape Town metropolitan area as a whole.

Here, a drastic shortage of housing, the increasing need for employment opportunities by migrant job-seekers and, until recently abolished, the Influx Control regulations have, among other factors, meant that males have had to leave families behind in rural areas such as the Transkei and Ciskei while they earned wages for their support in the cities (Platzky and Walker, 1985).

Although the household extends beyond the elementary family, it is essentially a group consisting of kin-related individuals and the family of a lodger, or ibhoda ('boarder'). The latter were included in the group under observation because, following the discussion in Chapter 5, they were considered by the rest of the occupants to be members of their group: They shared household chores, contributed

towards its maintenance, slept in the dwelling and frequently shared the cooking and eating arrangements (abatyela 'mbizeni 'nye, 'those who eat from the same pot' are part of the same domestic group).

This definition of the household, particularly the two domestic activities most closely related to it - eating and sleeping - provided crucial information as to the nature of social integration, and consequently the meaning of spatial arrangements. In addition, sleeping and eating arrangements established a firm basis for describing individuals as occupants or visitors. Thus, if an individual frequently shared the cooking and eating facilities and slept in the dwelling, she was categorised as an occupant. However, because the size and composition of the household varied considerably during the period of observation, the question naturally arose as to what extent inhabitants were occupants. Here, the eating/sleeping criterion provided a useful foundation upon which to clarify the relative status of the dwelling's inhabitants as occupants at any point in time. The following paragraphs elaborate briefly on how this was done.

During the period from August 1984 to August 1985 the household varied in size from 20 individuals (17 November 1984) to 8 (26 February 1985). The average size, based on the 30 days during which observations took place, was 14,6 individuals. In comparison with the mean household size in the settlement reported by Heap (5,1 individuals) and Prinsloo (6,91 individuals), the Crossroads domestic group is large (Heap, 1986: 6; Prinsloo, 1984: 7). According to

Prinsloo's findings, a household of this size would fall into the category of domestic grouping which has 10 or more occupants and which accounts for some 15% of all households in the settlement (Prinsloo, 1984: 8). During the same period however, it would also fall into Prinsloo's size category of between 6 and 9 people which would make it a part of the 48,87% of households in the complex. The following is a random selection of 11 observation days to show the variability in household size.

	<u>Date</u>	<u>No. Household Occupants</u>
1984	11 September	17
	13 September	16
	23 September	15
	6 October	18
	17 October	17
	14 November	18
	17 November	20
	1985	26 February
28 April		9
21 May		13
29 July		14
	Average Size	14,8 occupants

This pattern of size variability may be explained by reference to two kinds of social practice in the household. The first relates to children and the other to new migrants.

Child care, it was found, is not the sole responsibility of parents. Young children often spend extended periods at a time with grandparents, aunts and uncles who stay elsewhere in the settlement or in the township. Although it is not common for dependent children to live away from their mothers, when the situation did arise - which was

mostly the need to return to the Transkei for family matters - small children were taken care of by relatives.

In addition, during school terms, all senior school-going children were absent. Although there are junior and senior schools in the nearby townships of Nyanga and Guguletu, the older children all attended schools in the Transkei. One reason for this practice is that it serves to consolidate and maintain linkages with the rural homestead, so that if the household is evicted and deported, all the occupants would have a place to go to (cf. Heap, 1986: 5).

All the wage earners in the household are males who, with the exception of the head, are semi-literate and employed as unskilled or industrial labourers. During the period of observation, two male relatives and their families who were new arrivals from the Transkei stayed in the dwelling while they searched for jobs and their own accommodation. This practice is common in the settlement where dwellings are frequently used for accommodating migrants for as long as it takes them to become settled in their own dwellings.

Part of the dwelling's/household's function is therefore to support and accommodate relatives from the country while jobs and shelter are being sought. The household is consequently always changing in size and composition according to the number of children and job-seeking relatives who are being accommodated. Its formal characteristics, in other words, even over a relatively short period of several weeks, are never 'static'. The adoption of the definition of household used in

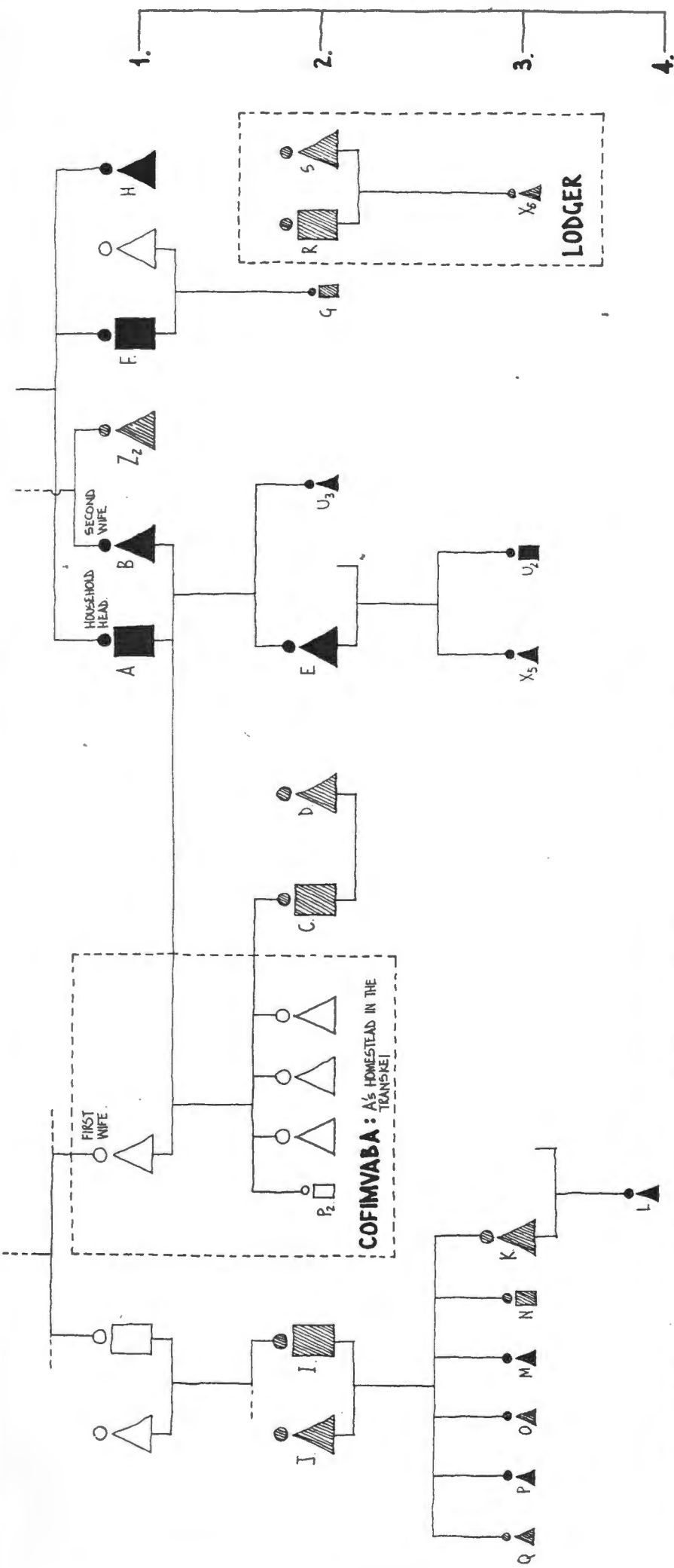
this study has meant that if the co-presence of relatives and/or children was noted as temporary - that is, lasting no more than a few weeks, or if they inhabited the dwelling and shared the eating arrangements for several very short periods over an extended length of time - then they would be regarded as 'partial occupants'.

Just as there are partial occupants so there are 'core' individuals whose co-presence in the dwelling is more or less permanent. The diagram shown overleaf (Fig. 22) indicates the kinship relations between all the household's inhabitants as found during the 1984/1985 period and clarifies their status as either partial or core occupants. All other individuals noted during the observation period are categorised as visitors.

Several features stand out from this diagram and need to be noted:

- The household is four generations deep. The eldest is A (64 years). His status as the head of the domestic group is supported by his wife (B) who respects him not only as an authoritative patriarch but also as one who has great responsibility as utata ka bantwana (the father of the children). By this is meant all his children, including those borne by his first wife. There is consequently no uncertainty or tension about A's standing in the household. Although A strongly maintains that he is an 'urban man', he is equally strong in asserting social, economic and cultural ties with the rural areas and exacting loyalties from his homestead in the Transkei. A reciprocal, mutually beneficial relation thus binds together his Crossroads household with the one at Cofimvaba. Responsibilities to both are driven by the compulsion to earn a wage in Cape Town so that the livelihood that is made at Cofimvaba - his place to go to if deported - may be supplemented with regular, that is monthly, injections of cash. This amount varied each month from between R80 to R100.
- Nearly 50% of the occupants who are related to A - that is 10 individuals - are grand- or great-grandchildren between the ages of 5 months (Q) and 13 years (M, N). This subgrouping represents the largest single category of kin and suggests the importance of mothers, grandmothers and aunts in their child caring roles. The fact that most of these children (Q, P, O, M, N, K) are the

GENERATION SPAN

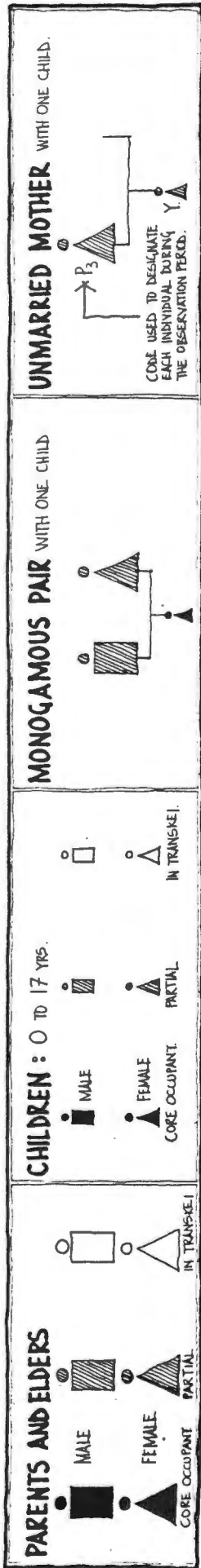


CORE OCCUPANTS : 11 (NOTE : ON SEVERAL OCCASIONS P, J, M WERE ABSENT, THEY WERE, HOWEVER, MORE FREQUENTLY CO-PRESENT AND ARE THEREFORE RECORDED AS CORE OCCUPANTS).

PARTIAL OCCUPANTS : 13

ALL OTHER INDIVIDUALS NOTED DURING THE OBSERVATION PERIOD ARE CLASSIFIED AS VISITORS. THESE INCLUDE FEMALE, AND RELATIVES.

KEY:



CROSSROADS

HOUSEHOLD ORGANISATION AND KINSHIP : AUGUST 1984 TO AUGUST 1985.

Figure 22

grandchildren, and L the great-grandchild, of A's second wife's brother indicates that insofar as his relatives and family are concerned, the responsibilities that individuals have for one another within the household are wide-ranging and extend across, as well as within, the generation spans and families.

- Of the 24 occupants, 15 are females. The overwhelming presence of older women and young girls may to some extent be explained by the fact that there are two husbandless mothers (K and E), and that there are no unmarried adult males (F's wife remained in the Transkei during the entire observation period).

One of the outcomes of this system of kinship organisation is that it affects the pattern of segregation among occupants which in turn is maintained and manifested in the sleeping arrangements and allocation of bedrooms. The relation between the core occupants and the bedrooms they occupied is as follows (the bedroom number refers to the space code):

<u>Core Occupant</u>	<u>Bedroom</u>
A	4
B	4 & 7
E	6
F	11
H	7
L	7 & 4
M	6
P	19
X ₅	6
U ₃	6
U ₂	6

Bedrooms 8 and 12 were reserved almost exclusively for use by partial occupants.

7.2.1.4 Technology and Style: The appropriate shanty

The dwelling is basically a simple shack, or 'shanty', made of corrugated sheet iron and secondhand materials. In this section the

following basic questions about its physical characteristics are raised:

- Why is the dwelling built in this way?
- How is it constructed?

Like most dwellings in the settlement, a very important feature of the building is that it was relatively cheap to construct and is cheap to maintain. This factor is crucial in the area where monthly incomes are generally low resulting in some 28,91% of households existing below the 'Minimum Living Level' (Prinsloo, 1984: 14).

Largely because the construction and maintenance of the dwelling was, and still is, controlled by the household at prices that are affordable, the upkeep of the fabric of the dwelling is not an economic burden. This ensures that expenditure on other important items such as food, fuel, clothing, children's education and remittances to family in the Transkei, can take place more easily.

During the period of observation, all the wage earners contributed to the running costs of the household. Cash was handed over to A who in turn authorised B to purchase food and fuel. These purchases amounted to the highest proportional expenditure on budget items.

Generally, the household's economic position was reported by A to be sound, where he managed to save a small part of his monthly wage. The dwelling, he felt, was highly appropriate: A building he had

constructed and which he is proud of. It is an environment, he asserts, that supports his household and suits well his present economic and social needs.

The dwelling's constructional system is basic: Corrugated iron fastened to a wooden frame (see Fig. 23). Most of these materials were obtained from secondhand merchants and demolition yards around Cape Town. The building's external appearance is thus, on first impression, no different from the many hundreds of shanty-like buildings that constitute the settlement. In detail, however, this shanty has been uniquely crafted and decorated internally according to the personal likes and tastes of the owner/occupants.

The rest of the discussion in this section will describe these aspects of the dwelling by focussing on the following elements of its structure:

- Floors and foundations
- Walls and wall finishes
- Roof
- Doors, windows, ventilation and artificial lighting.

- Floors and Foundations

The dwelling does not rest on any special foundation system. The main wooden support frames are set in holes some 300 mm to 400 mm deep and the ground fill compacted to provide rigidity and stability.

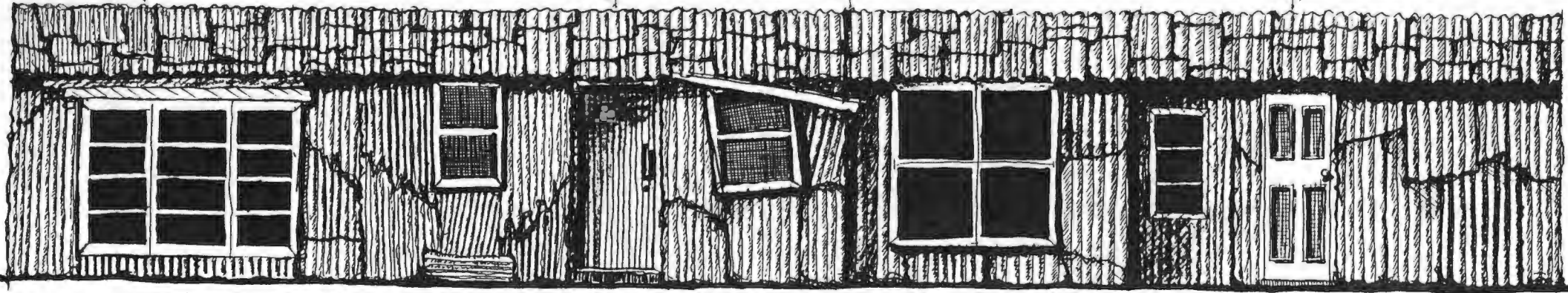
Most of the rooms have stamped earth floors. In order to obtain an even, more long-lasting surface which is easy to clean, the floors have been topped with a thin cement/sand screed. Linoleum

SECOND HAND WINDOW
FRAMES.

FRONT DOOR.

CORRUGATED SHEET IRON
ROOF AND WALLS.

LODGERS' ROOMS.



FRONT ELEVATION



STREET.

SHELTER

MAIN BEDROOM.

LOUNGE/DINING ROOM

KITCHEN

FRONT YARD.

CROSS SECTION

CORRUGATED IRON
WALL.

WOODEN
THRESHOLD

LINOLEUM FLOOR
FINISH ON STAMPED
EARTH SURFACE.

PAPERED WALL
FINISH.

CARDBOARD
CEILING.



Figure 23

Front Elevation and Cross Section of the Dwelling

CROSSROADS

or PVC floor finishes were then fitted in all the internal rooms except the Lobby (13), Shower (14), Lavatory (15), Store Room (16) and the Lodger's Front Room (18).

Externally, the ground surface slopes away from the building which is raised slightly above the two yard spaces. These 'site works' were carried out by A specifically to counteract the effect of the build up of rainwater during the wet winter months. The three soak pits or sumps in the yards serve to absorb most of the surface water.

- Walls and Wall Finishes

Corrugated sheet iron is used throughout the building. On the inside walls it is fastened to one side of the wooden framework and painted. On the other side it is clad with flattened cardboard boxes. This presents a reasonable flat surface which is decorated with 'wall paper': printed paper sheets used by manufacturers to make packages and containers for various domestic products. These are obtained freely and in bulk quantities from printers.

The occupants pointed out that each room had its own wall paper colour scheme. For example, the Lounge/Dining Room walls have been decorated with a bright yellow and red pattern that advertises the 'Knorr' brand of food seasoning. The Kitchen is done out in the blue, white and yellow of 'Sunlight' soap, and so on. The walls in Rooms 13, 14, 15 and 16 did not have any painted or papered finishes. This contributed to their dark atmosphere.

Externally the sheet iron is left unpainted. In contrast to the colourful interior, the slightly corroded and blemished look is dull, projecting an apparent sense of untidy clutter and impoverishment.

- Roof

Like the external walls, the roof is made of unpainted sheet iron. Although this has been laid at a very shallow pitch, no leaks were reported or observed. If a leak did occur however, this was solved by laying a further sheet of iron over the hole. The overall roofscape is therefore one of a seemingly unsystematic array of bits of sheet iron in various stages of corrosion.

The ceilings are similar to the internal wall finishes. The cardboard surfaces are either wall-papered or painted in pastel shades such as light blue and cream. These surfaces and colours therefore enhanced the colourful and light interiors.

- Doors, Windows, Ventilation and Artificial Lighting

All the doors and windows are second-hand items. The front door is well made with a dark varnish finish and elaborate ironmongery, reinforcing its importance as the main entrance. Other doors in the dwelling have been painted in pastel colours.

Window frames and casements vary in size and shape. No two windows are identical and all have clear glass planes. In all the bedrooms there is adequate lighting and each bedroom window is screened by a brightly coloured curtain. Largely because of security and privacy, none of the windows opens directly on to the streets or neighbours' properties.

The dwelling is generally well ventilated. In the rooms with no windows (13, 14 and 15), ventilation is effectively maintained by small openings at the top of the walls. Gas lamps and candles are used to provide lighting at night. These are essential since the settlement is not serviced with electricity.

All the constructional features mentioned above contribute towards an internal living environment that is generally comfortable: Warm and dry in winter and cool in summer. However, on hot summer days the temperature indoors was noted to exceed 26°C.

The form of the dwelling is characteristic of Crossroads' domestic architecture. Its style is derived from the set of circumstances that prevail in the settlement including the insecurities associated with labour migrancy, a lack of land tenure, and a general level of impoverishment. Thus, in a broad architectural sense, the external features of the dwelling should be seen as more an attempt by the occupants to maintain an economic strategy (of survival) than as a result of the urge to create a particular (shanty) style. Indeed, from a sociological point of view, underlying the spirit of architectural creativity and novelty is a structural device that, in terms of the nature of its spatial constitution, enables the household to incorporate, as well as overcome, a wide range of constraints and conditions to do with context at the same time as it impedes certain behaviours and options. The analysis of both these aspects of the dwelling is dealt with in the following chapter.

7.2.2 Cypress

7.2.2.1 Newlands: Privileged suburban living for whites

The suburb of Newlands is situated on the picturesque lower western slopes of Table Mountain, below Devil's Peak. As part of the city's complex of southern suburbs, it is generally acknowledged to be one of the more affluent residential areas where properties consistently fetch high prices on the real estate market. Most of the residents are consequently upper income earners.

The attractive features of Newlands include its unique geographical location and ecological characteristics. It is situated some 8 km from the Central Business District (CBD) to which it is connected by a four-lane motorway, a suburban railway line and a network of main roads. Several leading private and government schools, the University of Cape Town and a modern shopping centre are located in the vicinity.

Much of what is presently the residential area was initially proclaimed a garden estate for the Dutch East India Company in 1701 (Newton Thompson, 1968). Known as the 'Nieuwe Lande', it was chosen by the governor at the time, Willem Adriaan van der Stel, because it had an abundance of water and was considered by him to be the best part of the mountain slopes for the cultivation of vines, fruit, vegetables and trees. The early Dutch, French and British settlers were enchanted by the scenic beauty, the views of the Hottentots

Holland Mountain range in the (eastern) distance and the lush vegetation and moderate climate. As a result, Newlands soon became known and valued as "one of the show pieces of the Cape Colony ..."
(Newton Thompson, 1968: 4).

In the intervening years, since the Newlands Estate was first divided up and sold to private hands in 1798, that reputation has changed little. The sparsely populated landscape which at first consisted of homesteads situated on orchards, fields and vineyards, was gradually transformed into an attractive suburban setting. The high values attached to residential property indicate that it is one of the more prestigious suburbs in the metropolitan area. Its spatial organisation is typical of white South African suburbia and reflects the systematic sub-division of land that has taken place.

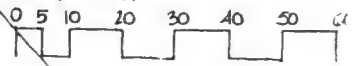
There is a clear distinction between private residential and the public spatial system - the parks and streets. Households who occupy individual dwellings in the area are consequently inherently differentiated from one another through the arrangement of space. This property of the Newlands settlement pattern is due mostly perhaps to the highly controlled and planned nature of architectural development that is allowed to take place. Most of the land in Newlands is zoned strictly for 'residential' use. Regulations are thus enforced to balance the relation between public spaces, semi-public areas and private (residential) domains (see Cape Town City Council, 1975).

Architectural and planning controls are implemented by the Cape Town Municipality which is the administrative arm of the Cape Town City Council. This is an executive organisation composed entirely of representatives of the various wards into which the city's white community and its 'group area' is broken up. The residents of Newlands, as in all other white suburbs and districts, are thus adequately represented on the major decision-making body in the city. This ensures, among other things, that public services in the neighbourhood remain as efficient as possible. These include keeping the roads clean, maintaining the well landscaped sidewalks and parks, making sure that the supply of running water, electricity and street lighting is continuous, and so on. The Municipal rates charged annually by the local authority to landowners for these services are consequently high in Newlands.

The overall pattern of layout and arrangement of space is basically that of an orthogonal grid which facilitates easily the distribution and maintenance of these services (Fig. 24). The high degree of geometric orderliness is structured by a uniform network of major and minor streets. These are arranged to form residential 'blocks' which are subdivided into individually owned stands. Each stand is occupied by one dwelling, usually designed by the original owner/occupant or, on his behalf by an architect who might have also supervised its construction. Most dwellings include outbuildings such as sleeping quarters for 'live-in' servants, a workshop, garage or carport, swimming pool, etc.

CYPRESS

NEWLANDS
CAPE TOWN



BUILT FORM

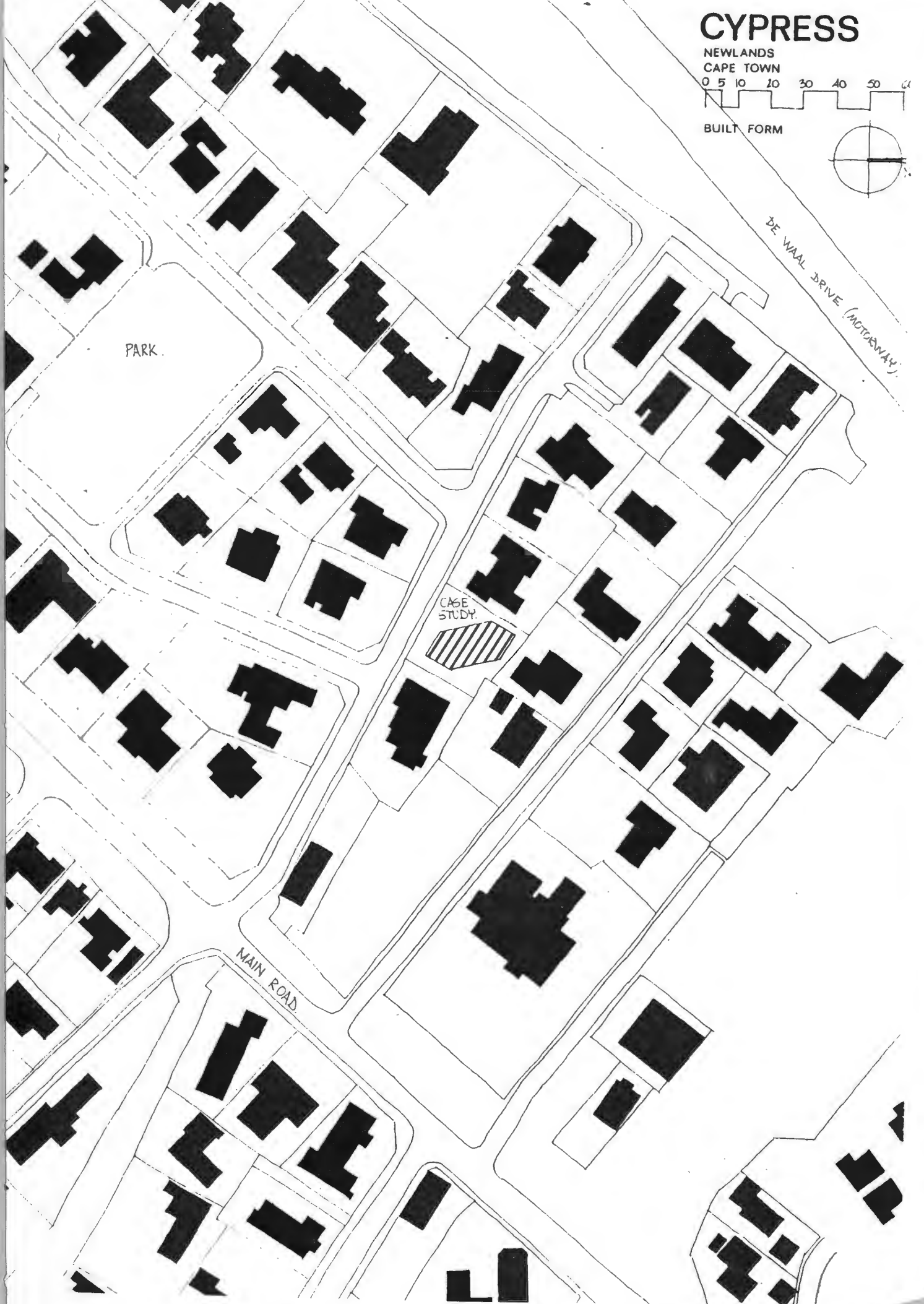


Figure 24

Cypress: Part of the Suburb of Newlands

The stands are surrounded by garden walls, hedges or other landscaped barriers. As a result, the dwellings are effectively segregated from one another and the streets.

In many ways the dwelling occupied by the Cypress household represents a clearly articulated architectural solution, or response, to the conditions defined by its broader setting including the design precedents set by other dwellings in the neighbourhood.

The dwelling is a highly individualistic architectural statement about the occupants and a particular design philosophy. The material and social aspects surrounding the architectural design of Cypress are more fully described in the sections that follow.

7.2.2.2 Spatial Layout: A carefully zoned schedule of accommodation

Cypress is situated in a relatively quiet street that branches off the main feeder road. It commands an exceptional north-easterly view of Table Mountain and is greatly shielded from the (prevailing) SE and NW winds.

The dwelling was designed to take full advantage of the 680 m² stand. A 2,1 m high garden wall built on the property boundary surrounds the main building. This, together with the overall design characteristics of the dwelling produces a domestic domain that is intensely private: An environment that suits well the personal needs of the occupants (see Fig. 25). Various sketches and drawings made

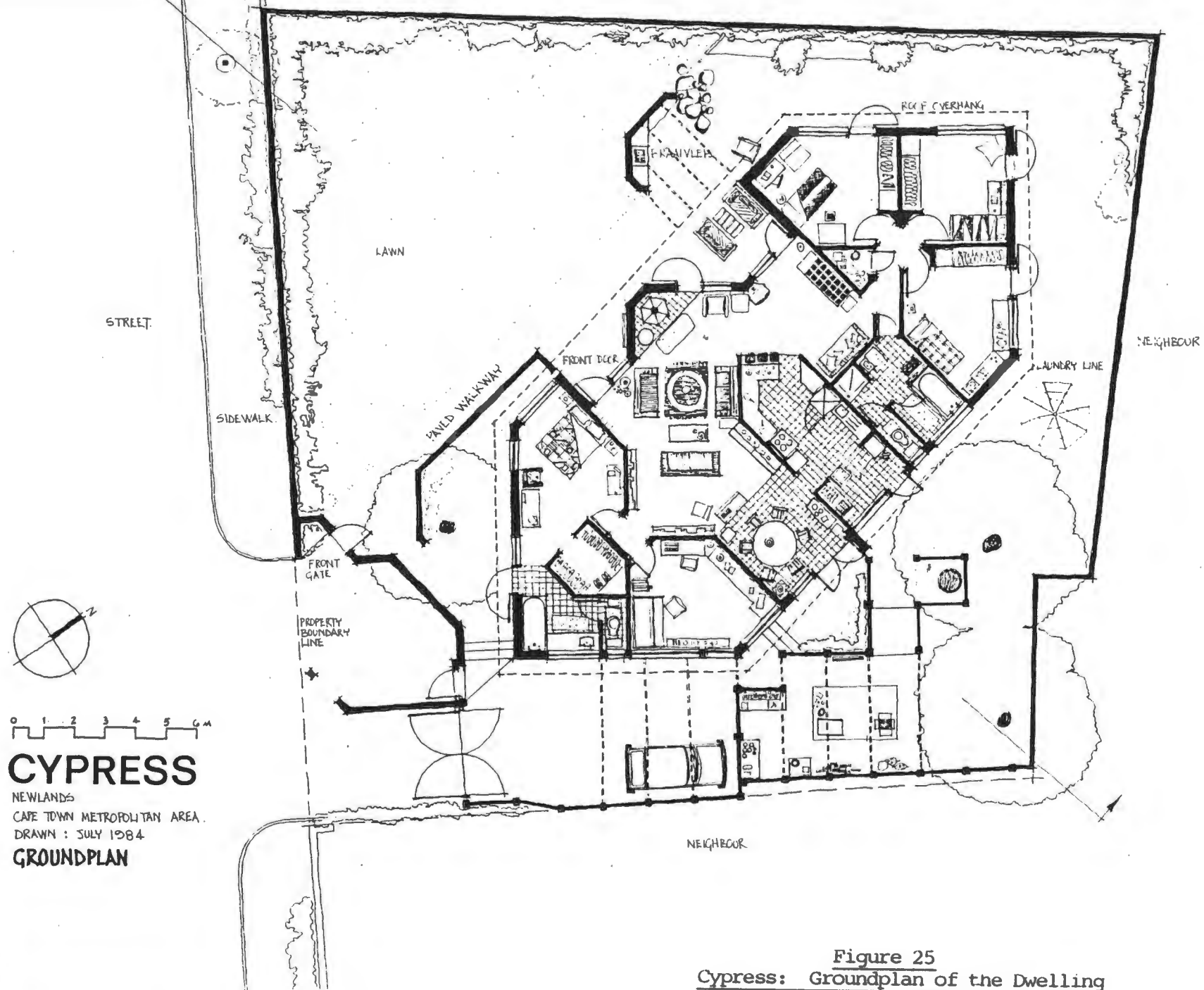
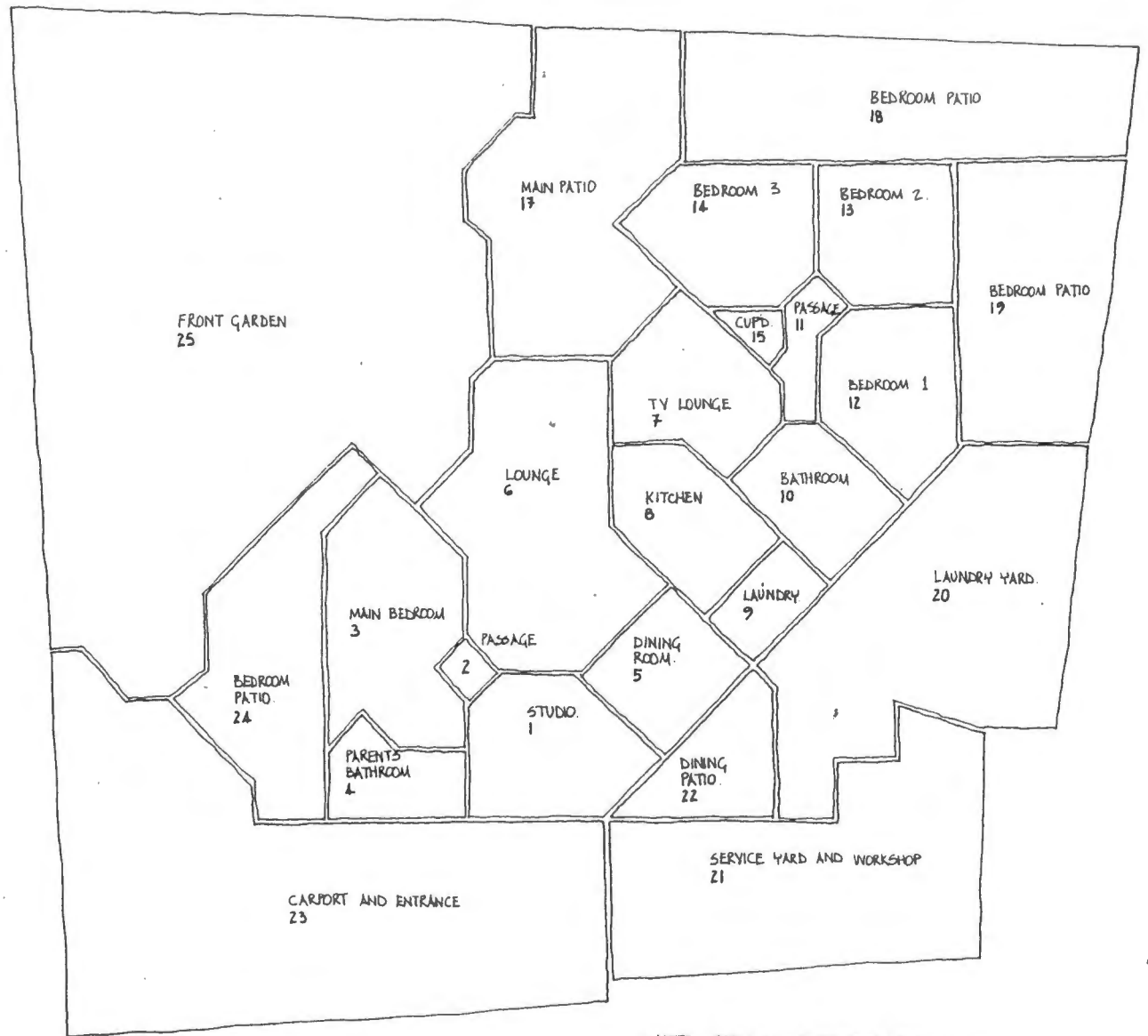
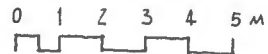


Figure 25
 Cypress: Groundplan of the Dwelling



CYPRESS : LAYOUT OF PRINCIPAL SPACES

DOUBLE LINES INDICATE THE SUBDIVISION OF THE PLAN INTO DISCRETE CATEGORIES OF SPACE.



NOTE : SPACE 16 IS THE ROOF AREA USED FOR STORAGE . ACCESS HATCH IS ABOVE PASSAGE 11.

Figure 26
Cypress: Layout of Principal Spaces

by the household head during the design stages indicate that very little was left to chance, resulting in the entire stand, including all of the outside space, being designed.

The design of the main building was carefully considered and integrated with the rest of the stand by means of various landscaping techniques. The dwelling consequently consists of four distinct, yet interrelated, zones.

A utility zone forms the 'back' portion of the dwelling. This is comprised of the carport which houses the household's three motor cars, a workshop and kitchen yard which includes a dog kennel. Access to this zone from the street is through a set of motor gates.

Several discrete patios serve to form outside extensions or living zones, of the various bedrooms. These are landscaped with plants, built-in seating and brick paved surfaces. Glass doors off each bedroom provide direct access to these areas.

A lawn establishes the largest primary surface in the 'front' zone. This area is aesthetically attractive where a paved pathway connects the front door of the main building with the garden gate situated at the property boundary. The garden wall facing the street is the 'best' surrounding the dwelling. Its attractiveness is complemented by the gate which has been colourfully decorated by the household head's wife using an elaborate and abstract geometric design.

Similarly, an abstract design, done in enamel on a steel panel which is fastened to the wall, marks the front door area.

The principal zone is the main building itself. This amounts to some 199,55 m², excluding the carport, and consists of 16 primary spaces. These spaces have been grouped according to three separate domains - for the parents, their children and a central living zone that integrates, as well as segregates, the two generations.

The following is a comprehensive list of the various rooms and the activity surfaces that equip them. This should be read together with the groundplan of Cypress (Figs 25 and 26).

Inventory of Principal Spaces and Activity Surfaces Within Them

<u>Primary Space and Numerical Code</u>	<u>Activity Surface</u>
1. <u>Studio</u>	1. Sewing Machine 2. Long Worktop 3. Typewriter/Desk 4. Drawing Board 5. Easy Chair 6. Floor Space
2. <u>Passage</u>	1. Floor Surface
3. <u>Main Bedroom</u>	1. Bed 2. Chair 3. Cupboard 4. Floor Surface
4. <u>Parents' Bathroom</u>	1. Bath 2. Wash Hand Basin 3. Lavatory 4. Floor Surface
5. <u>Dining Room</u>	1. Dining Table and Chairs 2. Food Warmer and Serving Table 3. Floor Surface

6. Lounge
1. Hi-Fi and Chair
 2. Telephone
 3. Drinks Cabinet
 4. Couch
 5. Couch
 6. Couch
 7. Low Coffee Table
 8. Fire Place
 9. Chair
7. TV Lounge
1. Chair
 2. Chez lounge (Couch)
 3. Table
 4. Built-In Couch
 5. Floor Surface
8. Kitchen
1. Bar Stools
 2. Work Surface 1
 3. Work Surface 2
 4. Stove
 5. Work Surface 3
 6. Mobile Work Surface
 7. Sink Bowl
 8. Floor Surface
9. Laundry
1. Ironing Board
 2. Washing Machine
 3. Floor Surface
10. Bathroom
1. Wash Hand Basin
 2. Shower
 3. Lavatory
 4. Bath
 5. Floor Surface
11. Passage
12. Bedroom 1
1. Bed
 2. Wash Hand Basin
 3. Desk
 4. Work Trunk
 5. Chair
 6. Floor Surface
13. Bedroom 2
1. Top Bunk Bed
 2. Space Below Bunk
 3. Desk
 4. Cushions
 5. Floor Surface
 6. Mobile Storage Basket (Papers/Notes)

- | | |
|--|--------------------------|
| 14. <u>Bedroom 3</u> | 1. Bed 1 |
| | 2. Bed 2 |
| | 3. Desk 1 |
| | 4. Desk 2 |
| | 5. Box Chair |
| | 6. Floor Surface |
| 15. <u>Built-In Cupboard</u> | 1. Floor Surface |
| | 2. Shelves |
| 16. <u>Roof Space (Storage)</u> | |
| 17. <u>Main Outside Living
Patio</u> | 1. Couch 1 |
| | 2. Couch 2 |
| | 3. Table |
| | 4. Basket Chair |
| | 5. Basket Chair |
| | 6. Braaivleis Area |
| | 7. Built-In Chair |
| | 8. Stone/Rockery Feature |
| | 9. Built-In Chair |
| | 10. Chair (Folded) |
| | 11. Dartboard |
| | 12. Asbestos Chair |
| | 13. Floor Surface |
| 18. <u>Bedroom Patio</u> | 1. Built-In Chair |
| | 2. Asbestos Chair |
| | 3. Floor Surface |
| 19. <u>Bedroom Patio</u> | 1. Built-In Chair |
| | 2. Floor Surface |
| 20. <u>Laundry Yard</u> | 1. Laundry Drier |
| | 2. Dog Kennel |
| | 3. Floor Surface |
| 21. <u>Service Yard and
Workshop</u> | 1. Garbage Bin |
| | 2. Work Bench |
| | 3. Table |
| | 4. Floor Surface |
| 22. <u>Dining Patio</u> | 1. Floor Surface |
| 23. <u>Carport</u> | 1. Floor Surface |
| 24. <u>Bedroom Patio</u> | 1. Floor Surface |
| 25. <u>Front Garden</u> | 1. Hammock |
| | 2. Chair |
| | 3. Chair |
| | 4. Floor Surface |

7.2.2.3 Domestic Grouping: A modern elementary family

When compared with the wide-ranging and extensive literature on southern Africa's black population, social anthropologists and sociologists have not published much on the region's white community. In particular, extremely little ethnographic research has been carried out recently on the white household in South Africa. Apart from the study done by John Argyle on the structure of white households living in Durban, this lack of knowledge may in part be ascribed to the preference shown by social scientists in the region for enquiries that are aimed at comparatively unknown or 'exotic' cultures who are usually perceived to be more interesting (Argyle, 1977). A further reason given by Argyle is the assumption among researchers - who are mostly white South African or expatriates - that they 'know' their own community because they belong to it and have greater experience of it. (Argyle, 1977: 105).

Based on work carried out in Europe and North America, Argyle isolated five household types which he used to describe and classify the domestic groupings in the Durban population sample (Argyle, 1977: 106-107). These included 'solitaries', 'no family', 'simple family', 'extended family' and 'multiple family' type households, where the incidence of simple family groups was proportionately the largest. This household type comprises only one conjugal unit and their offspring, the entire group living together and on its own.

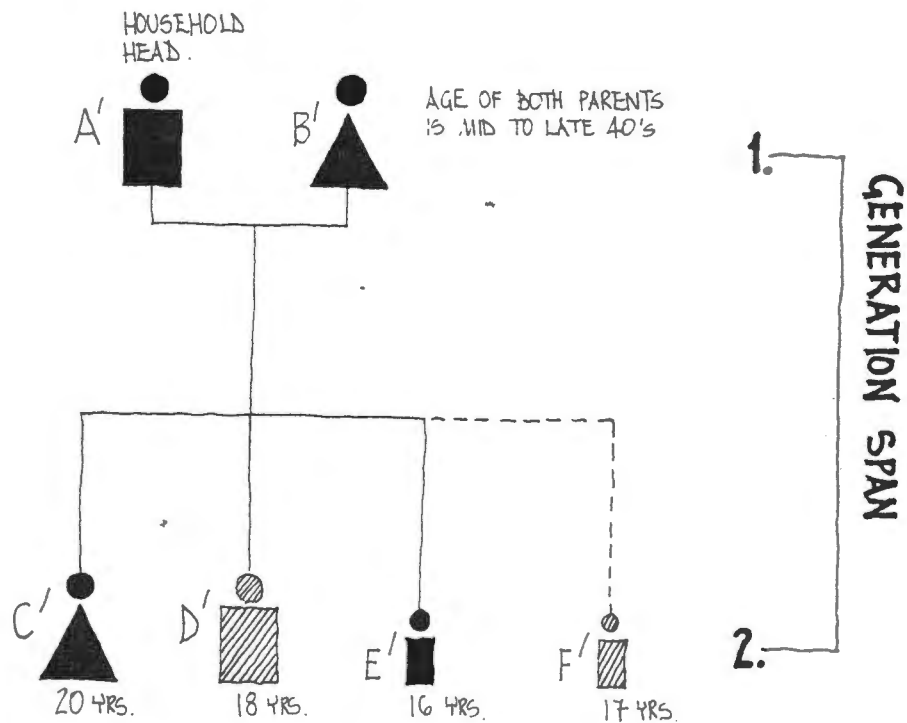
The Cypress household falls into this category and is illustrated overleaf (Fig. 27) to indicate its age and gender structure.

The family comes originally from the Durban metropolitan region where both A' and B' grew up in typical white middle class surroundings.

During 1978 they left Durban to settle in Cape Town.

The following is a profile of the occupants of Cypress.

- A' Head of a department of interior design at a local technicon. He attended university in the early 1960s but dropped out after one year. He then went to college and obtained a qualification in design and was subsequently employed as an interior/industrial designer before taking up his present position as college lecturer. During his lifetime he has stayed in 11 dwellings in Pietermaritzburg, Johannesburg, Durban and Cape Town. Of these, two have been designed by himself including Cypress and the dwelling in Durban which the family occupied and sold before moving to Cape Town. He occupies the main bedroom (3) with B'.
- B' High school art teacher and designer. She is employed at a prestigious school for girls which is situated in the Newlands area.
- C' Second year Bachelor of Arts student at the University of Cape Town. Prior to attending university, she spent one year in the United States of America as an Exchange Scholar. She occupies bedroom 13.
- D' Elder son. He matriculated in 1983 and in 1984 was employed by a firm of architects as an assistant draughtsman before leaving in September for the USA on a one year Exchange Scholarship. He was absent for the entire period of observation from September 1984 onwards and is thus regarded as a partial occupant of the dwelling. (Note: The status of occupants, as either 'partial' or 'core' is based on the same criteria as those used in the Crossroads household.) Occupied bedroom 14.
- E' Younger son. Senior school pupil at a well known school for boys in Newlands. Occupies bedroom 12.



CORE OCCUPANTS : 4.

PARTIAL OCCUPANTS : 2. (NOTE: THE DASHED LINE IS USED TO SHOW THAT F', THE EXCHANGE SCHOLAR, WAS REGARDED BY THE HOUSEHOLD AS BEING A 'MEMBER' OF THEIR FAMILY FOR THE DURATION OF HIS STAY WITH THEM).

ALL OTHER INDIVIDUALS NOTED DURING THE OBSERVATION PERIOD ARE CLASSIFIED AS VISITORS. THESE INCLUDE FRIENDS AND RELATIVES.

CYPRESS

HOUSEHOLD ORGANISATION AND KINSHIP : JUNE 1984 TO JULY 1985.

KEY : (SEE THE KINSHIP DIAGRAM FOR CROSSROADS).

F' Exchange Scholar from Argentina. He attended the same school as E' and occupied bedroom 14 which he shared with D'. He left the household at the end of 1984 and is therefore regarded as a partial occupant.

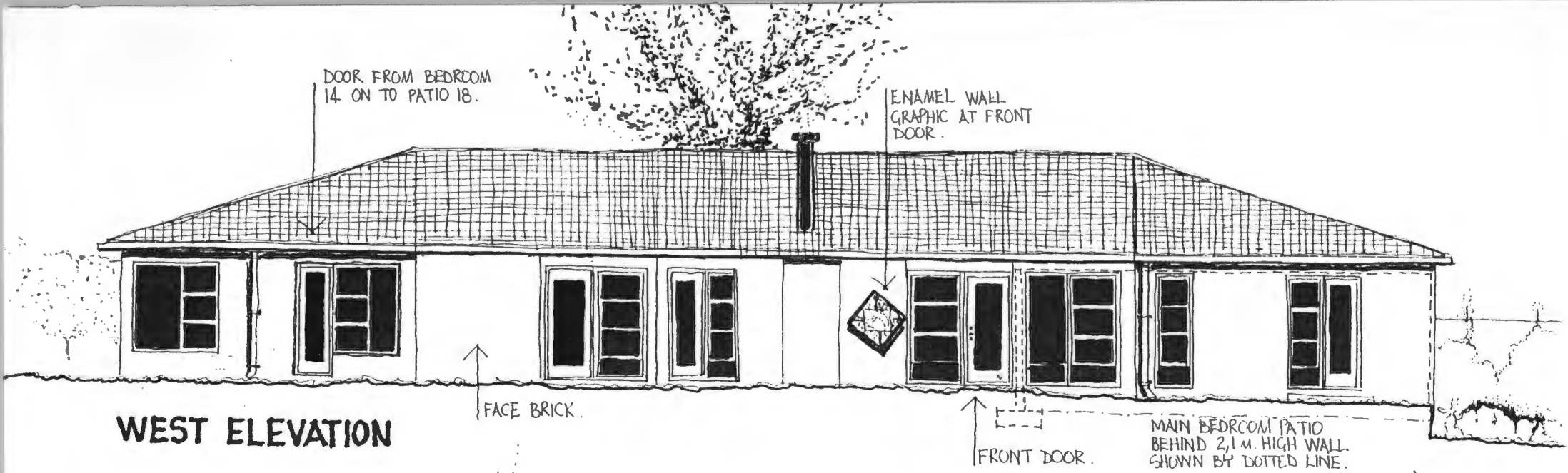
The household employs two part-time servants. A char (G') comes in twice weekly mainly to do the laundry and tidy up the dwelling. A gardener (X') is a less frequent visitor whose task it is to clean the garden and patios, mow the lawn and generally keep plants and shrubs in reasonable condition.

Several pets are kept by the family. These include three dogs, three cats, a budgie and a hamster.

7.2.2.4 Technology and Style: A studied expression of values and taste

In general the technological and stylistic organisation of the dwelling is due to two main considerations. These revolve around questions of function and economics. Underlying both of these questions is a concern for a building that is aesthetically pleasing (Fig. 28).

The dwelling was designed by A' and built by a private building contractor during 1979. The time taken between conception and completion was six months. Total capital expenditure amounted to some R43 000 of which R13 000 was spent on the purchase of the stand. This money was obtained from the profit made on the sale of the household's Durban dwelling which was supplemented by a building



DOOR FROM BEDROOM
14. ON TO PATIO 18.

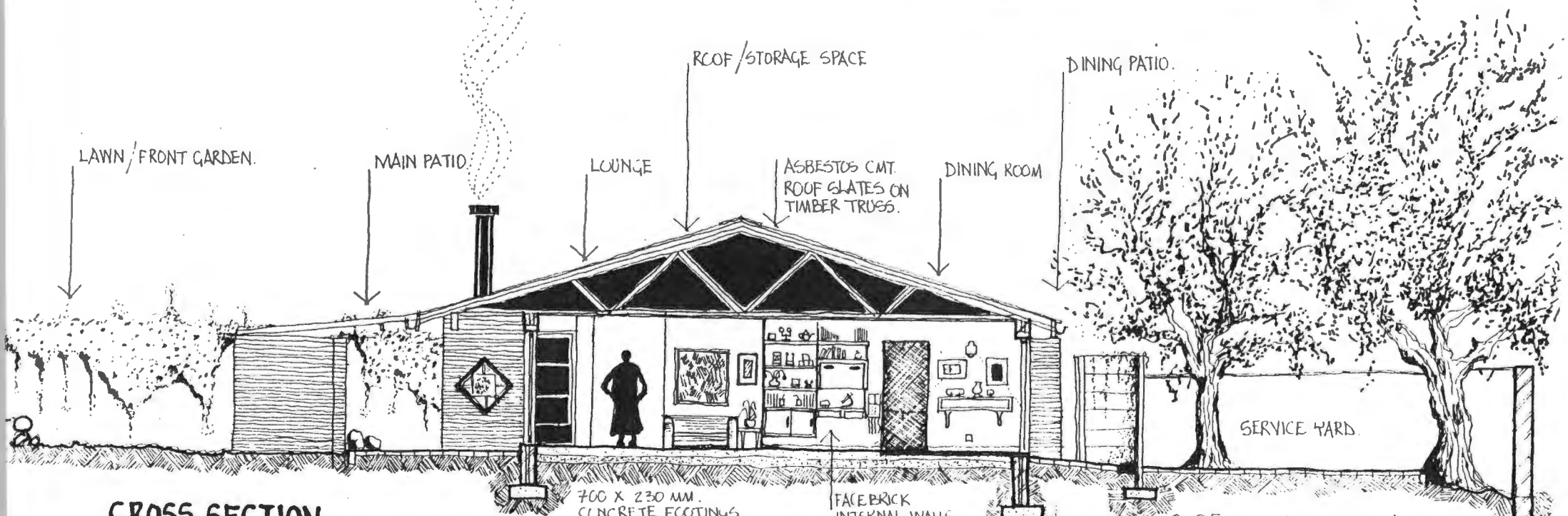
ENAMEL WALL
GRAPHIC AT FRONT
DOOR.

WEST ELEVATION

FACE BRICK.

FRONT DOOR.

MAIN BEDROOM PATIO
BEHIND 2.1 m. HIGH WALL.
SHOWN BY DOTTED LINE.



ROOF/STORAGE SPACE

DINING PATIO.

LAWN / FRONT GARDEN.

MAIN PATIO.

LOUNGE

ASBESTOS CMT.
ROOF SLATES ON
TIMBER TRUSS.

DINING ROOM

CROSS SECTION

700 X 230 MM.
CONCRETE FOOTINGS.

FACE BRICK
INTERNAL WALLS.

SERVICE YARD.

Figure 28

Cypress: West Elevation and Cross-Section of the Dwelling

CYPRESS

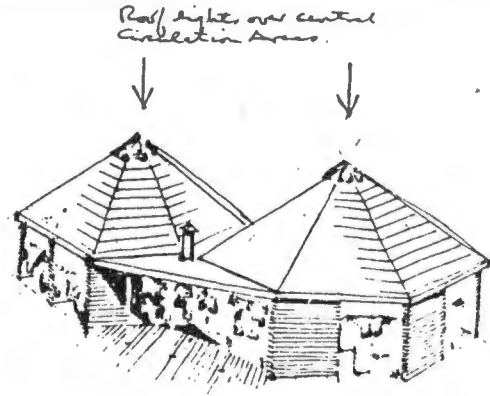
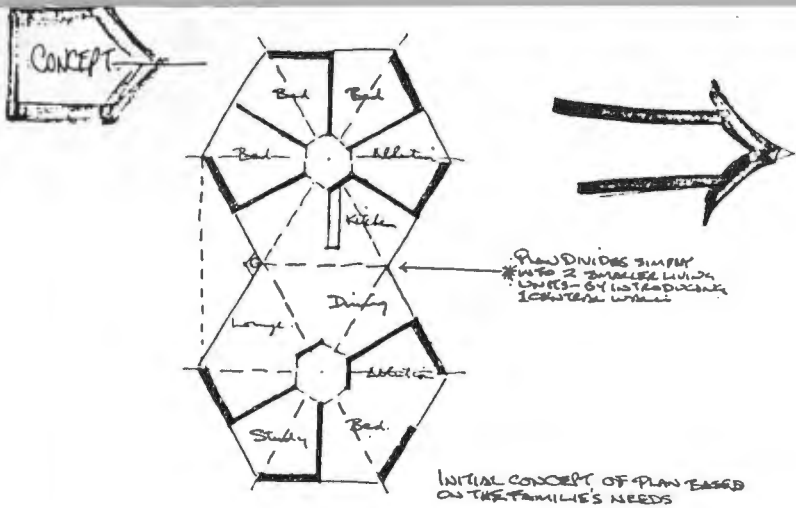
0 0.5 1 2 3 4 5m.

society bond. Being an important exchange and investment commodity, a great deal of thought went into the design of those aspects of the dwelling that would enhance its market value. These included a careful consideration of the building's shape, its constructional details, and the choice of building materials and finishes.

The dwelling's shape was derived by considering a range of factors including orientation, the concept of zoning (mentioned in the previous section), and Municipal by-laws concerning the building's bulk and size in relation to the area of the stand. Some of these considerations are illustrated in the sketches done by A' which are shown overleaf (Fig. 29).

As can be seen in these sketches, the pitched form of the roof was an important design element that has influenced the building's overall appearance. Factors that were considered in its design included the following concerns:

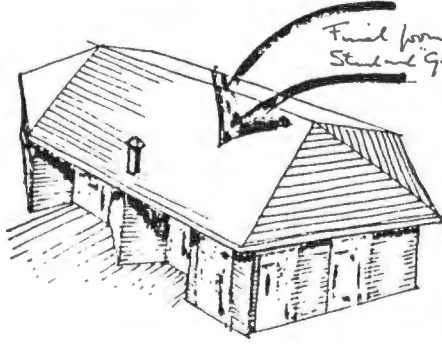
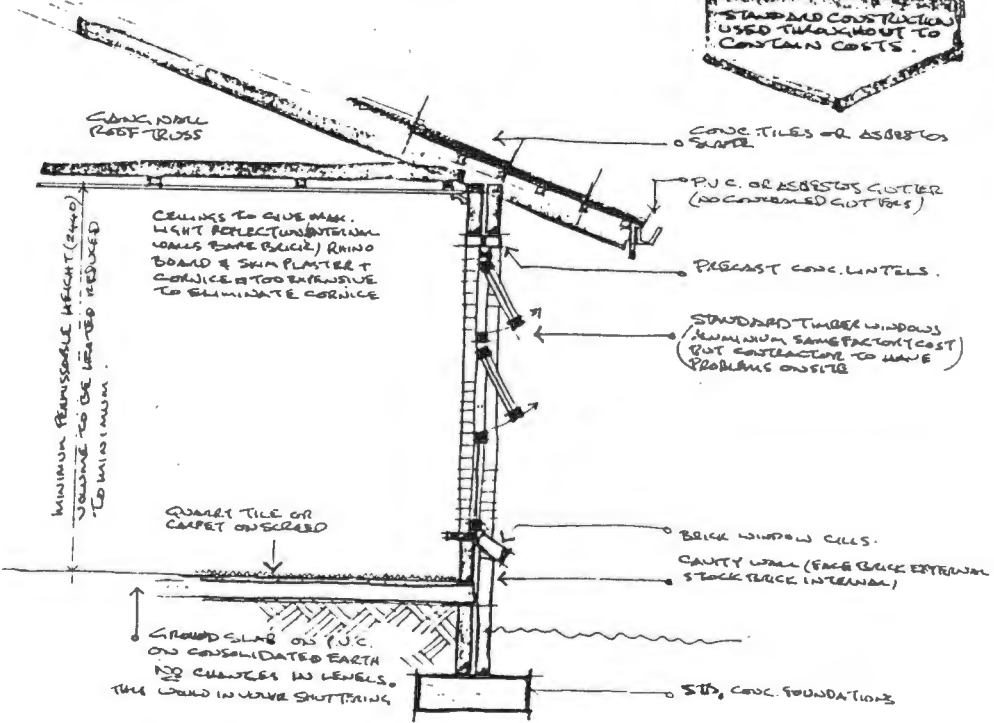
- That the shape be simple (a response to strong wind conditions)
- That there be large eaves and roof overhangs (so that walls are protected from rainwater and rising damp)
- That no gable walls be used (to reduce the chances of water entering through parapet wall details)



PLAN COULD EMERGE IN THIS FORM WITH AN OPEN BEILING & A 'ROUNDWALL' FORM OF ROOF CONSTR.

STANDARD CONSTRUCTION USED THROUGHOUT TO CONTAIN COSTS.

SOUND ROOF CONSTRUCTION CONSIDERED TO BE OF PRIME IMPORTANCE TO SUIT LOCAL CONDITIONS.



- No Gallies - water can enter through parapet walls.
- No Flashing (can be cause of leaks in time)
- No Flat Roof. Reasonable pitch prevents build up of surface water.
- Big eaves with hangers - Protects walls and reduces soil from being entering.
- Single slope is good in strong winds

CYPRESS

CONSTRUCTION DETAILS DESIGNED BY THE ARCHITECT, NEAL.

Figure 29 Construction Details

- That no flat roofs be used (to eliminate surface water conditions that lead to leaks).

The construction of the dwelling is based on several standard details and the use of standard doors, windows, roof trusses and specifications. The detailed cross-section done by A' shows how these elements have been used in conjunction with one another.

A major unifying theme in the dwelling is the use of natural materials. Here, the brown face brick chosen for the walls dominates throughout. All the external and internal walls are left in their 'raw', well-bonded finish. Brightly coloured glazed enamel tiles are applied to the walls in those areas that require them, such as the kitchen and the two bathrooms.

The overall effect of the internal face brick walls is that the interior spaces are moderately dark during the day. The extensive use of large windows and glass panelled doors together with the white ceilings offsets this effect to some extent.

Artificial lighting is used to complement the natural looking interior. This is so particularly in the main living zone where the affective characteristics of the various spaces can be regulated by dimmer switches that change the intensity of illumination.

Good quality, wall-to-wall carpets are used as floor finishes throughout all the living and bedroom spaces. The kitchen, laundry,

fireplace and bathrooms have red/brown quarry tile floors. Brick paving is used on all the outside patio and utility surfaces.

The choice of all these materials as finishes has resulted in a building where maintenance costs are relatively low. Besides occasional repair work, very little is spent on the upkeep of the fabric of the building.

The decoration of the dwelling has been tastefully done and reflects the artistic nature of the individual household members. Furnishings are attractive and comfortable. These include several built-in fittings and equipment such as clothes cupboards, bookshelves, worktops and kitchen appliances. Walls are decorated with paintings, various prints and posters, wall hangings and other paraphernalia such as an assortment of banners, Coca Cola advertisements and related artefacts in E''s bedroom (12).

7.3 Survey of Activities

7.3.1 Crossroads and Cypress

7.3.1.1 A Qualitative Framework for the Interpretation of Space: Observations on the use of dwellings and the scheduling of activities in space and time

The dwellings designed, occupied and owned by the Crossroads and Cypress households represent highly specific adaptations to two different sets of contextual conditions. If their relatively stable spatial morphologies are fully emmeshed with the social form of their

occupants and are related to the (active) generation of social relationships and interactions, then one way of gaining access to that process is to analyse them in use. As argued in Chapters 5 and 6, this is crucial for an effective understanding of the social meaning of dwellings:

"If design is to be understood beyond the mistaken slight phenotype modification for the continuous recreation of a genotype, then observers must become something like 'archaeologists of the present', attempting to uncover the elementary forms by which our societies are being mapped into new spatial structures." (Hillier and Leaman, 1974: 10).

In other words, descriptions of the duree of daily life are essential for understanding fully the longue duree characteristics of socio-spatial form. Given the duality of structure principle, then the mapping process mentioned by Hillier and Leaman - the dynamic aspect of the relation between activity patterns and spatial patterns - can only be analysed if data are available on the use of buildings.

The purpose of this section is to describe such a data set, and, in this way, to establish a broad field of qualitative information that will complement the quantitative descriptions obtained from syntactical analysis. Although these data are not established with the same degree of numerical and quantitative rigour as compared to syntax, they nevertheless construct a useful framework, or background, that is essential for interpreting spatial data. What follows is a

description of the observations made on the use of space at the two dwellings.

Notes on fieldwork techniques and the assembly of data surrounding the use of the two dwellings are given in Appendix B. A total of 62 days were spent making observations at the two dwellings. Observations at Crossroads amounted to 30 days which consisted of 135,5 hours and included 942 activity readings made at 15 minute intervals (see Table B.1). At Cypress 32 days were spent making observations. This amounted to 571 hours and included 2 284 activity readings (see Table B.2).

Access to the Crossroads dwelling was made increasingly difficult as the tensions in the settlement began to mount during 1985. Violence in the area, the general state of instability, hostility shown towards strangers by various factions in the settlement and, consequently, a greater concern for personal safety resulted in shorter observation periods at the dwelling. Thus, most observation periods during 1985 lasted six hours in comparison to the 12 hour periods obtained during 1984.

In comparison to the average daily observation period (17.8 hours) obtained at Cypress, the time spent at Crossroads was relatively short. These data were nevertheless considered to be sufficient and

comparable since the range of information obtained at Crossroads over the one-year period matched the information gathered at Cypress. Thus, although the amount of observation data gathered at Crossroads was less than that obtained from Cypress, the overall use-patterns shown by these two sets of data could be significantly compared.

Initially a free format description of activities was undertaken during observations. These descriptions were coded and stored using a straightforward alphabetical card indexing system. On this basis, and once the observations were completed in August 1985, all synonymous activity descriptions from both case studies were identified and grouped under a single heading. These were then collapsed into 15 major categories following a broad obligatory-discretionary scheme of activity type listing (see Chapin, 1974). This was considered a useful scheme, or 'stack' of activities, since it encompassed everything that people do in domestic situations and is thus well suited to the purposes of this study.

The following major categories of activity have been delineated and are listed in descending order from most obligatory to most discretionary:

<u>Code</u>	<u>Activity Type</u>
00	Sleep
01	Eating

02	Cooking & Food Preparation
03	Personal Hygiene & Body Care
04	Job-Related
05	Education-Related
06	Housework/Homenaking
07	Dwelling Maintenance & Repair Work
08	Socialising
09	Active Leisure
10	Passive Leisure
11	Religious/Spiritual
12	Child Care
13	Animal Care
14	Movement

Obligatory activities were taken to be those subsistence-related events that have to be performed if household life is to be sustained. They relate primarily to physiological functions in the human body - some, such as sleeping and eating, operating strictly in biological time.

Most other events have a greater degree of option and choice, both as to where they are performed and when they are performed. This flexibility is not to suggest that they are less important to the maintenance of household life, only that they 'fit' more loosely, or are more freely distributed, in space and time (cf. Fawcett, 1976).

In order to model these activities in relation to spatial organisation, it became necessary to correlate them with other variables. Observations on the use of the two dwellings were thus made to include the time of day, the individuals involved, what they were doing, the principal spaces and activity surfaces they were using, the artefacts being used and environmental conditions, such as

Corrected Effective Temperature (Appendix B describes the format used in the field for recording these parameters).

On the basis of these results it became possible to devise a simple representation of each period during which the observations took place. This consists of an activity/space/time matrix upon which all the relevant information is recorded. Using the numerical codes for space and activities that are given above, and colour codes for individuals, the use of each dwelling is extensively described.

With these graphic data two basic kinds of information were produced: Firstly, it was possible to construct a reasonably accurate 'biography' of each dwelling for the 12 month phase during which observations were carried out. Secondly, data could be generated on the utilisation of any principal space, including the kinds of activity performed in it, the frequency of use, the number of individuals occupying it, and so on. A set of five bar charts each observation day was tabulated in order to model, summarise and communicate easily the dwelling's daily use 'signature'. These signatures were then used to delineate longer term patterns.

Examples of both sets of graphic data are given in Appendix D. These consist of a representative cross-section of observation days from both dwellings. Seven days, including a variation of day-types from each are presented to show the 1984/85 period.

Within each dwelling very little significant and unexpected variation in use-pattern was noted across the sample. Obvious seasonal changes did emerge: In Cypress, for example, the fireplace in the lounge (6) became an attractive surface for the family to gather around to read, write letters or eat during cold winter evenings. On moderately hot summer days these activities shifted to the main patio (17).

A similar seasonal pattern was noted at Crossroads. The outside shelter (1) occasionally accommodated the activities that normally took place in the kitchen and lounge/dining room complex. This was mostly on very hot days.

The following is a brief description of each dwelling in use on a typical week day. For a graphic description of these events and patterns see Appendix D.

Crossroads

11.9.1984 : Weekday

Day Code : CR 1

Observation Period : 12 Hours

- 06h00 The first to rise is A who washes in his bedroom, dresses and leaves for work.
- 06h45 The household is asleep except for M and N who are in the lounge/dining room playing with one another.
- 07h00 C gets up and washes from a basin in his bedroom (8). He then dresses, goes to the kitchen and starts boiling water on a paraffin stove. M and N meanwhile wash themselves from a basin in bedroom 11.

- 07h15 C drinks a mug of tea and leaves for work.
- 07h45 Most of the household is awake. People are either drinking coffee, making beds or generally tidying up the dwelling. P, Q and S are still asleep.
- 08h30 M leaves for school while the other children play in the backyard. J prepares food in the kitchen for the children.
- 09h30 H is in her bedroom (7) sorting laundry which is in a bundle on her bed. J sweeps the kitchen floor while all the children are playing in the lounge/dining room. B in the meantime has been drinking coffee in her husband's bedroom. She finishes her second cup and leaves the dwelling to visit a friend.
- 09h45 A fire is started by E at the hearth in the backyard. H is in the storeroom filling her heater with paraffin. J is in bedroom 12 pouring warm water into a large basin which she will use to bath Q, her five month old child.
- 10h00 The first part of the morning is taken up by the women cleaning the dwelling. They are assisted by the young girls who also help with the preparation of food. H spends much of the time in her bedroom repairing clothes with her sewing machine.
- 11h45 B returns with her sister, Z², and two friends. Together they begin to brew beer at the hearth in the backyard. A steady stream of guests begins to arrive and joins the group of women who are sitting around the outside shelter talking, drinking beer and smoking. After a while B, who is a licensed herbalist, goes to her bedroom and, sitting on the floor, starts to grind various medicinal herbs using two grind stones. Some 30 minutes are spent doing this after which she goes to her husband's bedroom and proceeds to administer a mixture of various herbs to two of the (female) visitors.
- 13h45 Most of the afternoon is spent washing pots and mugs in a basin in the backyard after the visitors have departed. R arrives and is joined by S in their front room. B spends some time washing clothes in a plastic bucket near to the chicken house. She is joined later by two friends who sit and talk with her. M arrives from school and changes his clothing in his bedroom (6). N helps H prepare a pot of food in the kitchen using the paraffin stove and several pots.
- 15h15 Some time is spent by P, E, H, B, Z² and a visitor Y in the front yard. The women sit talking and smoking while the children are fed from a single pot. R falls asleep in his bedroom.

- 16h15 S sits reading a magazine in her front room (18). The baby, Q, is fed by her mother J in the lounge/dining room. M sits under the outside shelter listening to a portable radio while in the backyard Z² prepares a fire in order to boil water. Later, J, M, E, Z² and S gather in the lounge/dining room and sit talking while Q lies on a blanket on the floor.
- 17h15 A returns home and feeds the chickens from the meal which he keeps in the store room. All the others are chatting in the lounge/dining room. Later C returns from work followed by D who has been visiting friends.
- 18h00 The entire household including R and S congregate around the table in the lounge/dining room. There is much talking and smoking while the children play with each other. At the same time food is cooking in the kitchen.
- Observation period ends.

Cypress

28.1.1985 : Weekday

Day Code : CY 5

Observation Period : 17 Hours

- 07h15 A' is the first to rise. He goes to the kitchen and packs away the cups, cutlery and plates that have been washed overnight in the automatic dishwasher. He then makes tea and toast which he takes to the bedroom and serves B'. The rest of the family is asleep.
- 08h00 Everyone has washed and dressed. A' and B' have left for work. During the university holidays C' is temporarily employed. By 08h15 she has left for work. E' is the last to leave (for school). Excluding the pets, the dwelling is empty of occupants for the entire morning.
- 13h30 E' comes home, goes to the kitchen and makes a sandwich which he eats on his bed in his bedroom (12). He leaves shortly after this.
- 15h15 B' arrives, lies down on her bed and begins to read a book. After a short while E' returns, changes his clothes in his bedroom and both he and B' leave the dwelling.

- 17h30 C' arrives and changes her clothes in her bedroom (13). She leaves shortly afterwards.
- 17h45 A' arrives home. After getting a drink of water from the fridge in the kitchen he starts to water the lawn in the front garden using a hose pipe.
- 18h15 The family is together watching television: B', E' and C' are seated in the TV lounge (7) and A' stands at the worktop in the kitchen.
- 18h45 A' talks on the telephone for several minutes while B', E' and C' are watching television.
- 19h30 The dogs are fed by C' in the kitchen. A' has left the dwelling to go jogging. E' is watching television and B' is making a sandwich in the kitchen.
- 19h45 A' returns and after changing goes to the kitchen and starts preparing food for supper. Everyone else watches television.
- 20h30 A' showers in his bathroom (4). B' and C' play with the hamster on the front lawn while E' cleans its cage on the main patio (17).
- 20h45 The family has supper on the main patio. After eating they spend some time chatting around the table.
- 21h30 A' sits writing at his drawing board in the studio (1). He is later joined by C' and B' and the three sit talking. E' has meanwhile gone to bed.
- 22h30 All the family members are asleep.
- Observation period ends.

From the material presented in this chapter it becomes possible to develop a structurationist account of the relationship between dwellings and households. In doing this an attempt will be made to establish not only what are in principle the social properties of domestic spatial designs but also a finer understanding of the basic strategic differences that underlie each dwelling's morphology. Both dwellings have been knowledgeably patterned in relation to a wide range of conditions to do with each's environmental setting and social

ideas, including those surrounding household structure. Indeed, following syntax, it is reasonable to assume that the extent to which household structure is embedded in space will vary between Crossroads and Cypress whose cultural backgrounds differ considerably.

One way of understanding how these differences correspond (or do not correspond) with spatial designs would be to isolate those universal parameters that are common to both domestic groups and then to identify the manner in which they are spatially manifested.

Following the presentation in this chapter, two sets of social principles are immediately discernible as being useful for analysis. Firstly, in both cases there are clear ideas concerning the status and role of particular types of people. These relate to the categorical distinction between parents, children, males, females and visitors. The social relations that hold between them are expressed differently in each household and consequently the dwelling it occupies.

Secondly, the households represent two fundamentally different ideological and class positions in South Africa - the one dominated by the other. The coexistence of these two competing ideologies is interpreted (in the literature reviewed in Chapter 2 on southern African settlements and architecture) along broad cultural evolutionary lines within the dominant architectural paradigm: positivism or environmental determinism. Here, the architecture and material productions of the two different, coexisting ideologies - the one 'traditional and tribal', the other 'modern and civilised' - are usually viewed as the functions of two societies situated at extreme

ends of a cultural continuum where each is counterposed to the other's level of 'advancement'.

However, if households, as spatially and temporally institutionalised social systems, are structured only insofar as individuals knowledgeably reproduce pre-existing patterns of encounter and social practice, then the social meaning of their dwellings can only be explicated by examining them in terms of the very phenomenon that (in the literature reviewed in Chapter 2 at least) persistently seems to conceal it: ideology. Dwellings are ideological in that they actively create the household's social form.

Indeed, the material embodiment of ideology in domestic architecture has been one of the misleading and confusing aspects of the literature within the dominant architectural paradigm. Here, ideology has, at best, been treated as a passive background, at worst, separated completely from the material world. Thus the Crossroads and Cypress dwellings - through the way they arrange spaces - organise patterns of encounter so that specific social relations and meanings can be retrieved and interpreted by individuals. The architectural form that each household has adopted is thus crucially important to the reproduction of two fundamentally different ideologies.

On the one hand, the professional and economic characteristics of Cypress would place it in a position that, in South Africa as a whole, even in relation to most other white households might be regarded as being an extremely privileged one with high socio-economic status.

The household's lifestyle, its sectional as well as individual interests, an awareness of certain symbolic values - particularly those to do with art and the representational aspects of culture - and a general western, liberal outlook, make it part of a unique social class and subcultural set. Consequently, from the point of view of the occupants themselves, the dwelling is seen to symbolise and reflect meaningfully their 'modern' ideology which they take for granted as normal and inevitable.

Crossroads, on the other hand, represents a subculture that is inherently conservative. Besides being part of an impoverished and oppressed urban working class, the household's ideological apparatus is tied strongly to its rural roots. A broad range of rural values and social practices - including those surrounding gender relationships and encounters - have been reproduced in the urban setting as a matter of routine.

Following the discussion in earlier chapters, the different ideological systems that are operative in both cases may be seen to provide meaning to, and legitimate the forms of the domestic buildings that each has designed. As material culture, the dwellings are themselves part of each household's ideological apparatus. The following chapter will examine these different ideological principles to see how they are imprinted in domestic spatial layouts and how, as interpretive frameworks, they give meaning to the architecture that describes them.

CHAPTER 8MEANING IN DOMESTIC SPACE

As argued in Chapter 6, the meaning of dwellings is not inherent in their spatial form but is continually recreated and developed as they are used. Spatial design thus obtains meaning in the context of its use just as it in turn provides practical activity, social process and the people and other things involved with specific meanings. The intention of this chapter is to demonstrate as precisely as possible this model of domestic space. Through this an attempt will be made to obtain some understanding of the social principles of dwelling design and, conversely, the spatial requirements of domestic groups.

The comparison between the arrangement and order of space in Crossroads and Cypress raises general questions surrounding the relationship between ideology, social change and architectural form. In particular, given Marx's distinction between the superiority of the worst architect when compared to the best bee, the design and use of these dwellings indicates that both are the product of careful thought and planning, built by people who know exactly what they want and who have ways and means of achieving it. As such they are not built to express abstract notions but are designed according to rules of spatial composition regarded as crucial to the maintenance and reproduction of the social relations inherent in each. The differences lie in the methods and strategies each knowledgeably

chooses to adopt in relation to context, including the need to reach specific goals to do with the relationships between different categories of people. These differences and similarities are not only outcomes of intentional, purposive action, but result also from adaptations to the unacknowledged realities of context and the range of unintended consequences that flow with the day-to-day activities of domestic life.

A major function of the model is therefore to provide some integrated explanation of why and how certain domestic social relations imply definite spatial arrangements and architectural form. It proposes to supply an explanation, by way of demonstration, that although dwellings are designed to suit social purposes, an understanding of the meaning of form cannot rest on a description and analysis of these alone. Nor can meaning be simply 'read off' from the architectural details or aesthetic qualities of dwellings. Only by penetrating the morphological structure of space in which social relations are embedded and continuously reconstituted, can analysis hope to produce a more rounded explanation of the formal logic of dwelling designs, their use and meaning.

This approach allows several themes, or 'theories', surrounding the meaning of built form that persist in southern African architectural studies to be more rigorously tackled. The chief of these is the concept that African societies reproduce 'unselfconsciously' - as if by rote rule-following or mechanical tribal instinct - an architecture that is everywhere similar, changeless, repetitive and therefore

'traditional'. This concept is given meaning by being counterposed to the 'designed' environments of European settler societies and explained in terms of ethnic identity or tribalism (see Chapter 2 for an overview of these writings). Indeed, the analytical model proposed in this investigation - in that it operationalises the duality of structure principle and emphasises the spatial dimension of social organisation - is perhaps best able to contribute towards the development of a sharper, more coherent conceptualisation of the role of inherited ideas and routinely reproduced practices in relation to the dwellings of two seemingly categorically distinct households. Just how 'traditional' is the Crossroads household and its dwelling and similarly, to what extent is Cypress 'modern', are two major issues that will be examined in this chapter.

The chapter is arranged in the following way. First, the broader issues concerning the relationship between the maintenance and transformation of domestic social patterns with the structural properties of the spatial layout in Crossroads and Cypress will be described. Using the technique of space syntax, this will form the basis of an institutional analysis of dwellings.

Secondly, having examined the socio-spatial properties of the two dwellings, the analysis will outline how this relationship is drawn on as a structuring device whereby spatial meaning is both retrieved and reproduced by individuals during their daily activities. This establishes the basis for the analysis of strategic conduct where the

meaning and layout of space is treated as a reflexively monitored medium for patterns of domestic practice.

8.1 Syntactical Descriptions of Spatial Designs

Before proceeding with the analysis, it is necessary to outline the morphological properties of spatial layout that are to be discussed in relation to domestic social organisation. This is done in order to describe the ground plan of each dwelling in such a way as to expose the most relevant spatial characteristics so that these can be analysed and compared. In this way the principal means for undertaking both forms of analysis will be demonstrated.

First, the largest and fewest possible 'convex' spaces that are necessary to cover the entire surface of the dwelling are isolated. The layout of principal spaces in each case that was shown in the previous chapter forms the basis for this form of representation.

An unjustified permeability map relating all the principal spaces in the system is constructed on the basis of each ground plan (Figs 30 and 31). This indicates immediately the morphological pattern, or structure, of the spatial design in both cases. Using this map it is possible to describe accurately the relative separation of spaces using the integration measure (RRA) obtained from each space.

The numerical analysis of spatial relations in each dwelling indicates the average level of separation in both dwellings as follows: By summing all the RRA values and dividing by the number of principal spatial categories in each case, it is possible to express the overall, or mean, integration value for the dwelling as a whole. This shows that the degree of separation, or depth, at Crossroads is higher (Mean RRA = 0,962) than at Cypress (Mean RRA = 0,851).

By far the most integrating space at Crossroads is the lounge/dining room (RRA = 0,407) which is more than four times shallower than the deepest, or most segregated space in the system, the lodger's bedroom (RRA = 1,697). The two most important main use spaces, the main bedroom and the outside shelter, are also strongly segregated (RRA = 1,113).

At Cypress the most strongly segregated main use space is the studio (RRA = 1,215). This is slightly lower than the parents' bedroom (RRA = 1,435) which is more than two and a half times as deep as the most integrating spaces, the lounge and TV lounge (RRA = 0,550). The mean level of integration for the three children's bedrooms (Mean RRA = 0,838) turns out to be similar to the degree of separation measured for the dwelling as a whole. This is somewhat lower than the parents' domain, including the studio, their bedroom and bathroom (Mean RRA = 1,216). Since integration takes into account all other spaces in the system, it can be seen that, 'globally' at least, the parents' domain is some one and a half times more controlled than the children's area.

The second property of spatial design revolves around the degree of 'local' control in the system. This is a function of the number of 'rings' in the system, and captures the continuous (or discontinuous) flow of space, where this is measured by the relations of permeability, or 'ringyness'.

To reiterate what was discussed in Chapter 5, a ring is described in syntax as consisting of a series of spaces connected in sequence in such a way that a person moving in the system can return to any starting space without having to backtrack (Hillier and Hanson, 1984: 153 ff.). The relative ringyness of an individual space thus expresses how many spaces are adjacent, or one step away from it. Consequently, if a space has more than one locus of control relative to another, then, in terms of its ringyness, it will be more distributed in the system than if there were only one. Relative ringyness is therefore also a measure of the degree of choice there is in the system with respect to movement.

In terms of the relative ringyness of each dwelling viewed as a whole, the difference between them is great. Syntactically, the relative number of rings of the Cypress complex (Mean RR = 0,333) is nearly six times more than at Crossroads (Mean RR = 0,057). This is shown graphically in the permeability maps where Cypress exhibits many rings and Crossroads very few.

A striking feature at Crossroads is that 13 spaces, including all the bedrooms, or some 65% of the dwelling, are not on circulation paths. These spaces are therefore relatively non-distributed, where each has only one neighbour ($RR = 0,053$). This is nearly six times less than the most distributed room, the lounge/dining room ($RR = 0,316$), which exerts a great deal of local control over its neighbours. The back yard ($RR = 0,263$) and kitchen ($RR = 0,263$) are, similarly, spaces that have a great controlling effect on relations with other spaces in the complex. Thus, although there are a large number of ringless, or cul-de-sac spaces, the effect they have on the mean RR for the dwelling as a whole is offset by a very much smaller number of spaces that are extremely ringy.

At Cypress the distribution of RR values is more evenly spread. Here, the most ringless, or non-distributed, main use space is the studio ($RR = 0,040$). It is thus a powerfully controlled space since it is also relatively deep (high RRA). Being the most unlinked and segregated main use room in the parents' domain, it is able to articulate social relations across the generations as well as preserve the status of the parents in much the same kind of way as their bedroom does. Over here A' designs furniture, makes sketches, prepares lecture notes and reads. B' marks essays, prepares classroom notes, makes graphic designs, produces garments on her sewing machine and, together with A', runs the household finances.

The opposite holds true for the lounge which is both extremely distributed ($RR = 0,240$) and the most integrated (lowest RA). Thus,

syntactically, the lounge establishes a central region for the household and is at once more freely and easily accessible to everybody since most routes pass through it. In contradistinction to the studio, the lounge's function - in conjunction with the TV lounge, main patio and kitchen - is to homogenise social relations among individuals so as to reproduce relations of interdependence and ideas surrounding equal statuses and rights in the household.

The third morphological property of space concerns the degree of axially inherent in each dwelling (see Figs 32 and 33). Since this is a one dimensional description that identifies the longest and fewest straight lines that are necessary to cover the ground plan, it is able to clarify the overall structure of space (Hillier and Hanson, 1984: 91 ff.).

One useful outcome of this form of analysis is that it is able to indicate to what extent the plan is either fragmented or integrated in terms of the overall layout of principal spaces. The degree to which the spaces are integrated axially thus provides some indication of how structured the dwelling is.

At Crossroads (Fig. 32) the axial structure is simple and somewhat formal, where one axial line spans the entire length of the dwelling from the front yard to the shelter in the back yard. Spaces that do not lie on this line are intersected by secondary lines that, excluding the lodger's complex, cross the main axis at various points. The axial map shown describes an environment that is internally and

CROSSROADS

AXIAL MAP.

NUMBER OF AXIAL LINES : 9.

NUMBER OF PRINCIPAL SPACES : 19.

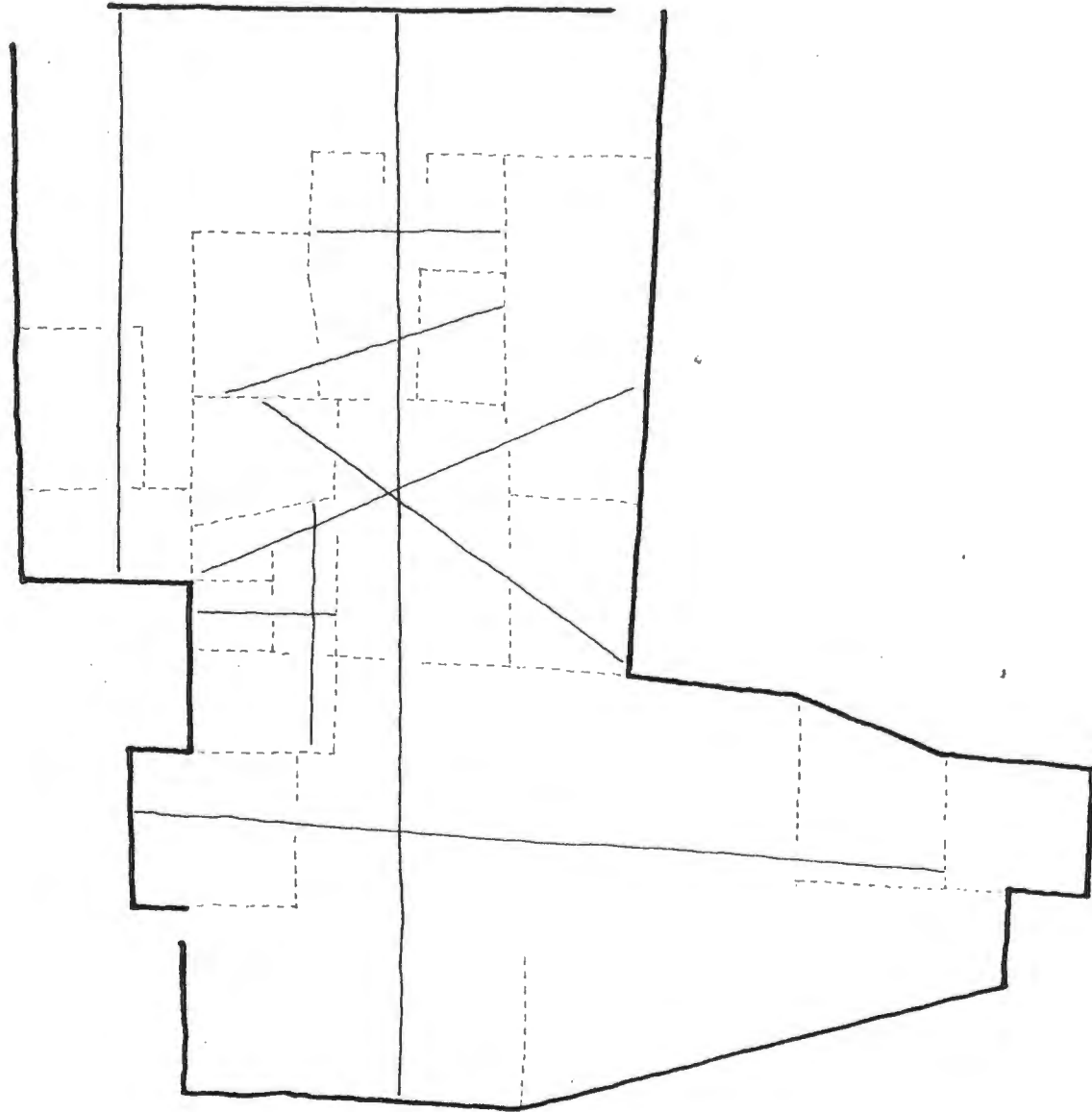
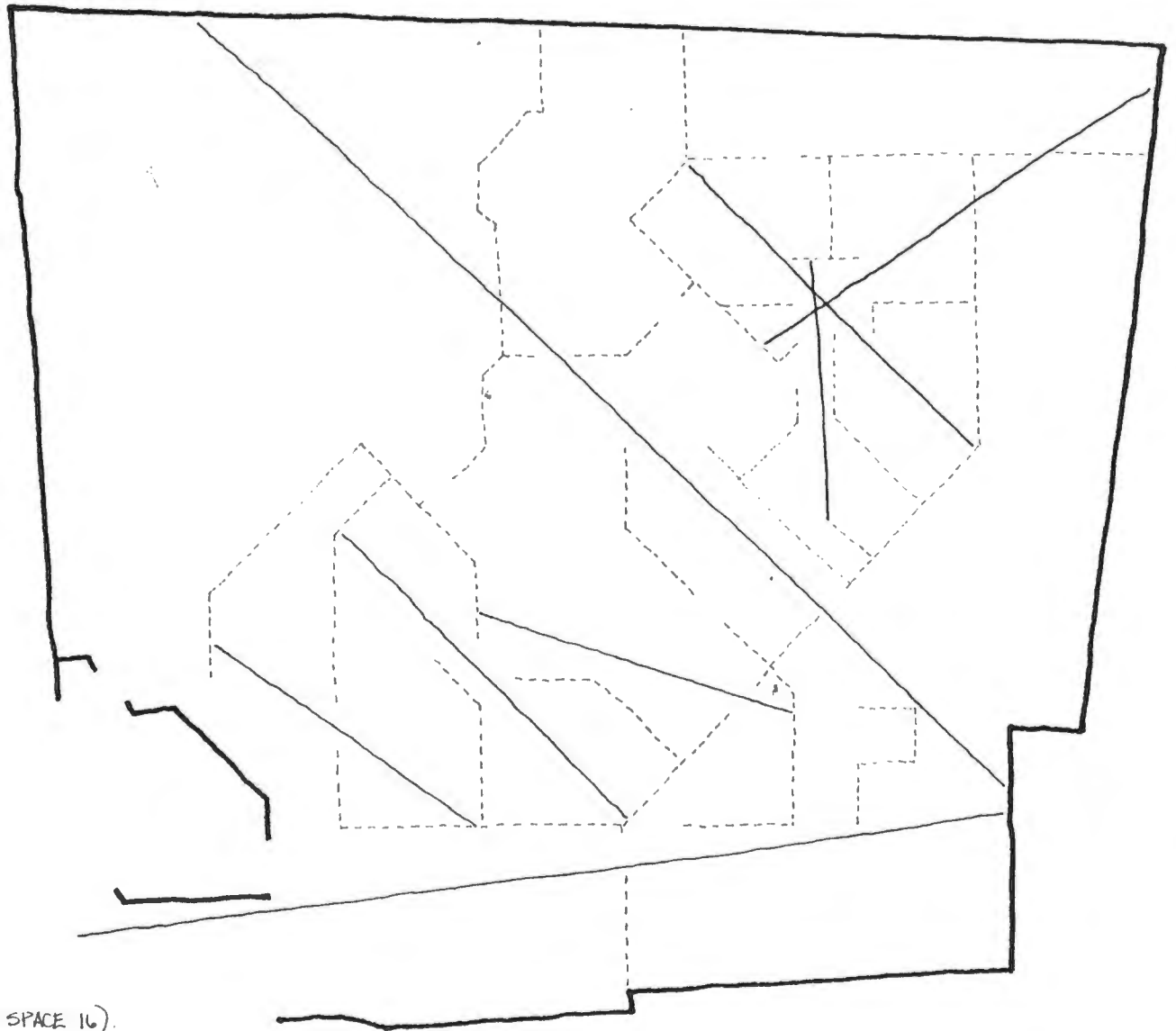


Figure 32
Axial Map of Crossroads



CYPRESS

AXIAL MAP.

NUMBER OF AXIAL LINES : 8.

NUMBER OF PRINCIPAL SPACES : 24 (EXCLUDING ROOF SPACE 16).

Figure 33
Axial Map of Cypress

externally highly ordered. This direct form of axial linking highlights the continuities among the spaces and thereby emphasises integration where this may be strongly differentiated locally.

The axial pattern at Cypress is quite different (Fig. 33). A key feature here is the degree of complexity. This is described by the axial map which indicates that the plan is much more fragmented, or less structured, than at Crossroads. Thus, although there is one dominant, integrating line - stretching from the service yard through the kitchen, TV lounge, lounge and main patio to the front yard - it is, from the point of view of the front gate, and the parents' and children's zones, relatively segregated. In contrast to the rest of the dwelling, the children's domain is, on the whole, more axially linked. Here, there is a more explicit order, suggesting a more structured set of local spatial relations than is the case in the rest of the dwelling.

These morphological properties suggest two fundamentally different sets of spatial relations that each household obviously requires in order to function as an integrated social institution. The following is a summary of these properties:

	Structural Articulation of Spatial Design	
	Crossroads	Cypress
Integration (RRA)	Segregated/ Relatively deep	Integrated/ Relatively shallow
Distributedness (RR)	Concentrated local control/Relatively ringless	Diffused local control/Relatively ringy
Axiality	Cohesive & simple/ Strong linking	Fragmented & complex/ Weak linking

For the purposes of analysis, these spatial characteristics will be used as key indices of the social connotations and functions of dwellings. The next section presents an institutional analysis of these two different orderings of domestic spatial relations and will attempt to show that each is a necessary material transformation of a particular ideological and socio-economic grouping.

8.2 Institutional Analysis: A Spatial Analysis of Domestic Social Relations

The main aim of institutional analysis is to clarify how domestic institutions affect interaction. It is therefore necessary to identify the structure of domestic socio-spatial systems and consequently to specify the recursive rule if any particular form is to be described. Since, in this investigation, the analysis of socio-spatial systems is the study of structuration, it becomes important to analyse spatial designs and household organisations as the material transformations, or the formal outcomes of the operation of recursive rules. That is, institutional analysis must focus upon

the modalities of interaction - the structural properties of household systems: signification, domination and legitimation.

Institutional analysis must therefore do three things. First, it must consider how the household is constituted spatially and behaviourally via the operation of power by examining the economic and political modalities of interaction. Second, it must demonstrate how interactions and patterns of domestic activities, as institutionalised practices, are legitimated spatially via the sanction modality. Third, it must consider the communication among occupants and visitors via the signification modality that lays bare the meaning of spatial design. In other words, space is viewed as a crucial element of all three modalities.

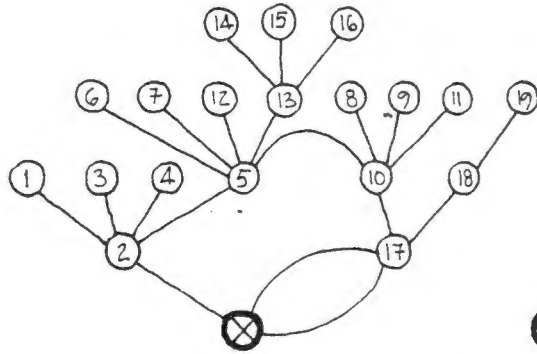
As mentioned in Chapter 6 there are two interrelated parts to this form of analysis. The first deals with those directly observed forms of day-to-day behaviours that impinge on each dwelling's spatial layout. The second uses these data as the basis for establishing how the three features of domestic socio-spatial relations - the S, D and L modalities - are manifested in each case study. In other words, through spatial analysis, the concern is with reaching an understanding of how the institutional form of each household is constituted and reconstituted in the link between the short-term - the durée of the flow of activities - and the longue durée, the culture of which it is a part.

In order to understand and interpret each dwelling in relation to household organisation, several key aspects of the *durée* of daily social behaviour will be examined. These forms of behaviour, which differ in each dwelling, have been isolated as providing the clearest indications of the relationship that exists between spatial arrangement and social form. They include those forms of interaction and patterns of behaviour that have a bearing on the relationship between the dwelling and the street, the equipment in the dwelling including furnishings and the contents of rooms and the relationship between particular activities and spaces.

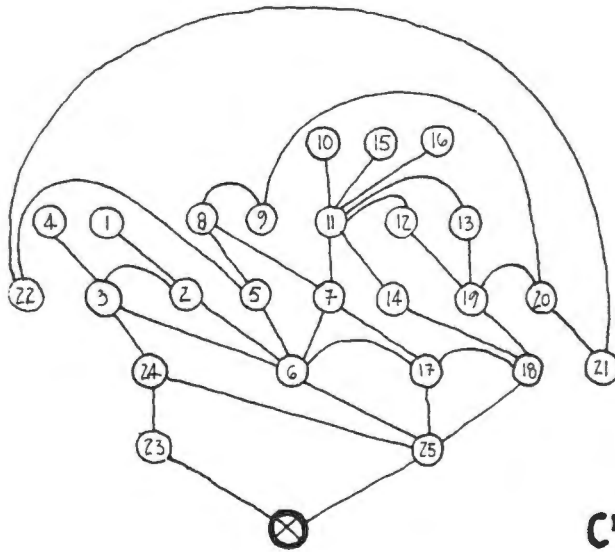
8.2.1 The Dwelling/Street Interface

Two distinctly different sets of relationships between the dwelling and the street are exhibited at Crossroads and Cypress. At Crossroads an 'open-door' policy appears to be at work. (It is worth noting that this pattern is completely analogous with the 'mis-use' of the carport in dwellings at Ongwediva, as shown in Chapter 2.) From the street the dwelling is clearly exposed to passers-by who have direct visual contact with the front and back yards as well as access through the front gate which is nearly always open.

This lack of spatial control on the main entrance is extended to the front door. Not only is there a weak sequence of spaces from the street to the interior of the dwelling, but the front door is left open during the day. The justified permeability map shown overleaf (Fig. 34) shows the integration characteristics of the dwelling seen



CROSSROADS
STREET RRA = 0,783.



CYPRESS
STREET RRA = 0,915

EACH PERMEABILITY MAP IS 'JUSTIFIED'
FROM THE STREET.

Figure 34
The Street/Dwelling Relation

from the street (RRA = \emptyset ,783). Indeed, the idea of a closed door or an inaccessible yard space might seem offensive in the settlement where neighbours and friends constantly visit one another.

Visitors to the dwelling usually go straight from the street to the kitchen or lounge/dining room, shouting their greetings from the front yard as they enter. Very seldom do visitors knock at the front door before entering, and when this does occur it is usually by someone who is a complete stranger to the household.

The external presentations of the dwelling to the street is generally considered by the household to be unimportant. Thus, although there is a strong, well defined boundary fence surrounding both yards, characteristics such as the idea of maintaining an attractive front garden or orienting the dwelling towards the (westerly) mountain view are not priorities. Of greater importance is the maintenance of links with family and neighbourhood friends. This is so especially among women who frequently visit one another, and children who play games in the narrow streets and congregate at one another's dwellings.

A similar kind of spatial behaviour holds true among the men. Over weekends it is common for the household head (A) to entertain his regular circle of friends and male relatives who wander in and out of the dwelling for an apparently endless series of (home-brewed) beer drinking sessions.

At Cypress the opposite behaviour pattern occurs. Here there is strong control over the garden gate which is always locked. It is opened only once the visitor has rung the door bell which is heard inside the lounge area.

The high garden wall that surrounds the dwelling together with the solid panel gates, including those for the motor cars, ensures virtually no visual access from the street to the dwelling. This is reinforced by a relatively strong sequence of spaces between the street entrance and the front door of the dwelling which is left wide open during the day when there are occupants at home. The permeability map shown (Fig. 34) is justified from the street to indicate this relationship ($RRA = \emptyset,915$).

There is also a strong emphasis on the presentation of the dwelling to the street. Because the main building is visually obscured from the street, great emphasis has been placed on the design of the boundary wall and gates. As mentioned previously, the front gate is attractively designed. There is a built-in planting box situated close to it, and brightly coloured glazed tiles situated on the wall mark the direction to the front door.

For the Cypress household, both prospect and precinct are important. The main building is strategically placed to exploit fully the mountain view just as the building is designed to complement the up-market suburb in which it is located. Thus, the front garden, although it is often used during the summer months, is also an

important visual or symbolic space, furnished along two edges by shrubs and flowers and overlooked by the main building's studied and proportioned front facade.

These boundary and spatial behaviours ensure that the dwelling and the social life inherent to it are highly segregated from the street and the neighbourhood. What is disclosed is only that which the household has carefully chosen to present, the rationale of which appears to be highly ordered. Just as in Crossroads, this order is not arbitrary or trivial, but must be seen to be an integral part of the household's sub-culture and class position.

8.2.2 Equipment and Furnishings

Crossroads is sparsely furnished with the most rudimentary work surfaces and artefacts. Most of what is placed in the various rooms is used on a daily basis.

In the bedrooms, mattresses and bedding on the floor are rolled up each morning and placed against a wall. Clothes are put away in suitcases and cupboards and the rooms are generally extremely neat with everything in its place. This is so especially in the main bedroom belonging to A. His room contains the most expensive furnishings including his bed, eiderdown, floor rug, portable radio, table and chairs. An expensive suit, together with several jackets and shirts are neatly arranged on coathangers suspended from nails hammered through the sheet iron to the wooden frame behind. Shoes

and two large suitcases are placed under his bed and a family photograph is fastened to the wall above the bed.

The most important piece of furniture in the living area is the sideboard/cupboard combination situated near the back door. The household's best crockery is neatly and formally displayed against a colourful background of paper that is glued to the surfaces of the shelves. It is also here that A's portable radio is played when he is at home during the day.

The only cluttered area is the back yard. But again, this apparent disorder is strongly controlled with piled up boxes and sheets of corrugated iron and wood stacked in a corner of the yard and in the main shelter. Both yards are occasionally swept with hard brooms leaving these spaces looking neat and tidy.

Cypress, in contrast to Crossroads, exhibits more apparatus and artefacts than are actually used. Most surfaces in the interior of the dwelling contain a wide array of purely visual, non-usable collections. As such there is no particular space that may be regarded as being the 'best room' in the sense that it contains the most expensive or sentimentally valuable equipment and artefacts.

Besides the well-designed kitchen/laundry complex, the various rooms are distinguished more by strong identity associations than by the inclusion of specific or valuable objects and furnishings. Bedrooms,

for example, project the tastes and values with which the occupants may want to be identified.

The living areas are similarly arranged to project the image of the domestic group as a whole. Books, the hi-fi set, a small antique scale, some pottery, several prints, the hand-woven floor rugs and lounge furniture contribute to an identity that is on the whole that of a style culture, one that is overwhelmingly designer oriented.

Since these visual orders are subject to different attitudes and fashions they are more susceptible to change than is the case at Crossroads. Observations during the year showed that whereas decoration and the placement of equipment remained more or less stable at Crossroads, at Cypress - particularly in the bedrooms - occupants altered the looks of their environments more frequently.

8.2.3 Activities and Spaces

In terms of the spatial distribution of activities, several features are common to both dwellings. Internally, the management of circulation is achieved without the use of long passages. In both cases there are economic reasons for this. However, whereas in Crossroads these reasons are directly stated, at Cypress this decision is underwritten by a design philosophy which has influenced the making of space connections. There has consequently been a conscious attempt to make the living areas 'flow' into one another. The result is that in both dwellings the central living areas exert strong

control over the rooms that are adjacent to them. The differences lie in the detailed achievement of control.

At Crossroads, among the internal spaces, visibility is weak. Thus, although spaces are knit together by space (lounge/dining room $RR = 0,316$ and kitchen $RR = 0,263$) and not passages, there is a strong internal definition of spatial category: There are no internal circulation rings and 13 rooms have only one locus of control. The strength of internal surveillance or control is consequently a function of the combination of the kitchen and lounge/dining room and not of each seen in isolation from the other.

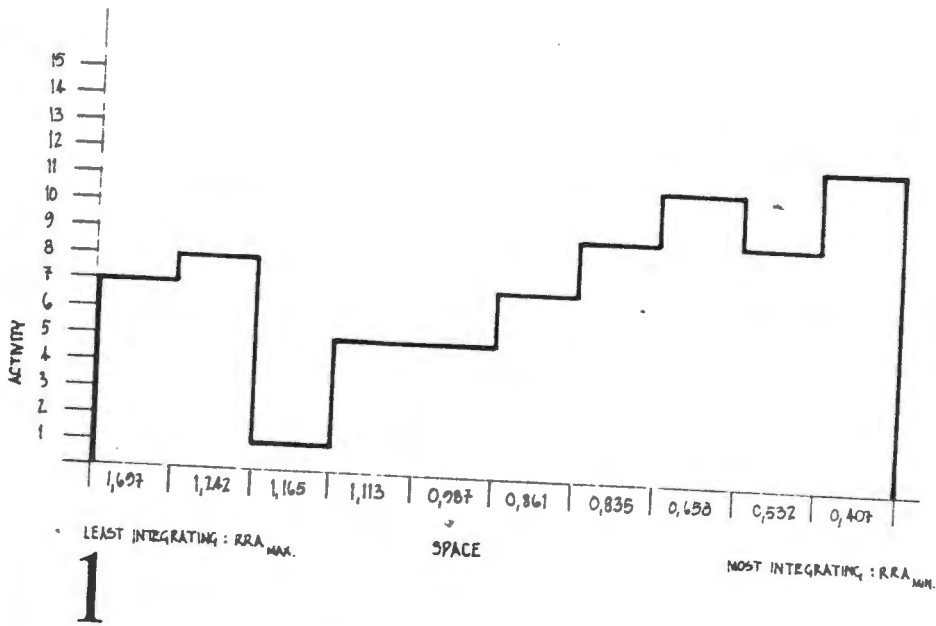
At Cypress the living areas exert control in an opposite kind of way. Internally, visibility is strong and the definition of spatial categories is weak: There are several deep internal rings and only four spaces (16 per cent of the dwelling) do not have any circulation paths passing through them. Surveillance is achieved by the weakening of boundaries between the lounge, TV lounge, dining room and the kitchen/laundry complex such that there is visual access to both the parents' and children's zones from several points. Internal control is therefore not dependent on the combination of the individual living spaces but is realised from each.

These properties may be used to clarify the links between spatial form and function (or activity) that occur at both the local and global level of control. In both dwellings activity patterns and movement correlate relatively strongly with spatial design.

This may be seen as a comment on what is already known since what people do in a specific domestic space - its 'function' - must, in syntactical terms, be identifiable from its local and global measures of control. The intention is therefore not merely to check the predictive powers of syntax but, more importantly perhaps, to see how similar functions are articulated differently under varied social conditions.

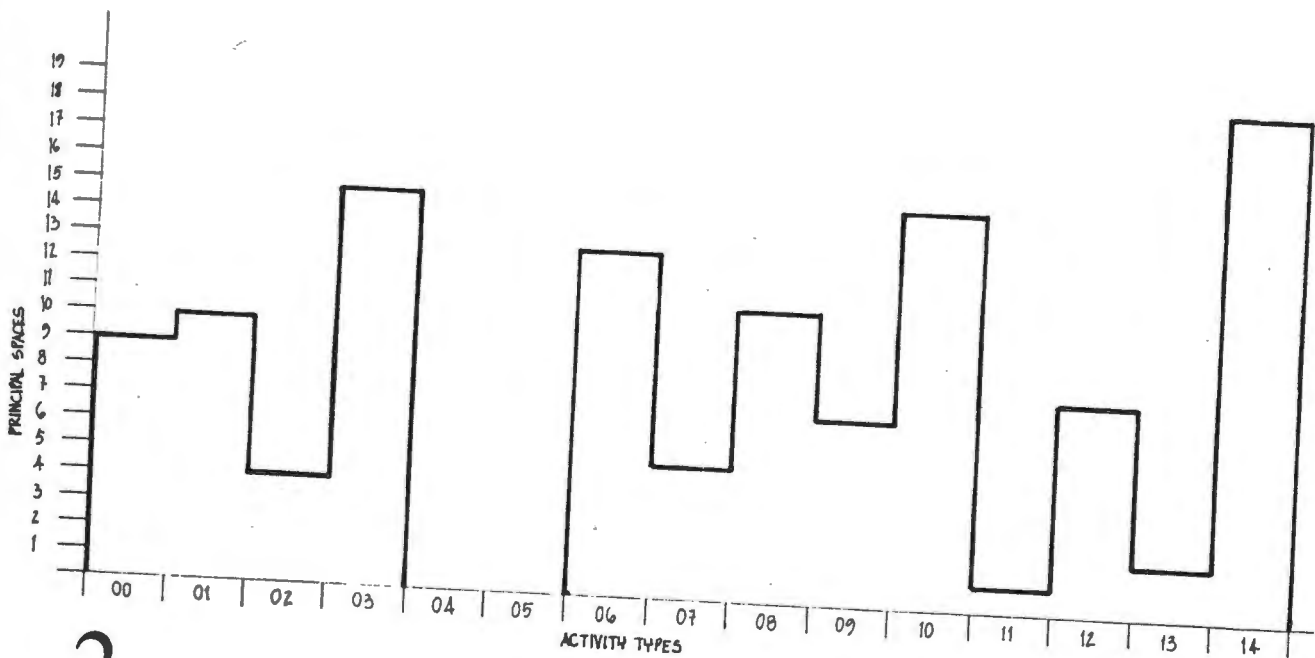
A set of graphs is shown for each case study. Each set contains three graphs that indicate:

1. The relationship between global control (RRA) and activities (Figs 35 and 38).
2. The spatial allocation of activities (Figs 36 and 39).
3. The relationship between local control (RR) and movement where this is taken to be a function of the number of people observed in specific spaces during the period that the household is awake (Figs 37 and 40). Readings for all the observation days are summed and the mean value obtained by dividing by the number of observation periods carried out during the year. The graph does therefore not reflect those night-time observations when everybody is asleep.



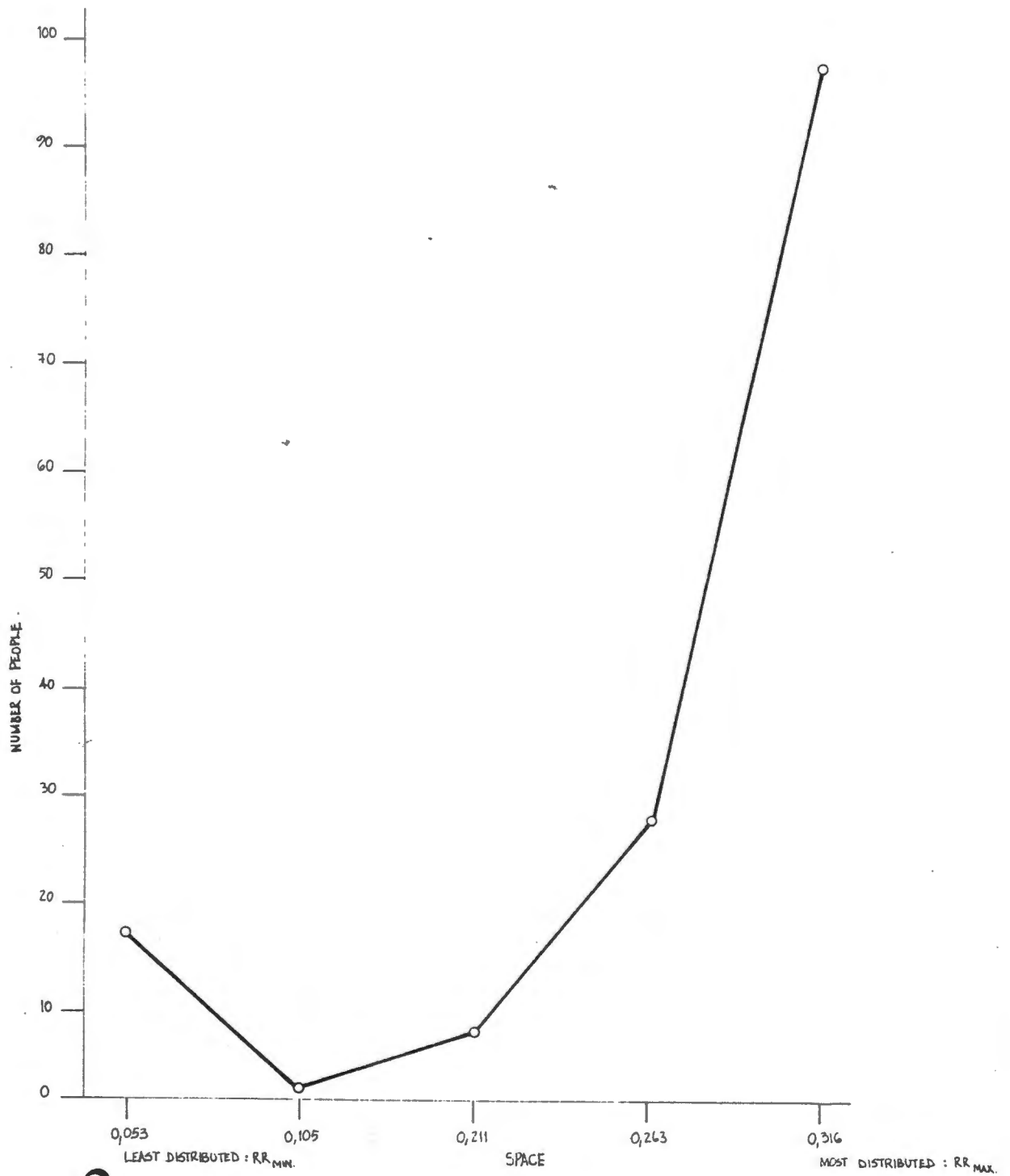
1

Figure 35
Crossroads: Multi-Functional Spaces



2

Figure 36
Crossroads: Multi-Spatial Activities



3

Figure 37
Crossroads: Local Control and Movement

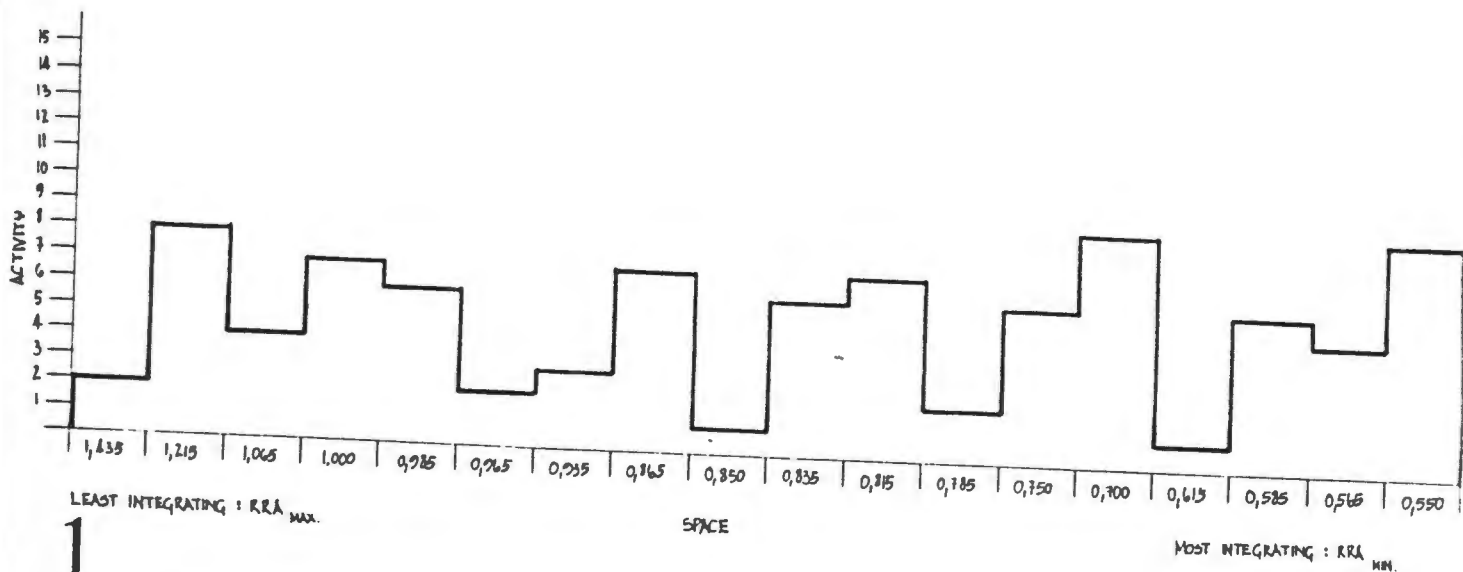


Figure 38
Cypress: Multi-Functional Spaces

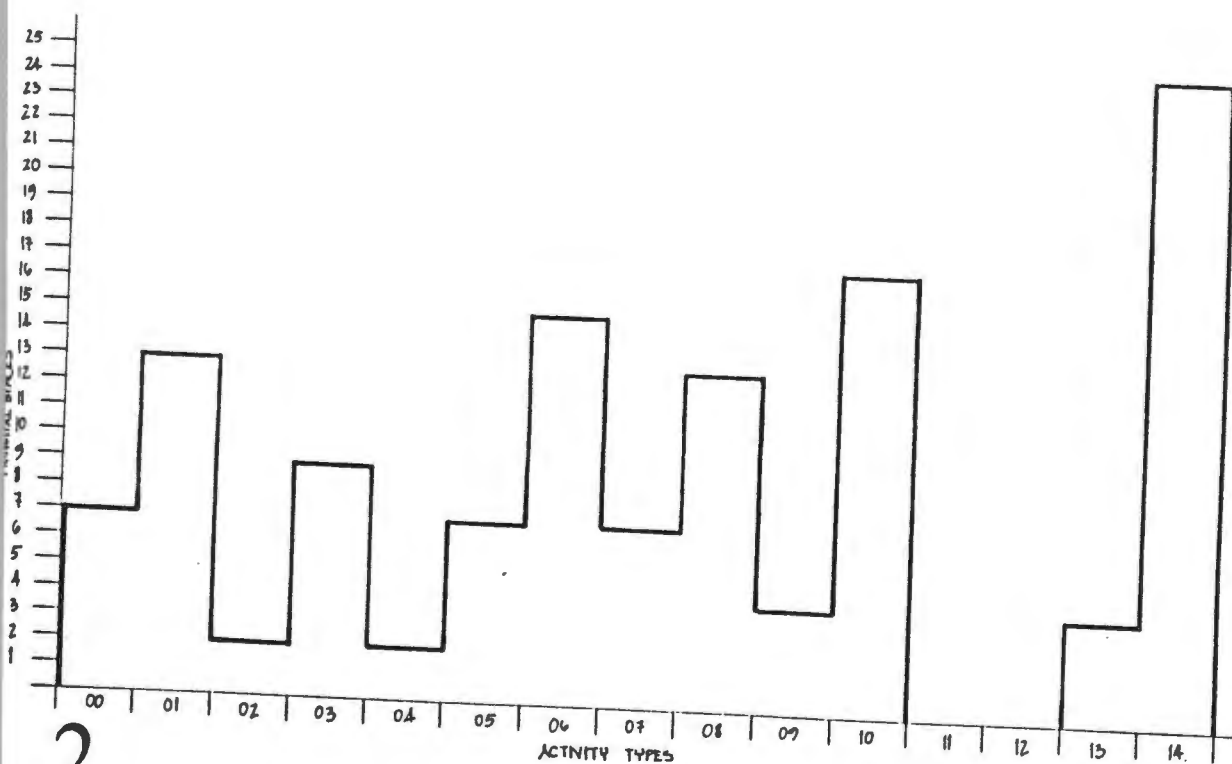
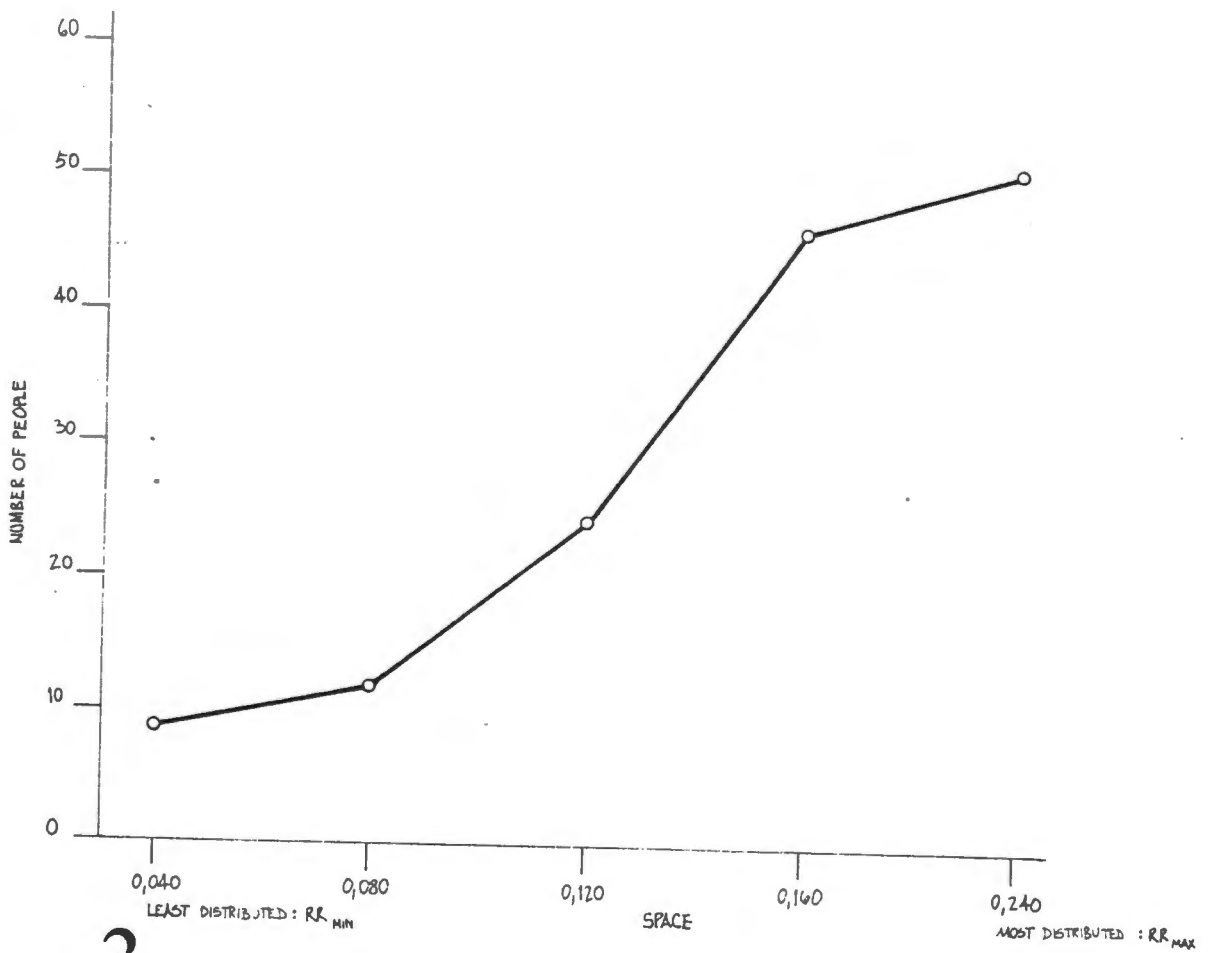


Figure 39
Cypress: Multi-Spatial Activities



3

Figure 40
Cypress: Local Control and Movement

The graphs are based on typical daily use patterns observed throughout the 12 month period and provide a synoptic overview of how each dwelling is used or how it 'works' in terms of spatial behaviour.

At Crossroads there is a direct correlation between global control (RRA) and the amount of activities that occur in specific spaces (Fig. 35). Spaces that are weak on the global dimension (RRA min.) tend to accommodate a greater number of functions. Thus, the most integrated space, the lounge/ dining room (RRA = 0,407) is used for performing an extremely high number (12) of activities. This is in contradistinction to the utility rooms (RRA = 1,165) - shower, lavatory and store room - that are each 'mono-functional'.

The two most segregating rooms in the complex, the lodger's rooms (RRA = 1,697 and 1,242) run contrary to this rule. The relatively high number of activities performed here may be ascribed to the extent to which the lodger and his family are, in reality, partially independent of the rest of the household. For example, the front room is used for cooking (on a paraffin stove), but this is not often and when it does occur, it is never without other household members participating. In addition, the fact that the full range of functions does not occur in the lodger's complex indicates not only that it is integrated with the household but that in terms of the number and type of activities, it functions similarly to the bedrooms (RRA = 0,861) in accommodating between seven and eight activity types. Indeed, the social and spatial characteristics of the lodger's accommodation indicate precisely the relationship that exists between

them and the rest of the household, where that which is the most spatially segregated, so as to preserve some degree of independence, is behaviourally integrated with the household.

Generally most activity types, excluding job and education-related activities that do not occur at all in the household, can take place in several spaces, as is shown in Fig. 36. The most important exceptions are those highly ritualised activities (activity type 11) surrounding B's role as a herbalist. When herbal potions are administered to her clients this is always done in A's bedroom, usually with the door slightly open. Thus, although B stores in her bedroom all the herbs, grind stones, shells, beads, arm bands and other artefacts that are used on these occasions, it is A's bedroom that is transformed into a domain that is important for the elaboration of a major ritual and mythical practice: One that is strongly associated with spiritual powers.

The main bedroom is therefore somewhat of a paradoxical space. On the one hand it is the space of A, an intensely private, highly segregated and strongly controlled room belonging to an authoritative figurehead and containing the most expensive equipment in the household, which, in contrast to the rest of the accommodation in the dwelling, is seldomly used by the household. On the other hand, it is precisely that space which is used to receive B's clients who are mostly complete strangers and whose visits are usually one-off occasions. The theoretical nature, or cultural identity, of the space is thus profoundly different to all the other spaces in the

system - one that is shown later in this discussion to be strongly linked to the reproduction of the *longue duree* through an infrequent encounter pattern.

The third graph for Crossroads, Fig. 37, shows that the space most frequently occupied is the lounge/dining room (RR = 0,316). Thus, in addition to accommodating the greatest number of activities and being the most integrated, it is also a major encounter space, in which is reproduced all those everyday transactions and relations that hold among the occupants - that is between men and women, children and parents - and between the household and visitors from the community in the settlement. Awareness of others is thus a vital component of the social identity of this room where household interaction is sustained through frequent encounters among individuals.

The kitchen and back yard (RR = 0,263) are similarly used but not as intensely. It is also in the outside shelter (RR = 0,053) that these patterns exist, and which cause the upward distortion at the non-distributed end of the graph where all the 'cul-de-sac' spaces are situated, including the bedrooms.

The set of graphs for Cypress shows a different use pattern. In the first place, the distribution pattern of activities in space is more or less even (Fig. 38), and the packing of activities in the rooms and outside areas is lower and more constant than at Crossroads. (At Cypress nine activity types are packed into the most integrating rooms, while at Crossroads the lounge/dining room accommodates

12 functions.) Indeed, this behaviour pattern is compatible with the relatively shallow and ringy spatial design that is inherently more homogenising than Crossroads. Function, it would appear, is both behaviourally and spatially strongly linked to the attempt by the household to aspire towards a culture that values the weakening of boundaries between spatial category and social status: Towards a culture that permits equal expression between different categories of people, including age and gender groupings.

Of particular significance is the weak correlation between global control and function. Most of the main use spaces accommodate a wide variety of activities and, as can be seen in the daily signatures in Appendix D, this happens when the occupants are co-present, usually during the early evening periods or, at weekends, round about midday. The number of activities that take place in the children's domain (mean RRA among their bedrooms = 0,838) suggests that their bedrooms, both separately and together, are transformed behaviourally into segregated areas that are compatible with their status as young adults (C' and D') and late adolescents (E' and F'). This is particularly so concerning guests who are entertained during the day and in the evenings, often with the bedroom doors closed. Eating light meals, such as sandwich lunches and sometimes breakfast, occurs occasionally in the bedrooms and the bathroom. There is consequently a weak distinction between day time spaces and night time areas - not only in the children's domain but in the dwelling as a whole.

The purely symbolic spaces are shown clearly by the troughs in the graph in Fig. 38. Areas such as the dining patio are hardly used. Their purpose is acknowledged by the household as one mainly to do with visual effect; for example, "to end the view" through the dining room's glass doors, or to supply some outlook from the main bedroom on to a brick paved, pot planted court that is, from the double bed at least, attractive.

Fig. 39 indicates that like Crossroads, most activities are multi-spatial. An important observation here is that whereas television watching - a dominant aspect of the household's leisure activities - could be expected to reduce the variety of activities as well as the diversity of loci at which they are performed, this is not the case. Indeed, the design of the kitchen, lounge and TV lounge is such that television viewing can occur from several points in these spaces. Other activities such as cooking, preparing food, feeding the dogs, eating, and so on, are thus frequently performed simultaneously while watching television. This is mostly an evening activity which often takes place sporadically among different household members - between study or work sessions, during supper, just before going to bed, while the bath tub is being filled, etc. Consequently, the overall pattern of space use is not greatly affected by television viewing.

Fig. 40 shows a similar but stronger correlation between movement and RR values than is the case at Crossroads. Excluding passage 11, the lounge (RR = 0,240) is the space in which the most movement occurs. Its social character is as direct as the studio: Where the latter

space realises control in isolation and the absence of outsiders, the lounge relies on immediacy, co-presence, face-to-face encounters and the weakening of boundaries for it to function adequately. It is, in other words, a space where the integration among occupants and between them and the wider social system is realised in terms of high 'presence-availability' (Giddens, 1981: 39) - a *durée* space where there is characteristically a small span in the space-time meshing of encounters. Thus, as a major zone in which social relations are synchronised, the lounge may be seen spatially, as a microcosm of the sub-cultural system that the household values and represents: A flexible visitor area in which assumptions about the relation between events and spatial category are not rigidly specified.

The form of cultural identity that is mapped into the lounge and, it would appear, the TV lounge, is developed and maintained by a carefully arranged display of artefact collections and furniture. Visitors are entertained not only in terms of social behaviour but also by the displays in the interior - conditions that project clearly, and remind visitors of, the interests and distinctiveness of the household.

The lower end of the graph (Fig. 40) shows a relatively high pattern of movement, especially as this is where the children's bedrooms are located (RR = 0,080). As mentioned earlier, this is because of the extensive day time use of these rooms.

In both households the rhythm of behaviours outlined above describes what is for each a particular mode of movement and space use. In each case the pattern is more or less durable, or fixed, in which is reproduced in everyday domestic life, an ensemble of dominant ideas about social class, gender relations, the exercise of power and those values that relate to custom.

The set of spatial conditions that embodies and enables these ideas is structurally different in each case, in which is interfaced a specific relationship between the occupants and visitors, and among the occupants themselves. In other words, the household may be viewed as a spatial culture which is the site of a power interplay between various reciprocal categories of individuals and which in turn, brings about specific unintended social effects. Each category represents different sectional interests that relate within the *longue durée* as a set of social conditions that require greater or lesser degrees of correspondence with space in order that the household be viewed as an institution that is part of society. Put slightly differently, the extent to which space is required by households in the mediation of power relations, varies under the different cultural and socio-economic conditions that inform patterns of encounter and modes of behaviour. The qualities of 'householdness', or the social identity of the household as an institution, may consequently be thought of as a function of this requirement.

Since dwellings lend some degree of fixity to social interactions, they are necessarily implicated in social system reproduction over the

longue durée and therefore must be interpreted as institutions that in themselves give pattern and form to social behaviour. Both aspects of households, their spatial organisation and the power relations and behaviours that are embedded in space, must consequently be investigated as manifestations of the same underlying phenomena, or ordering structure.

The second part of institutional analysis will attempt to explicate the generative nature of structure by examining space not as the expression of householdness or the social knowledge that underwrites power relations, but as an outcome of the household's interpretation of those sets of relations.

Analysis of the household as a spatial system has so far been carried out in terms of the durée of domestic life in which individuals knowledgeably reproduce modes of behaviour that are pre-existing, relatively constant and ontologically reliable. In order to show how and why this is possible, analysis must go one step further and examine the modalities of reproduction and, through that, identify the nature of structure. The intention is therefore to order, at an abstract level, the spatial and behavioural data into some integrated conceptual framework so that the underlying social meaning of dwellings may be better understood.

A useful starting point, which hinges around the concept of power, is suggested by the data themselves. Since the function of dwellings - or how they 'work' socially as asymmetrically aligned power relations

within set socio-economic and cultural conditions which produce those oppositional and reciprocal categories - is mapped into their form, then their meaning must coincide with the syntactical properties of spatial design, as the clearest indices to structure. Indeed, the set of spatial behaviours that are imprinted at Crossroads and Cypress suggest that, in terms of their metropolitan context, they are strategic variations of two different urban sub-cultures.

From the morphological record and behavioural evidence presented so far it would appear that Crossroads and Cypress are illustrations of two diametrically opposite ways of realising the cultural qualities of householdness. Where there is a strong correspondence between social category and spatial identity at Crossroads, at Cypress the reverse is true. Here, social definitions are not explicitly spatial. In other words, it would seem that power relations are more strongly spatialised at Crossroads than at Cypress.

The nature of these two different linkages may be reconstructed and elaborated by examining them in terms of the modalities inherent in the structures that govern the way the households are interpreted in the first place. In structuration theory the differences between significantion and legitimation modalities of integration on the one hand and integration based on modes of domination on the other, may, in terms of syntax, be expressed as the difference between transpatial (or global) integration and spatial (or 'local') integration respectively.

At Crossroads there are strong differences in the qualities of maleness and femaleness. These gender qualities are associated on the one hand with wages and migrancy - primarily the domain of men - and, on the other, with child rearing and domestic maintenance activities, especially the preparation of food and child rearing - the main role of women.

This pattern of relation and difference has definite physical references in the dwelling. Where A's bedroom symbolises a male-dominated area and the investment of wages he earns, the kitchen and living/dining room complex defines a female domain. (In addition, the sleeping arrangements among the core occupants are such that there is a clear division between the older women (room 7), the young children (room 6), married children (rooms 8, 11 and 12) and the household head.) These socio-spatial associations are more or less stable in the household. Consequently, there is a close correlation or high degree of non-interchangeability in the relation between social category and space.

The spatial relation through which social category is most easily realised is segregation, or asymmetry (Hillier and Hanson, 1984). Since most spaces in the system are in an asymmetrical relation with the kitchen and lounge/dining room complex, the dwelling as a whole may be described as being strongly categoric. This property together with the fact that there are no rings in the system so that the categories are unlinked and insular, provides an important insight into the way social integration is realised in the household.

A key space here, in that it is extremely segregating and ceremonially important, is the main bedroom. Although it is an important locus of domination through the exercise of economic and patriarchal power, it is, more importantly, a domain in which conservative Xhosa values are represented: Not through overt displays or the use of decorative motifs, but through the room itself as that manifestly belonging to a working class patriarch. One whose status in the urban setting is that of a migrant and whose political and social identity as well as his sense of ontological security is maintained and communicated through the reproduction of 'neo-traditional' codes.

As such, A's bedroom may, for the purposes of this analysis, be viewed as a global, or 'transpatial' space in which is knowledgeably implemented and reproduced a particular (conservative) ideology. Indeed, what at first appears to be a rather ordinary bedroom, turns out to be a major socio-spatial description of the household in terms of a simpler version of itself. It is culturally, in other words, a description inside a description of an urban household with strong rural ties. This is important since it is mostly here that integration between the household and the wider (urban and rural) social system is ceremonially and ritually maintained: A set of symbolic linkages that is strongly underwritten by ideology as a sanction modality that, through practice and elaboration in isolation, is seen to be realised.

Thus, although B interacts with her clients via highly specific (economic) resources in the form of medicinal potents, the entire process is given meaning by the symbolic identity of its spatial location. Similarly, when A or B occasionally entertain important guests, it is always in his room. And when tea is served here, it is brought on a tray with the household's best crockery. For the occupants, conservative values and practices are ceremonially entrenched or encoded in this space. In this sense the space works in terms of two universes of meaning, not one. These may be clarified by reference to the migrant status of the household, as one that traffics effortlessly between a world of urban values and classes, and a rural world.

In terms of urban context, the space is important for dealing with those occasional transactions that might be too highly valued or complex to accommodate in the space of everyday life in the dwelling. These would mostly include those transactions that articulate relations across the class divide. In the rural sense it becomes a domain that is conceptually analogous to the household's experiences and values that are rooted in the Transkei. Indeed, in these two senses, the main bedroom may, in terms of the household's own perception of its migrant status, be a domain that crucially bridges and integrates these two oppositional worlds.

Where, at Cofimvaba, the structuring of the status of males, and consequently of the household unit, is integrally related to cattle and through that to the wider social system, at Crossroads the

authoritative, economic and legal significance attached to this culture is transferred to the value of wages - the commodification of labour time, which is reflected materially in A's bedroom. It is therefore, perhaps, singly the most important space that describes a cultural code that has become significant to the household in preserving a sense of social belonging; not only in terms of a competitive wage economy in an environment that is politically tense, but also in a community that maintains strong rural linkages. In other words, the main bedroom is much more than its utilitarian label at first suggested. It is indeed somewhat of a sacred space in which is institutionally sanctioned and symbolically communicated all those social codes which the household, and the society to which it belongs, values and requires.

Just as global or system integration is realised via the sanction and symbolic modalities that are nested in A's small, segregated domain, so does local integration, or social cohesion within the household, take place in the dwelling's most integrating domain. The kitchen and lounge/dining room complex, in complete contrast to the main bedroom, is syntactically identified by being a powerful controlling space on the categories that are linked to it. Indeed, the straight forward nature of this arrangement is such that spatial relations between the kitchen, lounge/dining room and the rest of the dwelling are kept to a minimum, since most of the bedrooms and the yard are very nearly syntactically equivalent.

These properties suggest the ways in which social integration is realised in the household. Whereas there is strong internal organisation, strong boundary control and the enactment and representation of culture in the main bedroom, in the living complex a reciprocal set of conditions are maintained. Here, there is a weak control of boundaries between categories, implying that it is a domain where activities and encounters are generated and, through these practices, values re-negotiated. It is, in other words, a domain of cultural innovation and transformation: A spatial domain where everyday transactions take place, via the operation of economic and political power, in which each moment of attention to the passing *durée* is an opportunity for its modification and control.

An illustration of how this occurs is perhaps best achieved by highlighting the chief aspect of each of the economic and political modalities that are dominant in the interactions that take place here.

As mentioned earlier, one of the major social requirements of a dwelling is that it should bring together the unequal and different categoric distinctions associated with household occupancy on the one hand and, on the other, with being a visitor. This means that, insofar as the occupant/visitor interface is concerned, the visitors need to be located and entertained in areas that are easily controlled, whereas amongst the occupants, the various statuses associated with being a parent or a child, would need to be preserved. Obviously gender differences are common to both sets of relation:

Differences that are produced and maintained mainly in the most integrating zones in the dwelling.

On first inspection it would appear that the only space in which the role of women in Crossroads' society is produced is the kitchen. However, its syntactical properties, particularly in relation to the lounge/dining room suggest otherwise. The fact that it is more segregating than the lounge/dining room does indeed articulate a fundamental oppositional relation that exists in the dwelling between men and women. However, its ringy qualities, particularly the fact that it is situated on the dominant path between the main entrance from the street and the lounge/dining room re-affirm the extent to which local integration within the household rests upon relations among women: Relations that are reproduced mostly in the lounge/dining room.

The operation of power via allocative and authoritative resources may consequently be viewed as a function of these two syntactical properties. In this sense, the spatial characteristics of the kitchen and lounge/dining room complex signify the powers and responsibilities of women in controlling interactions and maintaining the rhythm of day-to-day activities. Not only is food prepared and allocated here, but this is also a major site for the care and socialisation of young children as well as a place where guests are entertained: Patterns that are strongly sanctioned by conservative social values and practices, so that even though individuals, especially women, have the power to break autonomously with the

routine activities and tasks which they are expected to perform, the relations of dependence that integrates different social categories, is strong.

Relations of autonomy and dependence and of dominance and resistance, working as they do via authoritative and allocative means, are thus clearly highlighted in this domain. Insofar as allocative power is concerned, where the men support the household by the wages they earn, the women take full responsibility for feeding the household and ensuring that the children are well looked after and healthy. Authoritatively, where the men, and particularly the household head, wield a great deal of patriarchal respect generally, the women dominate day-to-day transactions, especially where children and visitors are concerned.

With this discussion in mind, a description of something like the 'spatial logic' of the household may be attempted (see Hillier and Hanson, 1984: 22 and 256). Integration, it turns out, is a function of two separate yet interrelated key domains, where the essentially transpatial space of global integration is strongest. Since in the household there exists a high degree of correlation between social categories and spatial groups, then following syntax:

"... the members of that group will not be arranged with others across the landscape by virtue of the existence of categories, but must be combined with others as a whole, by some kind of superordinate logic existing over and above the system of spatial groups." (Hillier and Hanson, 1984: 256).

At Crossroads that logic is represented and signified in the main bedroom. Not only is the representation of culture highlighted but its modification or transformation is downplayed and discouraged. This is not surprising since the household, by its working class nature, deals inherently in the production of labour and the world of material, that is, spatial, resources in the transactions of meaning that dominate day-to-day life, and is therefore already spatially, or locally, integrated. The kitchen and lounge/dining room complex confirms and illustrates this clearly.

There is, however, a second, less frequently occupied locus of day-to-day transactions, namely the outside shelter. But here again, a situation completely consistent with that which occurs in the internal domain takes place: The function of the kitchen is transferred to the hearth, and that of the lounge/dining room to the shelter itself. Here, relations of permeability, particularly with respect to the back entrance and street, are similar to the original, that is, front entrance/kitchen, pattern. In other words, the same social and spatial arrangement unfolds but under circumstances that are varied.

The socio-spatial characteristics surrounding the main bedroom and the kitchen/living complex suggest the existence of a powerfully generative G-model: One that in order for the household to function as a domestic institution at all requires set relations between social form and spatial design.

In that the primary social function of the main bedroom is the retrieval and preservation of culture, its spatial characteristics will correspond to the properties of an exclusive domain, high relative separation, an easily controllable boundary and an interior that is highly organised. The kitchen and lounge/dining room area, in contradistinction to the main bedroom, reverses these functional requirements. Here culture is controlled and modified through the generation of transactions that require a weak definition of boundaries between spatial categories and low relations of asymmetry with them.

Social order is, in terms of these two unequal sets of spatial functions, concretised, highly structured and architecturally visible: What the domain of global integration requires the local domain excludes, and vice versa. The origin, or locus, of householdness may consequently be seen to be nested in the links between these domains. The one set of modalities (S and L) establishes the means by which the other (D_{auth} and D_{alloc}) is realised by the way they point at each other. This duality of requirements, which paradoxically integrates the spatial and transpatial domains, and consequently the household as a whole, ensures that the reproduction of the domestic socio-spatial system is meaningful, effortless and self-perpetuating.

There is, however, in terms of the household occupants who have knowledgeably chosen to live in the settlement, an unintended, and ironically, more 'hidden' and profound effect. It is that the

partial extent to which they have penetrated the limited employment and life opportunities available to them in the city reproduces exactly those oppressive conditions which impede their freedom and chances in life - conditions which 'caused' the household to leave the Transkei in the first place. Having left Cofimbava in search of work, with few formal skills, and having entered, and become dependent on, a low-wage labour market in an environment where there is increasing unemployment, political tension and few career prospects, the household head actively ensures that he remains locked into a (migrant) working class position that is more or less permanent.

Thus, in terms of the interacting individuals, the structural means by which social reproduction in the household takes place are largely unacknowledged, and the outcome mostly unintended. For this generation of occupants at least, the background pattern of activities and modes of behaviour are already pre-existing, institutionally entrenched in space-time and difficult to break with. Indeed, the continued social reproduction of A's dwelling over the *longue durée*, together with all the other dwellings in the settlement legitimates the shanty as a building type and from the inhabitants' point of view, sanctions the existence of the 'squatter' community as an institutional or spatial form that is, from the point of view of the inhabitants, both popular and well suited to their needs. The reluctance of the community to be moved to Khayelitsha, an environment of newly designed dwellings and sites set aside for 'controlled squatting', as well as their stated intention to remain where they

are, illustrates this to a large extent (see Ellis, 1984; Platzky and Walker, 1984; Cole, 1986).

A contrasting set of institutional characteristics is illustrated in the spatial arrangement at Cypress. As mentioned earlier, the distinction between gender groupings and among parents and children in the household is largely downplayed: A social pattern in which differences are suppressed and relations emphasised is syntactically expressed in a groundplan that is extremely ringy and generally low on assymetry, yet highly segregated from the street. Since the overall spatial pattern is axially unstructured and there is dispersed control to several points throughout the system, it is difficult for an individual to discern the overall syntactical qualities of the system at once.

Integration, it would seem, is not so much a spatial phenomenon - in that social form depends on categories of space that are strongly defined, and relations among them that are highly structured or specified - but is rather a function of the manipulation of symbols and the transformation of values. This abstract, somewhat indirect link between social meaning and space may be reconstructed as follows.

The production of ideas - a form of work and knowledge that is inherently abstract - is dominant occupationally, educationally and from a general interest point of view, in the day-to-day lives of the occupants. Consequently, integration and the social class that is reproduced and experienced by them does not need to be embedded in the

dwelling's spatial structure in order for it to exist: It exists already in that it is constituted and communicated by the presentation of material symbols throughout the dwelling. Thus, in the way it is equipped and decorated as a designed artefact itself, the dwelling signifies the concepts which are valued and around which the occupants are united.

This preoccupation with material things - stylishly designed artefacts and works of art that are everywhere on view - may be seen as the principal means by which power and control are realised in the household:

"The presence and control of objects of art provide a permanent mirror of superiority into which the upper classes can look and always see what they believe to be their own excellence, thus reinforcing one of their principal claims to superiority, their belief in their own good taste." (Warner, 1963: 235).

Although Warner is referring to North American society, a not dissimilar brand of western culture, and the social processes that inhere in it, is at work in white South African society.

This is achieved chiefly by the expropriation, display and use (or non-use) of material goods in an ordered system that both structures, and is structured by, the individuals who interact with one another through the environment of things. There is thus a strong emphasis placed on the control of allocative resources in the mediation of power relations in the household. An analytical interpretation of how this form of integration works is perhaps best achieved by

illustrating the morphological means by which it is expressed - the boundary.

Following Hodder (1984), the social rules that are transcribed into a dwelling's form refer ultimately to the 'ideological apparatus', or reference field, that, as strategies of power, are drawn upon by individuals in the negotiation of control. Their reproduction is consequently a function of the control of boundaries. Rather than oppose ideology, boundaries express it and thereby reinforce the practical unconscious organisation, or social logic, of daily life (cf. Hillier and Hanson, 1984: 259).

Transgressions of that logic may result in contradictions to the social organisation of households in particular (cultural) regions. The extent to which boundaries control - as obtained in RR values - is therefore a measure of the capacity of spatial relations to resolve not only the conflict among categories of individuals, but also the contradictions between practice and ideology. At Cypress these two resolutions are realised respectively in the constitution of internal boundary relations and the boundary between the street and the dwelling as a whole.

At Crossroads, where control over authoritative resources predominates allocative resources, the use of boundaries is crucial to the maintenance and balance of power relations. Here encounters among individuals are restricted by boundary limitations upon movement between spaces. Thus, if discretely bounded spaces are the function

of strong authoritative control and a differentiated social system, then, where allocative resources dominate, such as at Cypress by the accumulation and display of equipment, the opposite will tend to hold true. Since relationships among people are not the primary means through which integration and the meaning of householdness is realised, the encounter pattern will be less controllable and more transformative, or innovative, of values and norms. The maintenance of power relations and order will consequently rely on the weakening of boundaries between spaces.

Spatial arrangements in which there are strongly segregated and non-distributed spaces are therefore not as necessary to conflict resolution as they are where people form the dominant locus of control. Indeed, where much surveillance effort goes into the control of artefacts and material wealth, the household will require or encounter a pattern free of boundary restrictions if the system of power relations is to hold. Movement across boundaries and a more fluid system of social interaction is therefore vital if the balance of resource control is to be maintained.

The interconnected and largely decategorised nature of the spatial pattern in the Cypress dwelling, particularly in the main living domain, illustrates this. There is no special room set off from all the others for use on particular or ceremonial occasions, such as there is at Crossroads. All kinds of activities are performed at several locations so that 'function' is not as greatly spatialised as it is in the former case: Children's bedrooms are transformed into

lounges, dining rooms, painting studios and hobby workshops; breakfast cereal is eaten while soaking in the bath; essays are marked on the main patio; the dining table doubles as a work bench for school projects; books are read in the kitchen, and virtually the entire living area is used for parties.

The only main use space that is more differentiated from all the others is the studio. However, this is more an extension of the parents' bedroom, analogous to the desk and work surfaces in the children's bedrooms, than it is a ceremoniously important room. The household has more or less equal access to this space just as there is to all other rooms in the dwelling.

The flexible spatial design at Cypress may consequently be viewed as essentially a domain where reciprocal power relations are reproduced in order to maintain a wide range of shared obligations to do with friendship, kinship, familiarity, status and companionship. In this way, the household simultaneously projects reciprocity into the future not only between itself and visitors, but also among the occupants. The kitchen illustrates well this point. It is weakly categorised and is not reserved as a female domain, but is instead a context for the whole household where all tasks are shared.

Thus the entire living area may be used for serving drinks and food (allocative resources) as a matter of course in the reproduction of power relations in a style that is consistent with the (privileged) conditions of existence of white middle class suburban life. In Cape

Town, as in other South African urban areas, this is characterised by isolated households that rely on a highly formalised pattern of integration with the social system. This is achieved mainly through the network of acquaintances and friends that each selectively accumulates.

That network is in no small measure maintained by the telephone which, at Cypress, is situated in the lounge, close to the dining room. Spatial proximity and face-to-face interaction in the dwelling are consequently not necessary for the household to remain integrated with the wider social system. This set of links is maintained at other venues such as the workplace, university, art exhibitions, dinner parties, and so on, and is reproduced (at the dwelling at least) by inviting guests for drinks, dinners or lunches, events that are in themselves highly ritualised. (Aspects relating to this are discussed more fully in the analysis of strategic conduct in the next section.)

These characteristics suggest that integration at Cypress - both locally and globally - is oriented towards building complex spatial relations in which social relations and activity patterns are intentionally given the appearance of being somewhat disordered and highly abstracted, or transpatial. This pattern is complemented at the street boundary.

Here, aspects of the dwelling are carefully selected for presentation to passers-by and the neighbourhood. Incorporated in the boundary

are symbols - such as the carefully designed wall, gate and, sometimes, the parked cars - that project and embody the identity and status of the household. Identity, however, is communicated not only to the world of strangers outside, but more importantly perhaps it must signify to the occupants themselves, their own internal or idiosyncratic interpretation of householdness where this can only be a function of their personal biographies and life experiences.

It is precisely out of these biographical and experiential aspects that the household's internal notion of integration has emerged and become imprinted in the form of their dwelling. The solid, impenetrable boundary may therefore be seen as the spatial means by which the transpatial requirements of the internal domain are realised. In other words, the boundary has not only established the means by which the household can remain detached and indirectly linked to society, but in that the wall is stylishly elaborated, it has also unintentionally provided the means for the household to remain (symbolically) integrated with society.

This functional duality of the boundary, of simultaneously providing the means for integration both within the household and between it and society, suggests a more fundamental property that is inherent in it. As noted above, the boundary is not simply an outward projection of household identity, as if this were uniformly interpreted from within, but represents the collage of meanings that individuals idiosyncratically attach to it. In this sense, Durkheimian solidarity principles, in that they infer boundaries to have meaning

at the point where differentiation occurs, are again highlighted as inadequate concepts upon which to base spatial analyses (see Chapter 5). This is perhaps more so where Durkheim's mechanical, or 'simply' organised societies are concerned.

Since individuals are not societal dupes who interpret and act in the same way, it follows that boundaries, in addition to enclosing similarities, also constitute differences, including varied interpretations of the dwelling's meaning. By building on the principle established in syntax that it is through the interface of social differences that the fundamental properties of spatial morphology is produced, a more rounded understanding of the social meaning of space can be made possible if the interpretations of the individuals involved are incorporated into the analysis.

By creating and then interacting with their dwelling, the occupants simultaneously retrieve a description of the household and, through transactions, reproduce order in the system. The analysis of strategic conduct in relation to spatial design is an attempt to interpret that process.

Before proceeding however, it is necessary to summarise the salient features that have emerged so far in this analysis, if only to clarify the institutional nature of each dwelling and to consolidate the basis upon which the next section is to develop.

The G-Model Properties of Social and Spatial Organisation

Crossroads

- Signification (S) Working class migrant household involved in the production of labour: An oral culture in which communication depends mainly on face-to-face encounters.
- Domination (D) Works through the operation of political power: Male/female roles are highlighted (D_{auth}).
- Legitimation (L) A conservative and conformist value system that favours continuity and the reproduction of norms.

Major Syntactical Property

RA: A spatial system. Social organisation relies on the introduction of space and a differentiated use pattern.

Dominant Integration Characteristics

Global (or transpatial) and local (or spatial) integration are fused together in the dwelling: The main bedroom and lounge/dining room respectively.

Dominant Modalities

$D > (S + L)$: The introduction of space as a resource is a social requirement for local and global cohesion.

Cypress

- Signification (S) Middle class suburban household involved in the production of ideas: A media culture in which communication does not rely on face-to-face encounters.
- Domination (D) Works through the operation of economic power: Material resources are important (D_{alloc}).
- Legitimation (L) A transformative and non-conformist value system that favours change, the generation of new ideas and the innovation of norms.

Major Syntactical Property

RR: A boundary system. Social organisation relies on the elimination of space and a uniform use pattern.

Dominant Integration
Characteristics

Global and local integration are in separate domains. Local integration is reproduced spatially across the entire surface of the dwelling and global integration occurs at other occupational, educational and cultural sites.

Dominant Modalities

$(S + L) > D$: Space can be eliminated because the household is already integrated via the rule modalities.

8.3 An Analysis of Strategic Conduct: The Interpretation, Retrieval
and Elaboration of Spatial Meaning

The ensemble of structural properties that was noted in the previous section was characterised as a durable, or lasting, set of rules and resources that both structures and is structured by interacting individuals. It is through the process of the production of interactions that people draw on and reproduce these properties of domestic social systems. Structural modalities are, therefore, constitutive of action and encounter patterns all the time.

Since meaning does not reside in the spatial composition of dwellings but is realisable only in action, then the question that needs to be addressed is 'how are rules and resources drawn on in the constitution of interaction and consequently, the meaning of dwellings?'

Structure, as noted earlier, does not exist in a vacuum but is always historically and socially situated. Therefore, one way of approaching this question would be to view the set of rules and

resources as an abstract description of a 'problem field' in which is defined certain historical and social conditions that need to be negotiated. Domestic activities and behavioural patterns may consequently be seen as 'strategic', in the sense that these conditions are engaged and as 'solutions', in the sense that sets of operations, or events, are carried out on the problem field in order to resolve issues to do with social relations and control.

However, underlying this view is an analytical problem surrounding the conceptual difference between physical encounters considered as bundles of individual space-time paths that are concentrated around specific events, and encounters as context-related strategies in which the dialectic of control among different categories of people is realised. The answer to this problem is to be found in the nature of the link between spatial design and domestic behaviour.

Insofar as activity patterns are largely pre-existing - such as the transmission of modes of behaviour and ideas from one generation to the next - they mould spatial organisation. But spatial design also moulds and informs patterns of interaction: The one system embodies and is the means by which the other is realised. Domestic space is thus more than the outcome of domestic activity; it is also the generator of modes of doing.

At the same time spatial design is both locally and globally related to context. As noted above, different interpretations of spatial design can be invoked by the occupants. Dwellings must therefore

have the potential for realising different kinds of local, or internal social meaning - that is, meaning which relates to the idiosyncracies of the layout itself and its immediate context - and meaning that is extrinsic, or culturally related, in the sense that the household can identify with its wider context. As such dwellings can refer to several things at once. For example, the main bedroom at Crossroads constitutes globally a conformist rural culture and the value of wage labour. Locally it is the sleeping quarters and private domain of the household head in which is represented his authority.

However, all these meanings are not invoked simultaneously. Different scenarios, or strategic events, exact different interpretations, and the other meanings are placed on hold, or suspended. Following Giddens, individuals reflexively 'monitor' what they do, both tacitly and discursively, all the time. Any analysis of how these interpretations take place must therefore acknowledge the direct correlation between behaviour and the monitoring that is invoked through it: Monitoring that is inherently interpretive.

This process of continuous monitoring matches precisely the concept of description retrieval in syntax, and consequently, description control, elaboration and transformation. Strategic behaviours are therefore above all, processes in which meaning is retrieved.

Since the set of structural properties is the medium and outcome of action, it provides the means by which interacting individuals identify the situation, or problems in which they are located, analyse

it, become oriented towards it, and knowledgeably produce a 'solution' to it. Because the properties of structure are both transmitted and elaborated in the activity patterns of daily life, they are, from the point of view of the individuals concerned, invisible, or abstract. Here space, and in particular its axial properties, provides a crucial insight into relationships between abstraction and reality.

In both cases the nature of the relations among different categories of people has been shown to be specifically linked to elements of each's spatial design. At Crossroads, for example, the power relations between males and females are spatially entrenched and differences strongly highlighted. At Cypress, although gender differences do exist, these are not explicitly, or spatially, expressed, and are behaviourally downplayed.

These relations, and the directness by which they are intended to be laid bare and transmitted in space, are shown in the axiality map of each dwelling. This representation, in that it expresses the overall pattern of spatial layout and the extent to which the power relations embedded in it can be intuitively comprehended, indicates the potential for specific kinds of (intended) retrieval processes to be made.

At Crossroads the map is straight forward in the sense that the comprehensibility of its order depends on it being visually perceived at once. As such, power relations are directly put on view: The structure that underlies them is not only about the communication of

values and norms about gender relations, but stresses also the explicit socialisation of people into them.

The intended meaning of spatial layout is clear. Its overall order suggests that the dwelling is more a blueprint of social relations and ideology in which the scope for wide-ranging interpretations of the power set-up is narrowed. There is absolutely no question about the dominion of males or about the strength of patriarchal power. Rather the question is how this value system is perceived by the occupants and visitors, and integrated with the encounters among them.

The household's close ideological links with the rural community seems to express a desire to remain part of a conservative value system that migrating to the city could have freed them from. This system is thus purposefully reproduced under vastly different conditions: A type of moral conformism that stresses the undiversified power and superiority of the male figurehead. In other words, constraint works through the active involvement of the people concerned and is not some force that is imposed against their wills.

Out of this has developed an emphasis on defined and reciprocal gender relations, an encounter pattern that is face-to-face and a social network of associations that is tightly knit and highly spatialised. This increases the possibilities for community or social pressure on individual and group behaviour, and the conformist/conservative ideology is reproduced. Excommunication by the rural community and political ostracism (or the threat of violence) in the settlement,

thus appear as powerful sanction modalities that ensure the perpetuation of this process: One that is inextricably tied up with the arrangement of space in the dwelling and in the settlement as a whole.

By actively reproducing conservative practices and loyalties, a basis for household integration is maintained both socially and spatially. At the same time, by maintaining this form of spatial integration, the need to break with a conformist behavioural pattern is minimised. The entertainment of guests - a regular event in the household - illustrates this, whereby the description of power relations is retrieved and elaborated by the interacting occupants and visitors: A process during which the meaning of spatial design is continuously re-created as power descriptions are retrieved and preserved through the activities it enables.

A common form of entertainment in the household is when home-brewed beer is consumed together with several guests. After being prepared and brewed by B in large pots and boiled on the hearth in the outside shelter, it is cooled and served in tin mugs in the main living area. Several spatial and behavioural features stand as being significant.

In the first place, males and females occupy different, yet strongly interconnected rooms in the dwelling. The women sit chatting in the kitchen and front room with the very young children playing on the floor, while the men occupy the lounge/dining room where they are entertained by A. Since there is a high degree of control from these

rooms on all the other spaces in the dwelling, knowledge surrounding the layout, its occupancy and power relations is immediately accessible to all the visitors.

Although the gender groupings occupy relatively separate spaces, the conjoined, ringy properties of these rooms ensure that a high degree of interaction takes place between both groups. Women, for example, must pass through the men's domain in order to fetch more beer which is stored in the shelter. Food, normally gravy and bread or porridge, is kept warm on the stove in the kitchen so that the men are constantly interacting with the women in their domain.

People are thus brought together to share and celebrate the social knowledge that is embedded in the dwelling's design. Descriptions of this knowledge, and the power relations implied by it, are consequently retrieved by individuals in the visitor/occupant group not as a fragmented, or despatialised clustering of people, but as an interacting, spatial whole. Spatial articulation along the major axial line keeps the group more or less intact and the limited fragmentation of the plan ensures that direct, spatial contact among individuals is maintained and dispersion minimised.

Diverse interpretations of the meaning of space are therefore minimised since control among people, particularly between gender groupings, is limited by the pre-existing and socially specified learned behaviour that is encapsulated in the dwelling's form: Information and behavioural strategies that are spatially highly

ordered and visible. The meaning of space is a direct function of these characteristics since spatially, power relations and knowledge are concretised, directly accessible and easily controlled.

At Cypress a different set of meanings is invoked. Here the relationship between strategic behaviour and space is more indirect, less specified and open to a wider range of interpretations. Indeed, the behavioural strategies are just as strongly matched by the dwelling's spatial pattern as they are at Crossroads, but in a contrasting kind of way.

Since control is a function of several spaces and the plan is axially fragmented - so that it is difficult to comprehend its overall pattern - the means by which control is realised is not explicit. Thus, although there are gender differences, these are masked by the spatial order in which there exists a complex pattern of relations between the various rooms and outdoor living areas.

The transpatial code that unites individuals is highlighted in interactions since it is not so much space that brings them together but the symbolic values by which they are integrated in the first place that do. Dinner parties, a popular form of entertainment in the household, illustrate this behavioural pattern.

In the first place, guests have to cross the highly selective boundary that divides the domestic group and its wider setting. After the handing over of jackets and handbags to the hosts at the front door,

these items are deposited in the studio or main bedroom. Guests are then mutually introduced while being served a drink in the kitchen or dining room. This ritualised set of 'opening' behaviours is accompanied by general small talk which helps to integrate the guests with one another - that is, if they are not already acquainted. As a matter of routine, the guests, both males and females, are then persistently encouraged by A', or any of the other occupants, to 'serve themselves' from the array of drinks and refreshments that are offered. Thus slowly, as the guests begin to move about, chatting or getting drinks, they begin to become introduced to the social ideas that are emeshed in the dwelling's spatial design.

What is at first an inaccessible, or complex, set of descriptions is gradually retrieved as individuals move about the dwelling's surface. The encounter pattern is suggestive of how this process occurs.

As more guests arrive and as individuals circulate with drinks or food in hand, the entire group becomes splintered. Small clusters of individuals, regardless of whether they are males or females, old or young, generally begin to occupy different spatial locations - in the kitchen, sitting in the lounge, outside on the main patio, in the TV lounge, and so on.

This pattern is consistent with the degree of axial fragmentation in the spatial layout, which is in turn complemented by the ringy nature of the plan. The more random axial design encourages the formation of a subdivided encounter group, while the increase in ringyness

allows a non-sequential movement pattern. Thus, a wider range of choice and option is opened up regarding the sub-grouping that individuals might wish to join. Consequently, the possibility for differences and allegiances between individuals and sub-groups to be expressed beyond those qualities associated with gender or age differences is given wider scope.

The dwelling is thus experienced as a set of interconnected spatial domains as the event progresses. What is expressed is the overt suppression of conflicting power positions between males and females, and elders and children. These differences and the meanings they invoke are mediated through a complex spatial arrangement. This implicitly encourages a wide range of interpretations of power relations, any number of which can be invoked in encounters that do not specify in advance the descriptions that should be retrieved.

The household consequently runs the risk of being excluded from its socio-economic and cultural circle should this ideology not be implemented or its associated set of strategic behaviours transgress its logic. It is therefore important to say and do the 'right' things, but it is perhaps more important to be seen to be doing them: In other words, to display clearly the ideological linkages between the household and the wider cultural system of which it is a part, all the time. This, the morphology of space in the dwelling exposes well.

In both households, therefore, cultural ostracism is a powerful sanctioning device that ensures particular modes of doing, strategic behaviours and consequently, the meaning of space, at the same time as it excludes others. Therefore, although there are clearly identifiable economic and cultural differences between Crossroads and Cypress, there are strong fundamental similarities that unite them. In both cases it is not so much what kinds of knowledge surrounding the power relationships between different categories of people that are crucial, but rather how these descriptions are retrieved and elaborated.

The different spatial morphologies in the two dwellings generate corresponding forms of behaviour just as those behaviours require specific spatial realisations. The reproduction of encounters thus continually re-creates the meaning of space, which in turn is active in the structuration of power relations and the enunciation and signification of the ideology that underwrites them.

8.4 Summing Up

The broad purpose of this chapter has been to illustrate a social theoretical approach to the study of domestic space. The intention has thus been to provide some indication of the usefulness to architectural research of analysing systematically, buildings in the context of their use. As such, several areas of improved

understanding of the social meaning of dwellings have been highlighted.

In the first place, institutional analysis treated the household as a modality of interaction. Thus some understanding was provided of how encounters and transactions among individuals, particularly between males and females, are affected by power relations that are produced within the *longue duree*. A second, perhaps more important understanding flowed from this in that institutional analysis showed how space becomes directly implicated in the structuring of power relations within the *durée* of daily life. Here, spatial layout, as a signification modality in interactions, stands out: The fact that spatial meanings and interpretations are only produced in the context of use, which in turn generate particular interactions, provided greater clarification of the active role of space in creating and sustaining the household's identity. Thirdly, and following this, the analysis of strategic conduct showed how the behavioural logic implied by spatial design - as a set of institutionalised rules and resources in which is embedded the potential for certain modes of action - is knowledgeably reproduced in encounters.

These insights, limited as they might be by being based on the analysis of only two case studies, do nevertheless have wider relevance by suggesting in principle how and why spatial design is formulated the way it is. The relationship between the household's social form and the spatial form it adopts is indeed a non-trivial one: A relationship in which the existence of the one form is

dependent on the existence of the other. Hopefully the social processes, implied theoretically in the duality of structure principle, by which this relationship is continuously brought into being, will have been adequately explicated.

CHAPTER 9CONCLUSION : TOWARDS A NON-FUNCTIONALISTARCHITECTURAL THEORY

The analysis in the previous chapter has revealed some underlying relations between the idea of householdness, as a culturally institutionalised concept, and the arrangement of domestic space. Households, as institutions, have particular social and spatial lineages, or historical form. That is, the dwelling does not suddenly appear from nowhere as the unique creation of its designer/occupants: It has a past and, in that it will continue to be reproduced over the *longue durée*, it has a future. It is therefore necessary perhaps to make some comment on how history enters spatial design and how change occurs. This should help to conclude this investigation as well as suggest ways in which further research can develop.

Much of the spatial and social data that have been reviewed in the previous two chapters show that the concept of householdness in both dwellings is legitimated by a particular value order. Thus, although in both cases the household is constituted behaviourally through the operation of power, the meaning of which is signified and transmitted spatially, the evidence suggests that the reality of the household is, from the occupants' perspective, strongly underwritten by a reputed past, or tradition. The differences lie in those aspects of the past

that have been chosen for reference, the contemporary conditions of existence, and the kinds of future that each household anticipates.

In the Crossroads household, for example, the reproduction of its present socio-spatial form is made necessary by the economic, social and political realities in which it finds itself. Paradoxically, however, this is accomplished through exactly those (conservative) practices, strategic behaviours and forms of cultural expression that these realities, or contemporary conditions, tend to constantly undermine.

Since meaning is not open to objective account, but can only be interpreted in analysis, then it would be grossly spurious to label the socio-spatial form of the household as 'traditional' - implying that it is culturally trapped, or so bound up by its past that it is unable to address contemporary conditions. On the contrary, the effortless trafficking between an urban political economy and the world of rural values and practices at Cofimvaba suggests that aspects of the latter world - the world of the past, replete with its rural values, myths and rituals - are selectively built into the former world, more as an enabling resource than as an act of tribalistic tradition.

Far from being part of a single, homogeneous ethnic identity, the household is able to move into and out of several identities: At one moment it is part of a rural peasantry engaged in agricultural production and a culture that is centred around the value of cattle

(see Kuper, 1980), at another, a member of a politically active urban working class community that is acutely aware of its pivotal position in a society undergoing political and economic change. It is within these different contemporary cultural and environmental conditions that the household's respective architectures - the homestead at Cofimvaba and the Crossroads dwelling - have emerged as the bases from which to negotiate, interpret and adapt to the realities of context.

Consequently, at the Crossroads dwelling, the past is reconstructed as an interpretive device, or 'common sense' model (Geertz, 1983: 79), through which some adaptation is made to contemporary urban circumstances, and the future negotiated (cf. the reference to Giddens, 1981: 21 in my Chapter 6). Without the knowledgeable reproduction of this model there would be very little basis upon which the household members - both collectively and individually - could orient themselves to the conditions of existence that demand interpretation. In other words, it would be difficult to sustain some degree of ontological security without the inclusion of aspects of the past.

As has been highlighted in this investigation, the asymmetrical, or unequal, balance of power relations in households ceaselessly perpetuates, within the *durée* of daily life, the potential for conflict and tension - social transactions have to be negotiated, oppositional interests need to be reconciled, the identities of different categories of individuals have to be preserved, different decisions and ideas surrounding the nature of order have to be

accommodated, and so on. Indeed, the basis of these oppositional power interests and the potential for conflict are also the means by which tension is neutralised and order established. It is precisely through the finer workings of this ongoing-interactive process - the process whereby orientations to context are developed strategically, meaning explicated and interpretations of spatial design made - that the household, as a social and spatial system, is subjected to new interpretations and new meanings. The nature of household life is, therefore, the locus of its own transformation, not only socially but also spatially.

At Cypress a different model, based on a different set of life experiences and assumptions concerning the meaning of things, is at work. Here, although the basis for domestic life and the design of the dwelling are rooted in a particular past, it is the purposeful suppression or unacknowledgement of historical sources that gives the household its spatial and social form. There is indeed no need to retain outwardly previous forms in order to become integrated with society. Through education and the acculturation into a privileged class position, integration has already been achieved by the household. It is therefore able to create and transform exactly those statuses and symbols that other classes in society might strive to achieve. Consequently, because the professional class system, of which the household is a part, values elaboration and uniqueness, at the same time as it undervalues the overt reproduction of the past, a form of creativity is emphasised that has as its basis an extensive range of abstract concepts. This approach is reinforced by the

household head and his wife, who are both professionally trained designers, whose job it is to constantly search for new forms and original concepts.

Thus, although both dwelling designs have relied on the manipulation of abstract concepts, in the sense that other cultural associations are represented, the range of references, or the set of generative principles of composition, is wider at Cypress. Here, a more open-ended attitude towards the use and interpretation of space is emphasised in order for the social system to 'work'. In other words, the generative process, or 'tradition' of form-making, is more abstract than at Crossroads where it is more concrete and subject to a narrower range of interpretations.

This does not mean that at Crossroads the approach to design is less creative than at Cypress, but that the process whereby ideas are converted into spatial form is different. The Crossroads household is by and large a semi-literate one: Knowledge about the structuring of social relations in space and time and the processes whereby these concepts may be materialised are thus not stored in design treatises or drawings, but are communicated in the dwelling itself. The persistent and automatic labelling in settlement studies of this kind of society as 'traditional' may consequently be seen as the way this relationship is (inadequately) theorised (see Chapter 2). Indeed, the study of social meaning in association with architectural form is seriously undermined by a functionalist approach that is inherently

unable to integrate systematically spatial design with patterns of use and social system reproduction.

Without a sound theoretical basis on which to integrate human action and social systems with the analysis and interpretation of the meaning of domestic buildings, their social value is described as if it were a feature of their physical forms or the purposes they were designed to accommodate. In other words, social meaning has, in the literature concerned, been deduced to lie in the appearances and stylistic details of built form, and in the cultural principles through which the functional and social aspects of form are organised. Underlying both these approaches is the belief that social meaning is, ethnographically at least, an unproblematic property of the cultural identity of the various Bantu-speaking 'tribes': Unproblematic in the sense that African ethnic groupings are perceived to be clearly bounded, largely static and undeveloped entities in which meaning is tractable and susceptible to objective scrutiny and description.

One result is that a crucial element of the 'settler paradigm' - labelled in historiographical analyses as the 'invention of tradition' - is perpetuated (see Ranger, 1977). Consequently, the acceptance by architects and architectural theorists (among others) of something called 'traditional African architecture' as a principle for understanding the meaning of architectural precedent in the region, and for developing new designs that appear to be African - and therefore 'meaningful' - is commonplace.

The dichotomy between 'modern' and 'traditional' in describing social systems or buildings thus turns out to be an exceptionally useless one. Households develop as (selected) inherited ideas 'front' on to new situations in greater or lesser degrees, all the time. As such the socio-spatial form of the dwelling is constantly adapting, through the agency of its occupants, to the conditions of existence and is therefore never complete. In that agents are simultaneously both theorists and practitioners who reflexively monitor what they do, and therefore know how to proceed in relation to others and the conditions that confront them, the spatial forms that are chosen need to be seen not only as cultural products but as the means by which contextually meaningful behavioural strategies are realised.

Tentative though they might be, these insights into this particular epistemological problem were only obtained through the development of a model in which syntax and structuration theory were combined. Since this investigation has been more an exploration of an approach to the study of architecture than a definitive exposition, some comment is necessary on the method used.

It was noted in Chapters 1 and 2 that the cleavage between social system analysis and research into the social value of built form in architectural studies makes little contribution to either architectural theory or social theory. In order to overcome this problem it was argued that a sociological perspective in the analysis of buildings was necessary.

Chapter 3 then emphasised that the analysis of space, in which was stressed its dialectical relation with social systems, was fundamental to any improved understanding of the meaning of buildings. This provided an important conceptual basis upon which to search for an appropriate social theory - in which space was directly implicated (Chapter 4) - and a spatial theory, in which social system reproduction was central (Chapter 5).

The combination of syntax and structuration theory showed that the relationship between them is a highly complementary one in which there are benefits to the development of both. Firstly, by using syntax it was possible to extend the concept of structuration from a theoretical, 'sensitising device' to a formal research technique. This provided a useful way of comprehending more sharply the intricate set of relations between spatial design, social structure, human agency and time. By considering the syntax of spatial form in the context of use and social interactions, it became possible to demonstrate rigorously how the linkages between spatial arrangements and social relations are established and maintained.

Consequently, the concept of 'locale', which is stressed by Giddens as crucial to a proper understanding of social system reproduction, is refined and given a precise, that is, syntactical and numerical form. Syntax is therefore able to relate those formal, enduring properties of institutions that are deeply embedded in space and time to the behaviours that characterise them.

However, this could only be done by making systematic observations of spatial behaviour. In this respect, an excessive amount of data was perhaps collected since comparisons between daily use patterns with the total amount of data showed very little significant variation. This was not anticipated at the outset of this investigation and indicates that similar studies could be usefully undertaken using considerably less data.

The principal advantage in using structuration theory is that it provided a conceptual means for recombining agency and structure. Since this hinges around the duality of structure principle, the society-space dualism is transcended theoretically by implicating the form of the one in the form of the other in a reciprocal and recursive relationship. Thus space, as both rule and resource, was considered to be a modality directly implicated in the structuring of social organisation at the same time as it is structured by interactions and the power relations among individuals.

This principle was operationalised in Chapter 6 by using Giddens' notion of analytical bracketting. Here, the concepts of *durée* and *longue durée*, when coupled with syntax, provided a useful way of relating individual actions with the reproduction of the household as a spatially constituted social institution. Spatial design was treated institutionally as an outcome of domestic practices at the same time as it provided the medium for strategic conduct. This allowed the meaning of domestic space to be seen only as the result of interactions: Transactions in which different interpretations are

realised. Occupants (and visitors) were seen to manage their lives by following certain rules and by making retrievals of descriptions about the status and identities of space. Through this process the dwelling, other people and the encounters among them, were endowed with meaning at the same time as social structure was knowledgeably reproduced.

The major advantage to syntax is that structuration is able to provide a suitable social theoretical base that perhaps best rounds off what Hillier et al. set off to do in the first place. By abandoning the emphasis given to structural concepts, such as solidarity, and replacing them with the idea of recursion, Giddens returns control to the individual within the social system. Ongoing social reproduction - a concept matched entirely in syntax by 'restrictions on random processes' and 'description retrieval' mechanisms - is thereby stressed in favour of static definitions of social order.

Significant theoretical and applied benefits to southern African architectural studies in particular, and architectural and social theory generally, stem from this.

The notion that individuals, as powerful agents, have the capacity to engage effectively their conditions of existence and to change them if necessary, stresses the need to understand society and its material products beyond the functionalist paradigms associated with a colonial past. Broadly this means overcoming outdated concepts of determinism in which form and function are related such that buildings are seen to merely 'reflect' society. Since all social institutions, including

households, selectively draw on inherited ideas and modes of practice that are meaningful in their respective sub-regional contexts, the distinction between traditional (or tribal) and modern (or advanced) architectures becomes a redundant one.

In the South African political context these distinctions are central to maintaining oppressive policies where the very idea of ethnicity holds a particularly strong meaning. The analysis of various 'tribal' settlements and buildings, when coupled with the dominant ideology, is influenced by a heightened awareness of ethnicity. It consequently becomes an inherently oppressive political activity, especially when the discipline and profession of architecture is mostly in the hands of the descendants of the colonisers who hold power: Culture and the architecture of Bantu-speakers are identified with discretely bounded 'tribes', differences between communities are reinforced and naturalised, and the value-biased assumptions and prejudices rooted in Victorian anthropology are perpetuated and reproduced in new architectural and urban designs.

Southern Africa is characterised by numerous environmental and social conditions. There are differences in geographic setting, dwelling types and the physical structure of architecture including the stage of its development and density. Household occupants differ in background, age and sex composition, class, occupation, income, lifestyle, religious beliefs, political allegiances and in a wide range of attitudes and behaviours that cross-cut social boundaries.

Each of these differences contributes to daily and longer term activity patterns as situated social practices, the reproduction of social structures and consequently to the establishment, reproduction and transformation of spatial relations and architectural form. Any attempt to understand the social meaning of domestic architecture requires that these processes and the dynamic which they constitute be explicated.

The results of this investigation suggest that the structuration/space syntax model provides a useful technique for integrating these relations towards a theoretical understanding of socio-spatial relations that is at once all-encompassing and detailed: A model that is able to provide some improved understanding of what is meant by the dwelling in relation to the domestic social process to which it contributes and from which it emerges, and as both an enabling and constraining device within that process.

Obviously, many of the propositions must be substantiated by systematic re-evaluation from architectural case studies. Nevertheless, insofar as the study of domestic architecture is concerned, this model does seem to have value in synthesising what it is that people do, with their ideological framework, together with the dwelling they design and occupy.

Although it has not been the intention of this study to propose specific applications in architectural practice, such a direction is implied by the concept of structuration. This it does by showing

that dwellings do not merely express but actively establish and constitute the social identity of the households that occupy them. Essentially dwelling form acts as an ideological framework, making the present seem necessary, understandable and inevitable. The meaning of domestic space is therefore neither trivial nor self-explanatory and can only be comprehended in the context of its use.

The benefits to architectural practice - especially that which is concerned with the design of socially and economically appropriate mass housing in southern Africa - stem from this emphasis in that it establishes a strong plea for the prominence of social theory in the analysis of how architectural environments 'work'. In many respects conditions in South Africa are analogous to developing countries elsewhere: Rapid population growth coupled with massive urbanisation and industrialisation.

There are two major effects of these conditions. Firstly, it has been recently shown that approximately 600 dwellings need to be built each day for the next 14 years if the shortage of accommodation is to be effectively tackled (see Kentridge, 1986: 7). In terms of urban development this means that each year, until the year 2000, a new city of some 210 000 dwellings will have to be designed and developed.

Secondly, as is shown in early as well as recent urban and housing developments in South Africa, the circumstances surrounding rapid population growth and urbanisation often lead to the production of monotonous and dehumanising living environments. It is vital

therefore that, if qualitatively viable and economically sound settlements are to be produced, the design strategies will need to be formulated in line with a working understanding of the society-space relation. This is indeed crucial if the lack of common knowledge between designers and designed-for is to be bridged.

APPENDICES

APPENDIX A

JUSTIFIED PERMEABILITY MAP (JPM) : A SYNTACTICAL DESCRIPTION
OF BUILDINGS

Relative Asymmetry (RA)

The JPM is a technique that is intended to permit a form of analysis that combines the "visual decipherment of pattern with procedures for quantification" (Hillier and Hanson, 1984: 149). That technique is set out below. In order to describe a JPM for a particular building, the following procedure is necessary (see Hillier and Hanson, 1984: 108, 147-155):

- (1) Work out the mean depth (MD) of the system from the space by allocating to it a depth value according to how many spaces (the minimum number of moves) it is away from the original space. Sum these value and divide by the total number of spaces in the system minus one (the original space):

$$MD = \frac{\text{Depth Value}}{k-1}$$

where k = total number of spaces in the system.

- (b) Now calculate the RA using the following formula:

$$RA = \frac{2(MD - 1)}{k-2}$$

The result will be a value of between 0 and 1, where low values indicate a space from which the system is shallow, symmetric and highly integrated.

On the contrary, a high RA measure will show that from the point of view of the space, the system is deep, asymmetric and segregated. Thus, the JPM will look different each time it is drawn, or 'justified', from a different original space in the system. In this sense, the JPM may be thought of as a 'depth diagram' of the system taken from a specific category of space.

A general measure of relative depth, or the degree of integration of the system as a whole, is given by the mean RA. This captures the RA from all spaces in the system at once and thus provides a useful summary or index to the extent of total system integration.

In order for RA values to be useful for making cross-comparisons between systems of varying size, a further procedure is required (Hillier and Hanson, 1984: 109=113). This is necessary so that the

effect that the number of spaces in a system can have on the level of RA measures, may be eliminated:

"In effect, what we do is compare the RA value we have with the RA value for the 'root' (the space at the bottom of a justified map) of a 'diamond-shaped' pattern. This has nothing to do with geometric shape, it simply means a justified map in which there are k spaces at mean depth level, $k/2$ at one level above and below, $k/4$ at two levels above and below, and soon until there is one space at the shallowest (the root) and deepest points." (Hillier and Hanson, 1984: 111-112).

A set of standard 'D-values', or RA measures for the diamond pattern, is tabulated by Hillier et al. which gives readings for systems of up to 300 spaces (see Table A.1). To convert the RA values in a system the following procedure needs to be followed:

- (a) Using Table 1, find the D-value which corresponds with the same number of spaces as in the case study under investigation.
- (b) Divide the D-value into the particular RA value that is obtained for each space. The result is known as the 'real' RA (RRA) where:

$$RRA = \frac{RA}{D}$$

Relative Ringyness (RR)

The RR of the spatial system as a whole is given by the following expression:

$$RR = \frac{L - k + 1}{2k - 5}$$

where L = the number of connections between spaces in the system (indicated by lines in the permeability map),

k = the number of convex spaces in the system, and

$(2k-5)$ = the maximum number of independent rings in a map of k points (Peponis, 1985: 390; Hillier and Hanson, 1984: 154).

Table A.1

List of D-Values for k Spaces

1	51 0.132	101 0.084	151 0.063	201 0.051	251 0.044
2	52 0.130	102 0.083	152 0.063	202 0.051	252 0.043
3	53 0.12	103 0.083	153 0.063	203 0.051	253 0.043
4	54 0.127	104 0.082	154 0.062	204 0.051	254 0.043
5 0.352	55 0.126	105 0.082	155 0.062	205 0.051	255 0.043
6 0.349	56 0.124	106 0.081	156 0.062	206 0.050	256 0.043
7 0.34	57 0.123	107 0.081	157 0.061	207 0.050	257 0.043
8 0.328	58 0.121	108 0.080	158 0.061	208 0.050	258 0.043
9 0.317	59 0.120	109 0.080	159 0.061	209 0.050	259 0.043
10 0.306	60 0.119	110 0.079	160 0.061	210 0.050	260 0.042
11 0.295	61 0.117	111 0.079	161 0.060	211 0.050	261 0.042
12 0.285	62 0.116	112 0.078	162 0.060	212 0.049	262 0.042
13 0.276	63 0.115	113 0.078	163 0.060	213 0.049	263 0.042
14 0.267	64 0.114	114 0.077	164 0.060	214 0.049	264 0.042
15 0.259	65 0.113	115 0.077	165 0.059	215 0.049	265 0.042
16 0.251	66 0.112	116 0.076	166 0.059	216 0.049	266 0.048
17 0.244	67 0.111	117 0.076	167 0.259	217 0.049	267 0.042
18 0.237	68 0.109	118 0.075	168 0.059	218 0.048	268 0.041
19 0.231	69 0.108	119 0.075	169 0.058	219 0.048	269 0.041
20 0.225	70 0.107	120 0.074	170 0.058	220 0.048	270 0.041
21 0.22	71 0.106	121 0.074	171 0.058	221 0.048	271 0.041
22 0.214	72 0.105	122 0.074	172 0.058	222 0.048	272 0.041
23 0.209	73 0.104	123 0.073	173 0.057	223 0.048	273 0.041
24 0.205	74 0.104	124 0.073	174 0.057	224 0.047	274 0.041
25 0.200	75 0.103	125 0.072	175 0.057	225 0.047	275 0.041
26 0.196	76 0.102	126 0.072	176 0.057	226 0.047	276 0.041
27 0.192	77 0.101	127 0.072	177 0.056	227 0.047	277 0.040
28 0.188	78 0.100	128 0.071	178 0.056	228 0.047	278 0.040
29 0.184	79 0.099	129 0.071	179 0.056	229 0.047	279 0.040
30 0.181	80 0.098	130 0.070	180 0.056	230 0.046	280 0.040
31 0.178	81 0.097	131 0.070	181 0.055	231 0.046	281 0.040
32 0.174	82 0.097	132 0.070	182 0.055	232 0.046	282 0.040
33 0.171	83 0.096	133 0.069	183 0.055	233 0.046	283 0.040
34 0.168	84 0.095	134 0.069	184 0.055	234 0.046	284 0.040
35 0.166	85 0.094	135 0.068	185 0.055	235 0.046	285 0.040
36 0.163	86 0.094	136 0.068	186 0.054	236 0.046	286 0.039
37 0.160	87 0.093	137 0.068	187 0.054	237 0.045	287 0.039
38 0.158	88 0.092	138 0.067	188 0.054	238 0.045	288 0.039
39 0.155	89 0.091	139 0.067	189 0.054	239 0.045	289 0.039
40 0.153	90 0.091	140 0.067	190 0.054	240 0.045	290 0.039
41 0.151	91 0.09	141 0.066	191 0.053	241 0.045	291 0.039
42 0.148	92 0.089	142 0.066	192 0.053	242 0.045	292 0.039
43 0.146	93 0.089	143 0.066	193 0.053	243 0.045	293 0.039
44 0.144	94 0.088	144 0.065	194 0.053	244 0.044	294 0.039
45 0.142	95 0.087	145 0.065	195 0.053	245 0.044	295 0.039
46 0.140	96 0.087	146 0.065	196 0.052	246 0.044	296 0.038
47 0.139	97 0.086	147 0.064	197 0.052	247 0.044	297 0.038
48 0.137	98 0.086	148 0.064	198 0.052	248 0.044	298 0.038
49 0.135	99 0.085	149 0.064	199 0.052	249 0.044	299 0.038
50 0.133	100 0.084	150 0.064	200 0.052	250 0.044	300 0.038

Source: Hillier and Hanson, 1984

APPENDIX B

NOTES ON SPACE-USE OBSERVATIONS AND RECORDING THE DATA

Field observations at Crossroads and Cypress commenced once the households had agreed to participate in this study. They were selected for two main reasons:

1. Both households were known to the author prior to the investigation. This was considered an important factor in lessening the impact that a total stranger might otherwise have had on their private lives and consequently the behaviour that was being monitored.
2. The dwellings were accessible and reasonably close to the offices of the Spatial Archaeology Research Unit, U.C.T., from where this study was conducted. This was a fundamental requisite given that observations were to be carried out over a protracted period.

Observations commenced on 29 May 1984 and proceeded until 2 August 1985 after which the author spent most of his time analysing the material and writing-up.

The Choice of Survey Format

Several different methods could be used to collect information on household activities. In a preliminary study that was carried out in the Spatial Archaeology Research Unit these were identified as belonging to three broad alternative groupings which were then compared. The first method was a set of informal interviews coupled with several periods of participant observations (Kent, 1984). The second method involved the household members filling in diaries in which they would be required to describe their activities for the preceding day in relation to space and time. This method could also be used to record an individual's activity scheduling over a weekly time span (see, for example, Parkes and Thrift, 1980). The third method entailed making direct space-use observations at regular time intervals using non-coded recording sheets.

The aim of this survey was to be as systematic as possible so that case studies could be rigorously compared. A major requirement of the survey was consequently the generation of data that would render the following features of household activity analysable:

- Location of activity
- Individuals involved
- Starting time of activity
- Duration of activity
- Frequency of activity
- Sequence of activities

Given these requirements the third method was considered to be the most suitable. Method one was judged inappropriate on the grounds that too much incompatible data could be generated giving rise to speculation and inaccurate analysis. A major argument against the use of diaries was the fear that their quality might deteriorate over a long period. Extra effort would be required to fill them in and they would become tedious burdens possibly leading to their being made up with fictitious and grossly unreliable information.

Direct observations using a non-coded format on the other hand would overcome these disadvantages. The coding of activities could take place after the survey and could therefore incorporate the full range of activities however they were described.

The format used to assemble space-use data was designed to take into account the following information:

Date
 Household (Crossroads or Cypress)
 Time of activity readings (These were separated by 15
 minute intervals)
 The characters involved (Alphabetically coded)
 Activity description
 Artefacts used

(This is shown as 'Format A' below)

In order to be as comprehensive as possible, a separate format showing environmental variables was filled in simultaneously to complement the space-use data. An example of this format is shown below as 'Format B' on which the following data were recorded:

Date
 Household
 Day type
 Time of activity reading (e.g. 6.1 = 06h00; 6.2 =
 06h15; etc.)
 Temperature (A whirling hygrometer was used to measure
 the 'Corrected Effective Temperature', or C.E.T. At
 Crossroads and Cypress four 'stations' were chosen
 where readings at 15 minute intervals were made
 following a strict sequence.)
 Sky (Cloudy or Clear)
 Rain (Drizzle or Downpour)
 Fireplace
 Television (Its position at Cypress varied between the
 TV Lounge and the Lounge. The Crossroads household
 did not own a television set)
 Doors
 Curtains
 Lights (Three light zones were delineated in each of the
 dwellings)
 Other (Radio on, tape recorder playing, etc.)

Administration of the Survey

From the outset use was made of research assistants. Their main task was to assist the author on observation days. Each observation day was selected in advance in consultation with the household head. The day was then divided into two or three 'shifts', each roughly six hours long. These were subsequently allocated among the author and the research assistants according to preferred times.

Three research assistants were used. They were given a thorough briefing on the aims of the study, the technique used and were introduced to their respective hosts several days prior to the commencement of observations.

A total of 30 and 32 observation periods on separate days were spent at Crossroads and Cypress respectively. These were selected to represent proportionally the five day types that occur weekly and annually, such as 'School Holiday', 'Public Holiday', etc. The day types, and the periods of observation obtained during each, are shown for Crossroads and Cypress in Tables B.1 and B.2 respectively.

Since it was important to obtain, as far as was reasonably possible, a realistic set of space-use data, it became necessary to assess the impact which the direct observations were having on household life. It was thought that the best way to obtain this information would be to ask the household members themselves.

A simple questionnaire was designed and circulated to both households halfway through the survey to check the accuracy of the observations. The results of this questionnaire are given in Table B.3. They indicate that the observations of space-use could be taken as a reasonably fair reflection of the 'normal' pattern of events in each case. None of the responses to the questions suggested that drastic behavioural changes were taking place in order to accommodate the observers.

In both dwellings particular surfaces emerged as the most convenient positions at which observations could be written down. At Crossroads a table in the Lounge/dining room (5) was used. At Cypress two surfaces were used: the worktop in the studio (1) and the dining table in the dining room (5).

DATE

HOUSEHOLD

PART 1: CONSTANTS FOR THE DAY

MONTH 1 2 3 4 5 6 7 8 9 10 11 12

DAYTYPE 1. Weekday 2. Saturday 3. Sunday

4. Public Holiday 5. School Holiday

PART 2: VARIABLES

TIME

Temp 1
Temp 2
Temp 3
Temp 4

SKY (1, 2 or 3)

RAIN (1, 2 or 3)

FIRE (lit/out)

TELEVIS POS (1,2)
TELEVIS (on/off)

DOORS (open/closed)
CURTAINS (open/closed)

LIGHTS 1 (on/off)

LIGHTS 2 (on/off)

LIGHTS 3 (on/off)

OTHER 1

OTHER 2

OTHER 3

OTHER 4

MONTH	DATE	DAY TYPE	OBSERVATION HOURS	OBSERVATION READINGS
8 August	1 28.8.84	1 Weekday	12	48
				48
9 September	3 11.9.84	1 Weekday	12	48
	13.9.84	1 Weekday	12	48
	23.9.84	3 Sunday	36	144
10 October	3 6.10.84	2 Saturday	12	48
	17.10.84	1 Weekday	12	48
	25.10.84	1 Weekday	12	48
11 November	2 14.11.84	1 Weekday	12	48
	17.11.84	2 Saturday	24	96
12 December	2 17.12.84	5 School Holiday	6	24
	18.12.84	5 School Holiday	6	24

480 Readings

120 Hours

Total : 11 Days

DayType : 1 - 6
2 - 2
3 - 1
4 - 0
5 - 2

11 Days

MONTH	DATE	DAY TYPE	OBSERVATION HOURS	OBSERVATION READINGS
1 January	3 27.1.85	3 Sunday	6	24
	29.1.85	1 Weekday	6.5	26
	31.1.85	1 Weekday	18.5	74
2 February	1 26.2.85	1 Weekday	8	32
			8	32
3 March	3 6.3.85	1 Weekday	6	24
	16.3.85	2 Saturday	6	24
	31.3.85	3 Sunday	18	72
4 April	3 10.4.85	1 Weekday	6	24
	18.4.85	2 Saturday	5	20
	28.4.85	3 Sunday	17	68
5 May	3 21.5.85	1 Weekday	6	24
	25.5.85	2 Saturday	6	24
	30.5.85	1 Weekday	18	72
6 June	3 1.6.85	2 Saturday	6	24
	26.6.85	5 School Holiday	6	24
	27.6.85	5 School Holiday	18	72
7 July	2 29.7.85	1 Weekday	6	24
	31.7.85	1 Weekday	6	24
8 August	1 2.8.85	1 Weekday	6	24
			6	24

462 Readings

115.5 Hours

Total : 19 Days

DayType : 1 - 10
2 - 4
3 - 3
4 - 0
5 - 2

19

Table B.1

Total Observation Period Spent at Crossroads

MONTH	DATE	DAY TYPE	OBSERVATION HOURS	OBSERVATION READINGS
1	24.1.85	Weekday	18	72
	28.1.85	Weekday	17	68
	30.1.85	Weekday	18	72
Total: 11 Days				
2	13.2.85	Weekday	18	72
	20.2.85	Weekday	18	72
Total: 2 Days				
3	10.3.85	Sunday	17.25	69
	25.3.85	Weekday	17.5	70
	30.3.85	Saturday	18	72
Total: 3 Days				
4	24.4.85	Weekday	18	72
	29.4.85	Weekday	18	72
Total: 2 Days				
5	29.5.85	Weekday	17	68
Total: 1 Day				
			195 Hours	780 Readings

MONTH	DATE	DAY TYPE	OBSERVATION HOURS	OBSERVATION READINGS
5	29.5.84	Weekday	18	72
	Total: 2 Days			
6	1.6.84	Public Holiday	17.75	71
	11.6.84	Weekday	18	72
	17.6.84	Sunday	18	72
	21.6.84	Weekday	18	72
Total: 4 Days				
7	26.7.84	Weekday	17.5	70
	31.7.84	Weekday	18	72
Total: 2 Days				
8	11.8.84	Saturday	18	72
	16.8.84	Weekday	18	72
	21.8.84	Weekday	17.5	71
Total: 3 Days				
9	4.9.84	Weekday	18	72
	16.9.84	Sunday	18	72
	26.9.84	Weekday	18	72
Total: 3 Days				
10	15.10.84	Weekday	18	72
	20.10.84	Saturday	18	72
	31.10.84	Weekday	18	72
Total: 3 Days				
11	12.11.84	Weekday	18	72
	25.11.84	Sunday	18	72
	30.11.84	Weekday	18	72
Total: 3 Days				
12	10.12.84	School Holiday	17	68
	19.12.84	School Holiday	18	72
Total: 2 Days				
			376 Hours	1502 Readings

Total: 11 Days
 DayType: 1 - 9
 2 - 1
 3 - 1
 4 - 0
 5 - 0

Total: 21 Days
 DayType: 1 - 13
 2 - 2
 3 - 3
 4 - 1
 5 - 2

Table B.2

Total Observation Period Spent at Cypress

Table B.3

Questionnaire to Determine the Effects of Observations on the Pattern of Domestic Activities

	Crossroads	Cypress	
1. How many activities do you not undertake because of the presence of an observer?	_____	_____	Very many
	_____	_____	Many
	33%	25%	Few
	67%	75%	Very Few
	_____	_____	None at all
2. Is your sense of privacy being disturbed by the presence of an observer?	_____	_____	Yes
	20%	75%	
	_____	_____	No
	80%	25%	
3. Do you ever feel ill at ease when the observer is present?	_____	_____	Yes
	20%	25%	No
	_____	_____	Sometimes
	80%	75%	
4. Do you feel more at ease in the presence of an observer now than at the beginning of this study?	_____	_____	Yes
	15%	_____	No
	_____	_____	No change
	85%	10%	
5. Are there any particular times of the day when you are most aware of the observer?	_____	75%	Early morning
	_____	_____	Mid-Morning
	20%	_____	Lunchtime
	_____	50%	Afternoon
	60%	_____	Early Evening
	20%	_____	Late Evening
	_____	25%	None

APPENDIX CA HOUSEHOLD ACTIVITY STACKTable C.1Household Activities at Crossroads and Cypress

The following is a list of activities obtained from observations at Cypress and Crossroads: Cape Town, May, 1984 to August, 1985.

<u>Code</u>	<u>Major Classification</u>	<u>Activity Descriptions</u>
<u>00</u>	<u>Sleep</u>	
S1		Sleep
<u>01</u>	<u>Eating</u>	
B14		Breastfeeding
D1		Drinking
D4		Drinking coffee
D8		Drinking water
D15		Drinking herbal brew
D20		Drinking tea
E1		Eating
E3		Eating cereal
E8		Eating toast
E11		Eating pap & milk
F14		Feeding
G4		Getting a drink
H2		Holding cup
L19		Ladling beer
P31		Pouring soft drink
P40		Pouring tea
P47		Pouring coffee
S29		Snacking
S32		Serving ice-cream
S39		Sucking ice
<u>02</u>	<u>Cooking & Food Preparation</u>	
B16		Breaking ice
B9		Boiling milk
B11		Boiling water
B12		Brewing beer
B19		Buttering toast/bread
C14		Cooking
C23		Cutting bread

C25	Cutting vegetables
C31	Chopping fruit
C41	Cooking chicken
C45	Covering beer
C74	Cutting food
C76	Checking food in oven
D13	Dishing up
D19	Dressing chicken
D27	Dishing ice-cream
F12	Filling kettle
F13	Filling cup with water
G1	Getting food from fridge
G5	Grinding herbs
H6	Helping with food
H17	Holding 'Primus' stove
I2	Icing cake
K3	Kneading dough
L23	Looking in fridge
M2	Making breakfast
M3	Making tea
M6	Making lunch
M7	Making sandwiches
M12	Making salad
M16	Making coffee
M17	Making toast
M18	Mashing potatoes
M19	Making beer
M21	Mixing eggs
O5	Opening can
O8	Opening beer
P15	Pouring milk
P16	Packing lunch
P19	Pouring food into dish
P27	Pouring water
P28	Putting pots on 'Primus' stove
P30	Putting chickens in pot
P35	Putting food in fridge
P38	Peeling potatoes
P55	Pouring oil into jar
P61	Putting spoon down
S12	Scraping leftovers
S17	Straining food
S21	Straining beer
S26	Stirring food
S35	Slaughtering chicken
S38	Shaking grain
S40	Stirring tea
S44	Stirring beer
T1	Taking food from fridge
T8	Taking food from oven
W6	Washing vegetables
W7	Wrapping sandwich
W14	Washing fruit

R14
T23
T27

Rolling ribbon
Taking off overclothes
Tying scarf

Ø4 Job-Related

F22
M9
P32
P45
S34
S50
T5

Filing papers
Marking papers
Packing files
Punching holes
Sorting papers
Sharpening pencils
Typing

Ø5 Education-Related

F7
H4
H8
W2

Filling fountain pen
Homework
Helping with homework
Writing

Ø6 Housework/Homemaking

A3
A6
A7
B5
C5
C8
C11
C18
C19
C22
C27
C28
C29
C30
C32
C33
C46
C47
C57
C60
C63
C68
C72
C75
C78
C84
D12
D23

Assembling chairs
Assembling basket
Adjusting kettle
Blowing up bag
Closing curtains
Cleaning table
Cleaning stove
Cleaning carpet
Cleaning stoep
Cleaning bag
Carrying tea
Cutting patterns
Cutting paper
Clearing up
Cleaning floor
Cleaning workshop
Cleaning hat
Clearing tea away
Cleaning bath
Cleaning wash-hand-basin
Cleaning bucket
Collecting papers
Covering table with papers
Cleaning windows
Cutting cloth
Cleaning bench
Discarding newspapers
Dismounting birdcage

W39 Washing soap-mealies
 W40 Watching pot

03 Personal Hygiene & Body Care

A1	Ablution
B1	Bath*
B7	Brushing teeth
B15	Being vaccinated
B27	Being dressed
C12	Cleaning fingernails
C16	Cutting hair
C40	Creaming face
C77	Catching flies
C82	Cutting nails
D3	Drying in shower
D6	Drying hands
D7	Drying hair
D10	Drying
D11	Doing exercises
D18	Drinking medicine
E6	Examining face in mirror
F19	Filing nails
G17	Gargling
H5	Holding foot
I3	Inducing vomiting
P67	Preparing medicine
R7	Running bath water
R13	Removing splinter from foot
S3	Shaving
S7	Showering
S48	Storing medicine
W18	Washing hair
W20	Wiping hands
W37	Wiping body
W21	Waking up
G13	Giving medicine

03.1 Dressing/Undressing
 (Clothes/Appearance)

B27	Being dressed
C1	Cosmetics
C6	Changing
C20	Combing hair
D17	Doing face
F21	Fixing neck tie at mirror
F33	Fitting shoes
G9	Getting ready for school
P7	Putting on shoes
P8	Putting on socks
P44	Preparing for bed

D25	Dusting rugs
D26	Drying cups
E4	Emptying dishwasher
E5	Emptying rubbishbin
E10	Emptying bowl/pan
F5	Fixing hook to ceiling
F6	Folding milk-carton
F10	Folding laundry
F15	Fixing shoes
F16	Folding cloth/blanket
G6	Getting pegs from bag
G11	Giving cloth
H3	Hanging up clothes
H7	Hanging napkins
H15	Holding clothes
H18	Holding paper
H20	Holding new rolls of paper
H21	Heating irons
I1	Ironing
K1	Knitting
L4	Loading washing machine
L10	Lighting fire
L12	Laying out laundry
L14	Laying table
L18	Lighting 'Primus' stove
L21	Looking in cupboard
L30	Looking under bed
L33	Looking at clothing
L37	Looking for spoons
L38	Looking for plastic bags
L42	Lighting heater
M1	Making fire
M5	Mending iron
M13	Making bed
M20	Making shopping list
M22	Making glue
O2	Opening drawer
O6	Opening curtains
O9	Organising cupboard
O10	Opening packet
P5	Packing linen
P9	Packing dishwasher
P12	Packing
P13	Packing dishes
P20	Packing cutlery
P22	Pouring paraffin into heater
P24	Packing clothes
P26	Polishing shoes
P34	Pouring water on floor
P39	Putting clothes in laundry
P42	Putting label on bottle
P46	Putting records away
P49	Putting water down

P50	Putting plate in packet
P53	Putting basin on floor
P57	Putting key on shelf
P58	Putting brush on table
P60	Pouring paraffin into 'Primus' stove
R2	Running water in basin
R4	Rinsing bottle
R5	Removing laundry
R6	Rinsing dishes
R12	Rinsing tin
S6	Stoking fire
S10	Sorting firewood
S11	Sorting laundry
S18	Sorting clothes
S28	Sorting
S30	Storing vacuum cleaner
S31	Swatting flies
C77	Catching flies
S36	Scrubbing floors
T2	Tidying room
T3	Tidying cupboard
T10	Taking bowl off shelf
T11	Tidying up
T12	Tidying kitchen
T19	Taking bottle from table
T21	Stamping on laundry
T22	Taking calendar off wall
U1	Unpacking dishwasher
U2	Unloading laundry
U3	Unpacking parcels
U4	Unpacking vegetables
U5	Unfolding mattress
V2	Vacuuming
W3	Working at sink
W5	Washing cloth
W8	Weighing suitcase
W9	Fixing light in fridge
W15	Washing cups
W16	Washing clothes
W17	Washing boots
W19	Washing 'Thermos' flask
W23	Washing buckets
W24	Washing dishes
W29	Washing pots
W34	Washing drawer
W36	Washing blanket
Z1	Zippering bags

Ø7

Dwelling Maintenance and Repair WorkB4
B26Breaking branches
Burying rubbish

C3	Clearing grate
C4	Chopping wood
C13	Cutting branches
C15	Clearing branches
C17	Clearing rubbish
C24	Cleaning garden
C37	Cleaning drum
C54	Clipping hedge
C94	Collecting nails
D2	Drilling metal
D24	Digging hole
D28	Dismantling roof
E9	Emptying water into drain
F2	Fixing chairs
F17	Filing pliers
G2	Gardening
H1	Holding chair parts
H10	Hammering
H12	Hanging key in roof
H14	Hitting roof with stick
I4	Inspecting the fence
L24	Loading bags in roof
L25	Looking for hammer
L31	Laying paving
L41	Looking for construction timber
M4	Making chair
M10	Mowing lawn
T7	Trying out chair
B2	Bending metal
N1	Nailing roof
P1	Preparing metal
P6	Putting mattress in roof
P25	Putting skin on roof of shelter
P29	Packing plastic bags
P43	Passing bags up
P52	Pushing wheelbarrow
P59	Pasting paper
R8	Rolling package out
R9	Raking up dirt
S15	Sharpening lawnmower
S27	Sawing
S37	Shovelling dirt
T13	On roof
W26	Watering garden
W30	Washing drum
W31	Working with tools
C96	Changing battery
F28	Fixing torch
F8	Fixing wheel
F9	Fixing tube
P41	Pumping bicycle tyre
W28	Working on bicycle

P64	Putting pots away
H19	Holding brush
T4	Taking money from bag

08 Socialising

A9	Arguing
C7	Chatting
C64	Crying
C95	Calling someone
E2	Embracing
F20	Fighting
G16	Interview with visitor
L22	Laughing
S23	Singing
S43	Showing guests house
W32	Waiting for beer

09 Active Leisure

D22	Dancing
F1	Fixing weights
F4	Fixing tape-recorder
K4	Kicking ball
M8	Making model
M14	Making beads
M15	Making necklace
P3	Painting
P11	Packing rucksack
P17	Playing darts
P21	Playing
P33	Playing flute
P56	Playing with earphones
R3	Rolling up posters
S14	Sorting cassettes
T30	Throwing knife
W10	Working on pattern
W25	Washing car

10 Passive Leisure

A10	Admiring something
B20	Browsing
C21	Changing record
C87	Crocheting
S9	Sewing
D5	Drawing
D9	Drinking wine
D16	Drinking beer
C50	Cleaning flute
D21	Dismantling flute

F11	Fixing photos in album
G12	Giving cigarette
H16	Holding telephone
L2	Lying down
L6	Looking at magazines
S8	Standing at fire
L27	Looking into path
L28	Looking at pipe
S47	Standing at door
S46	Standing at bench
S4	Sitting
S2	Standing
L11	Looking at phone directory
A2	Adjusting radio
L7	Listening to radio
L8	Looking at drawings
L9	Listening to tapes
L13	Looking at newspaper
L15	Looking at photos
L16	Lying on couch
L20	Looking at tapes
L26	Leaning on post
L29	Looking at map
L35	Leaning on table
L36	Looking at book
L40	Looking through window
O1	On phone
O3	Opening mail
O11	Sitting on top of shelter
P18	Playing hi-fi
R1	Reading
R16	Resting
S16	Switching on T.V.
S19	Smoking
S20	Sitting at heater
S22	Sitting on fence
S25	Sitting in car
S42	Suntanning
T28	Taking photograph
W4	Watching T.V.
W27	Working tape-recorder
W38	Watching
L34	Looking at watch

11 Religious and Spiritual

C49	Chanting
K2	Kneeling and praying
R15	Rubbing root herb on stone slab

12 Child Care

B16	Bathing baby
B22	Baby being washed
B24	Baby being tended
C36	Carrying child on back
T9	Tending child

13 Animal Care

A5	Attending to dog
B8	Barking at crabs
B13	Being fed
B21	Being brushed
B22	Being tended

14 Movement

A4	Answering doorbell
A8	Arriving home
B17	Bringing milk and tobacco
B23	Bringing tools in
B25	Being carried
B28	Bringing wood
C10	Carrying tea
C34	Closing door
C39	Carrying water
C38	Carrying chair
C42	Carrying blankets
C48	Carrying chicken
C51	Carrying bowl/basin
C56	Carrying ladder
C61	Carrying plastic bath
C62	Carrying something
C66	Carrying laundry
C67	Chasing chickens
C69	Carrying flask
C71	Carrying axe
C73	Carrying food
C79	Carrying kettle
C80	Carrying couch
C81	Chasing
C83	Carrying bottle
C85	Carrying paraffin
C86	Carrying dustpan
C88	Carrying tray
C89	Climbing onto bench
C90	Carrying bag
C91	Carrying bottle
C92	Carrying pot
F18	Fetching grain
F23	Fetching beer

F25	Fetching cream
F26	Fetching pot
F27	Fetching bag
F30	Fetching nails
F31	Fetching bowls
F32	Following mother and others
G7	Going out
G8	Getting pliers
G10	Getting water
G14	Going to shop
G15	Going to clinic
O4	Opening gates
O7	Opening door
P10	Pushing bicycle
P48	Passing tea-tray
P62	Pulling suitcase from under bed
P63	Putting soapdish away
P64	Putting pots away
R10	Running
R11	Removing chair
T6	Trying to get in
T14	Collecting bucket
T15	Collecting spoon
T17	Collecting clothes pegs
C44	Crawling

APPENDIX DREPRESENTING ACTIVITIES IN SPACE AND TIME

A random selection of seven observation days is illustrated using two graphic techniques. The first consists of an Activity/Space/Time matrix. This information is a direct translation of the data provided in the observation formats, A and B. The original size of the matrix is the standard metric size, A1. This allowed all the observation results to be integrated graphically for easy reference.

Each principal space in the dwelling was divided into four space/time units repeated every hour over the 24 hour cycle. Movement across the dwelling's entire surface could thus be clearly shown using a system of colour-coded dots that represent the individuals who were present at the time the readings were taken. Photocopied reductions are included in this report to obviate the problems associated with the large format.

The second set of graphic illustrations consists of the daily profiles, or 'signatures', of space-use and activity patterns. Each signature consists of a set of five bar charts that were extracted from its corresponding matrix. They are used to provide summarised descriptions of each observation period.

Chart 'A' shows the number of people observed in each principal space during the observation period. This allows the relative occupation density of each space to be delineated.

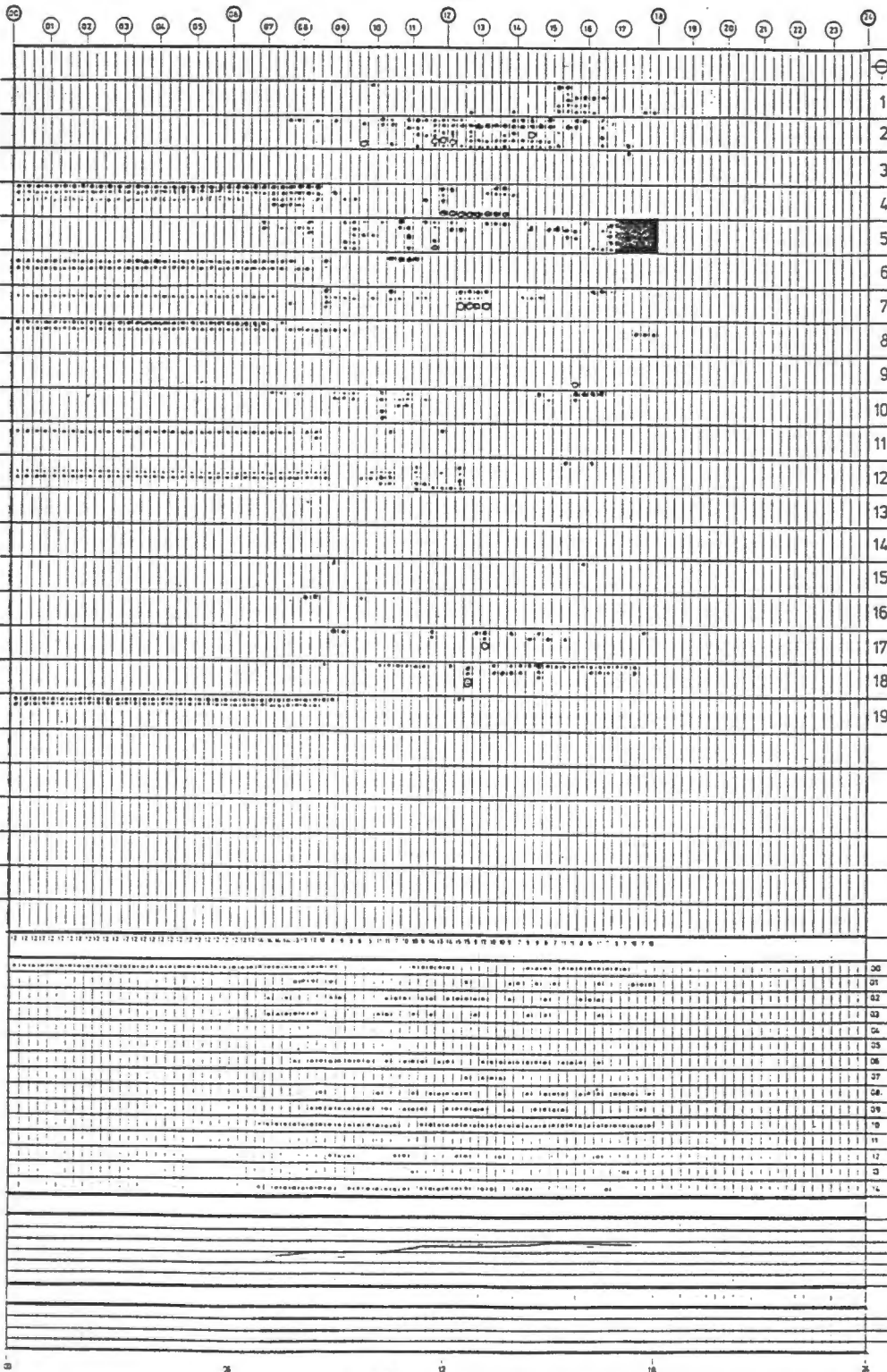
Chart 'B' illustrates the number of individuals who are co-present in the dwelling at any time.

Chart 'C' shows the extent to which particular categories of space are multi-functional. The lengths of the bars indicate the number of activities that have been 'packed' into the various spaces.

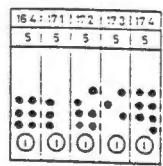
Chart 'D' represents the temporal 'packing' of activities in the dwelling. Long bars show multi-activity periods.

Chart 'E' tabulates the relative frequency of activities in terms of the number of readings taken.

Time



- QUALIFIERS**
- A
 - B
 - C
 - D
 - E
 - F
 - G
 - H
 - J
 - L
 - M
 - N
 - O
 - P
 - Q
 - R
 - S
 - Y
 - Z
 - V
- VISITOR: Relatives
 ○ VISITOR: Friends
 ○ VISITOR: Other (bankers, etc.)



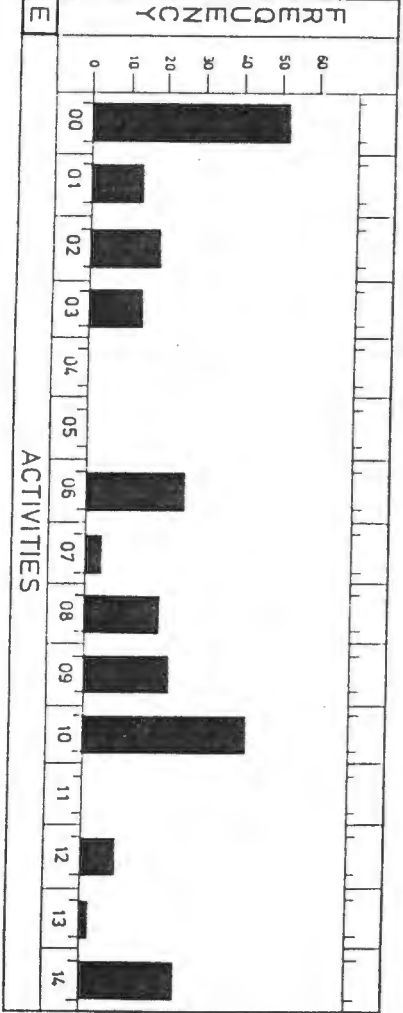
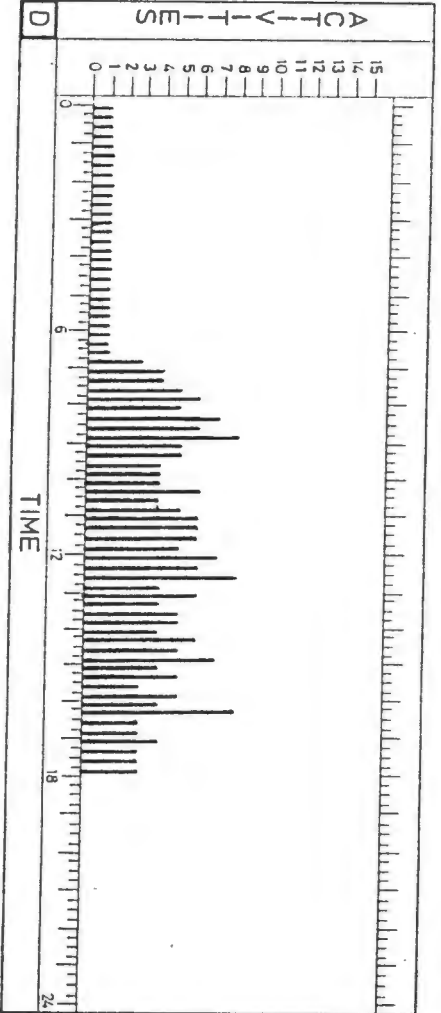
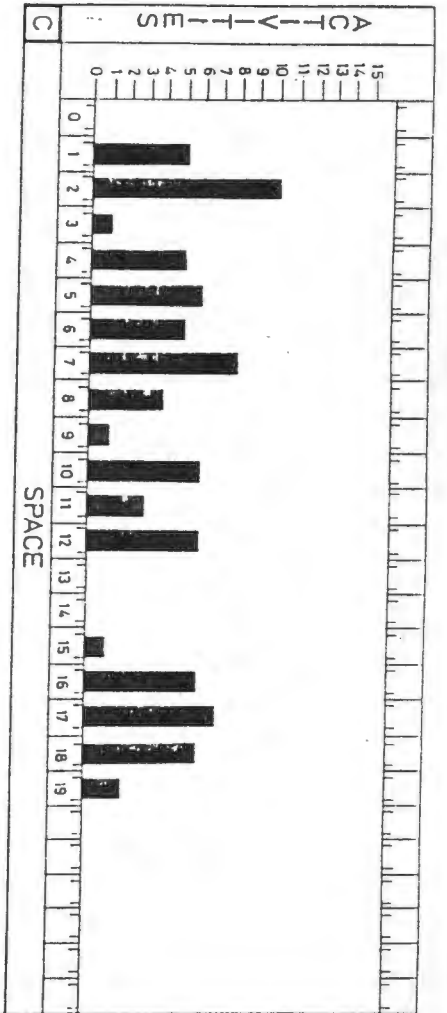
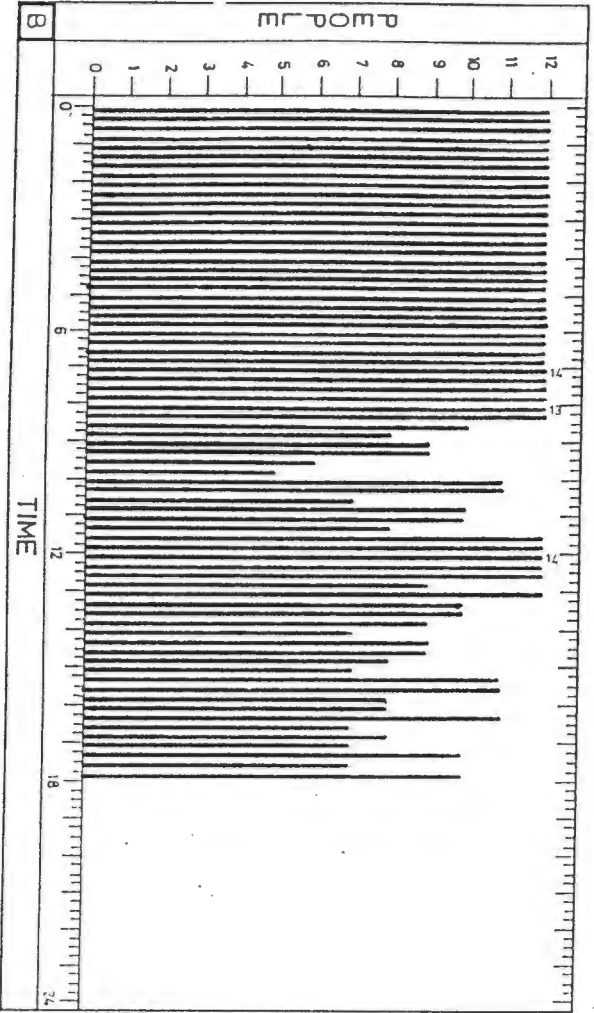
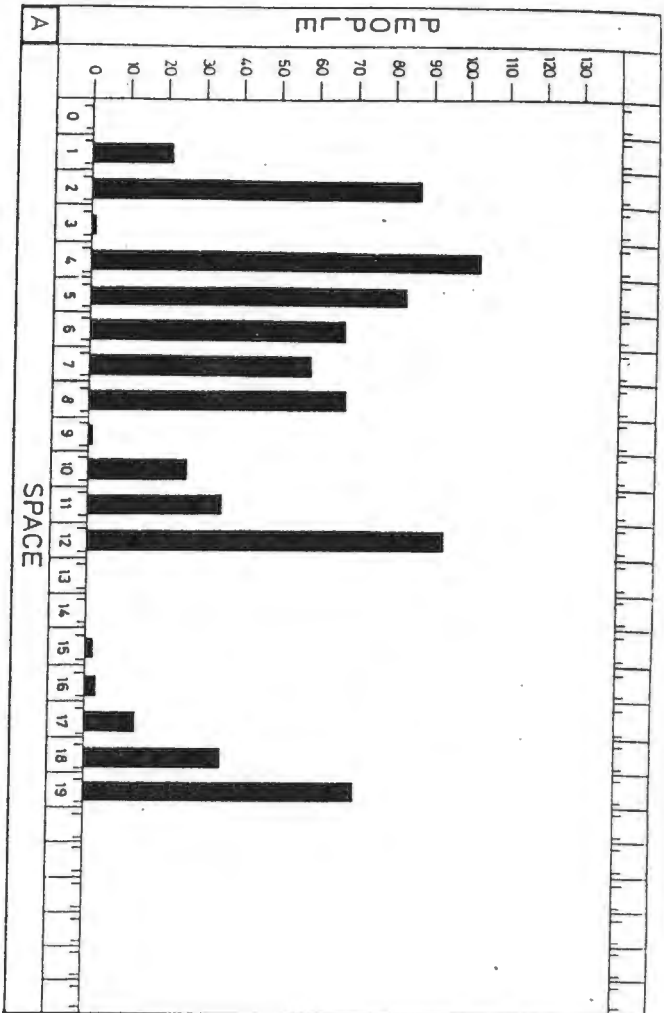
CR 1

Activity

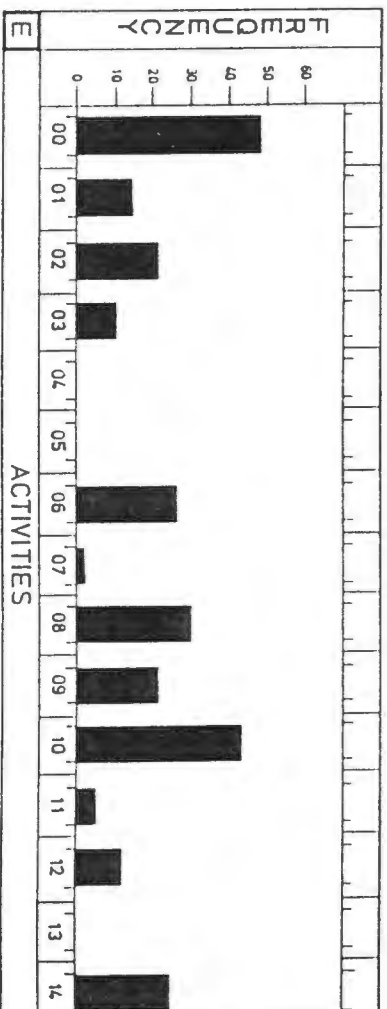
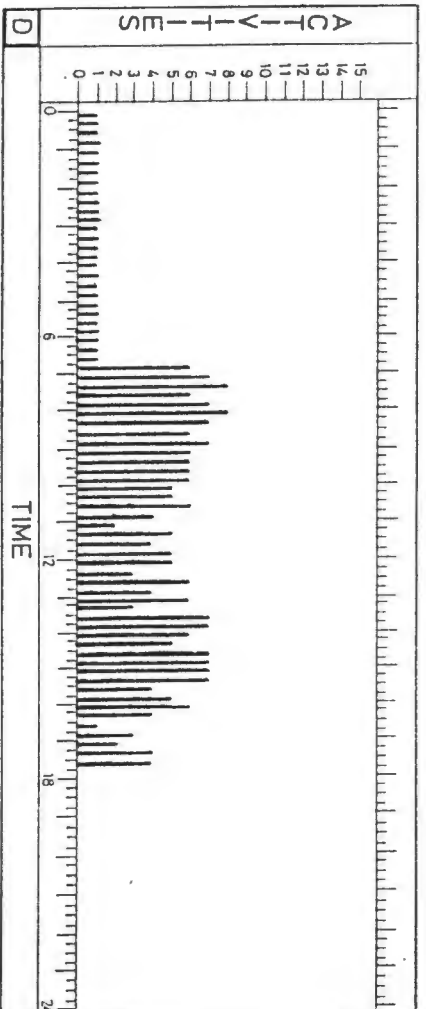
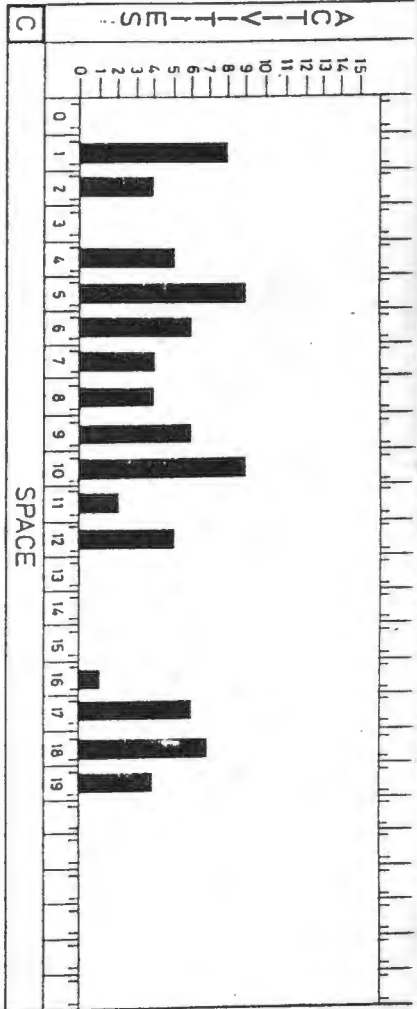
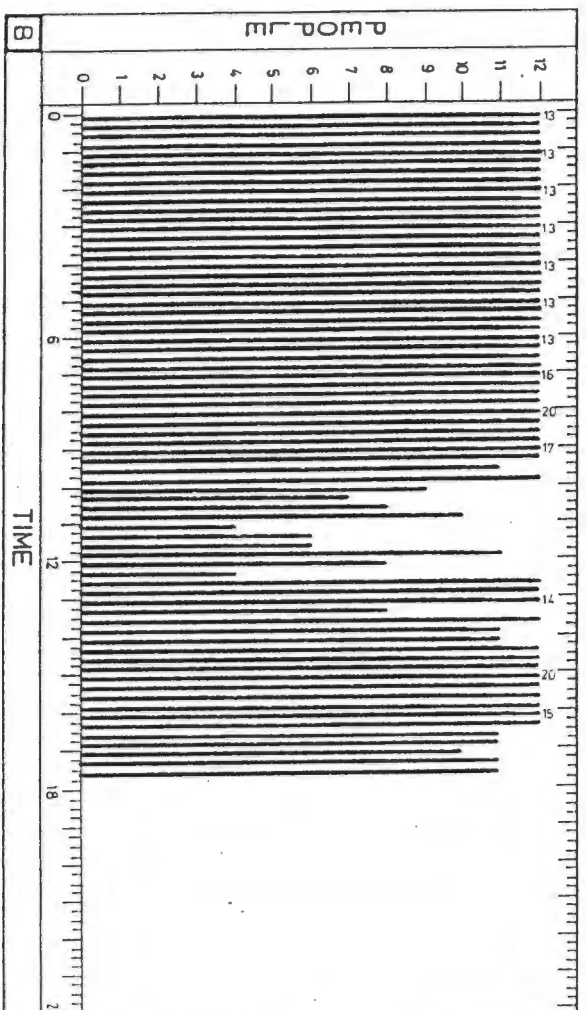
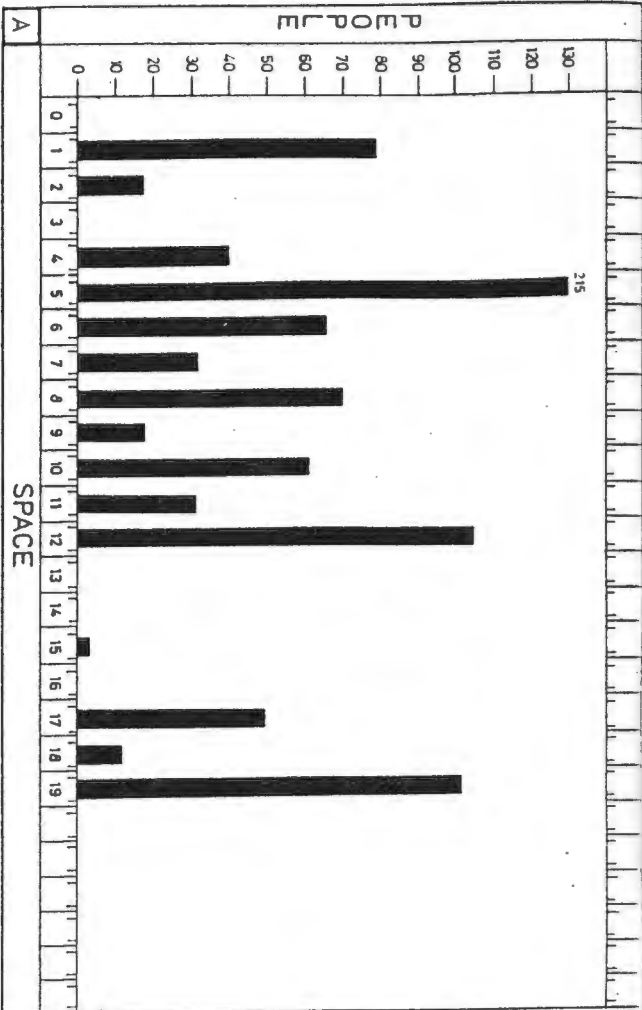
C.E.Temp

Lights

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 Activity-Space-Time Matrix
 Household Date Daytype
 11/05/2004 WEEKDAY

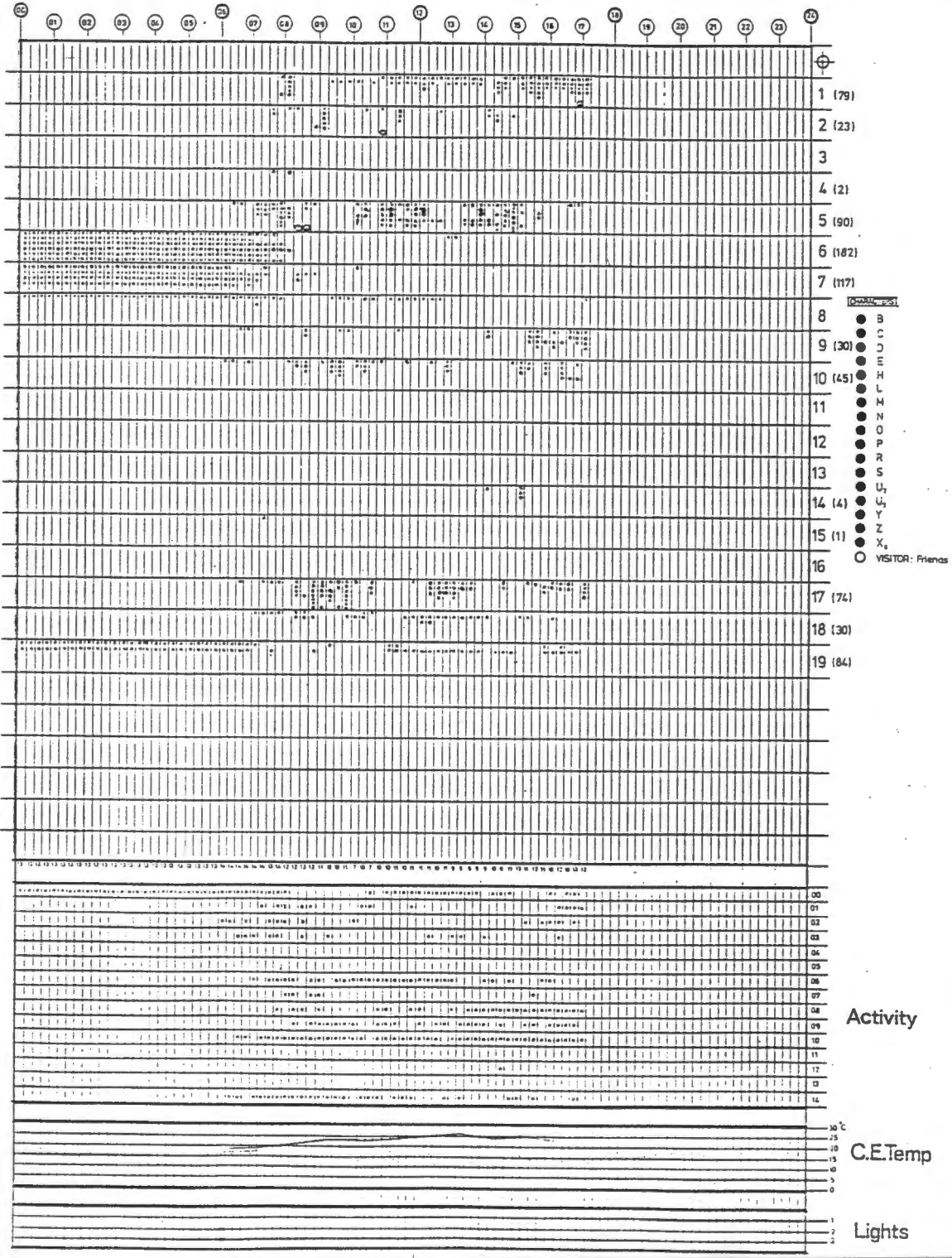


UCT HOUSEHOLD STUDY
 SARU
 House Date Daytype
 CROSSROADS 11-09-84 WEEKDAY
CR 1



UCT HOUSEHOLD STUDY
SARU
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 CRCSR0305123-09-84 SUNDAY
CR 2

Time



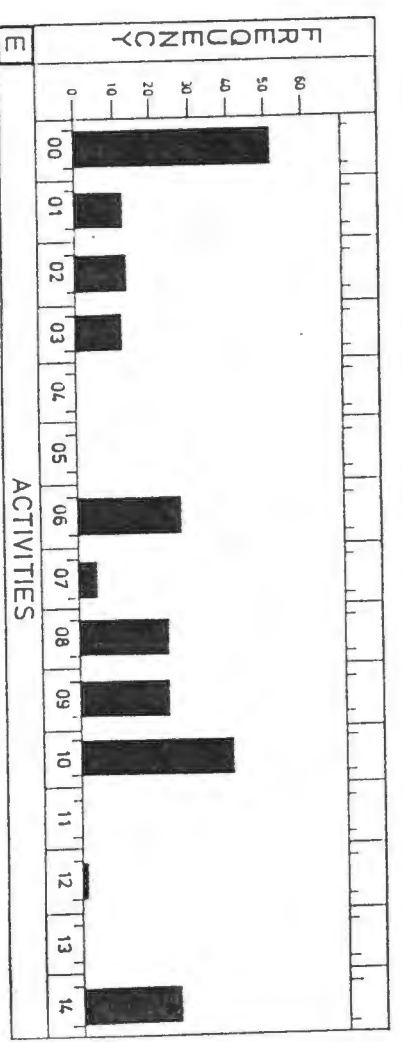
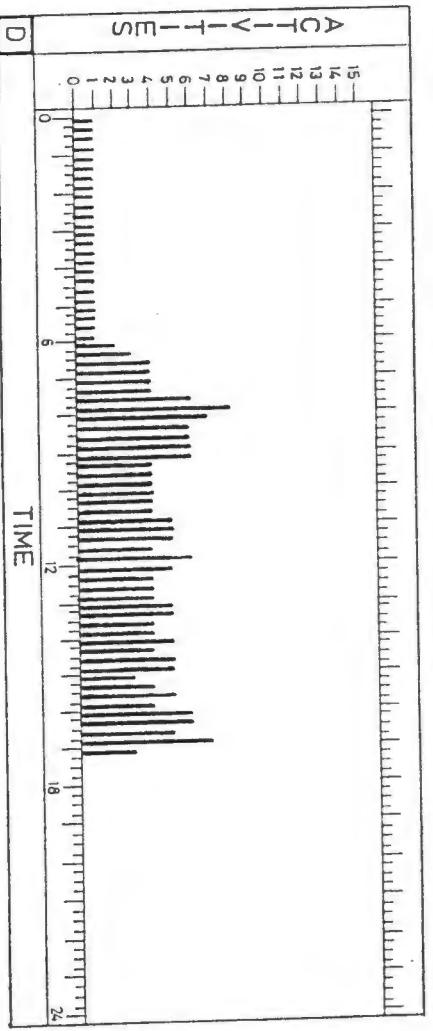
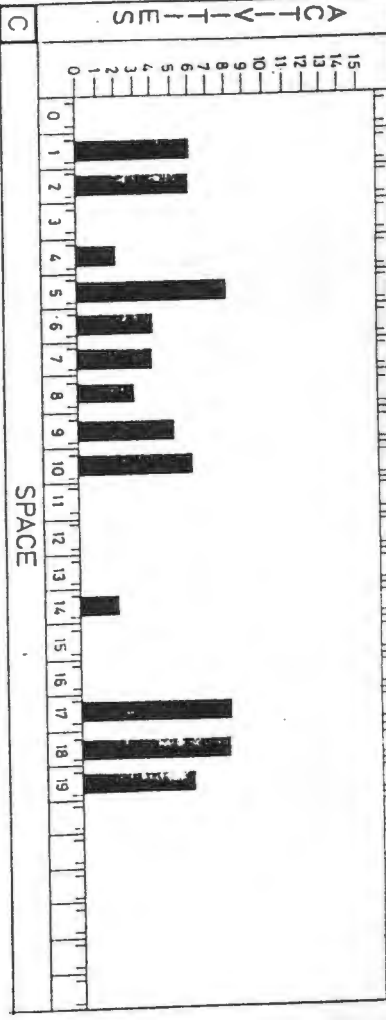
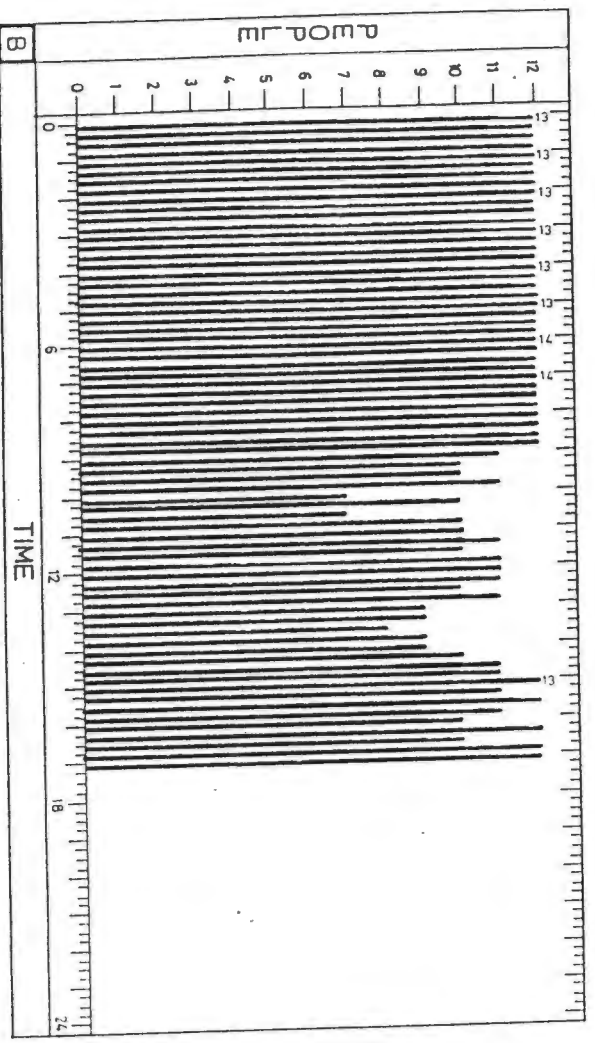
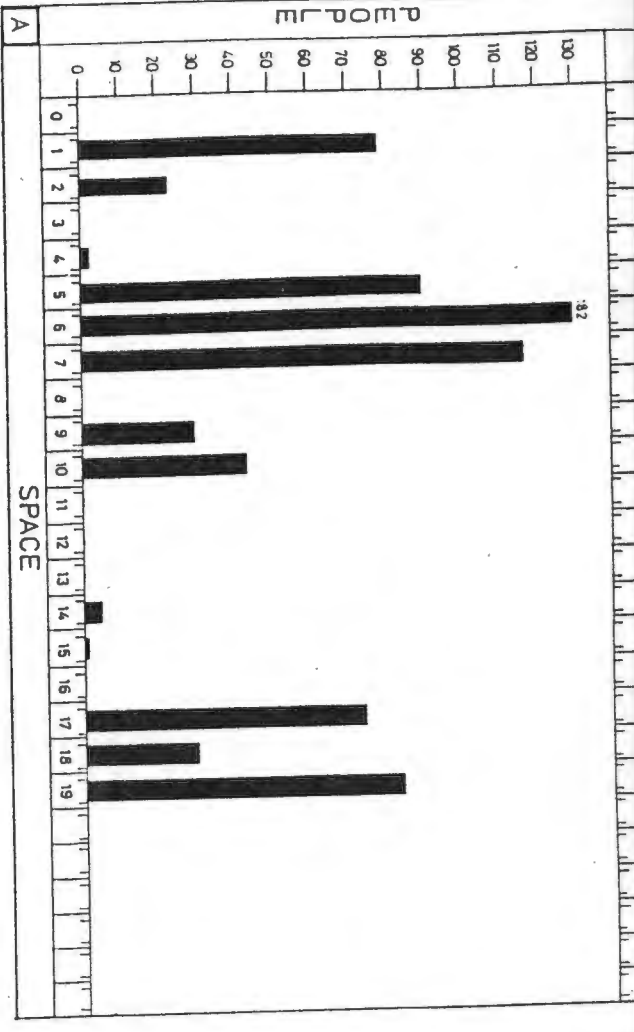
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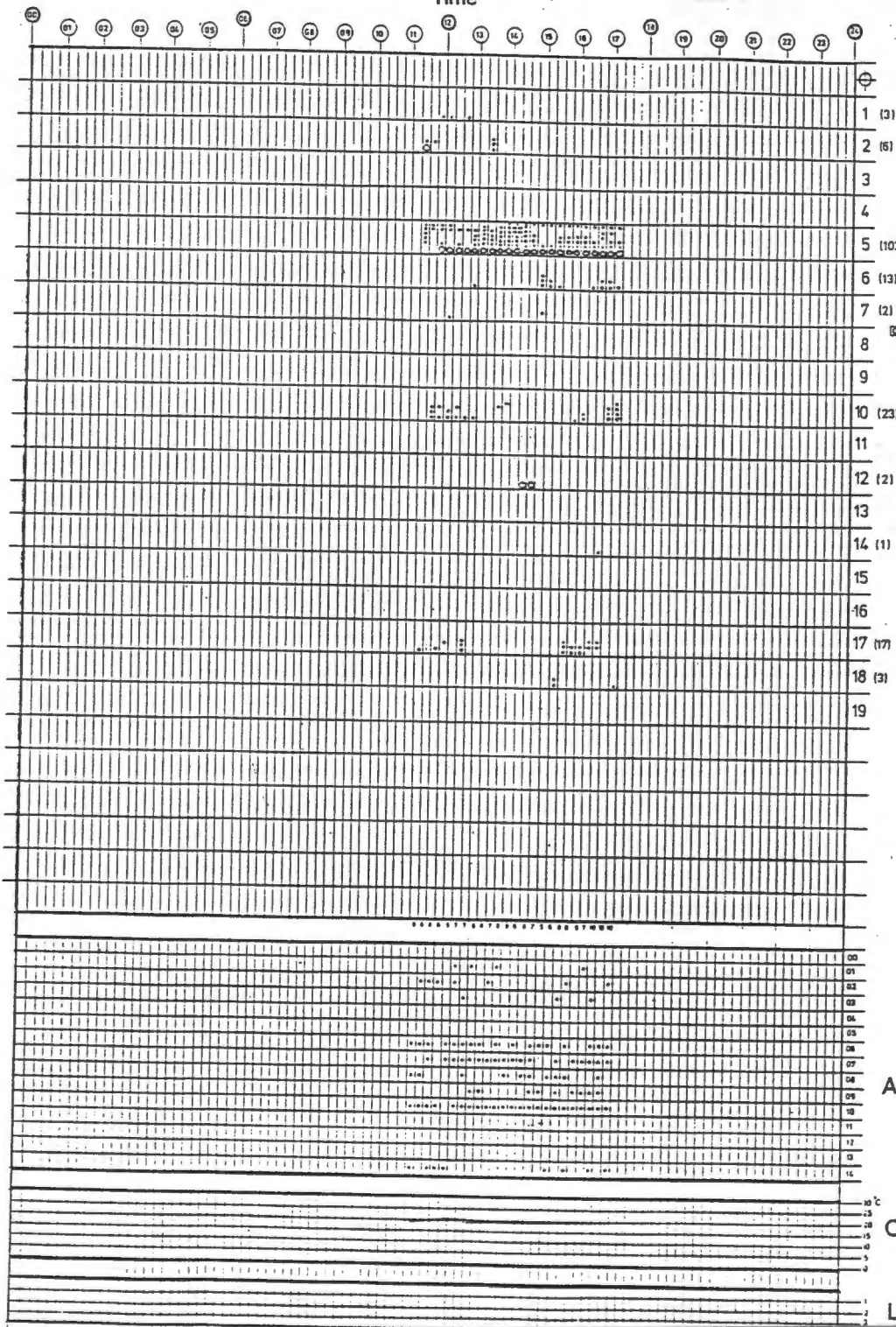
UCT HOUSEHOLD STUDY
SARU
 House Date Daytype

CROSSROADS 23.0.24.1 WEEK DAY

CR 3



Time



CHARACTER

- C
- E
- G
- H
- N
- S
- U
- V
- Y
- Z
- X₁
- VISITORS: Friends
- VISITORS: Mecca guests

CR 4

Activity

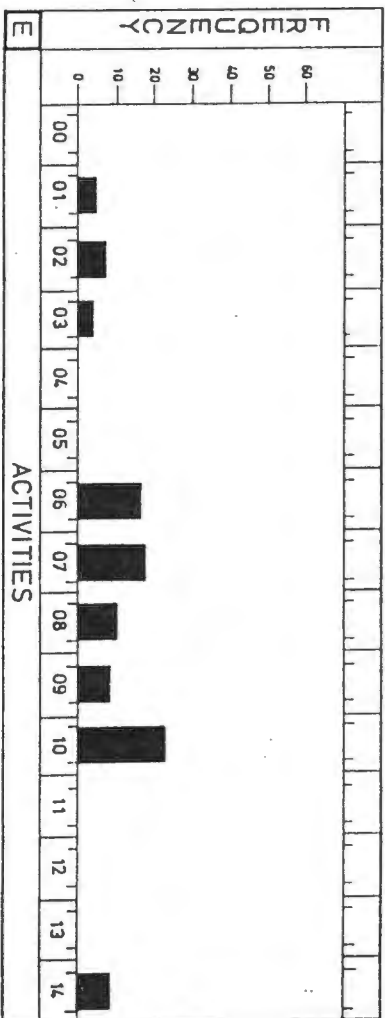
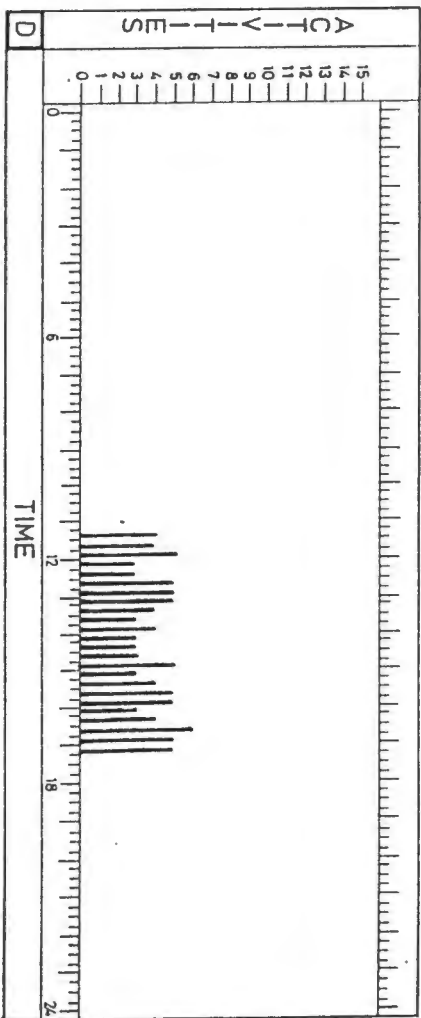
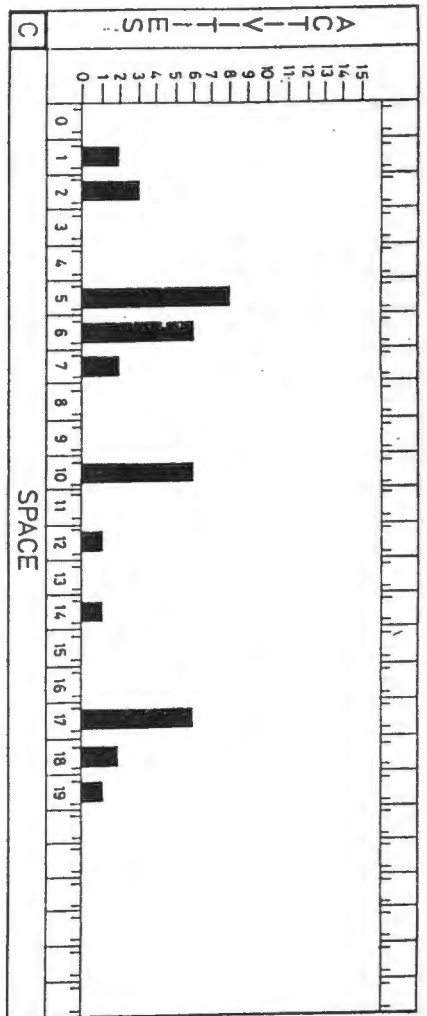
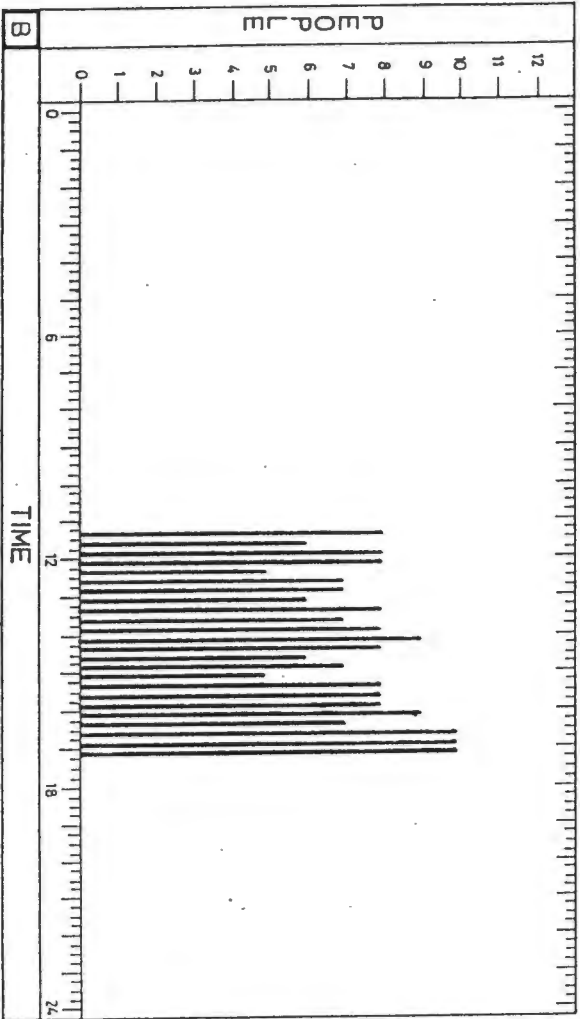
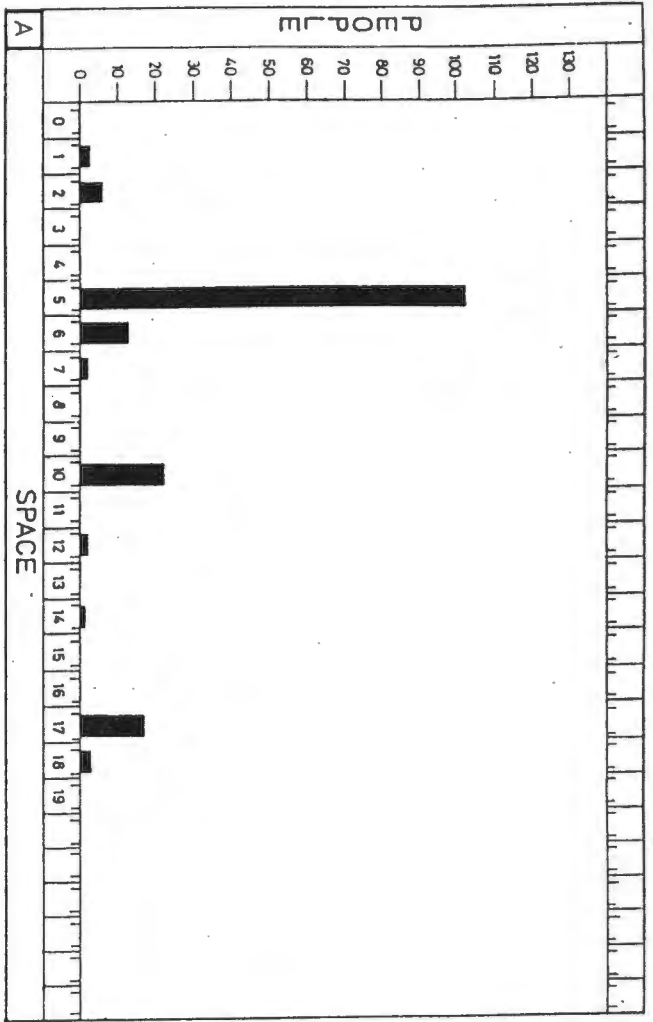
C.E.Temp

Lights

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Household Date Daytype
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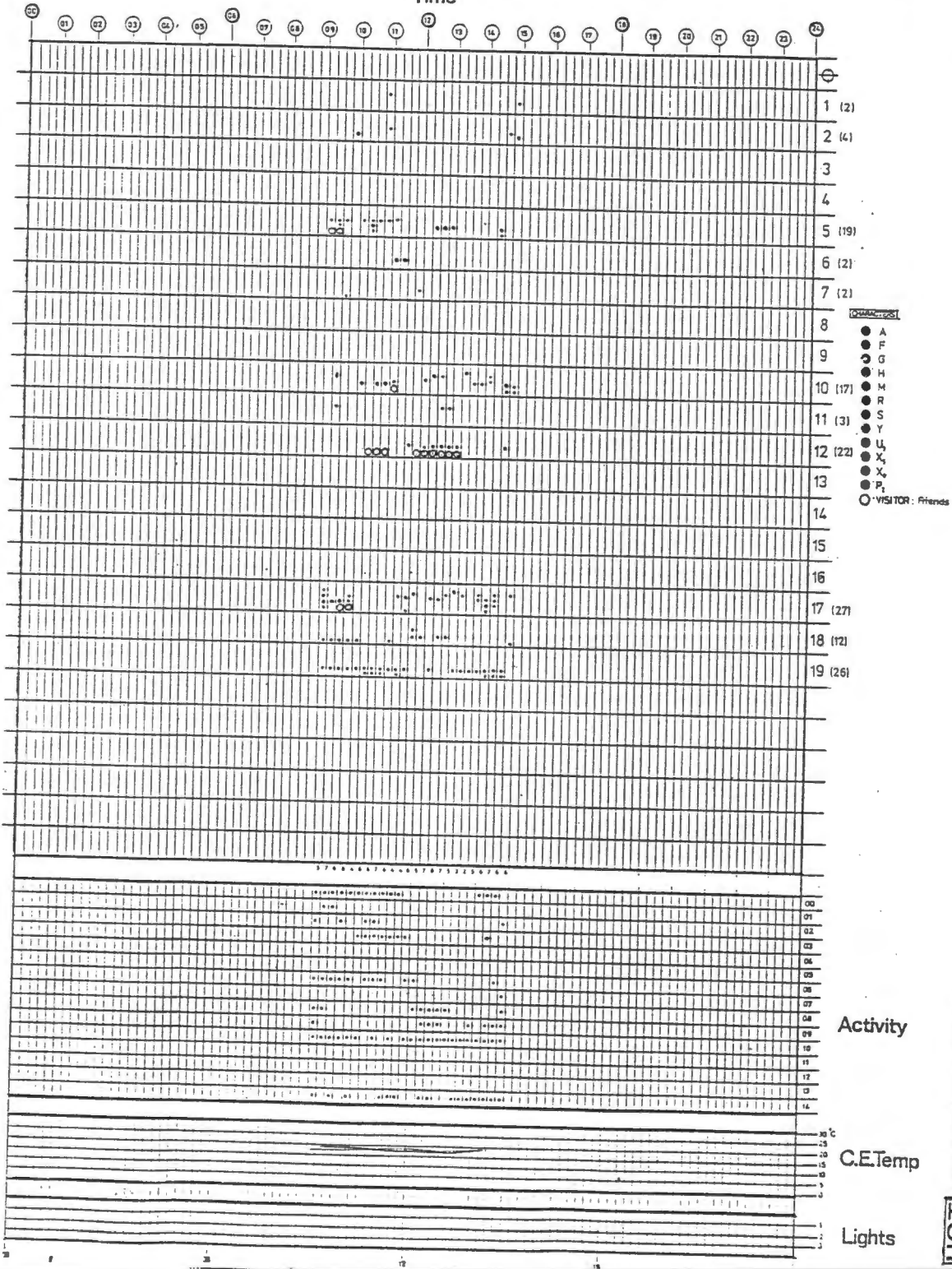
HOUSEHOLD STUDY

House Date Daytype

CROSSROADS 18-12-84 SCHOOL HOLL

CR 4

Time



CR 5

Activity

C.E.Temp

Lights

UCT HOUSEHOLD STUDY
SARU Activity-Space-Time Matrix
Household Date Daytype
URSSR005 16-03-1985 SATURDAY

UJCT
SARU

HOUSEHOLD STUDY

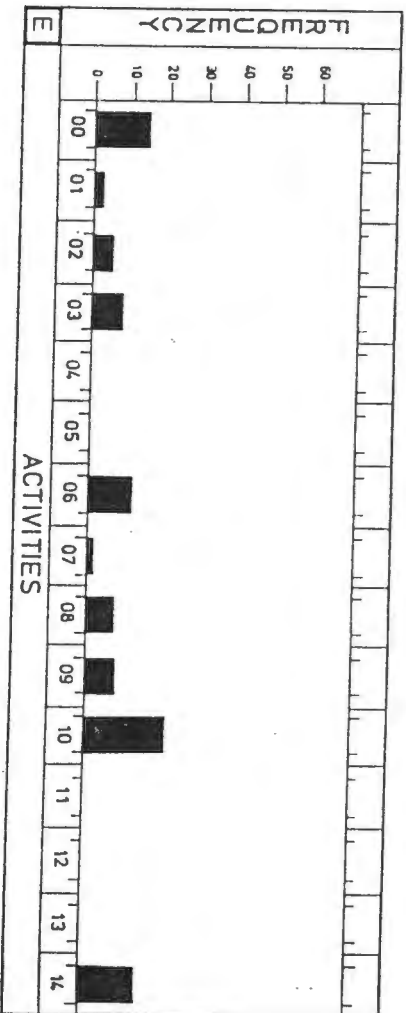
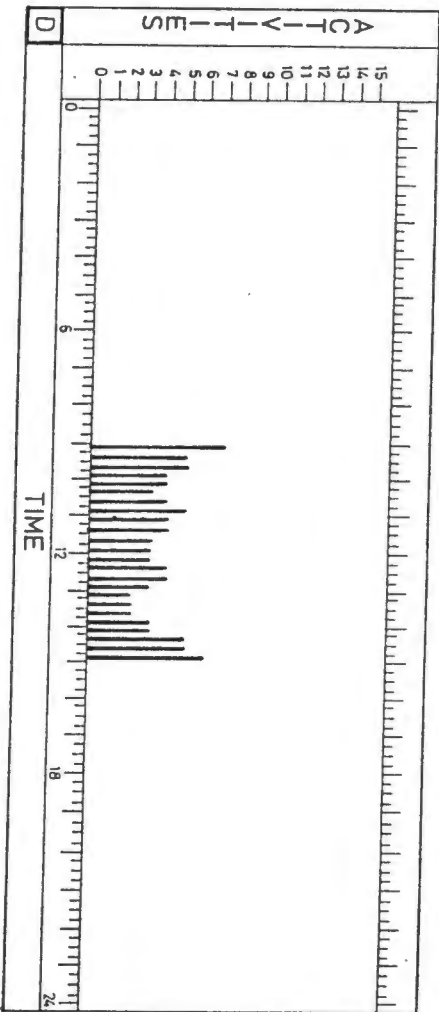
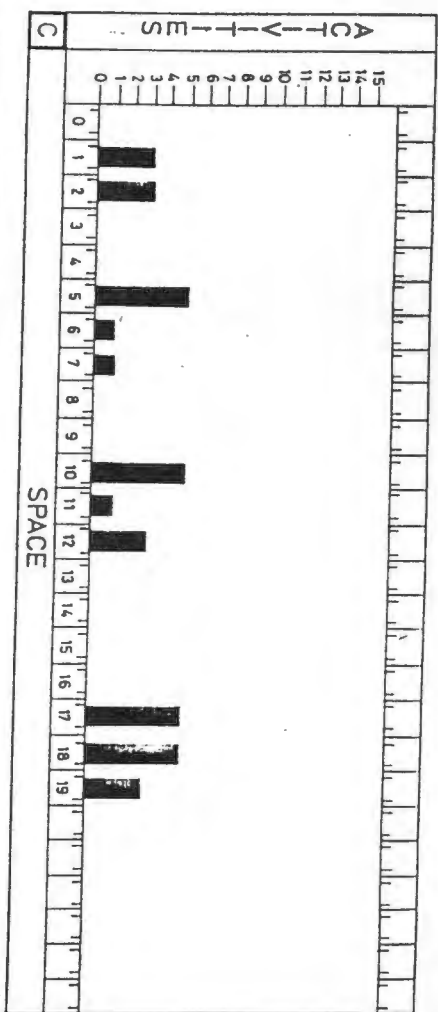
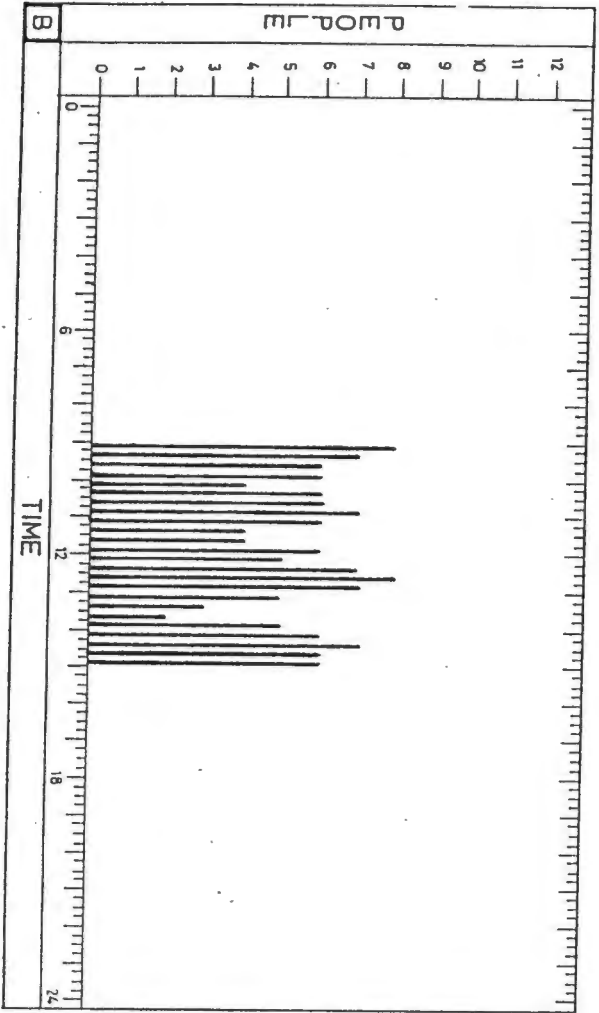
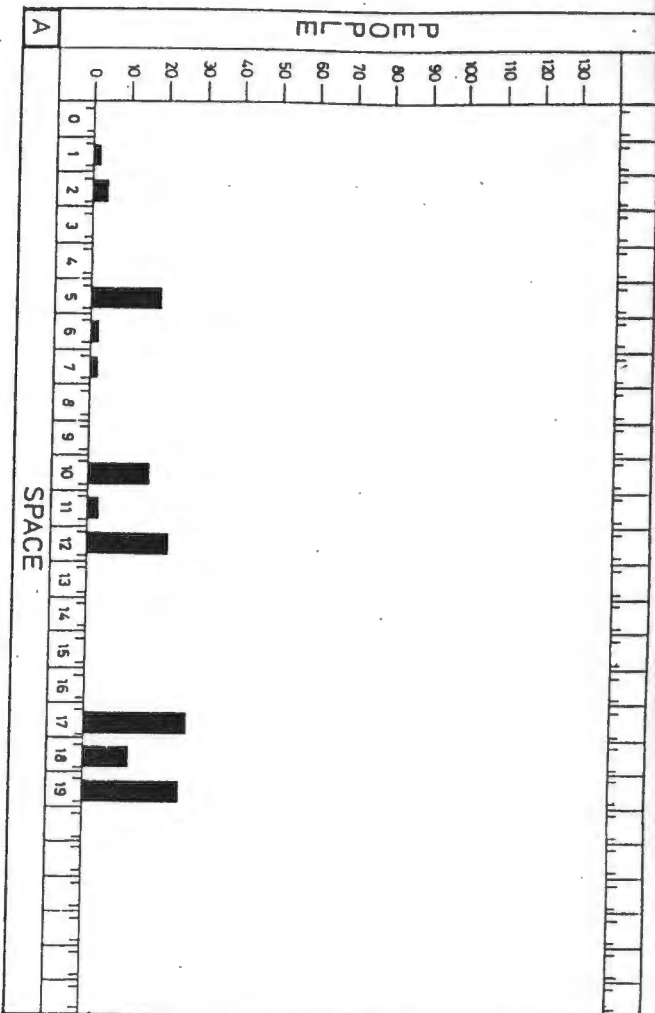
House

Date

Daytype

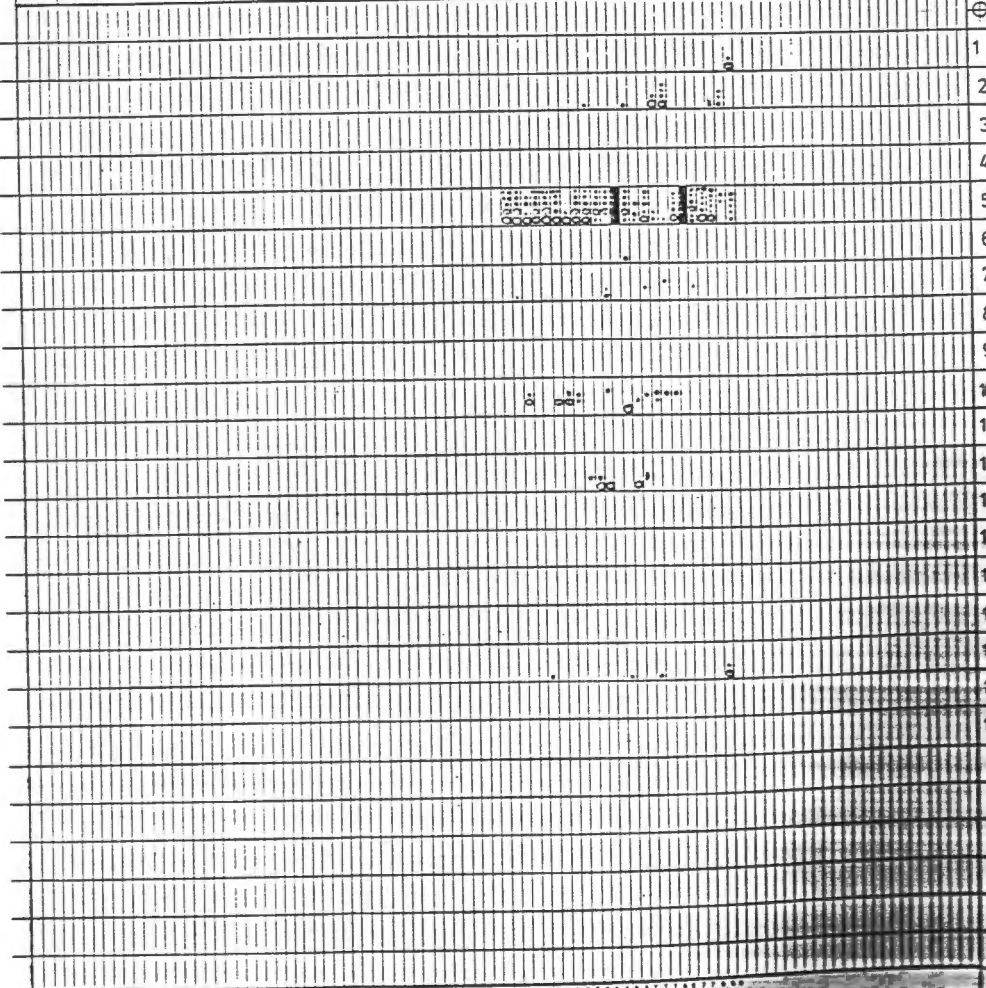
CROSSROADS;16-C3-85 SATURDAY

CR 5



Time

00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24



- B
- E
- H
- L
- M
- P
- Y
- X
- VISITOR: Relatives
- VISITOR: Friends
- VISITOR: Mecca guests

144163
515
●
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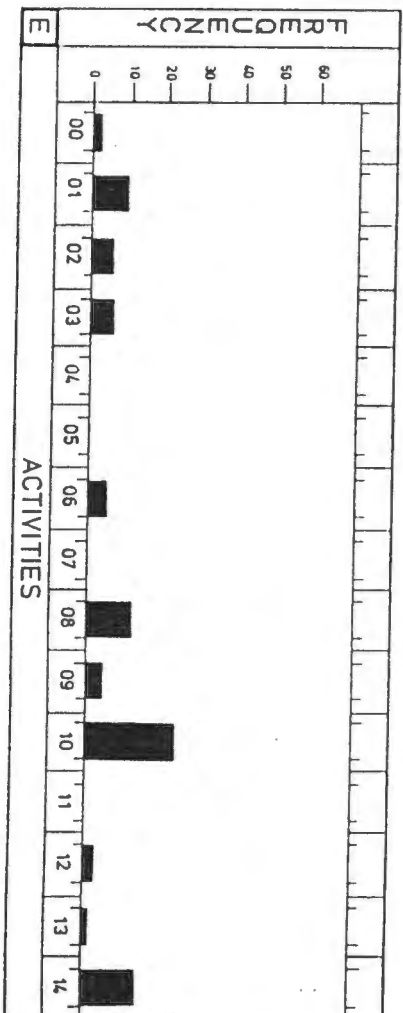
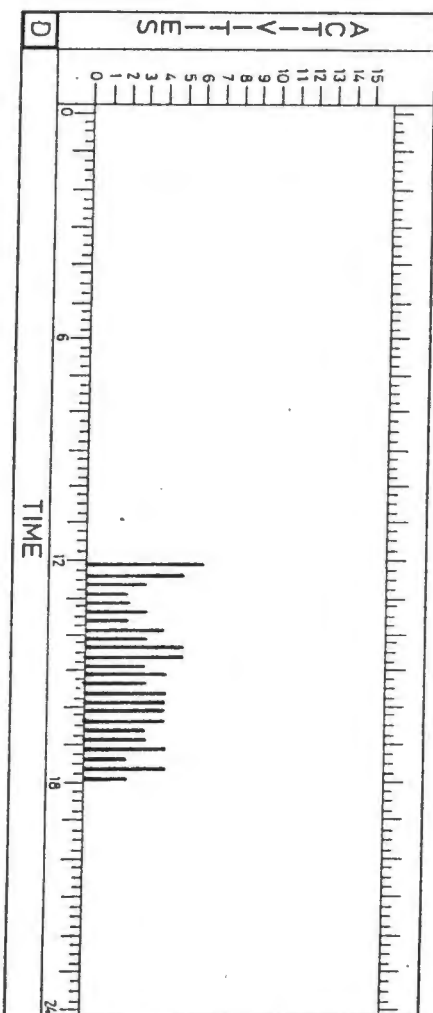
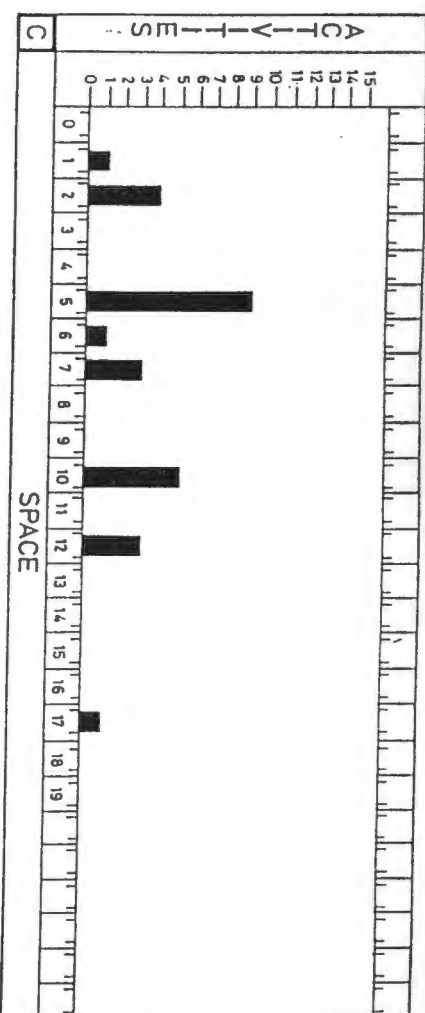
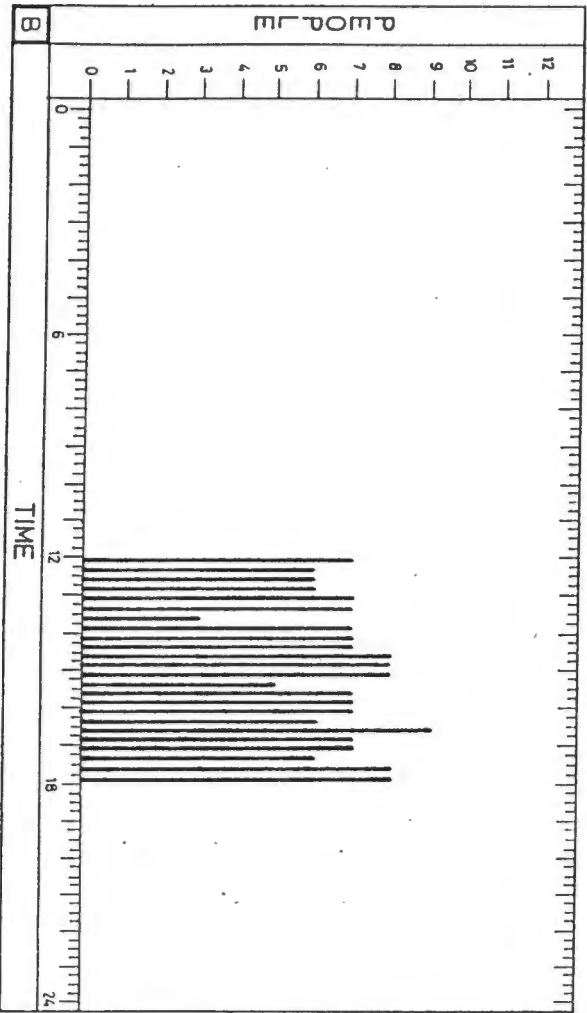
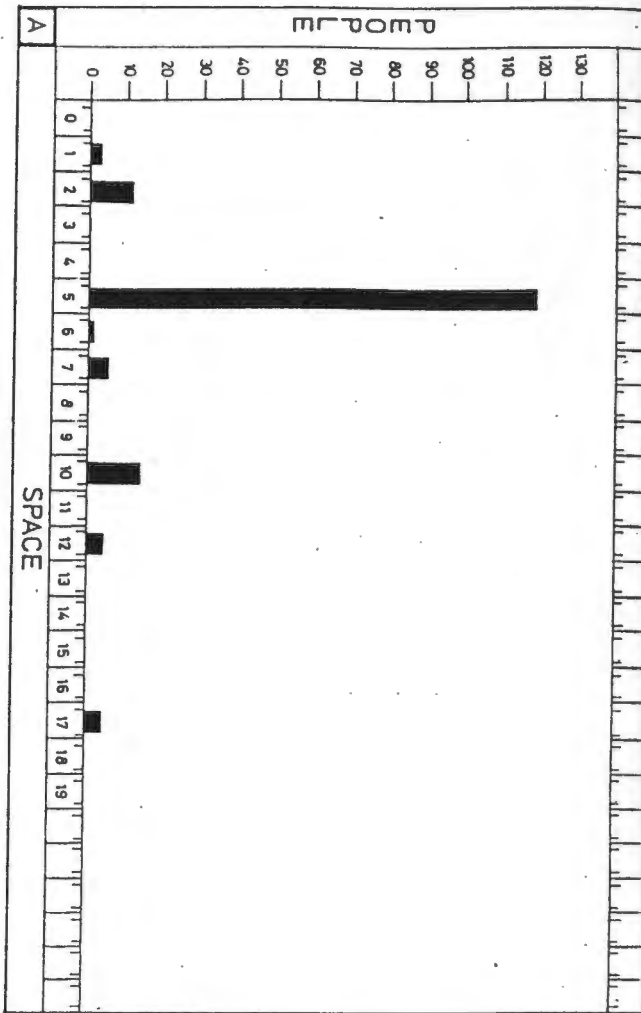
CR 6

Activity

CETemp

Lights

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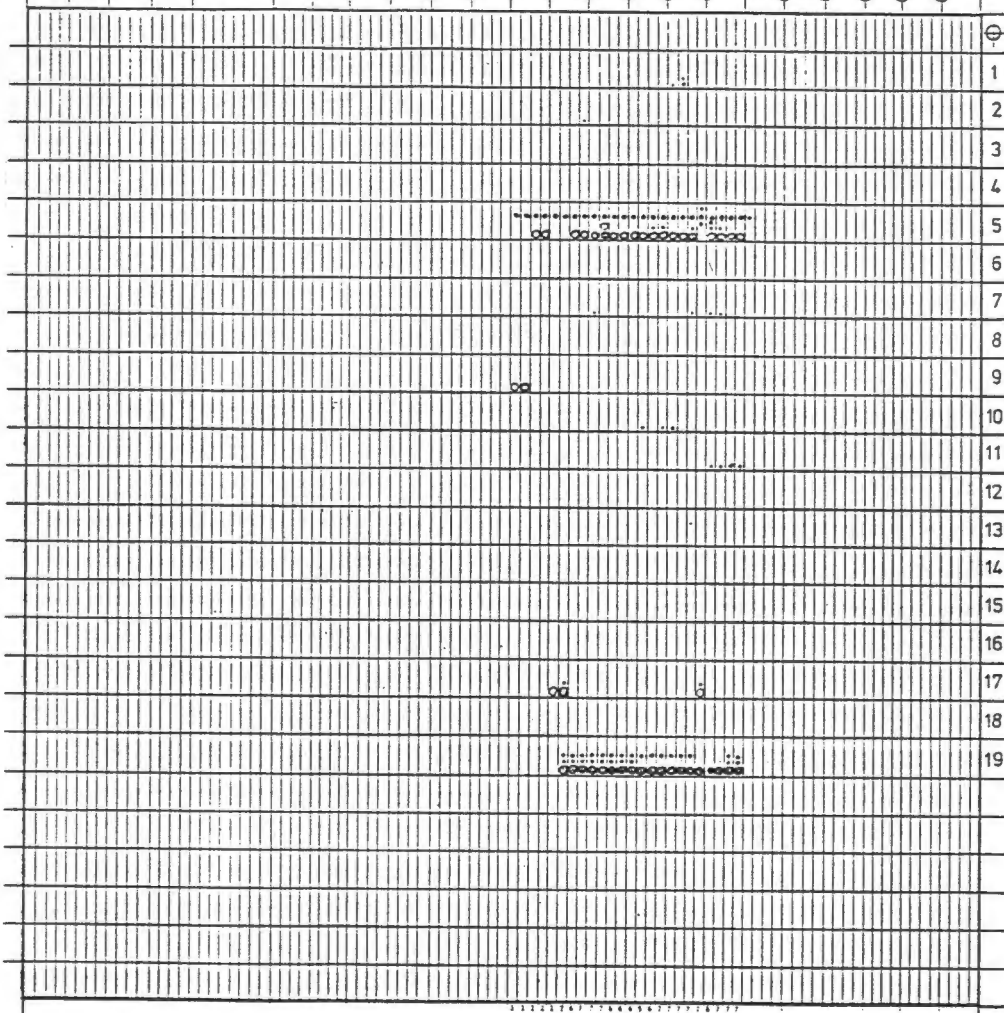


UCT HOUSEHOLD STUDY
SARU
 House Date Daytype
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CR 6

Time

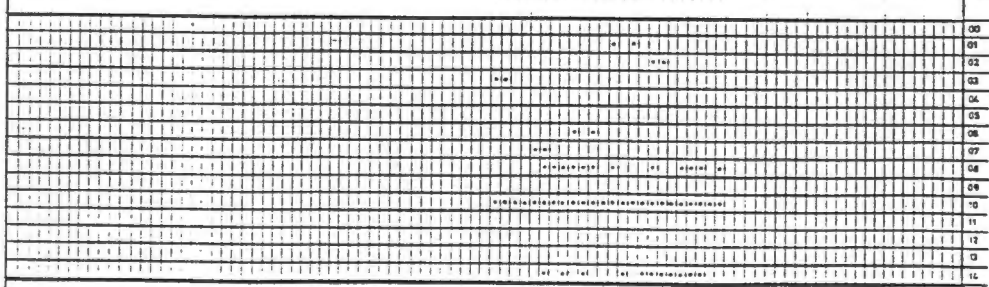
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 7 (4)
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 19 (6)

- E
- H
- M
- Y
- Z
- X_i
- VISITOR - Relatives
- VISITOR - Friends
- VISITOR - Other (Hawkers, etc)

CR 7



Activity

C.E.Temp

Lights

UCT HOUSEHOLD STUDY
 SARI Activity-Space-Time Matrix

Household Date Daytype
 CROSSROADS 1.08.1988 WEEKDAY

5 pages

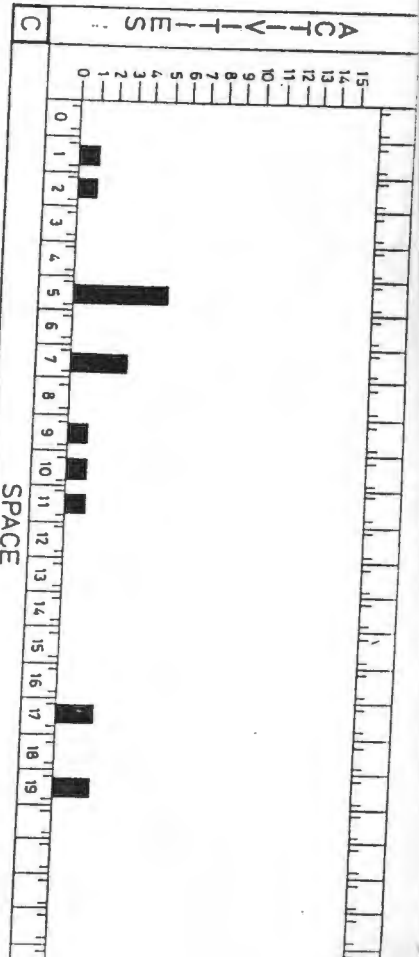
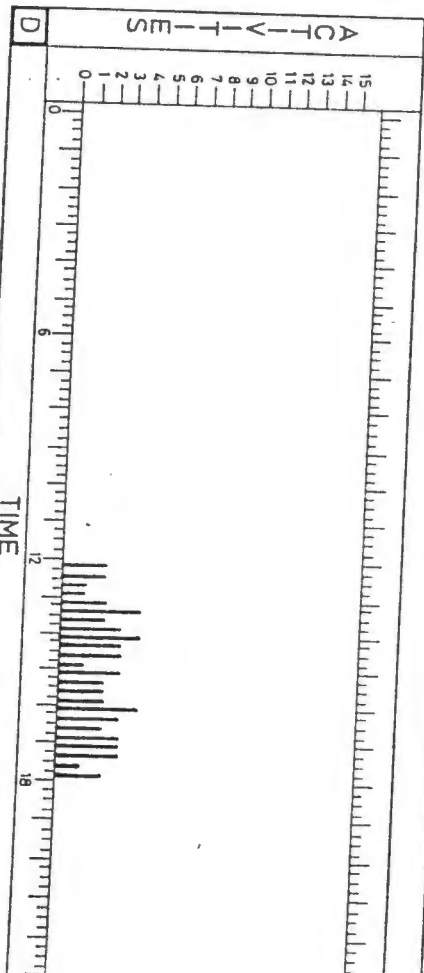
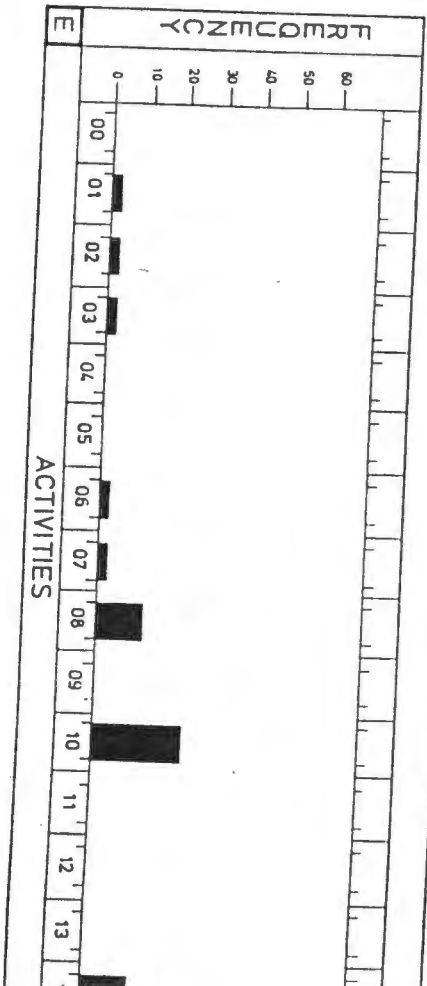
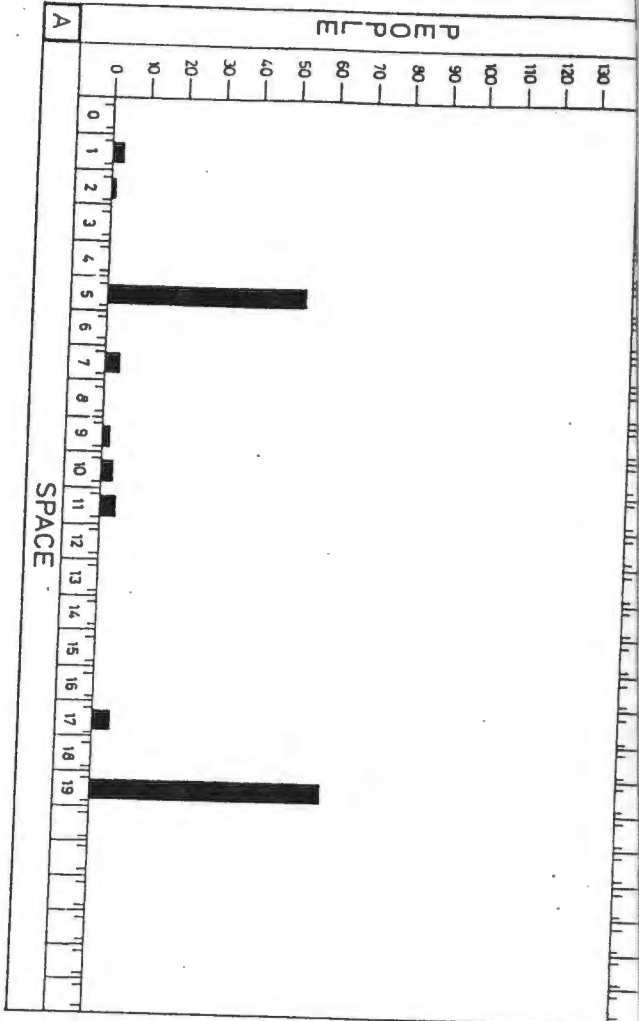
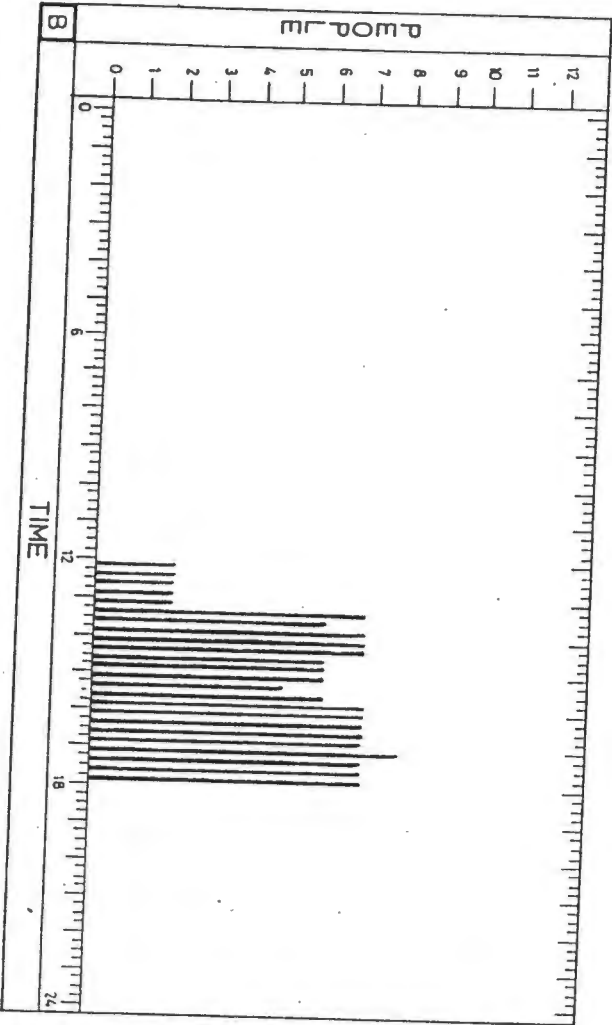
UCT
SARU

HOUSEHOLD STUDY

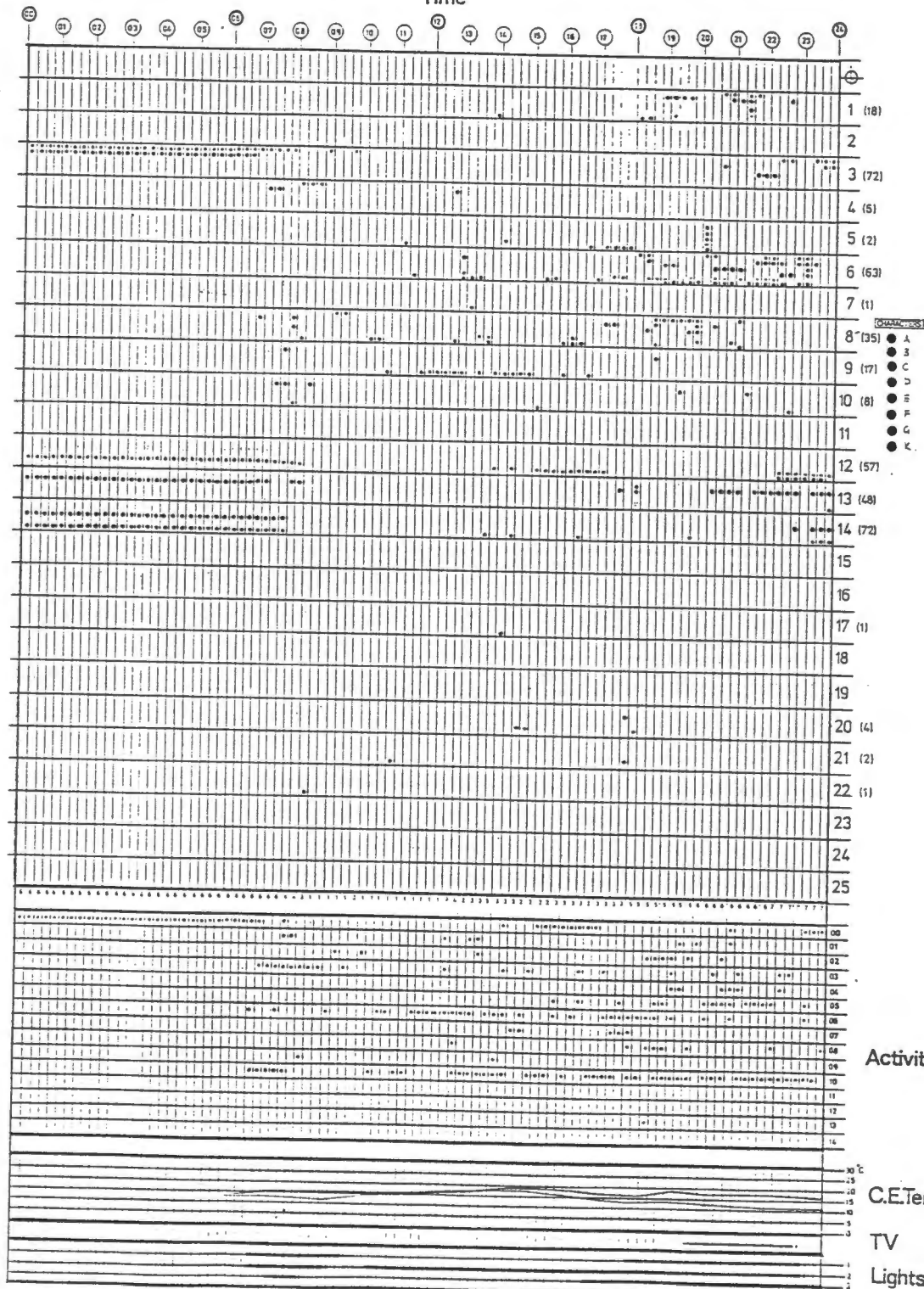
House Date Daytype

CROSSROADS102-08-85 WEEKDAY

CR 7



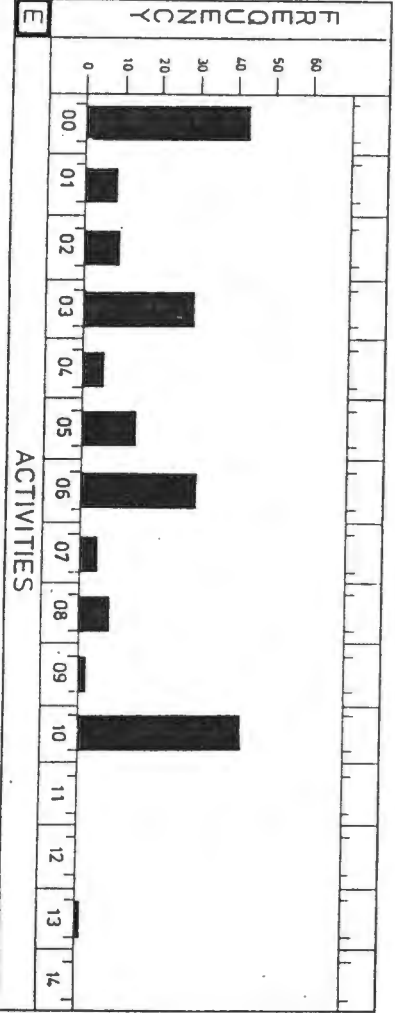
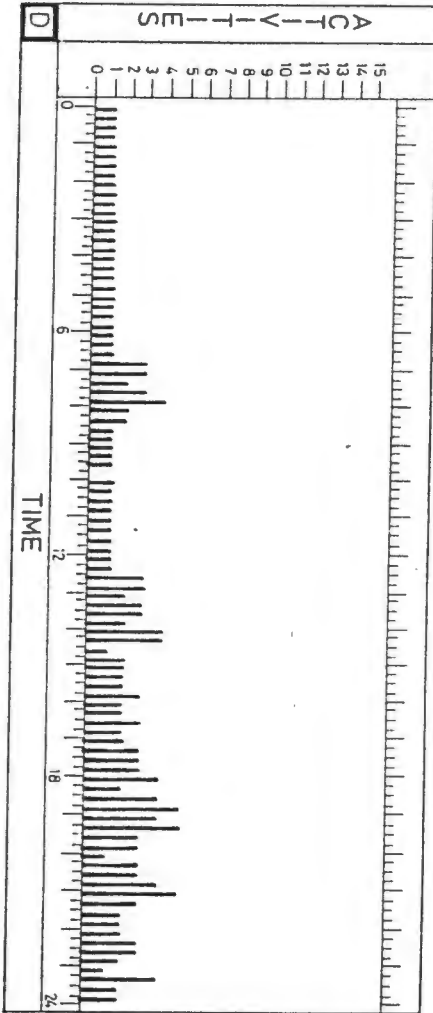
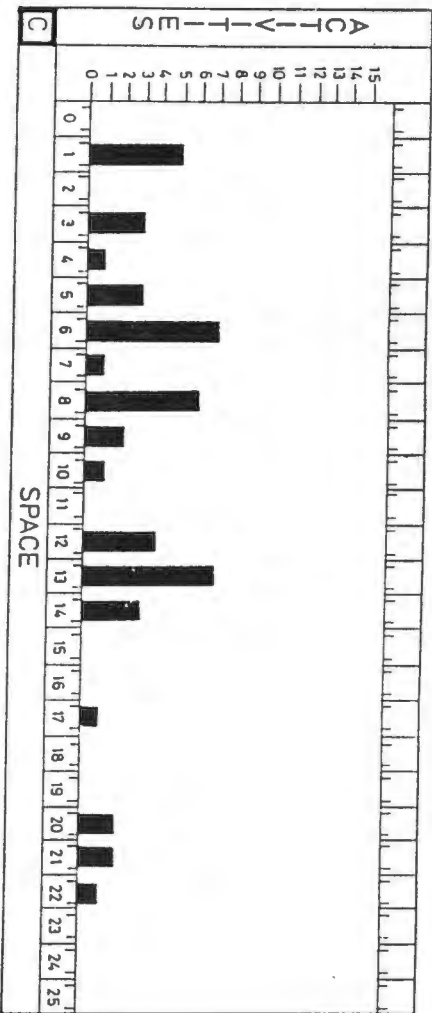
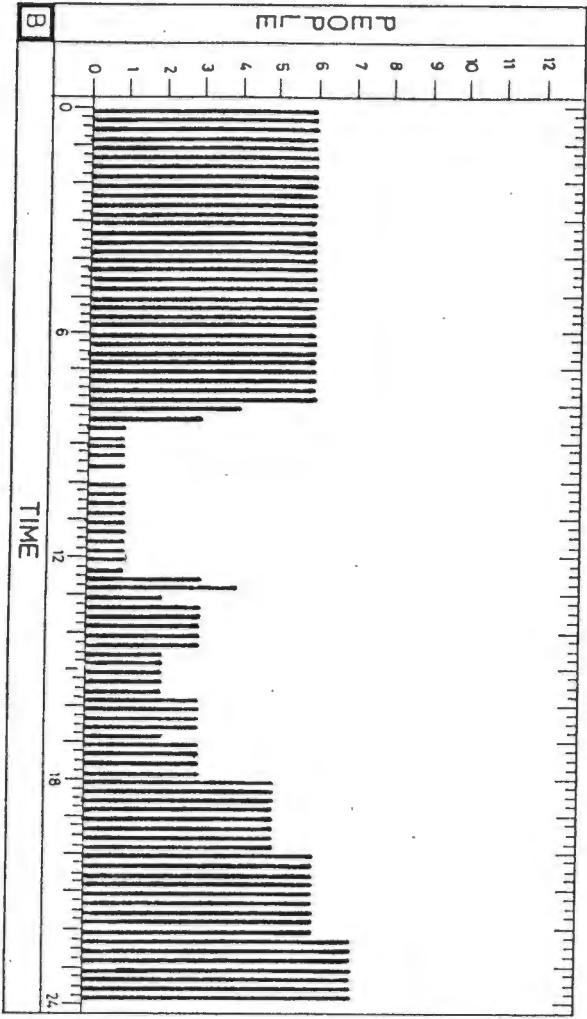
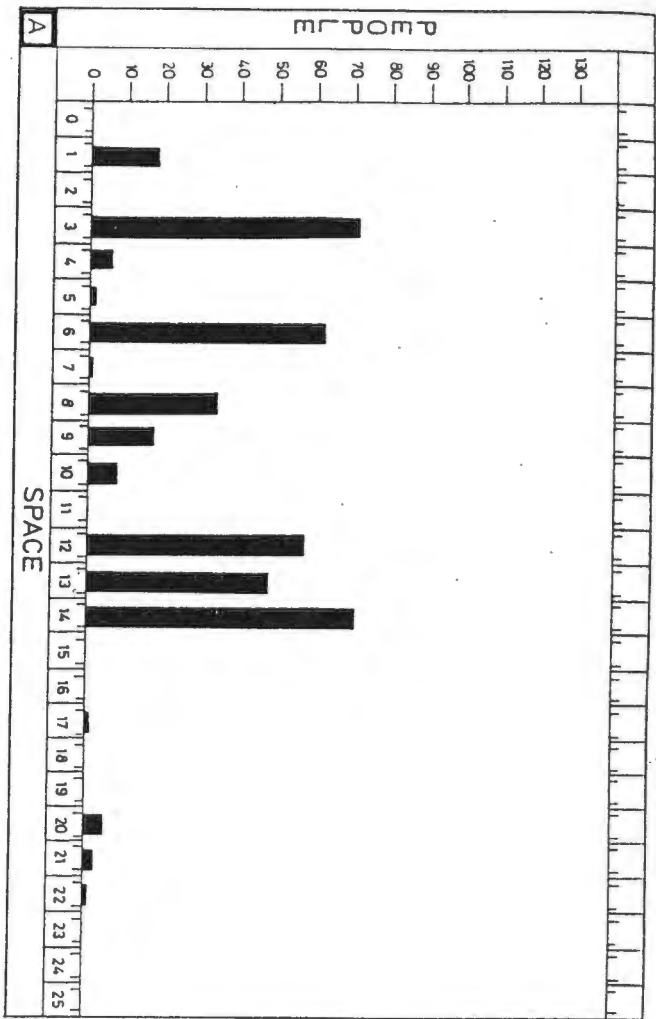
Time



CY1

HOUSEHOLD STUDY
 Activity-Space-Time Matrix
 Household Date Daytype
 29.8.84 WEEKDAY

Activity
 C.E. Temp
 TV
 Lights

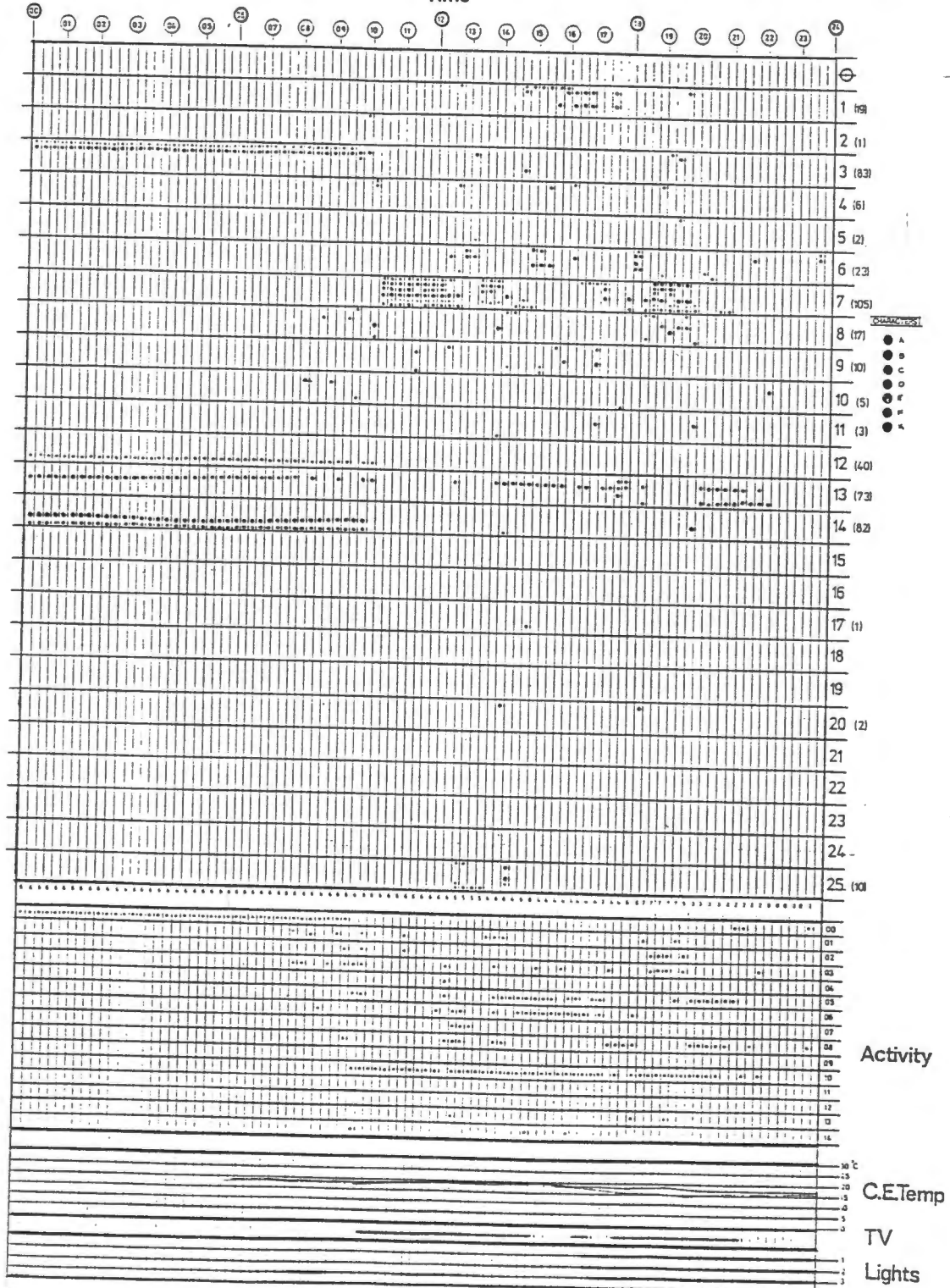


UCT HOUSEHOLD STUDY
SARU

House Date Daytype
 CYPRESS 29-05-84 WEEKDAY

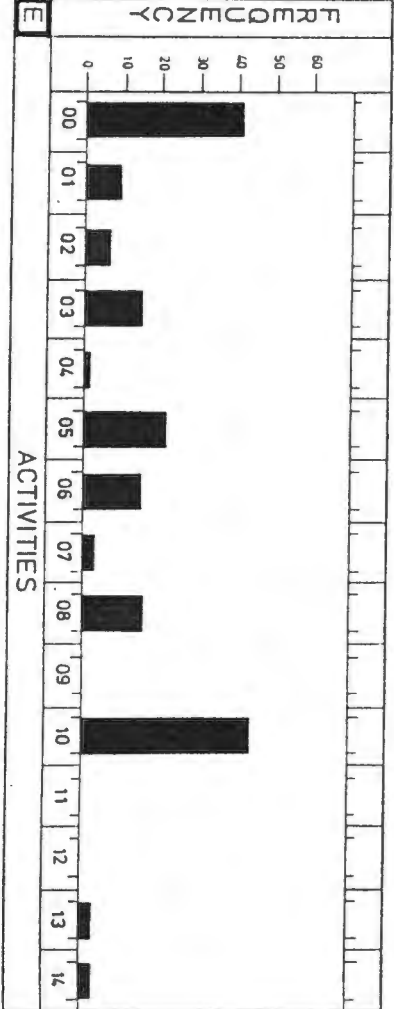
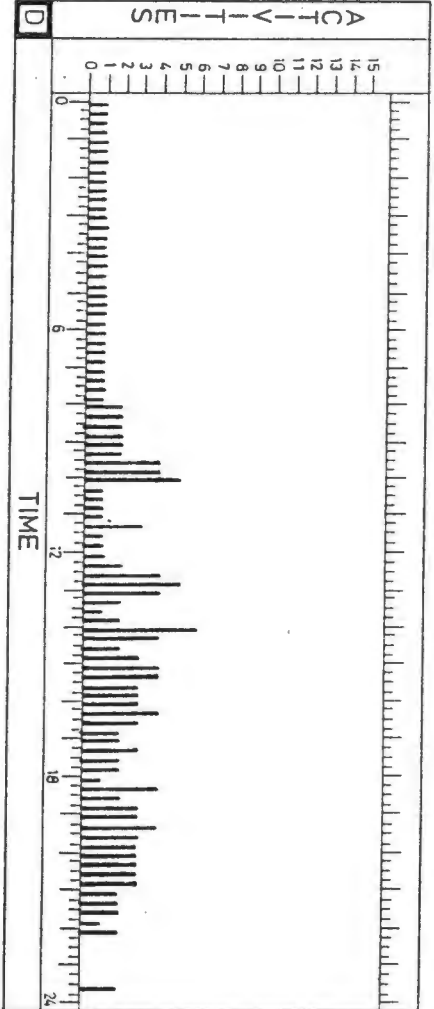
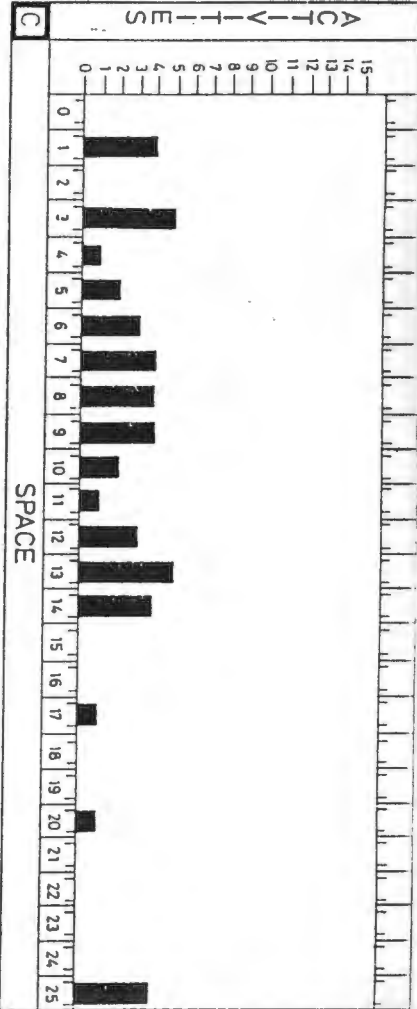
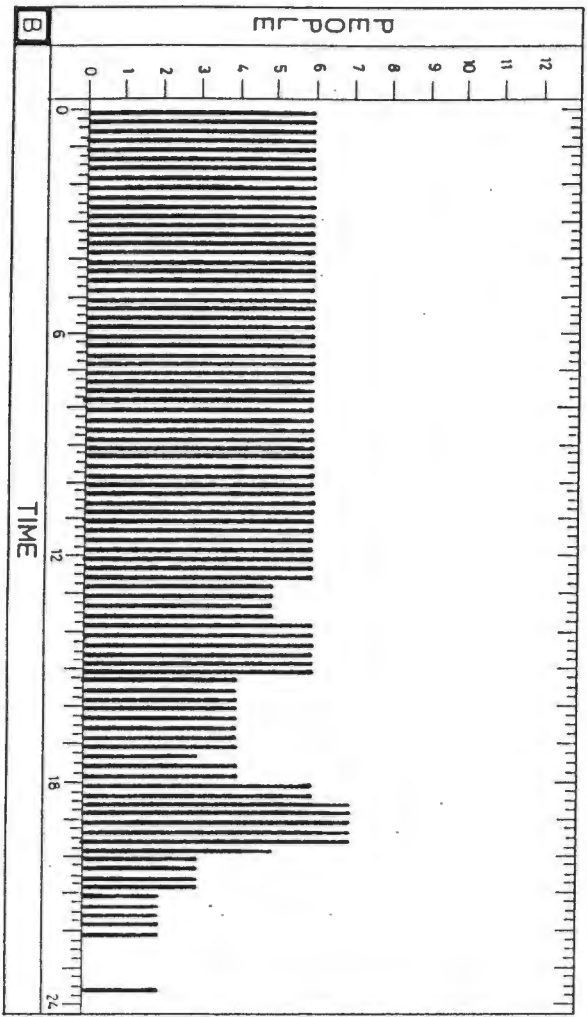
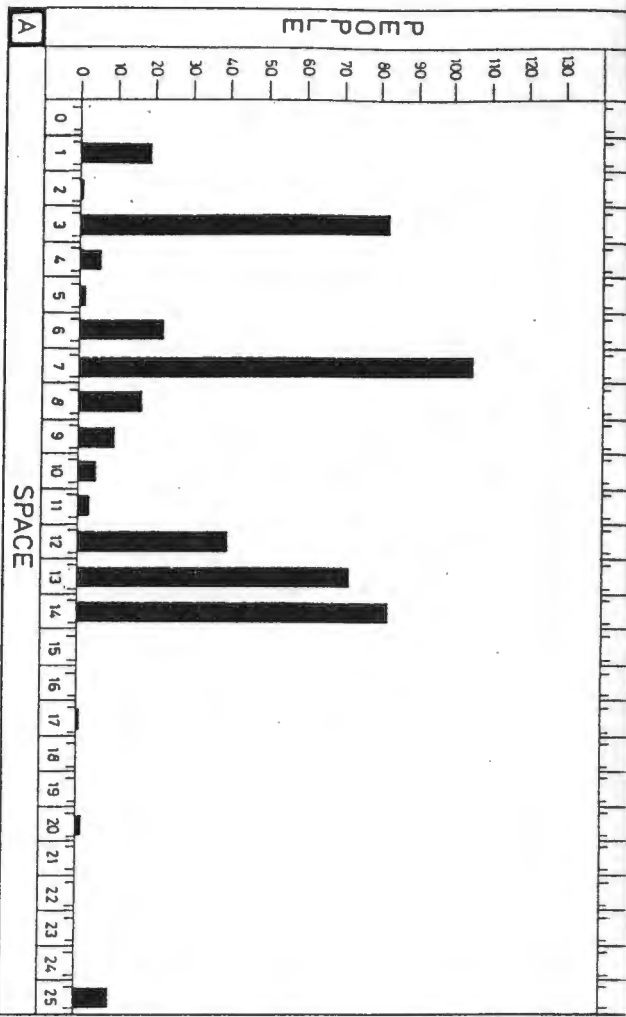
CY 1

Time



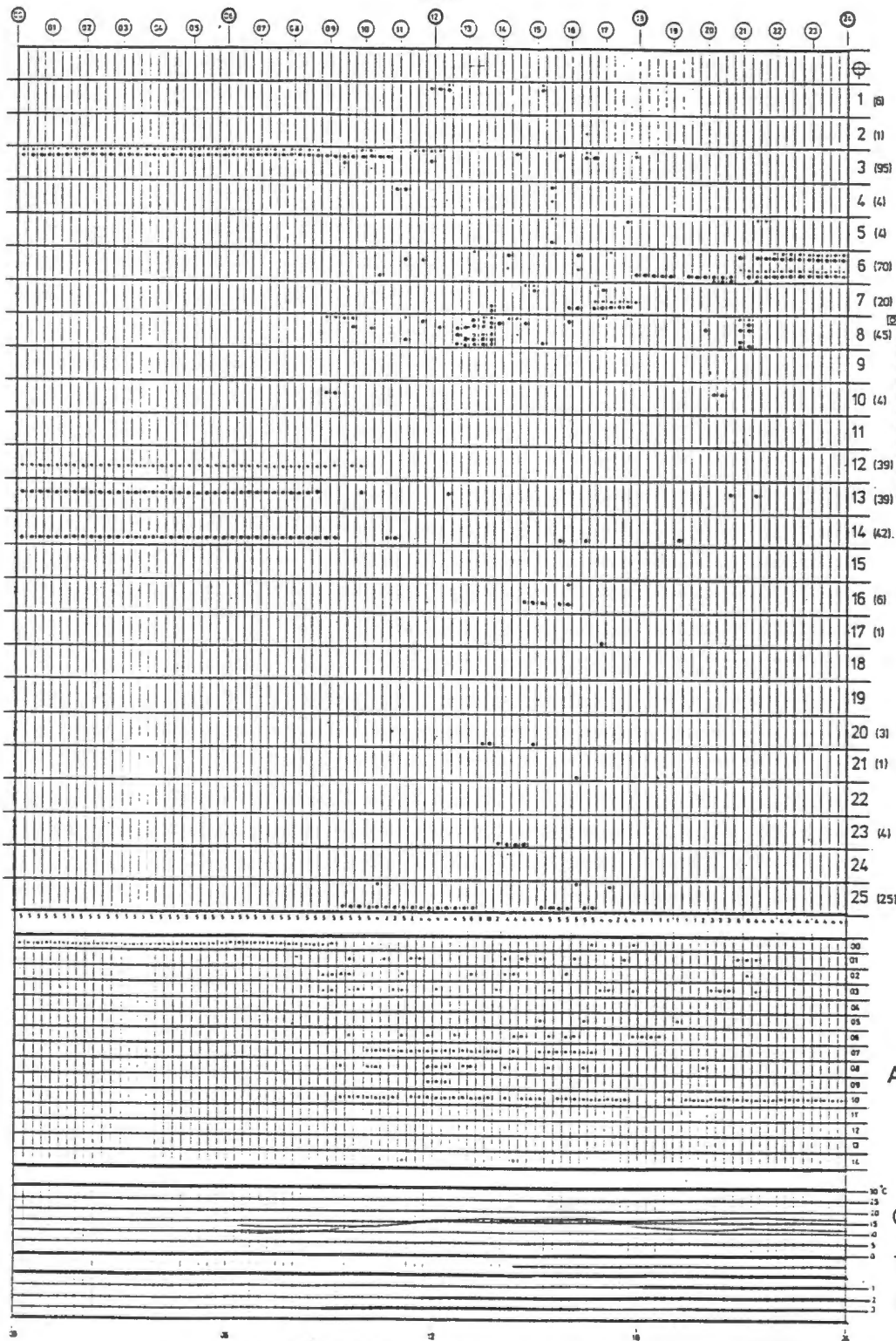
CY 2

UCT HOUSEHOLD STUDY
SARU Activity-Space-Time Matrix
 Household Date Daytype
 1-6-1981 Private 10:00



UCT HOUSEHOLD STUDY
SARU
 House Date Daytype
 CYPRESS 01-06-84 PUBLIC HOL.
 CY 2

Time



- A
- B
- C
- D
- E
- F
- G
- H
- I
- J
- K
- L
- M
- N
- O
- P
- Q
- R
- S
- T
- U

CY 3

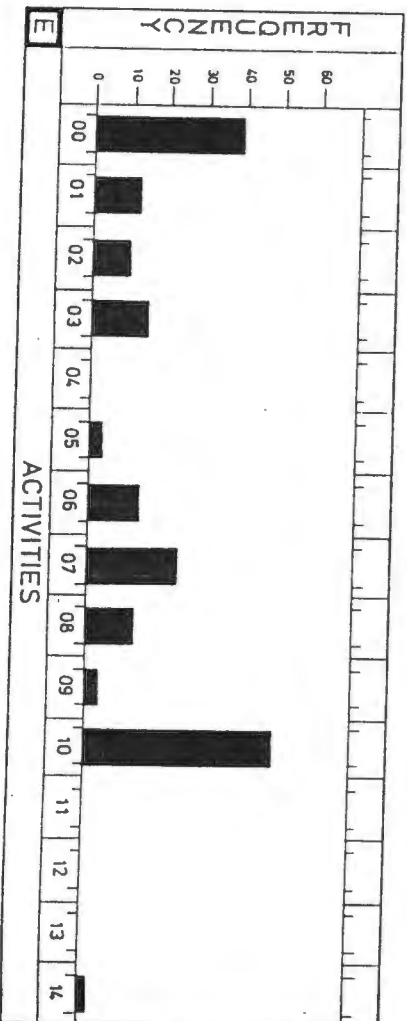
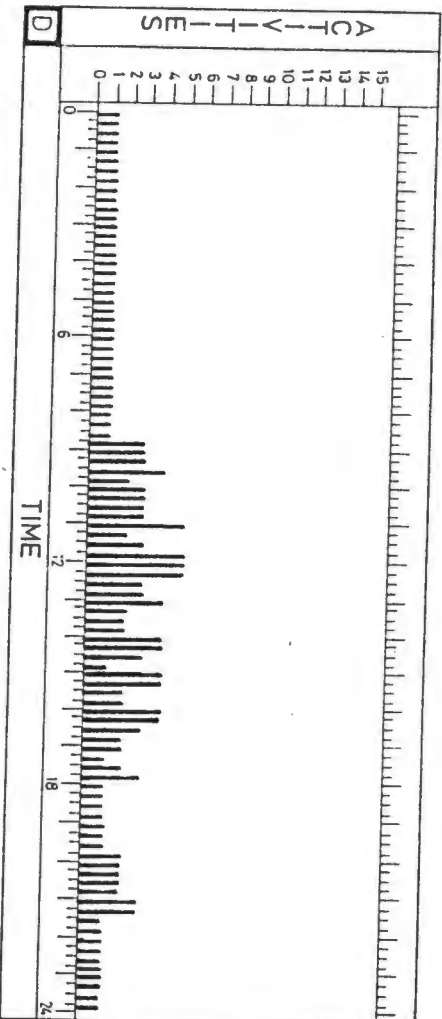
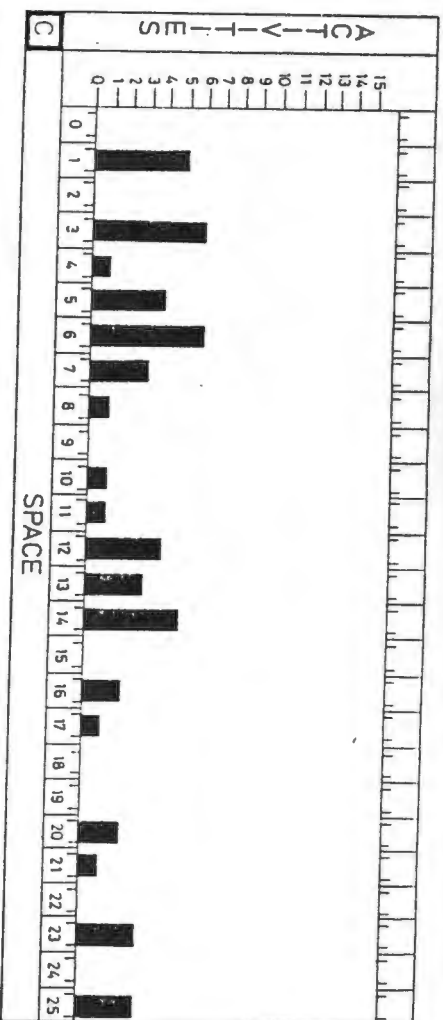
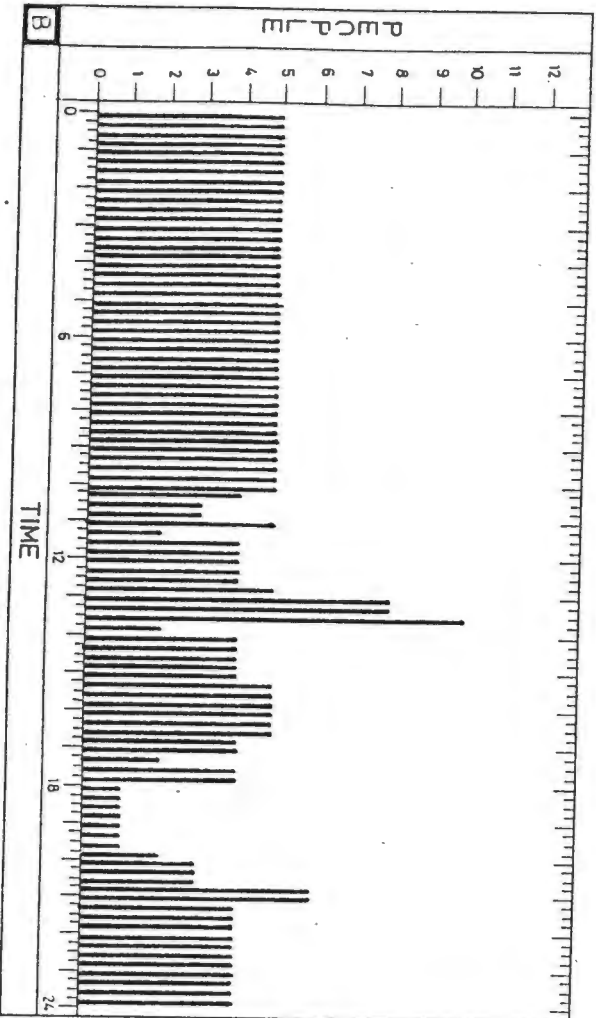
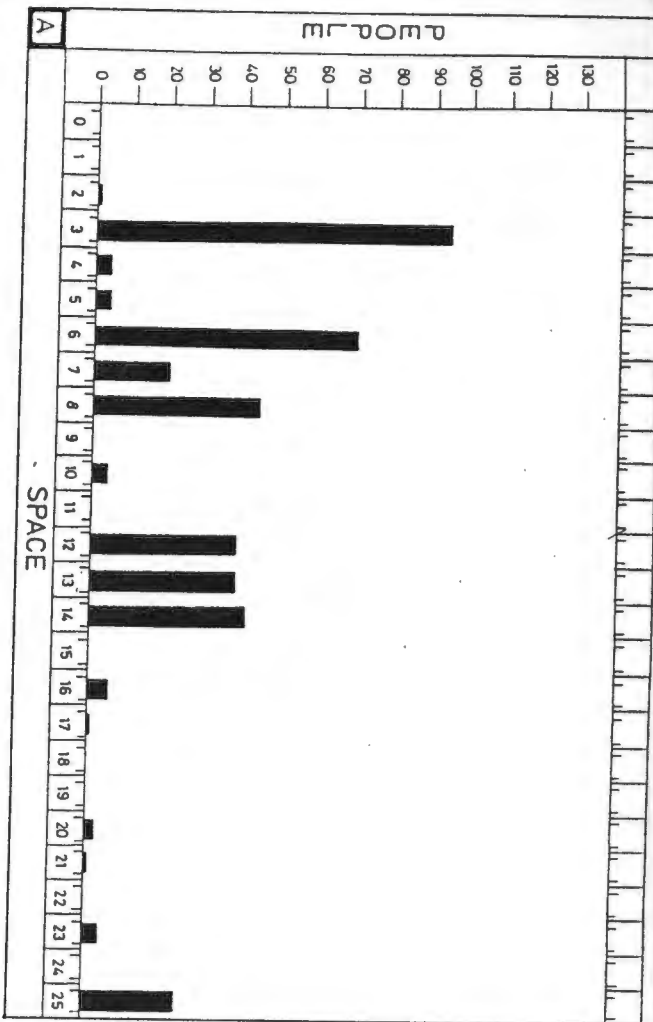
UCT HOUSEHOLD STUDY
SARU Activity-Space-Time Matrix
Household Date Daytype
11/8/84 SATURDAY

Activity

C.E.Temp

TV

Lights



UCT
SARU

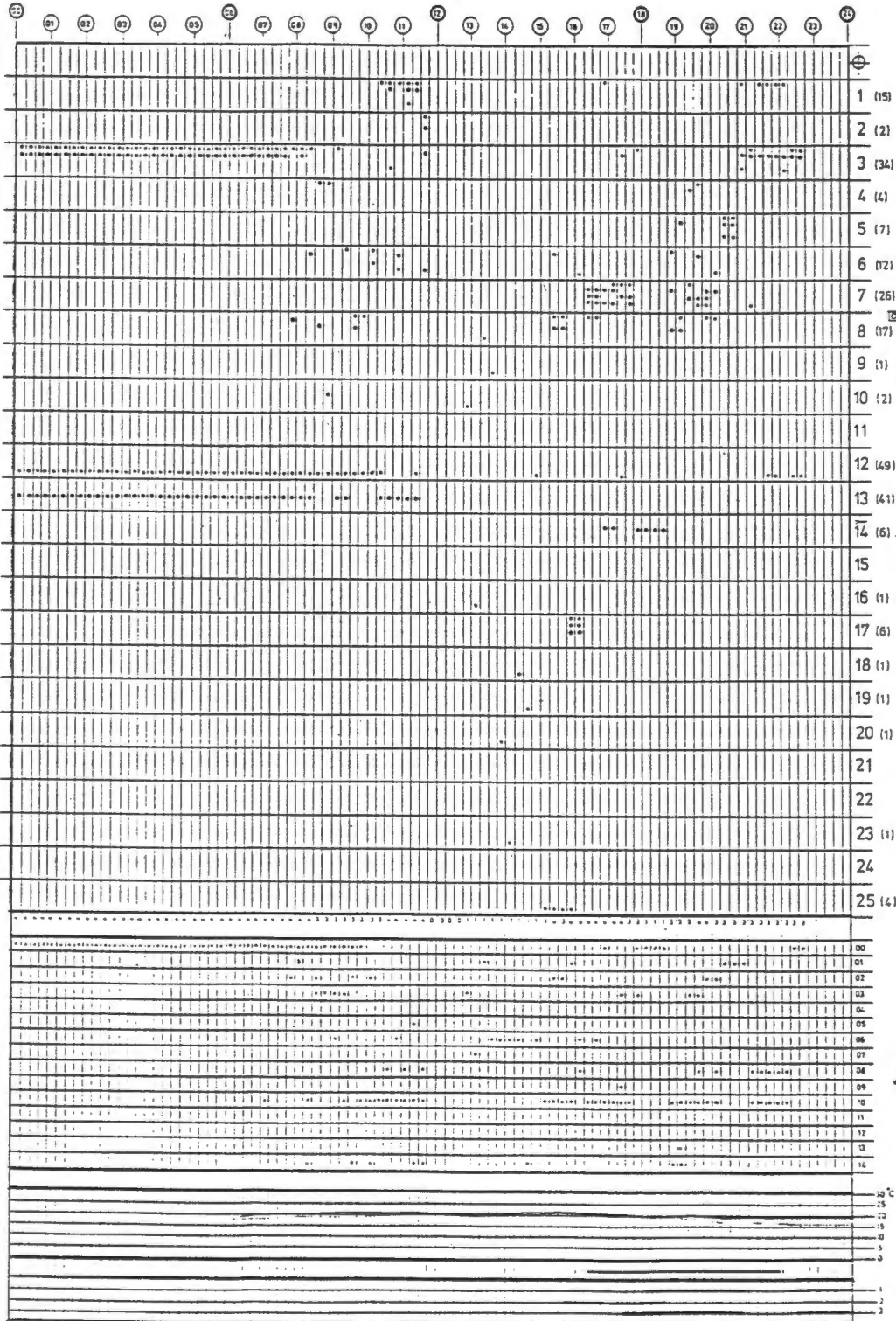
HOUSEHOLD STUDY

House Date Daytype

CYPRESS 11-08-84 SATURDAY

CY 3

Time



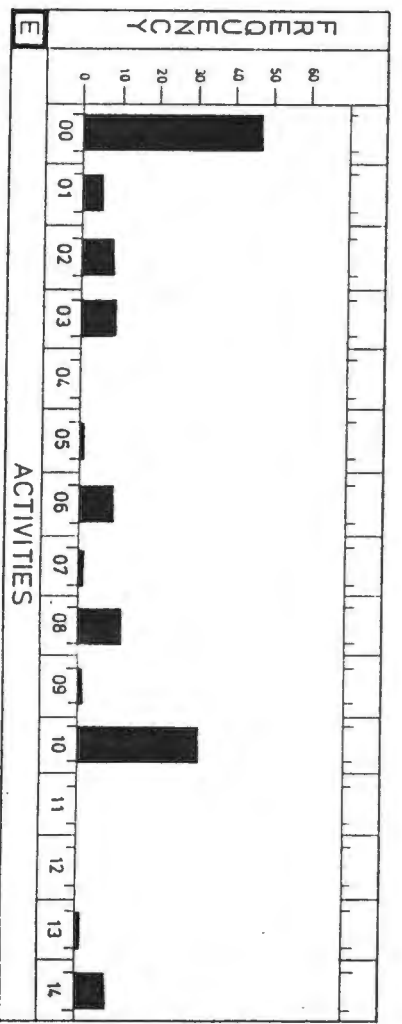
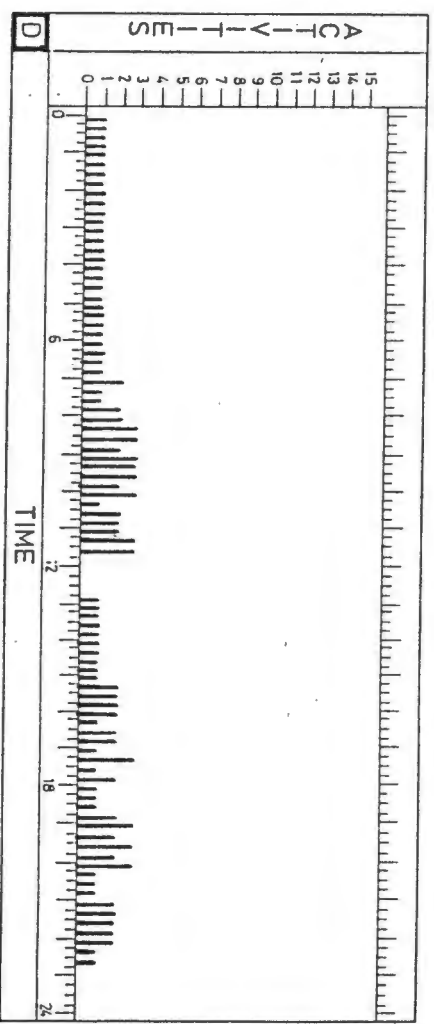
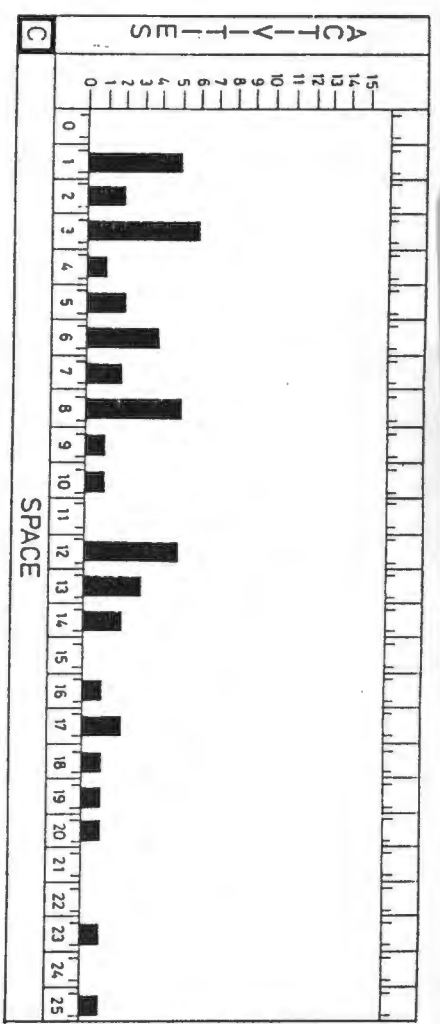
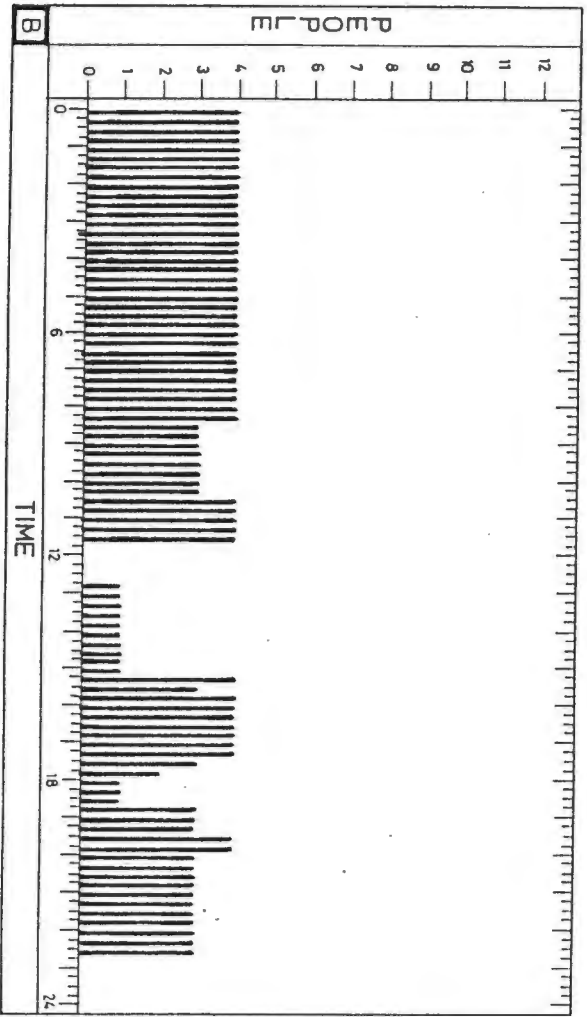
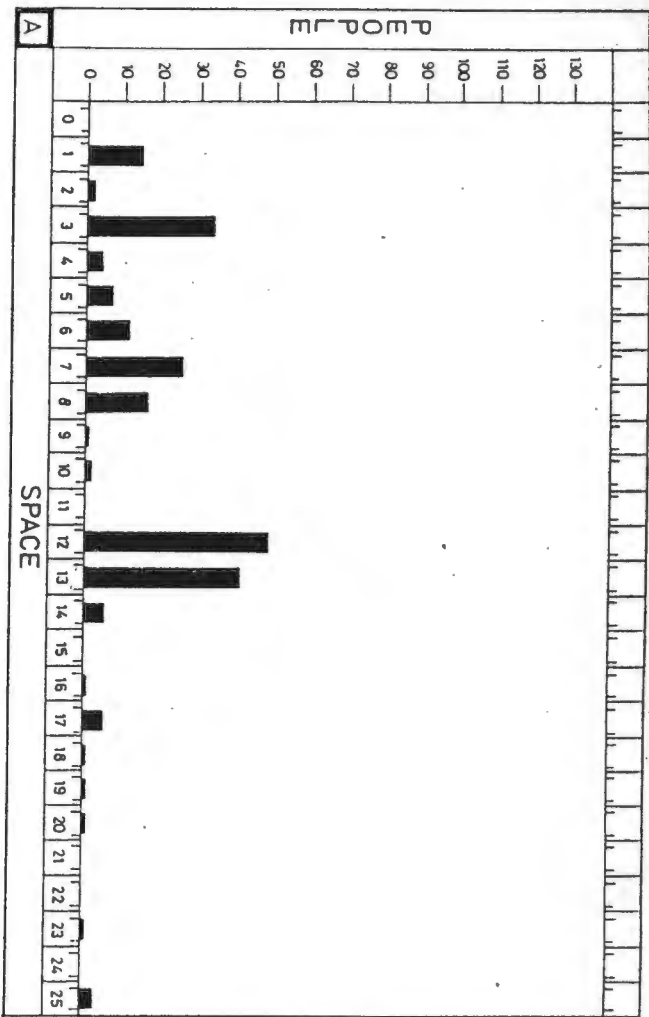
Activity

C.E.Temp

TV
Lights

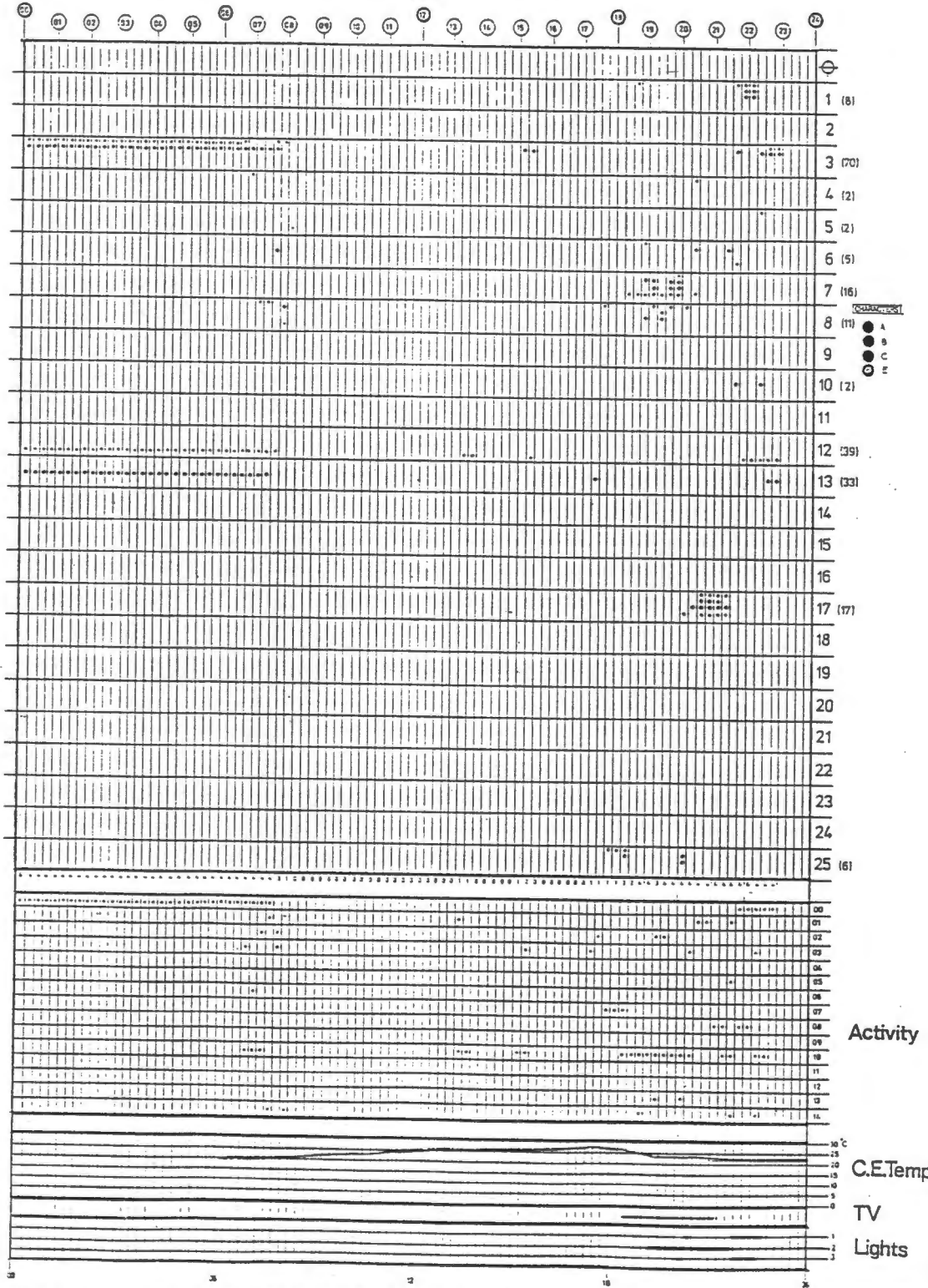
CY 4

UCT HOUSEHOLD STUDY
SARU Activity-Space-Time Matrix
Household Date Daytype
CIRASS 10-12-1988 SC.MOR. WOLBY
1-2-2



UCT HOUSEHOLD STUDY
SARU
 House Date Daytype
 CYPRESS 10-12-84 SCHOOL-HOL.
CY 4

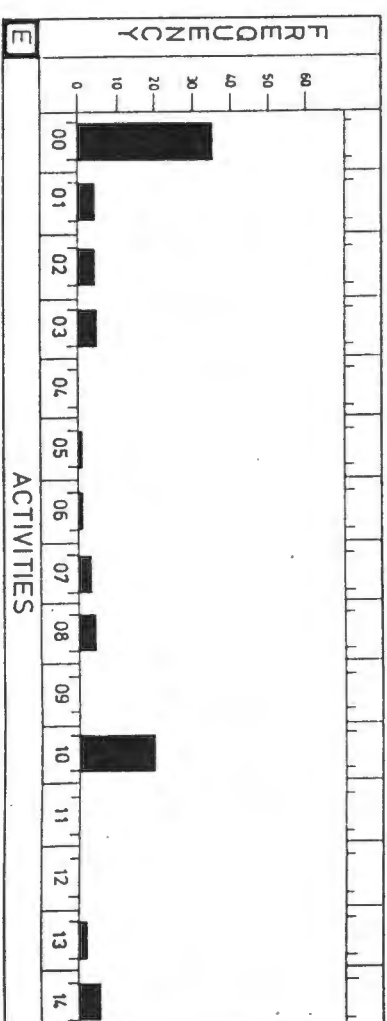
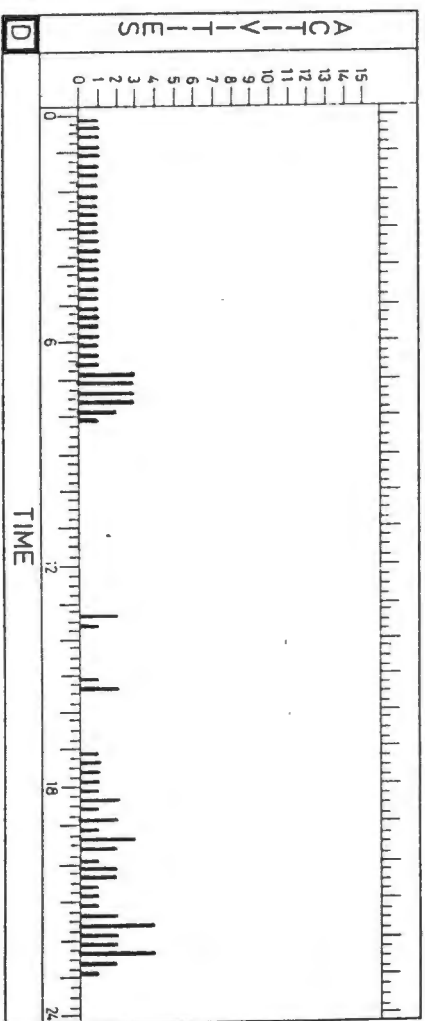
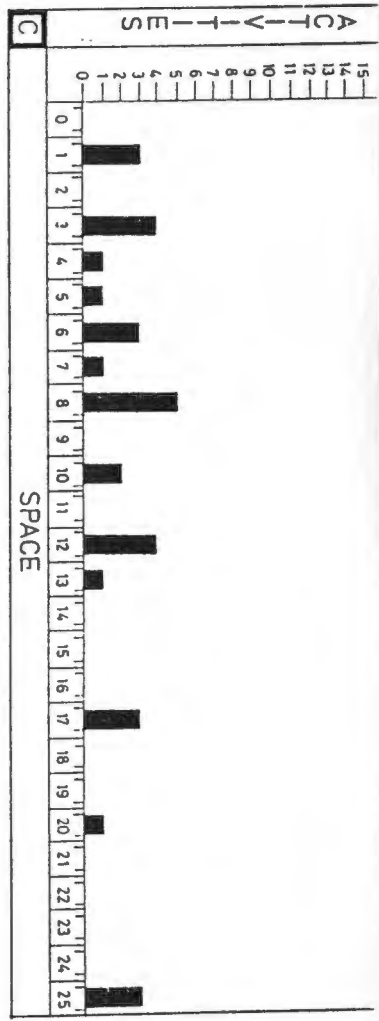
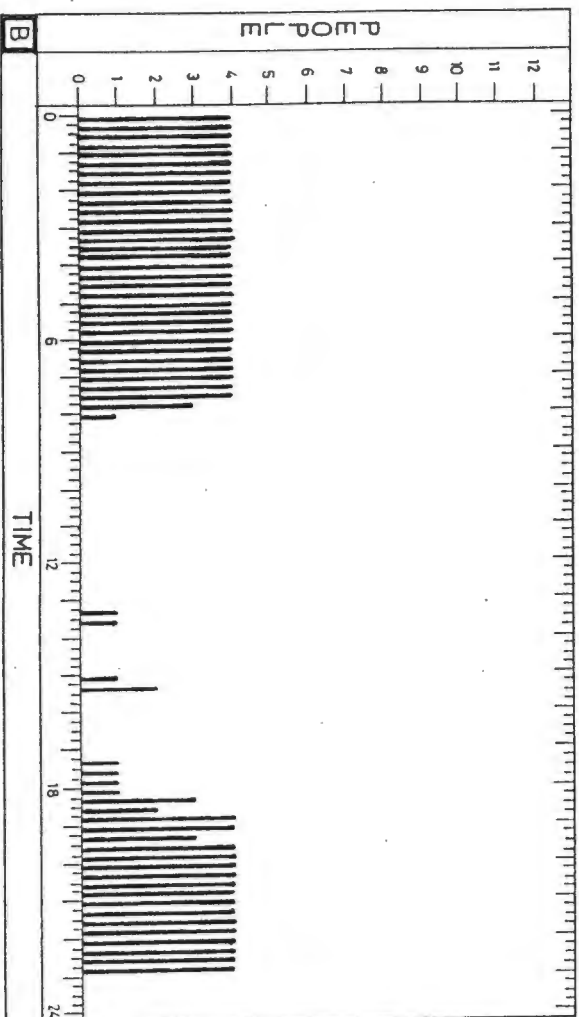
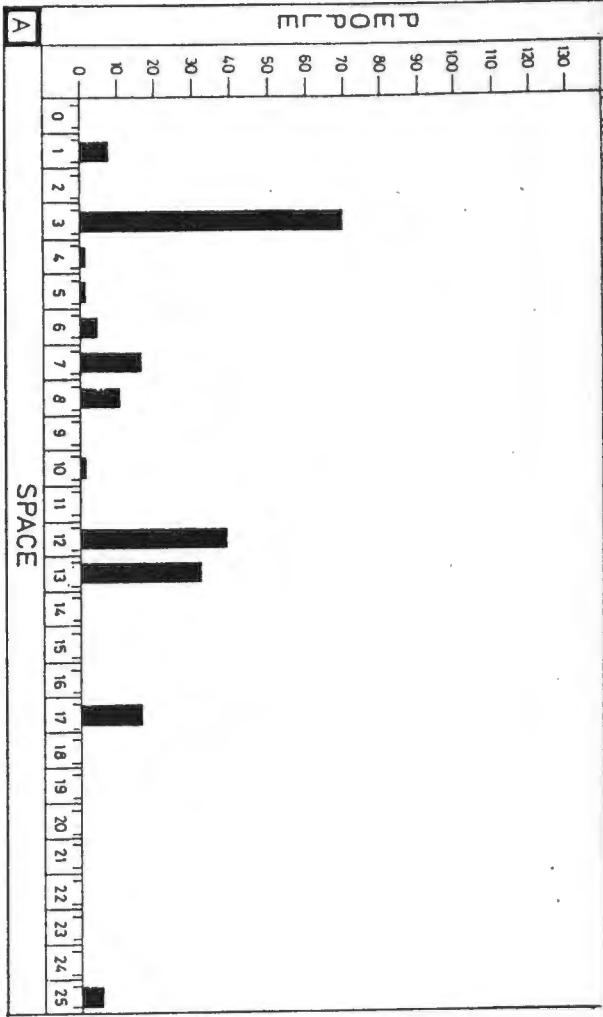
Time



CY 5

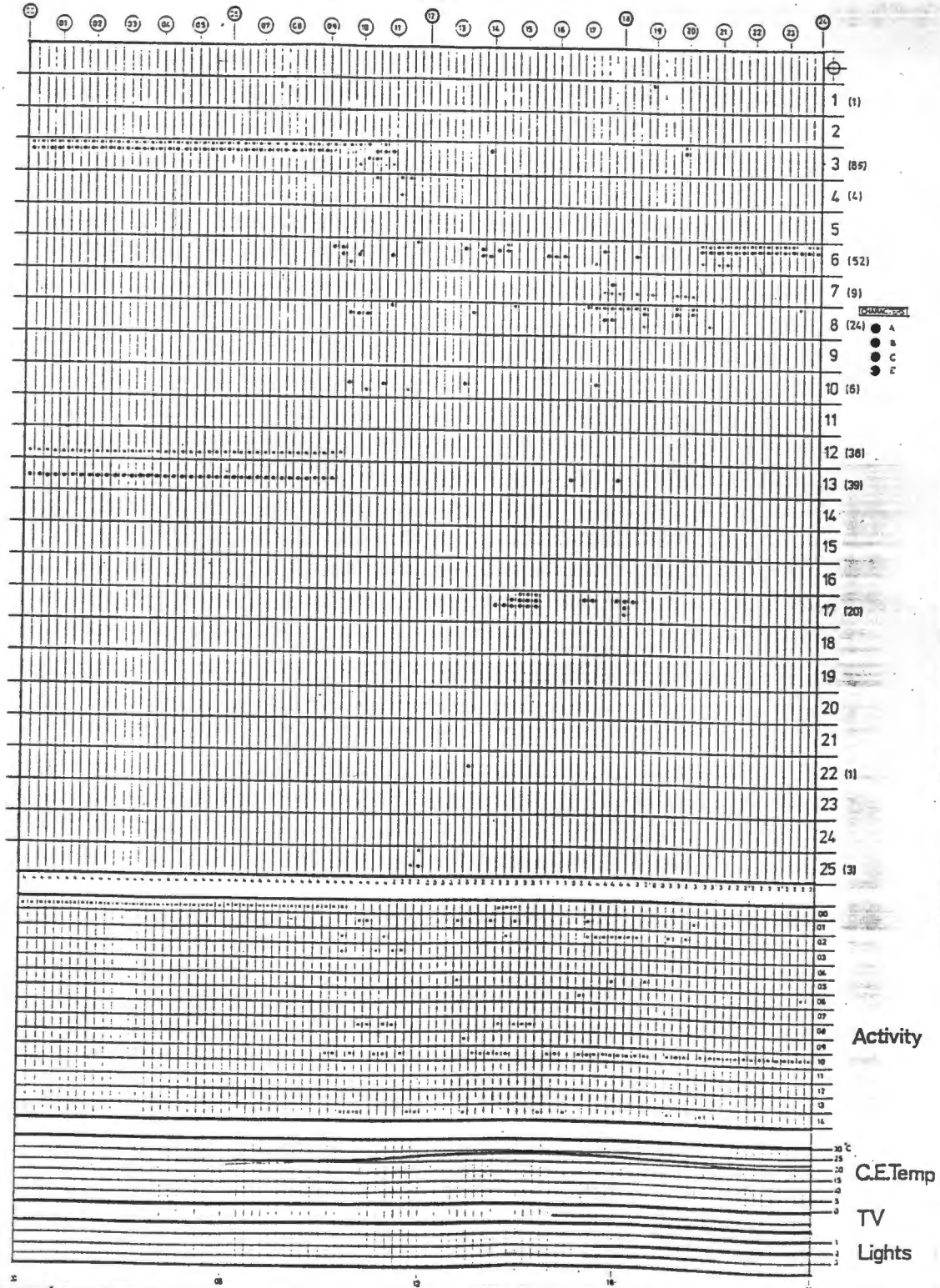
UCT HOUSEHOLD STUDY
SARU Activity-Space-Time Matrix
Household Date Daytype
19-1-1976 WEEKDAY

Activity
C.E.Temp
TV
Lights



UCT HOUSEHOLD STUDY
SARU
 House Date Daytype
 CYPRESS 28-01-95 WEEKDAY
CY 5

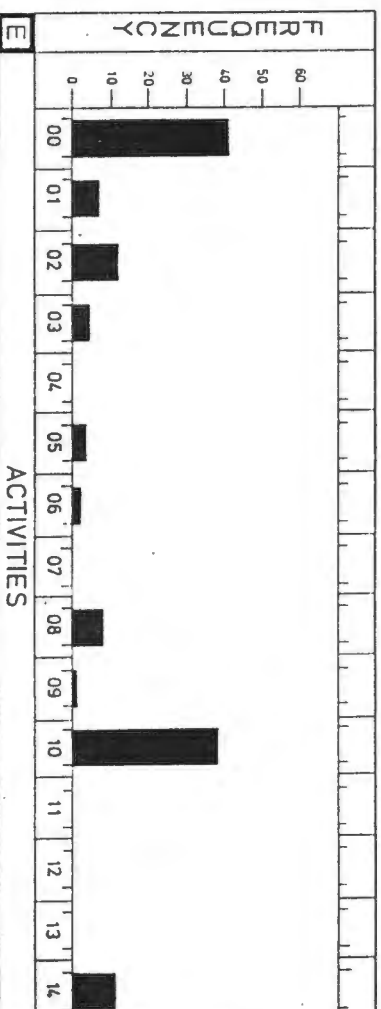
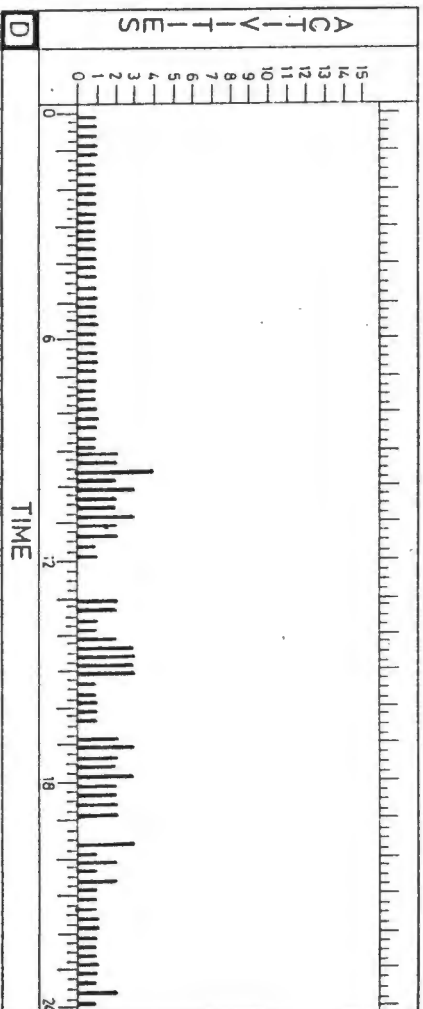
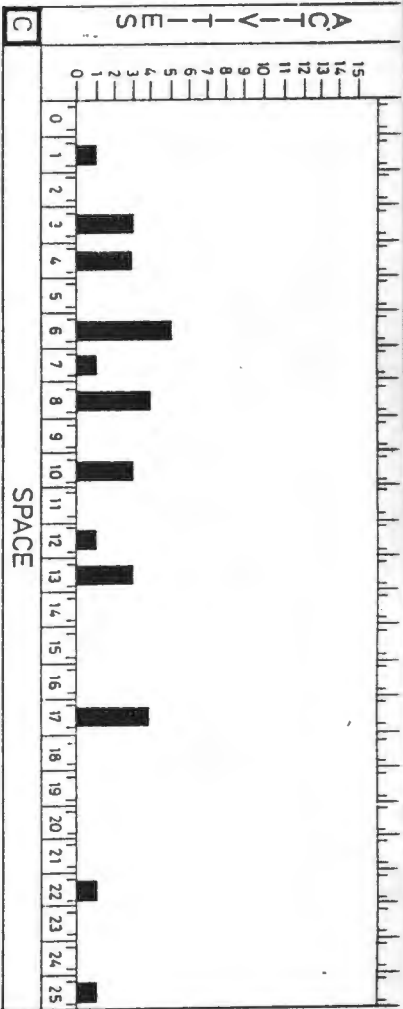
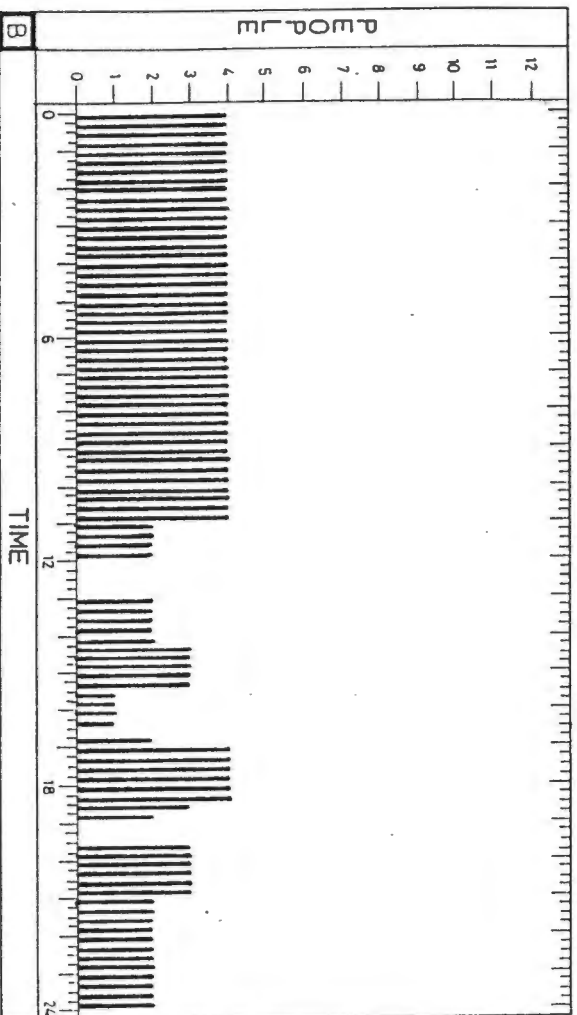
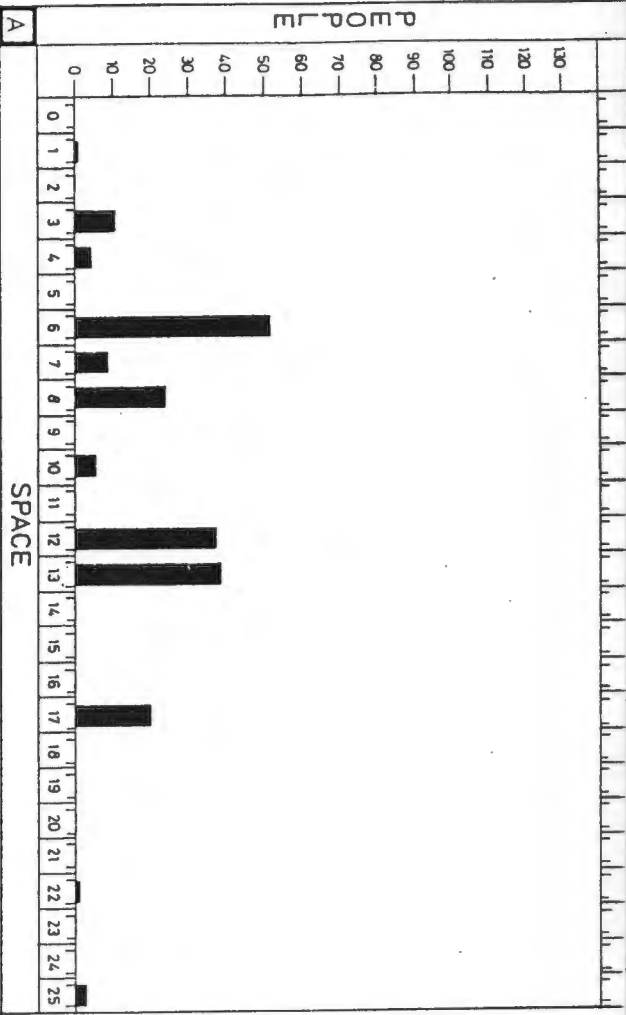
Time



CY 6

UCT HOUSEHOLD STUDY
SARU Activity-Space-Time Matrix
 Household Date Daytype
 30. 5. 1988 SATURDAY

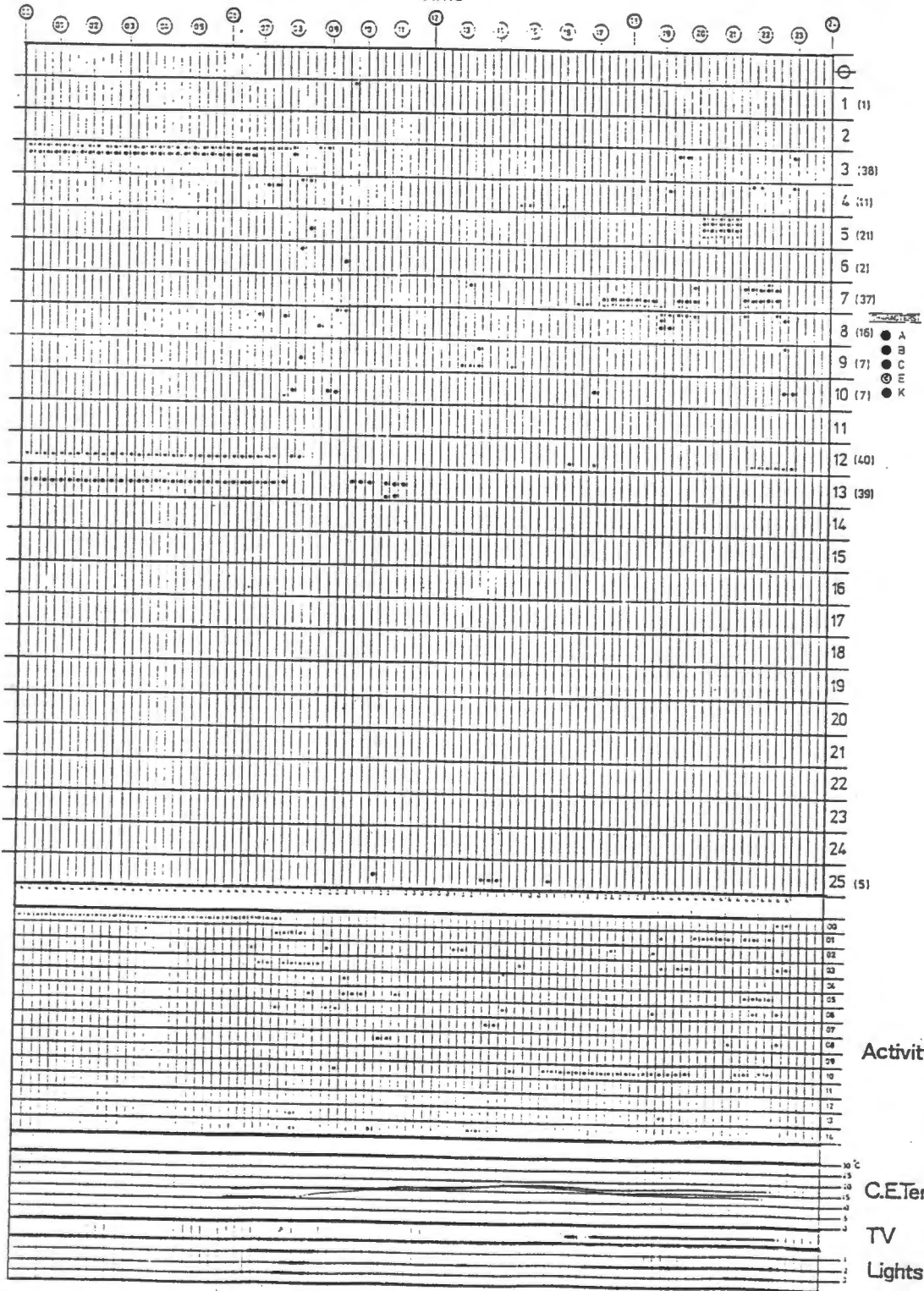
Activity
 C.E.Temp
 TV
 Lights



UCT HOUSEHOLD STUDY
SARU
 House Date Daytype
 CYPRESS 30-03-85 SATURDAY

CY 6

Time



Activity

C.E. Temp

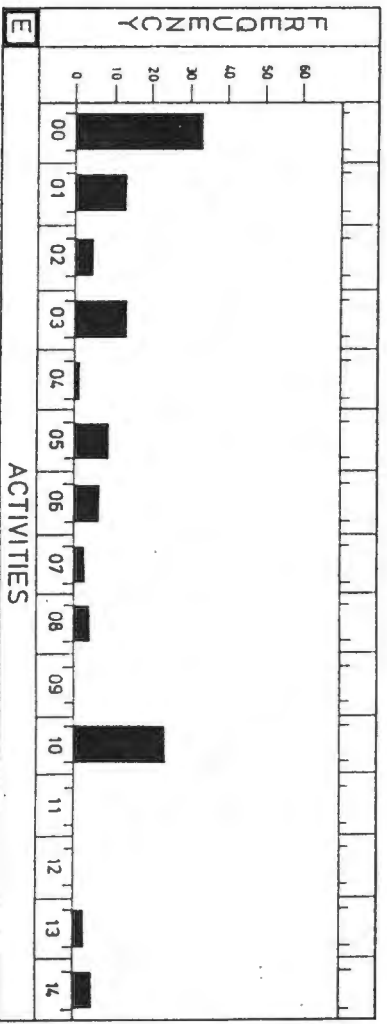
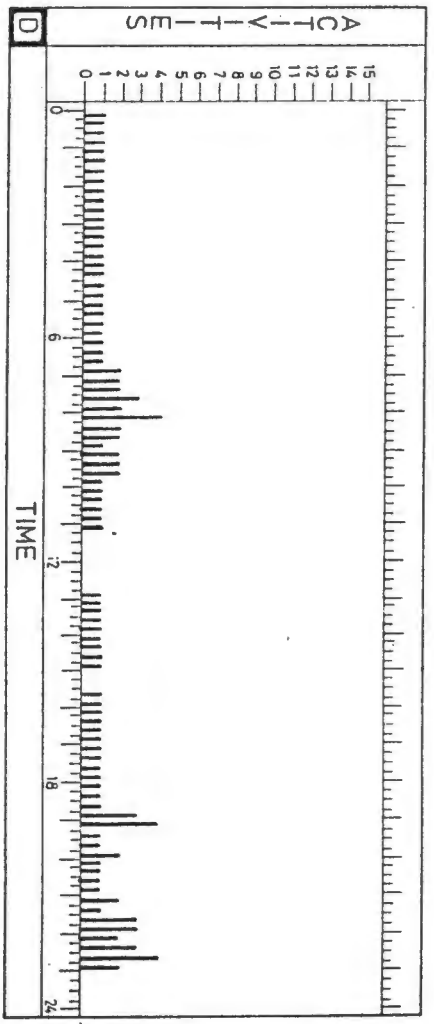
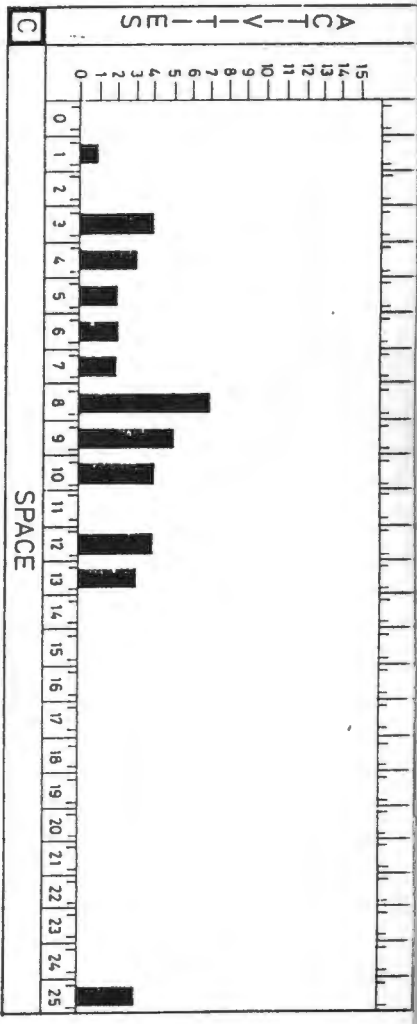
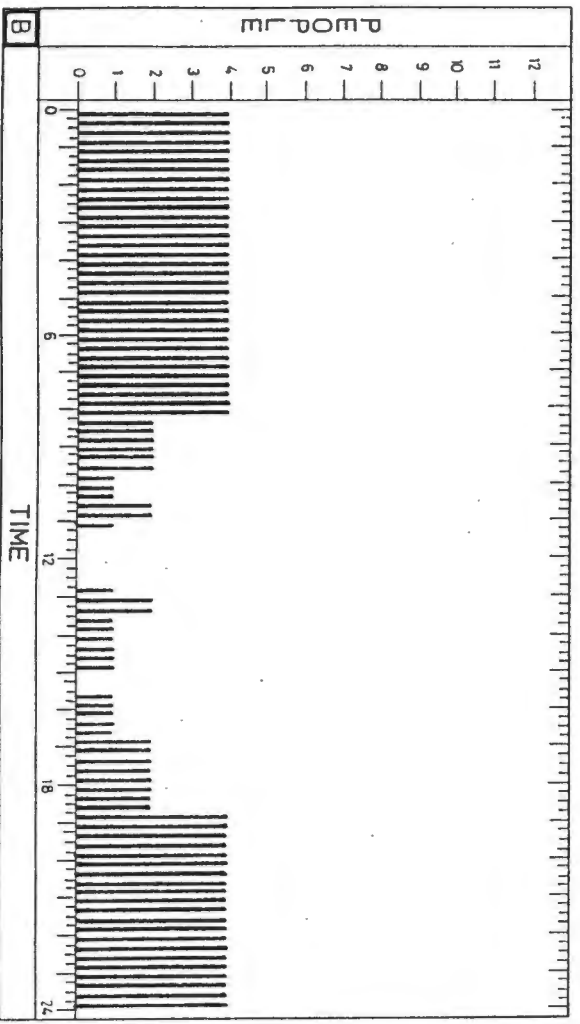
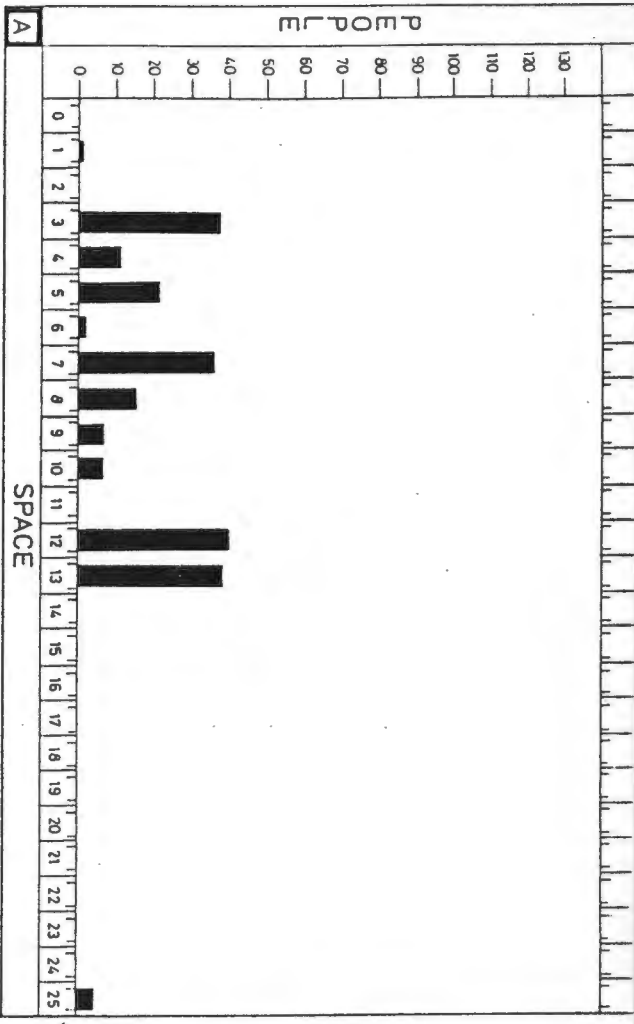
TV

Lights

CY 7

UCT HOUSEHOLD STUDY
SARU Activity-Space-Time Matrix

Household Date Daytype
GIBNESS 20. 8. 1987 WEEKDAY

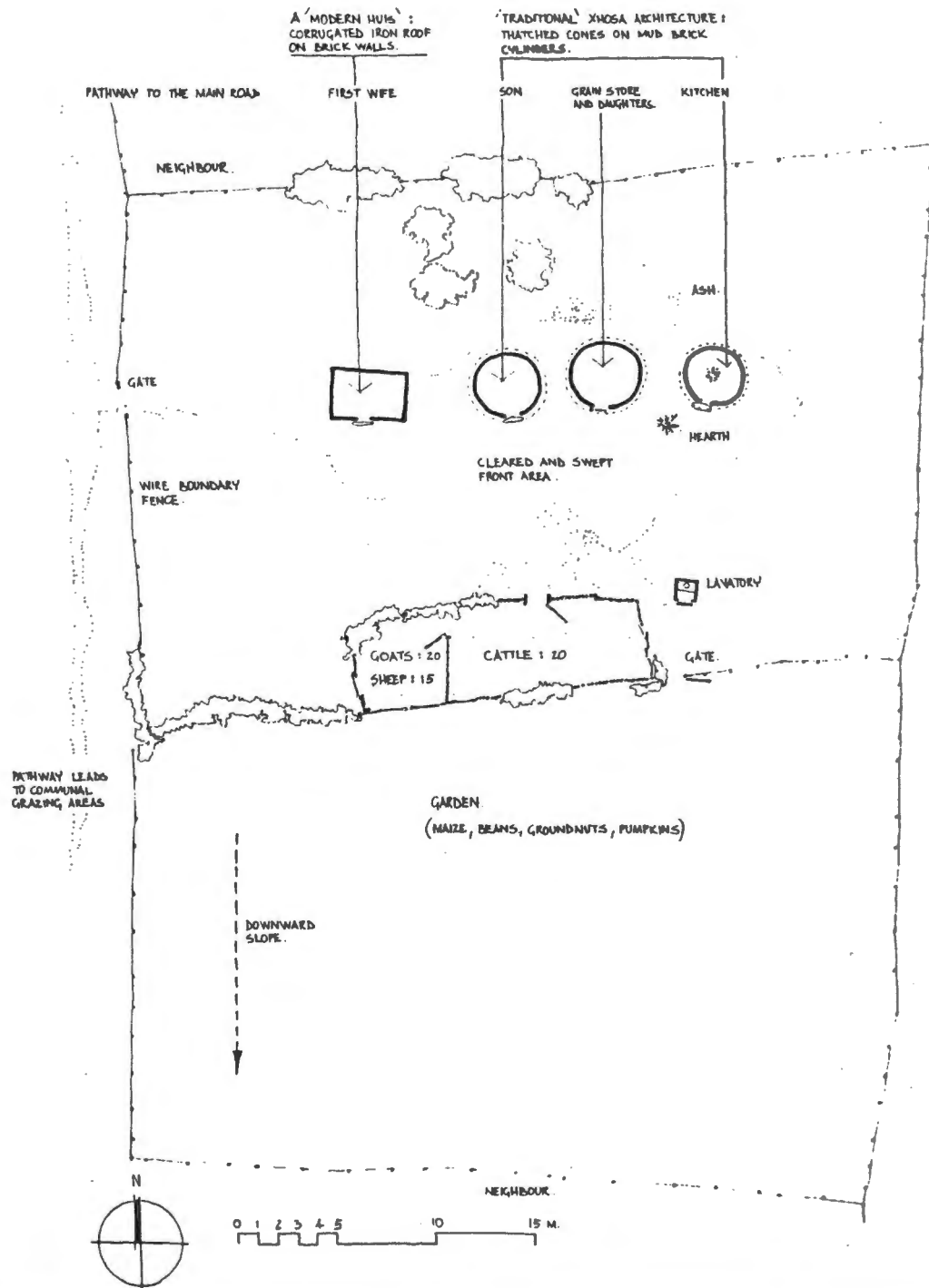


UCT HOUSEHOLD STUDY
SARU
 House Date Daytype
 CYPRESS 19-05-85 WEEKDAY
CY 7

APPENDIX E

COFIMVABA : A RURAL HOMESTEAD IN THE TRANSKEI

The groundplan of the homestead belonging to A is shown below. This representation is based on oral descriptions and diagrams done by A and his son C.



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