No. 114

THE SOCIAL CONTEXT OF BUILT FORM: THE CASE OF INFORMAL HOUSING PRODUCTION IN MEXICO CITY

Alex Walker

March 2001

THE SOCIAL CONTEXT OF BUILT FORM:
THE CASE OF INFORMAL HOUSING PRODUCTION
IN MEXICO CITY

Alex Walker

March 2001

Alex Walker
c/o Development Planning Unit
University College London
9 Endsleigh Gardens
London WC1H 0ED
E-mail: alexgerbrandwalker@yahoo.co.uk

THE SOCIAL CONTEXT OF BUILT FORM:
THE CASE OF INFORMAL HOUSING PRODUCTION IN MEXICO CITY

Contents

THE SOCIAL CONTEXT OF BUILT FORM:
THE CASE OF INFORMAL HOUSING PRODUCTION IN MEXICO CITY

1. INTRODUCTION

Informal housing production in the growing cities of the developing world has been the object of intense study for several decades, especially since the pioneering works of John Turner in the 1960s. In Mexico, in particular, a great deal of attention has been paid to the phenomenon of
what is often called self-help, self-produced, irregular or informal housing[1], both because of its importance in numerical terms, and because of its implications for broader social urban processes. Despite this focussed research attention however, within the voluminous literature on the phenomenon of informal housing production there has been almost no attention paid to the physical form of the houses produced. This apparent lack of interest can probably be explained with reference to the idea that process is more important than product, and as part of a general response to the grand formal solutions which dominated the urban agenda until the 1960s, and which failed to solve urban problems, as a reaction to which the concentration on informal and self-help solutions was born.

Nevertheless, as this article will argue, the physical form of informally produced houses is important for a full understanding of the processes of housing production. The form of the housing which is produced by millions of individual producers is a concrete manifestation of their intentions, and thereby provides a window onto their underlying aspirations, desires and motivations. As such an understanding of the producers' motivations is essential for the development of successful, socially sustainable urban policy, based on a full understanding of the producers' needs.

The importance of taking account of the physical aspect of housing is also reflected in the increased emphasis given to the issue among the international agencies, in the context of a general recognition of the importance of trying to establish basic quality thresholds in the context of housing improvement programmes. It has been recognized that such thresholds cannot be absolute, but rather relate to social and cultural values which are constantly renegotiated. Such an approach requires a fuller understanding of the relationship between house form and the underlying social and cultural processes.

1.1 The homogeneity of house form

The research set out from an observation of the general characteristics of the informally produced houses in Mexico City. It was noted that one of the most characteristic features of this housing was the tremendous homogeneity of built form.

Bearing in mind that in the informal settlements there tend to be houses in different stages of completion, it becomes apparent, upon even casual observation, that there exists a very clear model of production shared by the millions of producers in the hundreds of informal settlements around the city. As a first step in the research, a number of academics and architects were asked for explanations for the form of these houses. Two broad explanations were given. The first of these was functional: the way in which the houses are constructed is the cheapest and easiest way to build a house for the low-income population. It uses materials that are readily available in materials suppliers, and it uses techniques with which the builders are familiar from working on large construction projects. It also produces houses that occupy the whole plot, leaving an open patio in the centre for outdoor activities, thereby maximizing the use of the plot. As for the flat roofs, these are functional, serving as they do as the base for the next storey in a constant striving for upward expansion.

The second group of explanations was based on cultural considerations. The inhabitants of the informal settlements are immigrants from other parts of the country. They are representative of a range of cultural zones in Mexico, and they build their houses in accordance with their varied cultural patterns. In this way the informal settlements represent microcosms of the cultural diversity of Mexico.

These two explanations have different emphases, which are not wholly compatible. The functional explanation suggests a rational approach to the provision of shelter, with the use of quasi-scientific construction techniques, which gain maximum return for minimum investment. It implies that the producers leave their cultural baggage behind, to give preference to the more urgent need of the production of shelter. By contrast the cultural explanation implies that people pour their cultural values into the production of their homes, each one differently according to their identity. This explanation suggests that each producer will use a different form of production in the construction of their houses.

These explanations were put forward by experts in the field of urban housing, and are based on careful observations by them, and it seems unlikely that they are lacking any validity. Nevertheless, apart from having different emphases, on examination both of these explanations prove to be, in certain respects, unsatisfactory: While the initial provision of shelter might represent a functional satisfaction of a human need, housing construction all over the

world has been recognized to be a highly cultural activity. It would be strange if the production of informal housing were any different. Such an explanation appears to deny the actors a cultural identity, simply because the are poor. Furthermore, the functional explanation is problematic because the constructive method used is not, at first sight, particularly easy, nor is it cheap. In functional terms people could live, in Mexico City's climate, in much more rudimentary houses. These considerations tend to lend more support the cultural explanation.

However, the cultural explanation is also problematic, precisely because the initial observation, which led to the enquiries about house form was of the remarkable similarity displayed by the informally produced houses in the city. The idea of people with different cultural backgrounds producing houses according to the cultural patterns that they have brought with them would logically suggest the existence of a great variety of house forms in the informal settlements. From casual observation, this does not appear to be the case at all. Rather, as was pointed out above, the initial impression is of all of the producers of informal housing working to a single, simple model.

Within the literature on the relationship between house form and social and cultural processes, explanations of the physical form of houses have been dominated by the works of Amos Rapoport, and the culturalist approach, which tends to explain differing house forms as being physical manifestations of distinct culture sets. While such an approach has its merits in the analysis of vernacular architecture, it is problematic for the understanding of house form in culturally complex contexts such as those of rapidly growing urban areas in the developing world. Such settlements are typically characterized by a mix of people from different cultural backgrounds brought together in an urban cultural framework profoundly different from that of the rural areas. For this reason, it is suggested that a theoretical explanation for the physical form of informally produced houses must be searched for in other sources which deal with questions of the social context of urban informal housing production, and the social use of the cultural meaning attached to elements of built form.

This paper draws on the research carried out for the author's doctoral thesis. It will not present the empirical findings of the research, although it does refer to observations in the field, which are used to illustrate the argument underlying the theoretical explanation. The research was initiated with the aim of investigating further the form of the informal houses in Mexico City. Three related questions provided the starting point of the research: firstly, can the informal housing in Mexico City be said to represent a distinct house form? Secondly, if this is found to be the case, then what are the elements which characterize the form of informal housing? How can we describe this house form? Thirdly, what are the motivations of the producers of informal housing in the production of this house form?

The paper consists of 2 sections. First it presents a review of the literature which deals with the question of house form, and the social context of housing production in Mexico City. The second section proposes a new theoretical approach, based on the literature examined in the first section, for an analysis of the built form of informally produced houses in Mexico.

2. THE PHYSICAL FORM OF INFORMALLY PRODUCED HOUSES: A REVIEW OF THE LITERATURE

The obvious starting point for an examination of the physical form of informally produced housing is in the literature on informal housing processes. Although, as was mentioned above, this literature contains very little analysis of the form of informally produced houses, it does provide important information about the nature of this housing.

2.1 Informal housing literature

Breadth of focus. Within the literature on informal housing, there exists a large variety of terms used to refer to the subject of study. Although they are broadly interchangeable, their diversity would appear to reflect the breadth of focus in the study of the topic. Informal housing does not fall into the territory of any one academic discipline, but has attracted attention from geographers, planners, architects, sociologists and anthropologists. Van Vliet (1993) suggests that such a variety of perspectives leads to confusion. However, it could be suggested that this interdisciplinary participation, while refreshing, does not tend to be so limiting to mutual understanding as he suggests. In fact, there has been a great deal of overlap and exchange in studies of informal housing. Thus, the works of architects such as Pradilla & Jiménez (1973), provided an important influence on the work of geographers such as Burgess (1982). Sociologists such as Coulomb & Sánchez (1991), have studied low-income rental housing together with Alan Gilbert (1994), a geographer. Anthropologists like Mangin (1970), and Lomnitz (1977), have examined many of the issues which provide the concern for Turner (1972, 1982, 1988), an architect.

Perhaps more important than the different academic disciplines, the writers and researchers on self-help housing often come from differing ideological standpoints, the result being debates, often at cross-purposes. This is noticeable in the well-known debate between Turner and Burgess (Burgess, 1982, Turner, 1972, 1982, Turner & Fichter 1972), regarding the benefits, or not, of self-help in housing, and the nature of use values and

exchange values.

However, despite the diversity of approaches to the study of informal houses, and the existence of ideological differences between authors, there exist certain tendencies within the literature, principally with regard to the focus of study. In the following paragraphs an attempt will be made to extract, from the large literature on informal housing production, works which relate, positively or negatively, to the theoretical proposal outlined in the introduction.

Housing versus houses. For the purposes of the present paper, the main interest of the informal housing literature is in what this has to say about the physical form of houses produced. With respect to this subject, there appears to be an important tendency in the literature to concentrate on the processes of what Ramirez et al call informal housing "production, exchange and consumption" (Ramirez et al 1992, p 98), rather than the investigation of houses as the products of these processes (Andrade 1981, Rapoport 1988). This is a tendency which King (1984) laments in the 'new urban studies', a category in which he includes authors such as Harvey and Castells, which concentrate their analyses in the economic and political spheres. The same point is made by Knox, who notes a concentration on the "macro-level relationships between social and spatial structure, with relatively little consideration being given to architecture, building styles or the role of the design professionals in relation to the maintenance of the dominant social formations" in the works of Harvey, Castells, Preteceille and Lojkine, (Knox 1982, p 109).

At a macroeconomic level of study, the importance given to housing processes is not surprising. Van Vliet points out that considering the economic importance of housing processes, and housing policies to the economy as a whole, it is not surprising that "economic approaches have informed much of the research on housing." (van Vliet, 1993 p 556).

But the tendency to concentrate on process rather than product is one that goes beyond an interest in the macroeconomic importance of the housing sector, and which has deeper roots than the new urban studies cited by King (1984). The concentration on process appears to form part of the historic changes which have affected housing policy and urban planning approaches (McNeill 1983): in the context of so-called 'conventional' planning approaches to housing provision, there was a high level of professional design input, and the consideration of the house as an object was central. However, dissatisfaction with the ability of the "manipulation of bricks, mortar and asphalt" to increase the "general welfare of the majority of urbanites" (Epstein 1973 p 178) together with the growing realization of the inevitability of squatting

and other forms of informal housing production on a scale beyond that controllable by policy makers and traditional planning techniques, led to a reconsideration of the preoccupation with physical planning.

John FC Turner (1968;1972;1982;1988) has been one of the most influential advocates of studying the processes of self-help housing from the viewpoint of the users. "In English, the word "housing" can be used as a noun or as a verb. When used as a noun, housing describes a commodity or product. The verb "to house" describes the process or activity of housing." (Turner 1972, p 151). A similar distinction is made by Robbins; "... there is a difference between a concern with houses and a concern with housing [...] whereas houses are cultural and social objects and consumables, housing is a cultural process and a social activity." (Robbins, 1989 p 58). Turner explains that for a proper understanding of housing, we must use the term as a verb: "... the performance of housing, ie what it does for people is not described by housing standards, ie what it is, materially speaking." (Turner 1976 p 60). Elsewhere (1976 p 60) he explains that "... as long as it is erroneously assumed that a house of materially higher standards is necessarily a better house, then housing problems will be mis-stated in terms of the number of 'sub-standard' units 'needed'".

Turner's works have created a great deal of controversy (see, especially Ward, 1982, and Mathéy, 1992). Nevertheless, this particular emphasis on taking account of the broader context of housing processes, and the participation of the users, has been widely accepted, by academics, non-governmental organizations, and by the World Bank (World Bank 1980). The same point has been made by writers approaching the subject from different perspectives. Connolly points out that "An adequate definition of the housing problem is not [...] a description of specific living conditions, however appalling these may be, for these are in fact solutions to a problem which needs to be defined on a different level. In generic terms, the housing problem lies in the inability of the means of production of houses to meet the socially determined needs for shelter and residential services" (Connolly 1982 p 143). Deyan Sudjic makes the same point succinctly when he says that "Perhaps the truth is that formal issues are only of marginal relevance. The poor are poor because they have no money, not because they have poor housing." (Sudjic 1992 p 31).

It might be the case that there are other reasons for the concentration on housing processes rather than house form, than the positive appreciation of the need to take account of these processes when trying to identify the root of the problems. There is an implicit assumption in much of the literature that low-income housing is principally intended to satisfy basic needs, and has

no aesthetic content. This is an approach criticized by Holston; "In my view, there is no merit to the tradition in sociological studies, unfortunately rather extensive, of reducing working class taste to the rack of functional necessity where it has, by definition, no aesthetic distinction" (Holston 1991 p 460). Tarlo (1992) makes a similar point in relation to the divisions of academic interest in relation to clothes. When anthropologists began to study people directly, and to produce functionalist theories of society, she explains, they established an academic partition, which either paid no attention to clothes (and by extension, to other elements of material culture such as houses), in the context of social institutions, or which paid attention to clothes only as artefacts, in the context of museums, aesthetic studies, and in studies of production and trade, but with little attention paid to the interrelationships between clothes as cultural products and the dynamics of the social context.

This discussion indicates that there may be a mix of positive and negative reasons for the lack of concentration on the house as a product within the informal housing literature. Whatever the reasons are, and it is more difficult to say why certain studies have not been undertaken than why they have, an examination of the literature does demonstrate that there is relatively little material within this body of literature, that addresses questions of the form of the houses produced. However, there are a number of works which do address the physical form of informal housing in Mexico. These will be examined in the following section.

Descriptions of house form. Descriptions of informal house form, where they occur in the informal housing literature, tend not to be central to the discussion, but rather to be made in passing, as background material, or to illustrate particular points.

Connolly for example provides an outline of the nature of self-help housing production in Mexico City, as background material for her broader discussion of the economic and political context and social potentials of self-help housing. In this she describes the typical stages of construction, from the rapid production of a temporary tar-paper shack, in the initial stages of occupation of the land, through a gradual, normally piecemeal process of consolidation, with the construction of "... foundations, brick or block walls and concrete structure and slab roof" (Connolly 1982 p 157).

Similar descriptions are given by Lomnitz (1977), Sudra (1976), Ward (1982a and 1990), Andrade (1981), Chant (1984;1987), Coulomb & Sánchez (1991), Schteingart (1989), Schteingart, Boltvinik et al (1997) and indeed by most writers on the subject, as a means of providing contextual information. Sometimes the details vary. For example, Vélez-Ibañez (1983) provides precise descriptions of the layout of houses on plots, and of

the interior appearance of a typical self-built house in Mexico City, and his descriptions of the furniture, and the decoration of the houses are not found in other works. Nevertheless, in most cases, the descriptions provide background material, and make no attempt to provide explanations of the house form. For this reason, for the purposes of the present paper, these works provide useful background material, but they raise more questions than they answer. For example, Connolly, in her description mentioned previously, defines consolidation, the process she is describing, as "... the gradual improvement in dwelling standards" (Connolly, 1982, p 157). What constitutes an improvement is not discussed. Rather, it is taken for granted that the specific process described represents one of improvement. There are, however, a small number of works which examine the nature of house form in more depth. These will be dealt with in the following sections.

Structural works on informal housing. The literature can be divided into two main approaches.

The first is that of academic studies, normally by architects, of the structural and cost problems which arise from the large-scale production of houses, without proper planning controls, and without correct design calculations. Some of these works are objective studies, which recommend conventional solutions. For example, Bolívar et al (1994), who provide a detailed account of the structural consequences of unplanned densification of housing in Caracas. The main problems noted are crowding, lack of ventilation, natural lighting and a structural susceptibility to seismic tremors. Similar conclusions are drawn, in the Mexican case, by Bazant (1979 (b)).

There are other such studies which come from a more ideological position, often that of the 'alternative or intermediate technology' approach. An example of this approach is provided by Gúzman Rios (1991). He identifies the problems of autoproduced houses as "Lack of services. Costs of production elevated by: small scale purchases; lack of technical knowledge. Deficiencies in the internal distribution. Almost immediate physical deterioration. Lack of fundamental elements. Deficient isolation. Formal incongruence. Poor orientation.[2]" (ibid p 30). He does not explain what he means by 'formal incongruence'. The solutions that he proposes are to "Aim for a minimum of: individualization in production; industrialized materials; deliveries and lorries; paid labour; small-scale purchase; waste and neglect; structural inadequacy; dimensional disorder." (ibid). He recommends communal work and purchase of materials, and use of traditional materials such as adobe and timber, as well as 'intermediate materials' such as ferro-cement. A number of other authors identify similar problems with informally produced houses, and propose similar solutions

(see, for example, Morales Sales (1993), Habitat (1985)).

There are some important debates surrounding this type of approach, which mainly revolve around how appropriate such technology really is for people living in informally produced houses. The present discussion will not intend to enter into these debates. For the purposes of this paper, these works have a certain utility which derives from the descriptions that they provide of informally produced houses. They do not give any explanation of the house forms produced, however, although there is a generally shared supposition that the house form is problematic, and that features such as the 'formal incongruence', and 'dimensional disorder' identified by Gúzman Rios (ibid), are problems resulting from ignorance, and that these problems could be overcome by greater input on the part of the architectural profession.

While it is probable that important structural problems exist in informal housing, it would seem reasonable to suggest that there are other factors than ignorance at work in the influence on house form, which are not addressed in this literature. For this reason it would seem that it is necessary to look elsewhere for explanations of house form.

The second group of works dealing with technical and structural issues is that of the technical manuals produced by building components producers, mostly cement manufacturers. See for example APASCO (1997), and Cementos Tolteca (1984). These manuals, normally produced in comic form, do not differ greatly from the academic works mentioned above. They identify problems of design and construction in self-built housing, and propose solutions to these, which generally rely upon proper training of the people involved. The difference lies in the nature of the solutions proposed, which tend to be more conventional than the other proposals, and to involve the use of building materials produced by the company in question.

Once again the main usefulness of these manuals for this research, is in the descriptions that they give of informally produced houses, although these are rather limited. The manuals are also useful insofar as they provide a good indication of what formal elements are considered to be normal and acceptable by the established building sector. For example the concentration on durable building materials, and the layout of the house with internal distribution of space, in an open plot of land. These considerations will be discussed at greater length in below, during a discussion of urban housing norms.

Analyses of informal house form. There is a small collection of works which examine the production of informal houses in Mexico from the perspective of the socio-economic status of their inhabitants. Although the details of the works differ in some important respects, in general terms the approach involves a classification of different informal house types or qualities, and the correlation of these with the socio-economic profile of the inhabitants.

Bazant (Bazant 1979 (a);1985), proposes a typology of self-built housing, which is composed of five different house types. Type 1 is differentiated from the other cases because it occupies lands which can never be regularized, normally because they are dangerous for habitation, or are earmarked for a large infrastructural project. The inhabitants of this house type belong to a social group whose incomes are unlikely to increase in the future, as a result of their low education levels, and consequently limited job prospects. For these reasons, the houses which make up type 1 are unlikely ever to change substantially. They are minimum shelters, projected into the long term.

House types 2 - 4, by contrast, represent phases in a process through which individual houses tend to pass in their "pattern of physical evolution" (Bazant 1985, p 12[3]). The changes from house type 2 to house type 4 relate to a number of elements of house form, as well as to other factors such as land tenure. As they relate to the physical form of the houses, these changes can be summarized as follows: increasing built area on the plot, from 30-50 m^2 in type 2 to 90-150 m^2 in type 5. Introduction of communal services in type 4, and of fully regularized services in house type 5. The materials are described as being waste materials in type 1 houses, and "permanent materials" in all the other types. The difference in use of materials between these other house types (2 to 5) "... can be seen in the roof and in the finishings, since generally the walls are all of block or cement, or bricks."
(p 71).

Bazant's central thesis is that "... the autoconstruction of popular housing is the result of the socio-economic situation of its users" (p 12). Specifically, he attributes the gradual evolution of houses from type 2 to type 5 to changes in the family's size and economic condition. His explanation is that the earlier houses tend to be inhabited by younger, smaller families. As these families grow, the younger members move into more productive employment, and contribute to the family income, creating a greater surplus that can be invested in housing, improving the house, and also enlarging it so as to provide for the growing needs of the family. At the same time, as the family head consolidated his/her employment position, and earns more money, s/he also contributes more to the household budget, with the same results. So, as the household grows, and becomes more established, the house gradually completes a process of physical evolution.

Lomnitz provides a similar link between the socio-economic status of the residents of informal, self-produced houses and the physical

characteristics of the houses. In this study housing is classified in a range from 'good' through 'fair' to 'poor', with 'good' housing being of "... cement-block construction with concrete or corrugated metal roofing. Three or more rooms. Running water, light, bathroom, or latrine. Cement or tile floor." 'Poor' housing by contrast consists of "One room with or without lean-to for cooking. Construction of brick or other used materials[4]. Dirt or cement floor. No utilities. Poor state of repair" (Lomnitz 1977, p 71). These features are correlated with what she refers to as the 'levels of marginalization' of the inhabitants, which relate to a number of social indicators, principally income, type of employment and length of stay in the city. This is a broader range of indicators of socio-economic status than Bazant's household size, age and income, but the underlying observation is similar: the quality of houses is correlated with the socio-economic characteristics of the households. Where the two analyses do differ to an important degree is that Bazant's explanation is a dynamic one, which sees individual households gradually improving their houses as they become more established, while Lomnitz's approach is more static; other than the consideration of length of stay in the city, there is no indication of whether, or how, households or families might change their level of marginalization, and so their house type. The findings of both Lomnitz and Bazant are supported by Andrade (1981), who concentrates, in his study, on the evolution of the occupation of space on the lot with the economic improvement of the inhabitants.

Sudra's study of housing systems in Mexico City is, like Bazant's, a dynamic analysis. It examines the "... physical characteristics of housing, and their match with user needs [...] in five main categories: space, services, structural quality, adaptability to changing needs, and general environmental quality" (Sudra 1976, p 310) in the housing system of Mexico City. This description of housing conditions is used to lend support to his central thesis which is that different priorities are given to different aspects of housing by families in various stages of their life-cycle. So newcomers, although they would prefer higher environmental quality, place a premium upon access to work, and low costs in housing. More established families, however, seek to improve the physical and environmental quality of their housing.

This analysis at first appears to contradict Bazant's, as it illustrates a marked mobility of the households: while Bazant's study shows households incrementally improving specific houses, in Sudra's study we see the households moving between different forms of housing in different parts of the city as their fortunes evolve. However, on closer inspection, the apparent contradiction is less marked. Sudra sees self-help housing as one part of the wider system of housing, which includes rental housing, temporary residence with family and friends, and other specific housing strategies such as the arrimado, someone who lives on a vacant lot in exchange for providing security. In this system, self-help housing represents the part which is taken up by the more established families. This part of the system, which forms a part of Sudra's study, is the focus of Bazant's.

These works are important for this paper in two main ways. Firstly, they reveal how informal housing production is a gradual process of evolution: the houses produced are not artefacts in themselves, but are moments in an evolutionary process through which individual houses tend to pass. This means that, in order to understand the nature of the house form, it will be necessary to concentrate on the process of housing evolution, and not merely on the house as a completed product.

Secondly, the studies reveal that this process does not occur in isolation, but that it is closely correlated to the socio-economic conditions of the inhabitants. However, while they provide valuable background material, these works do not address the central questions of the present research. As a result, they do not attempt to analyze the reasons why the evolution of the houses tends towards a specific house form: why it is felt by the producers of the housing that some types of materials, construction methods, and uses of space are good, and others are not. Sudra does not disclose how he defines such terms as structural quality, or less still, 'general environmental quality', and in what ways, specifically, the more established families go about improving these aspects of their living environment. Lomnitz uses the qualifiers 'good' and 'bad', without defining the criteria she uses to judge these qualities, and Bazant talks about a general improvement in the quality of the house, once again without explaining why the specific form taken is held to be of a higher quality. The answers to these questions are not the subject of the studies mentioned, and they are apparently taken for granted.

The question of preferences for different house forms is one that is addressed by Legorreta, within a wider descriptive work on the "critical problem" (Legorreta, 1984 p 9[5]) of "autoconstruction" in the rapidly urbanizing oil-producing towns of the Mexican Southeast.

The explanation that he gives for the form of housing produced in this context refers, like those mentioned above, to the socio-economic status of the inhabitants, but also brings in the element of cultural patterns: "the housing constitutes the physico-spatial expression of the economic conditions of the autoconstructor, of his cultural patterns and of the degree of adaptation to the environment." (ibid, p 180). Furthermore, he attributes different influences to different elements of built form, so that "The type of materials used is a function of the economic possibilities of the family, while the form of use of space corresponds more to

cultural patterns and, in some cases, to the limitations imposed by the natural environment." (ibid p 180).

These influences result, in the area studied, in the existence of three basic models of house form: a model of rural provenance; a clearly urban model; and a model which "... expresses the process of economic and cultural transformation in which the inhabitants find themselves" (ibid pp 180-181). This latter model is the most common of the three. "The criteria used to characterize the models are the arrangement of constructive elements within the lot, and the use of interior space." (Ibid p 181).

On this basis the rural model is distinguished by a use of organic building materials, an undifferentiated use of interior space, and the external location of many daily activities. To a large extent, Legorreta says, this model becomes unfeasible in the urban context because of the shortage of space that is found there, and the consequent concentration of activities. In the transitory model, there is a greater subdivision of internal space, principally into areas used for eating and sleeping, divided by light walls, and a combination of 3 types of materials; of vegetable origin; short-duration industrial materials (corrugated cardboard and steel); and durable industrial materials. The urban model is distinguished by an extensive internal division and specialization of space, with a central room leading to other rooms with specialized functions. the materials are durable, and this is reflected in the greater complexity of the construction techniques.

Legorreta goes on to explain the origin of the cultural influences which lead to this urban model of housing: "This urban model corresponds to populations whose spatial pattern is based on private ownership of land, and in the individualized use of public services. The urban planning approach of government organizations implicitly brings this tendency with it, and is one of the principal factors in the expansion and generalization of the model" (ibid p 190).

This analysis provides a more profound perspective on the problem than those previously discussed. It maintains the emphasis on the economic condition of the inhabitants in the explanation of informal housing, but it also introduces the concept of culture into the explanation. However, in so doing, it again raises questions which are not answered: can the nature of the urban model of informal housing really be attributed to a cultural form based on private property? If so, what, if anything, distinguishes this model from other house forms which share this feature? Can the choice of building materials be consigned to a question of income, while the use of space depends on the cultural patterns, or is the choice of building materials also underlain by cultural considerations? If the demands of the natural environment are held to be important, why

does the balance of importance appear to shift with the changes between cultural patterns? Above all, the introduction of the concept of culture receives little explanation. A deeper examination of the interaction between built form and culture would be required in order to adopt this explanatory model.

There is another problem with this work with respect to its usefulness for the present research. Legorreta's analysis at first sight appears to support the theoretical proposition that people with rural cultural patterns emigrate to the city, and internalize urban cultural patterns, and so produce house forms which are in a state of transition. The problem arises when we attempt to bring this explanation to bear on the case of Mexico City. All of the descriptions of informal housing in Mexico City indicate a marked homogeneity in the built form. None of the studies of Mexico City indicate the presence of rural models, or of transitional models as described by Legorreta. This may represent an important difference between the cases of Mexico City and the oil-producing regions, which implies the need for a different theoretical explanation in the former case.

The major contribution of Legorreta's work is the introduction of the concept of culture into the debate. However, the concept having been introduced, it is not strongly developed in the work. Little detailed exploration is made of the dynamics of different cultural patterns in the study. Since this concept of culture is not fully developed in this work, and seems to have been hardly used in the informal housing literature, it was decided to follow its greater usage in another broad body of literature, which will be discussed in the following section: that of vernacular architecture and cultural geography.

2.2 Culture as an Explanatory Concept in Analyses of House Form

Vernacular architecture. The use of the term 'vernacular' is the result of "... an application of an extended linguistic metaphor to the theory of architecture" (Oliver, 1969, p 10). Vernacular means "... native, indigenous, not of foreign origin or of learned formation" (Concise Oxford Dictionary). The term is used to indicate two fundamental features which are supposed to distinguish the architectural forms to which it is applied: their specificity to particular geographical localities; and their representation of 'low', or peasant culture, as opposed to 'high' or literate culture (Gellner 1983).

While studies of vernacular architecture are not new (see for example Morgan (1881), there was a growth in the number of studies starting in the 1950s and 60s. This surge in interest in vernacular architecture could perhaps be understood in the context of the development of postmodernism as a movement, one of the distinguishing features of which is the breaking down of barriers between high and low cultures (Bertens 1995), and so providing a

challenge, like that of Robert Venturi (Venturi, 1965; Venturi and Scott Brown, 1970; 1971) to the traditional distinctions in architectural studies, exemplified by authors such as Pevsner: "A bicycle shed is a building; Lincoln Cathedral is a piece of architecture. Nearly everything that encloses space on a scale sufficient for a human being to move in is a building; the term architecture applies only to buildings designed with a view to aesthetic appeal." (Pevsner 1968 p 15).

Perhaps, also, the increase in interest in vernacular architecture could be attributed to the tendency towards a disappearance of regional architectural forms and their replacement with more generalized forms. This suggestion comes from the observation that many of the works on vernacular architecture in Mexico and Central America are principally descriptive: they concentrate on cataloguing, rather than analyzing house types (see, for example, Aguilar Arrivillaga, 1980; Arquitecture Vernacular 1980; Duly 1979; López Morales 1993; Moya Rubio, 1988).

For the purposes of this paper, works which are descriptive, rather than analytical of vernacular house forms are of little use. The discussion will continue with an examination of works which have attempted to provide explanations of the built form of vernacular architecture. Oliver (1969, 1987,) identifies the fundamental difficulty involved in explaining vernacular house forms. He suggests that the variety of built forms around the world cannot be simply explained by reference to the local environmental conditions. Rather the form and nature of vernacular architecture must be understood as products of particular socio-cultural contexts. He argues (1965) that one of the problems that has arisen with regard to the understanding of vernacular house forms is that they are normally described by architects, who consider them in the context of their own culturally-determined aesthetic appreciations.

An example of this tendency is given by Rudofsky, who provides graphic support for his attempt to "... break down our narrow concepts of the art of building by introducing the unfamiliar world of non-pedigreed architecture." (Rudofsky 1964, 2nd page - no page numbers), with photographs of buildings from all over the world. However although he appears to rebel against the "architect centred" approach to the study of buildings, it turns out that he too believes in the essentially functional roots of the beauty that he perceives: "Vernacular architecture does not go through fashion cycles. It is nearly immutable, indeed, unimprovable, since it serves its purpose to perfection. As a rule, the origin of indigenous building forms and construction methods is lost in the distant past." (Ibid, 1st page). Similarly, Norberg-Schulz explains that "Simple tasks, such as dwellings and farms, keep a relatively invariant character in spite of all cultural changes. They are

therefore served by simple, fundamental formal structures which only to a limited extent participate in the general stylistic development." (Norberg-Schulz 1963 p 160). Such approaches demonstrate a complete lack of analysis of built form in terms of local social or cultural processes.

A number of cultural geographers, rebelling against such functionalistic explanations of house form, have been interested in trying to analyze house form and type. Most have concentrated on the cultural landscapes of the United States, and the regional differences that are apparent there, as well as the spread of house forms resulting from cultural diffusions, (Kniffen 1936, 1965, Lewis 1970, Zelinsky 1973, in N Duncan 1981).

Works which deal with cultural influences on house form beyond the United States are fewer. One of the best known, and most often cited examples of these is Rapoport (1969a; 1969b; 1982; 1988), who attempts to provide a conceptual framework to explain the great variety of housing that man has produced, across space and time. The works are largely attempts to challenge what he identifies as the conventional wisdom regarding the influences on house form. He criticises the two main approaches which are based, he argues, on physical and social explanations. The problem with such explanations is, he suggests, "that they have tended to be physical determinist (sic) in nature" and that "the theories have inclined toward a rather excessively simplistic attempt to attribute form to a single cause" (Rapoport 1969a p 18).

By contrast he provides convincing evidence to support his thesis that while all of the factors used as explanatory variables, including climate and environment, availability of materials, technical ability, need for defence, religious needs, and economic requirements, have an influence on built form, they are secondary influencing factors, insofar as there never exist any absolute determining factors, there always exist choices. The primary factor, or force underlying house form is culture, ie culture is an influence that causes people to choose one form rather than another. So, for example, Rapoport claims that it is the fact that the Navajo, of the South-eastern United States are culturally Athabascan (a cultural category originating in the northern United States and Canada) that causes them to continue to build their houses in a style developed in their ancestral homelands, rather than adapting the Pueblo style which pre-existed in their new homeland of New Mexico (Rapoport, 1969b). He states that "... what finally decides the form of the dwelling, and moulds the spaces and their relationships, is the vision that people have of the ideal life." (Rapoport, 1969a p 47 my italics).

There are a number of questions which arise even on the basis of this brief summary of Rapoport's approach: what, exactly, is meant by the "ideal life"? Does this mean that all human populations have an ideal form of living, and that

their house form represents the closest approximation that they can gain to this, or does it mean that house forms are direct reflections of this ideal, and that people have no further ambitions than the ideal forms that they have produced? Or does it mean something quite different? No definition is provided, and the concept does not appear to be helpful in approximating to explanations of house form.

The accusations of determinism that Rapoport levels at the approaches that he criticizes are also problematic. It is not clear that these explanations, although only partial, can actually be called deterministic. The notion of determinism is that specific variables result in determined outcomes. Most of the explanations which Rapoport criticizes in fact depend on a number of factors or variables, which make the charge of determinism difficult to maintain. However, if we were to use the same broad criteria that Rapoport apparently uses to identify deterministic approaches, it would seem that Rapoport's approach, which talks of "... what finally decides the form of the dwelling" (Rapoport, ibid), is itself deterministic.

Another problem that appears is that of the idea of 'choice'; that people choose between available house forms as a result of their cultural needs. This idea is problematic insofar as it appears to imply that people choose, in the construction of their houses, from a range of available house forms, the ones which most suit them (or their cultural requirements). The idea of cultural groups choosing one of almost infinite possible house forms, rather than gradually developing particular house forms, within determined contexts as a result of a range of influences, is difficult to sustain.

It could also be asked to what extent the explanation goes beyond a simple catalogue of formal diversity as resulting from cultural diversity. This question arises with respect to the Navajo Indians who continue to use a house form which was developed in different geographical conditions, rather than adopting the local house forms, because these pertained to a different culture. This explanation can not easily be contradicted, but it appears to miss the most important element of the example, that is the question of why it is that in some cases contiguous cultural groups maintain markedly different cultural patterns, and house forms, while in other cases they merge these forms? What factors either impede, or encourage cultural integration? The theoretical approach offers nothing to questions of the dynamics of cultural change.

Rapoport develops these ideas in numerous subsequent works, one of which (Spontaneous Settlements as Vernacular Design, 1988) appears to be of direct relevance to this study, because it represents an application of his thoughts to the phenomenon of 'spontaneous' urban housing. In this work he suggests that "Another observation of spontaneous settlements is that their underlying schemata are in a state of flux and include both traditional culture core elements and newly introduced elements highly desired by the builders and users" (Rapoport 1988, p 52). This statement directly addresses the central preoccupations of this paper, and for this reason is of particular interest. However, the assertion is supported by no empirical evidence beyond one or two anecdotal examples. There is also, apparently, little theoretical support given to explain such an observation. Rapoport states that "The new values of modernity often lead to a rejection of traditional spatial organizations, house types and so forth" (ibid p 71), and that "In situations of rapid change, the maintenance of cultural identity becomes an important role of the cultural core" (ibid). However, he does not explain the dynamics of the diffusion of the 'new values of modernity', treating this rather as an ill of the modern age which must be combated: "this suggests the need to emphasize the values of traditional environments and communicate them effectively to users and decision makers" (ibid). Nor does he discuss whether there might be variations in the importance given to the maintenance of cultural identity in different social circumstances, or what are the conflicting interests which promote a greater maintenance of traditional forms, or a greater adaptation of new forms.

Rapoport makes some useful comments in the above-mentioned work, such as that there must "... be an implicit model or cognitive scheme shared by all the individuals making apparently independent decisions" (ibid p 52), thereby identifying spontaneous settlements as determined cultural phenomena, which can be studied as such. He also points to the diversity of formal qualities of spontaneous settlements in different parts of the world (pp 53 and 66, and photos), thus contradicting assertions that such settlements are innately functional, and therefore tend to be uniform throughout the world. But the framework, which is founded on comparing spontaneous settlement to vernacular architecture does little to help the development of a theoretical approach. Rapoport demonstrates that there are many similarities between the two forms of environment (not least because he provides such an all-encompassing definition of these (ibid p 54)). But it is not clear how such a comparison can help to illuminate the formal nature of spontaneous housing as a category in itself.

The works discussed here highlight the importance of the concept of culture in an examination of house forms. They demonstrate that house form must be understood to be a product of the culture of the producers, rather than a product of the physical environment. But the discussion also indicates some potential pitfalls with the use of the concept of culture in the explanation of house form. It must be asked, then, can this concept be used in

this investigation, and if so, how? The following section will examine a group of works which have addressed the problems with the use of culture as an explanatory concept, and which present alternative approaches to the examination of the relationship between the concept of culture, and the physical form of the house.

Problems in the use of 'culture' as an explanatory concept. The use of the concept of 'culture' as an explanation for house form is appealing. It seems to avoid the problems of functional and physical determinism associated with other explanations, and to represent a positive appreciation of the diversity of house forms around the world. However, there are problems involved, which are broadly identified by Rapoport: "Culture is a vast domain, built form a small part of it and also a subset of it (...) It can be suggested that "culture" is both too abstract and too global to be useful." (Rapoport 1990,
p 10).

More specifically, the problems resulting from the explanatory use of the concept of culture can be largely divided into two varieties: the first relate to the generalized way in which the concept of 'culture' is used as an explanatory tool, insofar as it is frequently used in a way that implies that culture were an independent entity which influences people's actions with no input from the people. The second group of problems revolve around the more profound difficulty of the definition of concept of culture itself, and whether
it should be used as an explanatory tool at all.

The problem of the explanatory use of culture is, as James Duncan points out, that of reducing people to "... 'cultural dopes' blindly following the rules dictated by their culture" (Duncan, J, 1981 p 39). The analytical result of the use of this model is, according to King, that this type of approach "... tends to be static, giving too little importance to the dynamics of social and cultural change." (King 1984 p 434). Formal features are identified as belonging to particular regions or historical times. They are seen as identifying periods, or social groups, without any consideration of changes, active use of cultural elements by the people, or of outside influences.

The root of the problem, according to Nancy Duncan, is that the approach used derives from an early anthropological model of culture which turns this "...conceptual abstraction into an active force and which renders man a passive agent" (Duncan, N 1981, p 102), Such an approach leaves no room for explanations involving the questions of the formation of tastes, or of the factors underlying supply of housing. It also simplifies the question of demand to such an extent that it leaves out all explanations based on "... social, psychological, ideological, political and economic factors" (ibid p 102). The use of culture as an explanatory tool may,

she says, "... be due to a politically conservative bias which assumes that supply is automatically created by demand." (ibid p 103).

This analysis is supported by Keesing, a cultural anthropologist, who warns of the misuse of the term 'culture', the central preoccupation of his discipline: "... there is a danger of taking this abstraction we have created as having a concreteness, an existence as an entity and causal agent "it" cannot have...[we need] to remember that "it" is a strategically useful abstraction from the distributed knowledge of individuals in communities." (Keesing 1981 p 72).

This leads to the second broad problem of the use of culture as an explanatory tool, which is not simply whether the correct model is being used, but whether the concept can be useful at all in an explanation of house form. In essence, if houses are built by people, then they are cultural artefacts, but this does nothing to tell us why they take the form that they do within the particular context under examination, nor about why cultures change. Stating that houses vary in physical form because they are produced in different cultural contexts is an important starting point. However, in order to explain the particular elements of form within a specific cultural context, it would be necessary to resort to other elements of explanation. Keesing again: "The concept of "culture" as it has emanated outward form anthropology into popular thought, has too often served as a way of avoiding explanation in historical and economic terms." (ibid p 499).

Application of the concept of culture. Given the problems mentioned above, it must be asked: if the concept of culture is to be used in the analysis of built form, how can it be used? Ingold, discussing a similar difficulty with the use of culture within the study of ecological anthropology, suggests that "... perhaps the answer to [the] question 'what to do about culture?' is in fact to leave it out of the [...] equation" (Ingold 1992 p 53). Perhaps this recommendation with respect to the analysis of house form is unnecessarily extreme. However, difficulties do exist. Cruzate indicates the problem by referring to Voutat, who points out that "... cultural identity is not an explanatory concept, but a concept which requires explanation" (Voutat, 1992, in Cruzate et al 1996). As an alternative Cruzate proposes an approach which results in a more dynamic appraisal of the forces which shape culture "This orientation of the research supposes a shift of focus from the study of cultural aspects of society - a common set of values and representations - to social factors - the existence of different interest groups." (ibid p 2). In other words he proposes that rather than using culture in explanations of cultural phenomena, it is necessary to look at the elements of society which result in eventual changes in cultural realities. Taken in terms of the present investigation, such an approach implies not

explaining the form of informal houses as being the result of determined cultural patterns. Rather, it implies asking what are the social dynamics which underlie the use of, and changes in those determined cultural patterns which result in specific cultural forms, manifested in the form of the housing produced.

In a sense, the study of culture has been the realm of the discipline of Social (and in the United States, Cultural) Anthropology. Looking at the use of the concept within that discipline, it becomes clear that, indeed, culture tends to be seen as the object of study, rather than as the explanation for diversity. An example of this is given by Cohen, who explores the reasons for the maintenance of a markedly different cultural identity by Hausa traders in Ibaden, in Nigeria, from the Yoruba majority. He rejects explanations based on the supposed conservative nature of Hausa culture, and says, instead, that the Hausa can be seen to have emphasized their cultural separateness in order to maintain control over lucrative trade routes which otherwise would be vulnerable to usurpation by other ethnic groups. In the context of urbanization and industrial development, he explains, if privileges cut across ethnic lines, then ethnic differences will tend to disappear, to be replaced with subcultures based on social class, with new cultural elements. If, on the other hand, ethnic differences and class differences overlap, then existing cultural differences tend to become entrenched. "A great deal of social change will take place, but it will tend to be effected through the rearrangement of traditional cultural items, rather than through the development of new cultural items [...] Thus to the casual observer it will look as if there is here stagnation, conservatism, or a return to the past, when if fact we are confronted with a new social system in which men articulate their new roles in terms of traditional ethnic idioms. This is why a concentration on the study of culture as such will shed little light on the nature of this kind of situation" (Cohen 1988, pp 336-337).

From the above discussion, it would seem possible to conclude that one of the principal problems encountered in the use of the concept of culture in the analysis of house form is that of the conception of culture as a structure which guides, or even determines people's actions, with no indication of the role of actors as agents, or of how the structure discussed might change. This problem is, to some extent, clarified by reference to the theoretical approaches dealing with the interrelations between 'agency' and 'structure', among the most powerful proponents of which is Anthony Giddens.

Giddens, in a discussion of the differences between social science and the natural sciences explains that "In social theory, we cannot treat human activities as though they were determined by causes in the same way as natural events are. We have to grasp what I would call the double involvement of individuals and institutions: we create society at the same time as we are created by it." (Giddens, 1986, p 11). Therefore, he goes on to say, rather than, as functionalist and structuralist approaches tend to do, envisaging social structures like walls, that is to say institutions fixed by usage, "... we should have to say that social systems are like buildings that are at every moment constantly being reconstructed by the very bricks that compose them" (ibid p 12, italics original).

These ideas indicate the focus of Giddens' theory of double structuration. This theory is complex, and has been presented in an extensive series of books and articles. The present discussion will not enter into an extended analysis of these ideas. For the purposes of this research, it could be said that what is of interest is the explanation that Giddens gives of the duality of structure and agency: "All social action involves structure, and all structure involves social action. Agency and structure are inextricably interwoven in ongoing human activity or practice." (Ritzer 1992, p 570). That is to say that people's actions are not determined by structures, since those structures are, in fact, constantly created by the actors engaging in social activities. Rather, actors are guided in their actions by structures which are, in turn, constantly reproduced by those actions: "All reproduction is necessarily production, however: and the seed of change is there in every act which contributes towards the reproduction of any 'ordered' form of social life." (Giddens 1976, in Cassell 1993 p 101 italics original).

The changes which occur in structures during their reproduction result from the observation that "... the sort of 'knowledgeability' displayed in nature in the form of coded programmes is distinct from the cognitive skills displayed by human agents [...] It is the specifically reflexive form of the knowledgeability of human agents that is most deeply involved in the recursive ordering of social practices" (Giddens 1984, in Cassell 1993, pp 89-90). This reflexivity is manifested in a "... reflexive monitoring of activity", in which actors also "... routinely monitor aspects, social and physical, of the contexts in which they move." (ibid, p 92).

Giddens' theory is principally directed towards the analysis of social structures and institutions, which he understands as "... patterns of social activity reproduced across time and space." (Giddens 1986, p 11). However, he does not exclude patterns of cultural behaviour from his analysis, and it would seem that the general argument outlined above helps to overcome the dilemma of talking about actors as being guided by internalized structures of social patterns, but not being bound by these in their activities. The concept of reflexive monitoring of actors' own, and others' activities, and of the physical context, and the subsequent transformation of social (or cultural) structures, is also useful. It supports the notion that

actors do not merely follow predetermined cultural patterns, but that they are able to manipulate these to their own needs - an approach indicated by Cohen in the previous section.

The relevance of this to the discussion about the relationship between culture and house form is that this approach appears to support the view of culture as being a structure which provides a framework for the practices of social actors in activities such as the production of housing, but which cannot be said to determine the practice of the actors. Rather, the implication is that in order to arrive at an understanding of the nature of cultural practices, of which house form represents a concrete manifestation, it is necessary to examine these within the dynamics of the social context in which these practices occur. In fact, in the explanation of social phenomena, there always exist varied influences which have effect at the same time, and which overlap.

The need for a different approach: other literature sources. The discussion so far has examined the two broad bodies of literature in which it was expected that answers to the questions posed regarding the physical form of informally produced houses might be found: the literature on informal housing production in Mexico, and the more theoretical literature on the relationship between house form and cultural processes. This literature has provided useful insights into the physical form and social processes of production of informal housing in Mexico, as well as a greater understanding of the role of culture in the development of house form. However, while the informal housing literature helps to answer the first two questions, indicating that, indeed, the informal housing produced in Mexico City appears to conform to a distinct housing type, defined by a common set of architectural elements, the literature discussed was not capable of providing an answer to the motivations of the producers of informal housing. Concretely, it would seem that the concentration of the literature which aims to explain the form of houses is on the continuity of cultural identity in traditional contexts. Such an approach is not helpful in the context of informally produced housing in Mexico City, in which the producers come from a range of different cultural backgrounds to a culturally complex setting. Despite these aspects of the context, the producers of informal houses follow a very clear formal model in the production of their houses. It would seem that, in order to understand the motivations of the producers of informal houses, it is important to understand the significance of house form to them. The following section will discuss several approaches which deal with this question.

2. 3 House form and the expression of social identity

Inherent human housing needs or social construction of needs. There is a group of studies which have attributed desire for certain house types, normally the detached, owner-occupied single-family dwelling, to their potential in the satisfaction of basic, inherent human needs (Cooper 1974, Newman 1973, Porteous 1976). Criticisms of this general approach centre on the observations that it takes a culturally specific housing form - owner occupied single family housing - to be a human norm, and that the explanation does not take account of the social context in the development of housing values. For example, Pratt criticizes authors like Cooper of taking commonly held assumptions about house types and reifying them as theoretical dogma. She points out that "... it is possible that dwellers in high-rise housing projects are stigmatized by their residences and thus have reason to feel personally violated. It is another matter for Cooper to incorporate this reification into her theoretical analysis unselfconsciously by suggesting that the high-rise is inherently depersonalizing" (Pratt 1981 p138).

On top of this, a glance at the cross-cultural material available on house forms should be enough to provide an abundance of empirical evidence to demonstrate that the single-family detached dwelling commonly found in the United States, and other areas is not a culturally universal housing form. There are many examples of different cultural contexts in which people live in multi-family and often multi-storey houses, without any apparent evidence of social decay as a result. Mumtaz (1969), gives a description of villages in the North of Ghana in which there exists no apparent defensible space for families. In fact the structure of the village is such that people have to walk over other people's roofs, and through their houses to get to their own dwellings. In Yemen, there are many towns in which apartment blocks of up to ten or more storeys have been inhabited for centuries, without the social problems which some authors, confusing symptom and cause, attribute to this house form. In the United States themselves, the Pueblo Indians of New Mexico continue to inhabit what is probably the oldest continually used house form in the country, which is effectively a form of multi-storey, multi-family apartment block, with no form of defensible space for individual households. In Mexico itself, Cortés's description of the housing of the Aztec nobility is of large tenement houses, in which up to 300 people lived, sharing living and sleeping spaces (Morgan 1881). More examples could be offered, such as fortified villages in the Carpathians and long houses in Borneo, where up to 100 households live under the same roof (Armstrong 1989). Similarly, there are many examples of high-income high rise dwellings in the very cities being studied by these authors, for example the Barbican centre

in London, and most of the buildings in downtown Manhattan, which appear to suffer from few problems of crime or anti-social behaviour.

This debate has been widely discussed elsewhere, and it will not be examined in greater depth here. The purpose of referring to the discussion here was to bring up the question of whether there exist inherent human needs for housing. Criticisms indicate that this is not the case, but rather that housing needs are developed within determined socio-cultural contexts. This is a point made by Coulomb & Sánchez, "... having a social character, needs are socio-historically constructed, and as such housing needs, and the ways in which they are satisfied are constructed and reconstructed daily on the basis of multiple determinations: economic, social, political and ideological" (Coulomb & Sánchez 1991 p 113[6]).

The issue of the continuous contextual variability of what people demand from their housing is explored more fully by Ramirez et al (1992). They point out that the low-income populations which produce self-help housing, by so doing abandon the housing provided in the section of the market that is economically accessible to them, that falls below socially acceptable standards, in order to produce housing which is, initially at least, of an even lower standard. The explanation for this apparently contradictory behaviour is, they suggest, that in this way people can escape the 'deadlock' of a context in which the provision of housing is not incorporated into the social reproduction of the labour force. The only way they can, in such a context, provide themselves with housing that is 'socially acceptable' is to produce it themselves, gradually, and initially using artesanal production techniques. In this way they can, over time, make improvements to the housing, and bring it up to 'socially acceptable standards'.

So what do they mean when they talk about 'socially acceptable standards' in housing? They explain that "... cultural definitions and aspirations and [...] political achievements [...] define quality thresholds - by no means easy to identify or to anticipate" (Ramirez et al 1992 p 102). The elaboration of formal definitions of housing standards (minimum floor areas, etc) outside of specified social contexts is, as they point out, a notoriously futile pastime. Rather, they address the subject in terms of the process of completing the 'use values' of houses in conformity with "... socially acceptable standards [which are] permanently redefined in the context of an ongoing social struggle. Although highly variable, they are in most places related to the minimum qualities of the houses regularly transacted as commodities in the national market." (ibid p 107).

This discussion indicates that house form does not serve only the functions of shelter and protection, a point made by Rapoport in section 2, and that it does not serve inherent human needs,

but rather, that it relates to needs created and recreated within determined social contexts. In particular, there have been a large number of studies which consider the role of house form in the expression of the social identity of the inhabitants (Duncan, J. 1981; Duncan, J. 1989; Hockings, J. 1987; Holston, J. 1991; Hummon, D. 1989; Pratt, G. 1981). What is often missing in this type of analysis however, is any examination of the mechanisms by which it can be argued that the physical form of houses, which are inanimate objects, is capable of communicating the social identity of the inhabitants. This is a question that will be discussed in the next section.

Social ascription of meaning to elements of built form. The notion that objects are ascribed with properties which are not inherent to their physical nature was discussed, in some detail, by Marx. Pratt discusses Marx's ideas of objectivation, alienation and reification, the last of which she defines as "... the process by which man, having forgotten the human source of products such as ideas, values or concrete objects, views them as objective things and allows them to dominate him." (Pratt 1981 p 137), in other words man ascribes to things a power and a reality which they can not possibly have in themselves. These qualities emerge not from the things themselves, but from the social context in which they are produced. The idea that qualities and meanings are assigned to objects within a social context forms the basis of Blumer's theory of 'symbolic interactionism', which "... does not regard meaning as emanating from the intrinsic makeup of the thing, nor does it see meaning as arising through psychological elements between people. The meaning of a thing for a person grows out of the ways in which other persons act towards the person with regard to the thing. Their actions operate to define the thing from the person; thus, symbolic interactionism sees meanings as social products formed through activities of people interacting" (Blumer in Berg 1989 p 7).

Thompson applies this general approach to an explanation of why is that objects, after depreciating in value in accordance with traditional economic theory, can then suddenly be removed from the category of 'rubbish', ie with no value, to achieve a renewed and steadily increasing value. The explanation he gives is that while objects have inherent physical properties, it is wrong to assume that the qualities that are held to pertain to objects result from those physical properties. Rather, he explains, while there do exist natural limits which are imposed by the physical properties of things, "... objects have the qualities that they have as a result of a social process of endowment" (Thompson 1979, p 51).

He applies this explanation to the study of housing, in an examination of the process

commonly referred to as 'gentrification', that is to say the process by which slum houses of little or no value are reinvented as desirable historical properties of increasing value. This process demonstrates the way in which the qualities attributed to objects, in this case houses, can shift dramatically without any actual change in the inherent properties of the houses. This is because at the day to day level, assessments of elements of built form are to a large extent independent of the inherent qualities of the built form. The houses are likely to be superficially changed, in order to comply with certain contemporary demands, but are unlikely to be fundamentally rebuilt.

The relevance of this approach to the present discussion lies in the idea that values are not inherent in objects, but rather are socially ascribed to them, and that people can manipulate and change those values. This means that in order to understand the nature of built form, it is not sufficient to study the physical form of the house in isolation. Rather, it is necessary to study people's understanding of the meanings of the built form that they produce.

This approach is one that has formed the basis of the study of sociolinguistics. Sociolinguistics is the study of the social use of language. The subject matter is, in itself of no relevance to this paper, but the development of the theoretical concepts provides a useful illustration of some of the issues which affect the nature of built form.

The principle of the study of sociolinguistics is that language is not merely a systematic code for the communication of specific information. It is, beyond this, a social phenomenon; it is a means of establishing the parameters of a relationship between individuals within a social context. Language communicates information not only through the medium of what is said, but by how it is said. Aspects of language use, including dialect and accent, provide information about the individual relating to such questions as place of origin, class, gender (rather as specific house forms are supposed to do in analyses of 'vernacular architecture'). However, sociolinguistic theory provides interest by going beyond this property of language as a social marker, by taking account of the importance of attitudes to different language forms, and the dynamics of how people use these.

While most linguists now agree that different forms of language have no intrinsic qualities, attitudes to different language forms vary widely, and can provoke strong emotions in certain circumstances. This is because particular elements of language are invested with social information that then is transmitted by the use of the language. "There is nothing at all inherent in non-standard varieties which makes them inferior. Any apparent inferiority is due only to their association with speakers from under-privileged, low-status groups. In other words, attitudes towards non-standard

dialects are attitudes which reflect the social structure of society." (Trudgill 1983, p 20).

The relevance of this theoretical approach to the study of built form may not be immediately evident. However, on reflection, it becomes apparent that, if we discount the immediate subject matter, that is to say spoken language, the concern of sociolinguistics is to demonstrate how social attitudes influence the use of elements, in this case of sound, which have no intrinsic qualities, but which, through association, are imbued with different social values. The same could be argued with respect to elements of built form; objects with no intrinsic social qualities, are imbued, as a result of association, with certain values, and these values arising from the social context can be expected to affect the use of those objects.

The application of the approach developed in sociolinguistics was the basis for a study conducted by Pavlides and Hesser on the vernacular architectural form of a village in Greece. Their aim was to "... "see" that environment through the eyes of the inhabitants, and to arrive at an understanding of its use and meaning as defined by those inhabitants." (Pavlides & Hesser 1989, p 359). The way in which they applied the concepts of sociolinguistics to their study was to hypothesize that when examined from the perspective of the inhabitants, vernacular architecture would reveal "... socially significant information known and shared by the inhabitants" (ibid p 360), but which would not be accessible to the outside observer simply through the observation of the physical properties of buildings.

Holston takes a similar approach in an examination of the production of spatially and socially peripheral housing in urban Brazil. He refers to architecture as a "... public idiom which enables people to evaluate that experience through a precise vocabulary" (Holston 1991 p 456), and later (pp 458-459), he talks, in the terminology of de Saussure, the founder of modern linguistics, of the "langue" and the "parole" of "house talk", the first referring to the common set of "gestures" that are used to ensure communication, and the latter to the particular "gestures" which communicate individuality.

The analysis revolves around the social significance of the process of autoconstruction, in which the home has become the "... domain of symbolic elaboration about the experience of becoming propertied and participating in mass consumer markets, in which both ruling-class and working-class ambitions for developing new social identities intersect." (ibid 447).

The aspect of the house that Holston focuses on is the "... house as surface-as public façade, signboard, decorated wrapper, second skin." (ibid p 457). His main conclusion is that people make use of the house as a means of communicating respectability, in the face of poverty. The importance

of the house as a medium for this communication is compounded by the finding that people are often immigrants, who come from places where they are known by name, to the city where they become nameless, and cannot rely on their reputation to vouch for their respectability. In this way they use the appearance of the house to communicate their identity. He concludes that through autoconstruction people politicize themselves as citizens, and at the same time they replace denigrating images of themselves with "... new ones of competence and knowledge in the production and consumption of what modern society considers important" (ibid p 462).

The works of Pavlides & Hesser and Holston both provide examples of the way in which a socio-linguistic approach can be applied to the study of house form, although neither of these use the approach specifically to investigate the question of social identity, as was discussed earlier in this section. Nevertheless, both provide useful methodological and theoretical bases for the development of an explanation of informal house form.

2.4 The context of informal housing production in Mexico City

The preceding section illustrated the broad bases of an approach which could help to understand the mechanism by which elements of house form would appear to communicate the social identity of the inhabitants of the housing. How can this broad theoretical approach be applied to the context of informal housing in Mexico City? The discussion up to this point has highlighted the importance of locating analyses of house form in an understanding of the social context of housing production. For this reason, this section will revisit the literature on Mexican informal housing production in order to arrive at an understanding of the social context of informal housing production in Mexico City.

The social identity of the inhabitants of Mexico City. How does the available literature describe the social context of informal housing production in Mexico? At the broadest level it can be said the occupants of informal housing are predominantly poor (Ward 1985, p 27; Connolly, 1990; Schteingart, 1997). The generally accepted level for indicating the economic status of the inhabitants of the informal settlements is that the majority of them earn less than 2.5 minimum salaries per household. Indeed the poverty of the inhabitants is the main explanation for the existence of informal settlements. Burgess (1982) points out that the informal production of housing can be explained in terms of the failure of the costs of social reproduction of the work force to be provided within their wages. That is to say, workers' wages are

insufficient to attain housing in the formal housing market, and so they are driven to the informal production of their housing.

However, the fact that the inhabitants are poor does not represent a complete explanation of the social profile of the inhabitants of the informal settlements. As Schteingart points out "While not all of the poor live in settlements which were, or are informal, neither, as will be demonstrated throughout the following chapters, are absolutely all of the inhabitants of these settlements poor (although the great majority are)" (Schteingart 1997, p 26[7]).

In fact, in Mexico City, the informal autoproduction" of houses on the periphery is one of four broad options available to the urban poor. These options are "... a) to acquire a house through governmental and social interest programmes, b) to acquire a plot and to autoproduce the house in the periphery, c) to rent d) to share with someone else the house or plot" (Coulomb & Sánchez 1991, p 95). In which case, the question arises, which section of the urban poor inhabits the informal peripheral settlements?

This question is one which is open to some debate. The traditional explanation, current until the 1960s (Gilbert and Varley 1991 p 95; Coulomb & Sánchez 1991; Coulomb, 1992), and still used widely in the press, and by some academics (see for example, Ayala 1996) is that the informal settlements represented sinks for the waves of poor, illiterate rural migrants who came flooding daily into the cities. This explanation was overturned, most notably by Turner (1968), with his bridgeheader model, which involved migrants moving to inner city slums, until they consolidated their position in the city, and had saved up sufficiently to move into self-help settlements on the periphery. This theoretical approach was fitted to the Mexican situation by Sudra (1976), who proposed that, in fact in the Mexican case many of the migrants moved into rented accommodation in the consolidated self-help settlements rather than in the centre. Nonetheless, the basic approach to life-cycle changes and their relation to residential tenure choice remained (see discussion in Section 1).

The Turner model of residential choice has been questioned both theoretically (Burgess, 1982), and empirically (Gilbert and Varley 1991, Gilbert & Ward 1985, Coulomb, 1992, Coulomb & Sánchez 1991). Gilbert and Varley question the notion of 'choice', ie the idea that people can choose the residential form that suits their particular life-cycle stage. They suggests that while choice is important "... both choice and constraint are critical ingredients in the housing decision" (Gilbert and Varley 1991 p 102). Such an approach, they say, would explain the renewed importance of low-income rental housing, because "... the tenure balance depends not on the absolute cost of

ownership, but on the relative costs of renting versus ownership" (ibid p 7). Thus changes in tenure must be understood in the context of the dynamics of relative prices. In Mexico City, "... towards the end of the 70s the average price of a plot in colonia El Sol (Nezahualcóyotl) [...] was around two minimum monthly salaries, at the end of the 80s the price of a peripheral plot with no services was around 10 times the minimum salary" (Coulomb 1992 p 170[8]). However, as Gilbert and Varley (1991 p 100) point out, although earlier works have suggested that owners are wealthier than tenants, they find that in fact they have extremely similar incomes (ibid pp103-108), so relative wealth, as such, cannot be used to explain why some people engage in informal housing production.

Coulomb & Sánchez also question the validity of the Turner model, and criticize this on the basis that it matches supply with demand (Coulomb & Sánchez 1991 p 58). They also observe, in contrast to the assumptions of the Turner model, relatively low mobility on the part of the low-income population (ibid p 62). They point out that Turner's model only takes account of migrants, and not of the growing population of natives of the city (41% of the population of the peripheral neighbourhoods in their study, ibid).

They suggest, rather, that "... the means of satisfying this need for housing, including tenure forms, will be conditioned by multiple determinants of economic, social, political and ideological character" (ibid p 118). There are a number of possible variables which they suggest might influence the tenure status of poor families, including whether they have children or not, and the stability of their employment (they suggest that greater instability in employment makes the option of renting less attractive). Following from Varley's preparatory work for Gilbert and Varley (1991) (Anne Varley personal communication), they identify "... two elements which appear to mark important differences between property owners and tenants [which] are: the migratory condition of the head of the family and the housing tenure of the parents [of the head of the family]" (ibid p 119) (see also Gilbert and Varley 1991, pp 113 and 117-118). With respect to the first of these they suggest that there is a higher percentage of natives among the tenants in the city, and a higher percentage of migrants in the peripheral settlements. This could appear to support the original (1960s) model of migrants moving to peripheral settlements, but this is not, in fact, the case because most of migrants have been living in the city for more than 20 years before becoming property owners (ibid p 69). Rather, they suggest that this has to do with the fact that natives have more social resources on which to draw in the search for other housing forms. With respect to the influence of the tenure form of people's parents on their housing tenure, this, they suggest, has to do

with socio-cultural values relating to housing tenure which people bring with them: "It is more "natural" for children of tenants to continue to be tenants, while we might think that for the children of home owners, the search for the ownership of a house is more "naturally" converted into a sort of "categorical imperative", socially and culturally unquestionable" (ibid, p 113).

The emphasis on socio-cultural factors is of some importance to this discussion, although it refers to the form of tenure, rather than to the physical form of the house. It supports the suggestion that socio-cultural "... values, which are hard to change, since they are created and recreated in everyday life" (ibid) might have an important influence on house form. Also the suggestion that the majority (79%, p 68) of the inhabitants of the peripheral settlements are migrants appears to support the initial suppositions of this paper. However, a number of doubts arise. Once again, these arise in terms of the absence of references, in the descriptions of informal house form in Mexico City, to the heterogeneity of house form which we would expect if migrants from different areas brought with them different cultural patterns of housing. Perhaps it may be the case that a positive value towards home ownership is easily maintained, as it does not clash with the value system in the city. Other values relating to the physical aspects of house form, might, however, be more changeable, if they clash with those found in the city.

Another uncertainty which arises, with respect to the percentage of migrants in the peripheral settlements is that in another study Coulomb suggests that the rapid growth of informal housing production in the state of Mexico in the 1980s is due largely to "... an important increase in the habitational needs of voluminous population groups who arrived, during the decade, to adulthood" (Coulomb 1992, p 159). In other words, here he seems to be suggesting that the bulk of the population engaging in informal housing production are intra-urban migrants, in accordance with Gilbert and Varley's approach, and also in agreement with Corona & Luque's analysis of migration in Mexico, which points out that, while the growth rate of the city from 1970-1990 was 2.6%, the natural growth rate was 2%, and only 0.6% was attributable to migration (Corona and Luque 1992, p 22). Camposortega (1992) also claims that 30% of the migrants to Mexico State (ie the fastest growing part of the urban area of Mexico City) come from the DF. Furthermore, Corona & Luque note that intra-urban movements are a reflection of the scarcity of housing in the city centre (Coronal and Luque1992 p 23). These figures suggest that an important part of the population of the informal settlements is composed of people who have never been migrants from other parts of the country, but who originate from other parts of Mexico City.

How, then, can the social identity of the inhabitants of the informal settlements be characterized? The literature appears to support the negation of the idea that these settlements are collections of recently arrived rural migrants. It also raises questions with respect to Turner's model, both on the basis of his assumption that demand automatically creates supply, and with reference to the complexity of intra-urban movements, and the factors which influence these, which are not accounted for in his model. However, there is no clear agreement as to what the answer is. There is controversy as to whether the inhabitants of the informal settlements are more or less poor than those of the inner city rented slums, whether they are migrants from other parts of the country or from other parts of the city, what is their precise social profile. Perhaps the best brief profile that can be drawn of the inhabitants of the informal settlements is that "Their populations belong to social sectors which, although they are predominantly located within the range of "low income", have cultural, social, migratory, familiar and economic characteristics which are often more opposed than similar" (Coulomb and Sánchez 1991 p 61). That is to say, the inhabitants of the informal settlements are predominantly poor, and that this is what identifies them as a unity. Other than this, they represent a highly heterogeneous mix of social, political, cultural and employment characteristics.

Urban housing norms. While the previous section dealt with the social identity of the producers of informal housing in Mexico, this section will deal with the physical context of informal housing production: the city of Mexico, specifically, the social norms governing housing production in that context. It was previously discussed how housing standards which are considered to be socially acceptable are developed within determined social contexts. This observation suggests that it should be possible to identify a set of housing norms[9] which form the parameters for socially acceptable housing in a social context such as Mexico City. This section will present findings from various sources which suggest that this is the case, although, the housing norms identified cannot be limited to Mexico City. Rather, it will be suggested, these represent a set of Mexican urban housing norms.

The term 'urban housing norms' automatically suggests the existence of the opposite, that is to say a set of rural housing norms. The literature on Mexican vernacular architecture (see for example, López Morales, 1993; Moya Rubio 1988), suggests that there do, indeed, exist a set of characteristics which characterize rural housing, within the diversity of house types which are found. These include the use of predominantly organic building materials, the limited internal division of space within the house, and the non-existence of formal services, specifically sewerage and electricity. The division

into urban and rural house forms is problematical, because it immediately raises the controversial debate about the existence of distinct urban and rural ways of life, associated with the theories of Louis Wirth (1938), applied in Mexico by Redfield (1941) and Lewis (1962;1966) among others. Such an approach has been widely criticized, (see, for example, Perlman 1976; Lezama 1993). One of the major problems with a distinction between rural and urban ways of life is the tendency towards diffusion of urban values into rural areas (Glass 1989), which blurs such distinctions. However, since the present research is about house form in Mexico City, these issues cannot be explored further. Rather, the literature will be examined in order to determine whether it can be argued that there exists a set of housing norms which characterize the urban areas in Mexico, without trying to determine to what extent these norms might have been diffused into rural areas.

No literature was found which explicitly discusses housing norms in Mexico City. These tend to be implicitly understood, as is the case with norms, amongst people who share them. This means that this section of the literature review will require an analysis of various texts in order to extract data from them.

The main sources consulted for the determination of the urban housing norms in Mexico are the 1995 intermediate census data for the DF[10] and Mexico State (INEGI 1995, a and b); the comic-format housing construction manuals (APASCO 1997; Cementos Tolteca 1984); and various other sources which refer to housing norms.

The census data reveals its value-based approach to housing standards when it states that "It is traditional to consider housing as a factor in social well-being, since the population, in order to satisfy its needs, requires housing which provides it with, on the one hand, adequate protection from the environment, and on the other hand, with the basic services needed to achieve favourable conditions for familial, social and economic development" (INEGI 1995 (a) p 26[11]).

The housing norms revealed by an analysis of this and the other texts mentioned previously will be presented below.

i) Use of Materials. The section on "...predominant materials in floors, walls and roofs" (INEGI 1995 (b), p 982[12]), has a note, which divides material types into two categories: "Light, natural and precarious materials in walls include: reeds, bamboo, palm, daub or mud, wood, corrugated asbestos or steel and adobe, waste material and corrugated cardboard. Solid materials in walls include: brick, block, stone, cut stone or cement. Light, natural and precarious materials in roofs include: corrugated asbestos and steel, palm, shingles, wood, tiles, waste materials and corrugated cardboard. Solid materials in roofs include: concrete slabs, brick and

ceramic roofs laid on beams."

This section clearly sets out the norms for building materials in urban areas, separating those which are light, natural and precarious (ie bad), which include almost all of those normally found in rural areas, and are commonly found in informal settlements, from solid (ie good) materials.

These observations are supported by the construction manuals published by APASCO (1997) and Cementos Tolteca (1984). In both cases the manuals explain how to build a house with the following materials: foundations, floors, columns, ring beams and slab roofs of concrete. Panels of brick or concrete block. External windows and doors of steel or aluminium. Internal doors of wood. The Tolteca manual justifies some of these choices. For example "Concrete floors are better than earth floors, because they have important advantages: first, because the earth floor allows the reproduction and growth of numerous micro-organisms which are damaging to health. Secondly, they avoid humidity, which also can produce many illnesses" (Cementos Tolteca 1984, p 78[13]). Similarly, "Doors of steel, which generally are used on the exterior, offer us greater durability, better resistance, and safety" (ibid p 124). The house should be painted because "... constant contact with dust, wind, rain and sun can deteriorate [the external parts of the house]. This care also helps the house to look more attractive, and so we enjoy arriving home" (ibid p 202). They are also supported by CENVI (1996), which has a section giving percentages of houses with or without slab roofs. No other alternatives are given, implying that a concrete slab roof is the urban norm. The analysis is also supported by a discussion of living standards in Mexico by Camposortega Cruz, who says that "The quality of life in the MZMC is greatly superior to that of the rest of the country. For example, houses with earth floors are fewer than 4% in the Metropolitan Zone, in contrast to 20% in the country as a whole" (Camposortega Cruz, 1992, p 13[14]), clearly expressing the value of the superiority of other (normally concrete-based), floor types over the use of earth in floors.

ii) Use of Space. The section of the Conteo 95 on average occupancy (INEGI 1995 (b) p 982, looks at numbers of occupants per house, per room, and per sleeping room, an assessment which clearly sets out the norm of subdividing space into separate areas, some of which are specially set aside for sleeping. This interpretation is strengthened by the table (p 983), which shows numbers of rooms per dwelling, indicating that more than half of the dwellings surveyed have more than 4 rooms. Another table (ibid p 983) indicates that 96% of the houses have a kitchen, and that 87% of the houses have this as a room to itself.

These data, which indicate the existence of a norm for separate rooms for the activities of eating and sleeping, are supported by the regulations for minimum sizes of rooms in the building regulations for the Federal District. Although these regulations do not specify that the existence of certain rooms is mandatory, the fact that they regulate the minimum sizes of different types of rooms indicates that it is held to be normal for these rooms to exist. The categories of rooms which are specified are: principal bedroom; additional bedrooms; sitting room; dining room; integrated living-dining room; kitchen or kitchen integrated into dining-living room; bathroom; wash room (DDF 1998 p 134).

Both of the self-build manuals indicate a house model with extensive internal subdivisions.

The APASCO manual, which is more technical, does not make any suggestions as to how these spaces could be used. However the Cementos Tolteca manual makes some comments: "The walls which divide the spaces of the house allow everyone to be comfortable, and to have their own space. All the members of the family require their personal spaces, this contributes to the family harmony. Men and women grow and develop as such, and for this reason they require their own spaces in order to conserve their intimacy, even more so the couple. It is better to have three small rooms than one big one, that way living together is more agreeable." (Cementos Tolteca 1984, p 58[15]). These comments clearly outline the values which, at least the authors of the pamphlet, consider important regarding the internal use of space in the house.

iii) Services. The services which are considered normal in urban housing are similarly revealed in tables on page 984 (INEGI 1995 (b)), which consider dwellings with connection to the water network, with drainage, and (ibid p 985), counted by the type of fuel used in cooking, in which 90% of the households use gas, in preference to wood or charcoal. Once again, these figures are supported by the building regulations, which specify minimum requirements for the provision of potable water, and sanitary services (DDF 1998, pp137-138).

APASCO (1997) explains the processes of the introduction of three basic services; potable water, electricity and drainage. Tolteca comments on the importance of electricity: "Modern life requires electricity in all respects. It accompanies us from when we wake up, until we go to bed." (Cementos Tolteca 1984 p 152) The analysis is also supported by the continuation of the passage from Camposortega Cruz, cited in the section on the use of materials: "... houses with drainage constitute 91% in the first case (the Metropolitan Area), in contrast to 65% in the second (the rest of the country); houses with piped water constitute 95% against 80%, and houses with electricity 98.5% against 87.5%" (Camposortega Cruz, 1992, p 13). The data is also supported by Consejo Nacional de

Población, which uses the following indicators to define the state of 'marginality' with respect to housing: "Houses without piped water; houses without drainage or toilet; houses with earth floors; houses without electrical energy; houses of an inadequate size for the needs of the home" (Consejo Nacional de Población, 1992, p 17[16]).

iv) Summary of Urban housing Norms. From this discussion it can be concluded that there exist certain basic norms with regard to urban housing in Mexico. These norms are summarized succinctly by Duhau & Schteingart (1997), in a methodological section, which explains the categorization system they used for a set of questionnaires. Because it reflects the key elements of the discussion above, this summary will be cited in full below:

Floors:
      earth or packed earth = bad
      cement = regular
      wood, mosaic = good
Roofs:
      corrugated cardboard or wood = bad
      corrugated metal or asbestos = regular
      concrete slab or concrete block = good
Walls:
      corrugated cardboard or wood = bad
      stone or adobe = regular pre-stressed
      concrete, cement, concrete blocks or
      bricks = good
Finishings:
      no finishings = bad
      lime-wash or paint on brick = regular
      stuccoed, roughdashed or plastered
      = good
Bathrooms:
      does not exist, or outside and shared
      = bad
      outside but exclusive = regular
      inside, shared or exclusive = good
Use of the kitchen to sleep:
      yes = bad
      no = good
Internal divisions:
      are not separated = bad
      curtains, cloths, mobile panels = regular
      walls = good

People per room:
      two people or less = good
      from two to 3.5 people = regular
      more than 3.5 people = bad
Ventilation in the rooms (bedrooms, kitchen; bathroom and sitting room):
      none = bad
      from one to three = regular
      four = good"

(Duhau & Schteingart, 1997, p 56[17]). Since no

reasons are given for why any of these characteristics are considered to be bad, regular or good, and since none of them appear to be intrinsically so, it can be understood that this list reflects a set of values which relate to elements of house form in the urban areas. The list complies with, and summarizes those norms mentioned earlier.

This discussion supports the proposal that, albeit with superficial variations in terms of style and size, there exist a broad set of norms which characterize the physical form of Mexican urban housing. These can be summarized as follows: durable building materials used throughout the construction; differentiated use of space within the house, in accordance with a clear pattern; the existence of formalized urban services. As well as characterizing the form of houses within the formal sector, however, an examination of the literature, together with observations of informal houses demonstrates that these comply very closely with the urban housing norms discussed here, as can be seen from the description given below. The apparent contradiction of informal houses, which are produced outside the formal mechanisms of social control, conforming so closely with the established urban housing norms, will form the basis of the theoretical explanation given in the following section.

3. THE USE OF THE ELEMENTS OF HOUSE FORM IN THE EXPRESSION OF SOCIAL IDENTITY: A THEORETICAL APPROACH

The foregoing discussion presented a review of the literature on house form, on informal housing production, and of other sources which provide conceptual tools. This section will use the discussion of the literature as the base on which to construct a theoretical explanation of the physical form of informally produced houses in Mexico City.

The physical form of informal houses in Mexico City. The questions with which the research was initiated related to the physical form of informally produced housing in Mexico, and the motivations of the actors in the production of that house form.

Before going any further, it will be necessary to be more precise about what is to be explained, by providing a description of the physical form of informally produced houses in Mexico. This description is formulated on the basis of the literature discussed in section 1, and from the direct observation of the characteristic elements of informal houses in Mexico City.

The informally-produced houses in Mexico City are not built as complete products, but rather they pass through several phases of construction. This is

an important characteristic of this house form, and it is vital to gaining an understanding of the final form of the houses produced. For this reason the description of the informal house form will not merely be given in terms of the final product, but of the process as a whole.

The process is divided conceptually into four phases. This division is aimed at clarifying the description of the consolidation process, but it is not random. It reflects the division into five phases proposed by Bazant (1985), discussed in the first section of the paper, and it also reflects the system of categories used by the inhabitants of the informal settlements. Each of the four phases of consolidation will be described in terms of materials used, division of space within the house, layout of the house on the plot, and the use of decorative elements. It must be taken into account that it was found that the houses are not consolidated as single structures, but rather, are composed of a collection of separate structures which may be consolidated at different rates. For this reason, the description given here must be understood as representing an ideal process, based on the standard patterns found in real cases examined.

Phase 1 Constructions. These constructions normally consist of one or more structures of approximately 4x4m. The structure is made of a mixture of new and second hand small-dimension timber, with a roof sloping lightly (at an angle of 4° or 5°) in a single direction. This structure is covered with sheets of corrugated cardboard impregnated with creosote[18]. Waste materials, such as blankets, carpets, sheets of steel and sheets of plastic are also used in the covering, but these cover a relatively small proportion of the structure. The houses have simple doors made of wood, which can be locked with a padlock and chain, or they have curtains or blankets covering the door opening. They do not have windows. The floor is earth.

The constructions consist of a single interior space which is used for multiple activities of cooking, eating, sleeping, washing, and living activities. Normally when there is more than one space on the plot, these are occupied by different households. The toilet, when it exists, is a small structure, built in the same way as the rest of the house, and located in the corner of the plot, together with the washstand.

The arrangement of the structure on the plot follows one of two broad patterns: either it is located in the centre of the plot, and is surrounded by open space, or the individual structures are arranged around the perimeter of the plot, enclosing an open space in the centre. Given the small size of the individual structures, the enclosure of space at this stage is incipient.

The decorative elements used are rudimentary. Mostly they consist of the use of plants and flowers,

hanging in pots around the house, and in the use of white paint on some parts of the structure.

Phase 2 Constructions. In this phase, the previous constructions are replaced by others of the same size or larger. They are built with a single skin of concrete bricks or blocks, without foundations or supporting structure[19]. The roof is as in phase 1. The floor is earth, or a thin skim of cement. The houses have doors and windows made of steel or aluminium. The bathroom-toilet remains, from the previous phase, and is made of corrugated cardboard, and is found in the corner of the plot, near to the washstand.

In the cases in which there is more than one structure, this allows a slightly greater division of space than in the previous phase, but in essence the phase 2 structures have undivided internal spaces, dedicated to multiple uses.

The layout of the house on the plot follows the same general pattern as in phase 1, ie, either with the structures in the centre of the plot, or with an incipient enclosure of the plot by the structures.

The decoration of the house in this phase is limited, as in phase 1. The most common form of decoration is white paint, directly applied to the unplastered brickwork, although there are occasional examples of houses built of unsupported brickwork which have been plastered and decorated with relief elements.

Phase 3 Constructions. In this phase of consolidation, the structures from the previous phase have been replaced by a single structure which occupies a much larger portion of the plot. It is built on foundations of masonry, with a ring beam of reinforced concrete on top. Reinforced concrete columns are integrated into the structure at the corners, and at intervals of approximately 3m in the walls. These columns are designed to support an upper ring beam at a height of 2.5m, although this upper ring beam does not yet exist at this stage in the construction.

The roof is the same as in the previous phases - a light structure of wood, inclined at a shallow single pitch, and covered with laminated materials (cardboard or corrugated iron, or corrugated asbestos). The bathroom is a small room (2x2m) inside the house. It has a flush toilet, directly over a cesspit, although the toilet flush is not plumbed in. The floor is a concrete skim, over a rubble base. The windows and doors are of steel or aluminium. There is a wall, built in the same way as the walls of the house, surrounding the plot.

The structure is divided internally with concrete brick or block walls. The spaces are assigned specific uses: kitchen; living area; separate bedrooms for parents and children; and a bathroom.

The house occupies its final position on the plot. It follows one of two patterns of layout on the plot, as described for the phase 1 houses, either in

the centre of the plot, with open space around it, or with the structure ranged around the edge of the plot, with the open space in the centre. The patterns in this phase are more complete than in the previous phases. The communication between the different rooms is a mixture of internal and external (through the patio).

The decorative elements are more elaborate in this phase. The walls are plastered on the inside, and the windows and doors are painted and finished with aluminium trimming.

Phase 4 Constructions. In terms of the materials used, this house is identical in all respects to the previous phase, except that the wood-structured roof has been replaced by a reinforced concrete slab roof, of 10-12 cm thickness. The inclusion of the roof means that the phase 4 houses might also have further stories. It is necessary for the house to reach this stage in order to build a second floor, because the floors are always of slab construction. If the house has more than one level, the form of the upper levels is identical.

The division of space inside the house is the same as in the phase 3 constructions, except that, with the potential for further stories, the division of space can be complete even in cases in which there are more people occupying the plot.
The layout of the house on the plot is the same as in the phase 3 constructions.

The use of decorative elements consists of the following features: The house is plastered and painted in bright colours. The doors and windows are painted, and trimmed with gold. The roof projects out to form a canopy. Decorative details are applied to the front of the house, such as false stonework, brick arches, wrought iron railings, and relief plasterwork. Trees and flowers are planted both in front of the house, and in the patio. Inside the house, the floor is covered in tiles, the walls are plastered and painted.

What can be noted even from this highly condensed description of the process of formal consolidation is that while the earlier phases are characterized by a notable divergence from the urban housing norms described in the previous section, the final phase of consolidation is characterized, in contrast, by an extremely close conformity with those housing norms. Combined with the previous observation of the great homogeneity found among the informally produced houses with regard to the process of consolidation, it can be said that the informal production of houses, although not regulated formally, is characterized by a high level of conformity. The reasons for this will be discussed in more detail in the following section.

Review of the research problem. To recap: the producers of informal houses in Mexico are socially and culturally heterogeneous, within the wider

urban context. What characterizes them as a coherent social group is their economic status, and the resulting fact that, being unable to accede to housing within the formal system, they produce their own housing on the margins of legal and social acceptability. In the production of their houses, the producers follow a very clearly established system. The production of houses passes through a number of phases, the earlier of which can be characterized by a clear divergence from the urban housing norms, in terms of materials, use of space, etc. The final phase, however, is characterized by an extremely close accordance with the urban housing norms, and with a great homogeneity of form among the houses.

On the basis of the discussion up to this point, this section will present a theoretical explanation of the physical form of informally produced houses. There are a number of perspectives from which the question of house form could be examined, which could be summarized as being functional, cultural or sociological perspectives.

There exists among the inhabitants of Mexico City, as elsewhere, a need for shelter. In this sense, the production of housing is a manifestation of what Runciman (1998) refers to as 'evoked behaviour', resulting from human evolution. However, the climatic conditions in the valley of Mexico are not extreme, and cannot account for the complexities of the house forms found there. Nevertheless, there are factors of the local context which have certainly had an important influence upon the historical development of the model of housing found in the valley of Mexico. For example, the prevalence of earthquakes, the relative shortage of timber and the abundance of stone for building. But, it is argued, while these factors can be used to explain the historical developments of house form in general, this paper is concerned with the reasons for the physical form of informally produced houses in particular, and so will look for explanations in the social context, and not in the broader geographical context.

Staying within the framework provided by Runciman, he calls acquired behaviour that resulting from people borrowing idioms, fashions and behavioural styles that they see being used around them. With regard to housing production, this means that people tend to produce their housing in accordance with the models of housing that they see around them, that is to say, in accordance with the housing values that they internalize through the processes of daily life in a context in which specific models of housing exist.

In a social context in which housing problems did not exist, the rest of the explanation would be relatively straightforward: individuals produce and live in housing which accords with their cultural values, following the procedures of what Runciman (ibid) calls imposed behaviour, which are the set of institutionalized procedures which have developed

around the activities of housing production exchange and consumption.

However, the widespread existence of informal production of housing in Mexico can be understood as being the result of a profound problem in the housing system. The nature of this problem is that there exists a contradiction between the acquired behaviour and the imposed behaviour. This contradiction lies in the incapacity of the institutionalized housing supply system to supply for more than half of the population houses which comply with their housing values. (Coulomb & Sánchez 1991). The result has been the development of a parallel system of housing provision - the informal production of houses. The fact that informal housing production occurs outside the formal system of supply is not problematic in itself, as far as the physical form of the housing is concerned. However, the problem, for the producers of informal housing lies in the contradiction which was noted earlier (see Ramirez et al 1992). This is that, because of the nature and costs of housing production, the informal production of housing is a slow and gradual process. The result is that the informal producers of housing, who share the dominant housing values of the broader urban society, have to produce, and at the same time live in, houses which, initially, fall far below the standards indicated by those values: the housing produced in the early phases of the informal housing production is made of non-durable, and often waste materials. There is frequently no internal division of space for even the most basic of separation of activities. And there are rarely any formal urban services attached to the house.

This falling below the standards of the basic housing values causes physical discomfort to the inhabitants. However, the problem goes beyond one of physical discomfort, and also subjects the inhabitants of the informal settlements to social insecurity, which can be defined as the situation arising from the contradiction between the perceived social identity of the inhabitants of the informal settlements and the social identity which is communicated through the medium of the elements of built form. In order to explain the relationship between the condition of social insecurity and the physical form of the houses produced in the informal settlements, it is necessary to return to the concept of the social ascription of meaning to elements of built form.

The foregoing discussion presented an analysis of the way in which elements of built form, as objects produced in a cultural context, acquire and communicate social meaning. The result is that the house as a totality communicates information about the social identity of the inhabitants. However, in the case of the informal production of housing, the information communicated by the elements of built form in the initial stages of formal consolidation is erroneous: in these early stages, the information

that the house form communicates about the social identity of the inhabitants does not accord with their perceived social identity. The inhabitants of the informal settlements share the values of the wider urban society, and consider themselves to be members of that society. However, the informal houses produced in the initial phases are in clear discord with the values of the broader urban society, because of their inconformity with the urban housing norms. The information thus communicated by the physical form of the houses is that the inhabitants are not full members of the urban society, that they are somehow different. It is this impression which gives rise amongst many inhabitants of Mexico City to the ideas that the inhabitants of the informal settlements are recent rural migrants, or criminal, or marginal, or all of these things - in other words, different from the rest of society.

It is on the observation of this contradiction that the theoretical explanation of this house form is based. Although at first they are obliged by economic circumstances to produce house forms which do not conform with the housing norms of the society of which they form a part, this represents a strategy on the part of the inhabitants of the informal settlements to gradually produce housing which does conform those norms. That is to say, the process of formal consolidation of informal housing is a gradual process of increasing the conformity of the elements of the built form with the urban housing norms. However, the production of informal housing is not the same as the production of other house forms in accord with the dominant housing norms. Rather, occurring as it does in a complex and contradictory social context, the earlier phases of the informal production of houses condemn the inhabitants to an erroneous social identity. In order to overcome the resulting social exclusion, it is proposed that the inhabitants of the informal houses incorporate elements of built form during the formal consolidation process which gradually allow them to use the form of their houses in order to communicate their identity as members of the urban society. In this respect, the conformity of the physical form of the house can be understood not merely as one of compliance with the dominant norms, but rather, as an active use of those norms in order to express the social identity of the inhabitants of the houses as being members of the broader urban society.

The result of these influences is that the physical form of the houses which is produced within the informal settlements conforms with the urban housing norms identified from the literature. However, while remaining within the parameters of the urban housing norms, the particular influences of the social context in which the houses are produced, and the social pressures to which the producers are subject, means that the house form produced in the informal settlements is a distinct

house form, differentiated from the other house forms in the city. In this sense, it can be said that a distinct cultural form has been developed: the social dynamics have resulted in patterns of behaviour, and the development of a process of housing production which uses the elements of house form which have developed in the historical and geographical context of Mexico City, but which, in the production of informal houses, are combined in a way which differentiates the informally produced houses from those around them, and which creates a clear, homogeneous model of informal house form. In this sense, the discussion in this paper has demonstrated a circularity of form: the paper started with an observation of the homogeneity of the informally produced houses. Asking what are the influences which determine the particular form of this housing, it was suggested that the answer does not lie in the cultural patterns of the producers emanating from their places of origin, as these are seen to be diverse. Rather, it was proposed, the answer had to be searched for within the dynamics of the social processes of informal housing production. It was proposed that the main influence on the form of the informal houses was the motivation on the part of the producers to use the elements of the house form in order to demonstrate their social integration. However it seems that, in the very attempt to demonstrate their social integration, the producers of informal housing conform closely to a model which has developed within the context of informal settlements, and which, as a result, creates a new cultural pattern which could be called the culture of informal housing production in Mexico City.

4. CONCLUSION

This paper began with an observation of the apparent homogeneity of built form in the informal settlements in Mexico City. Such homogeneity of built form, it was argued, suggested the existence of a clearly developed system underlying the informal production of housing in the city. This observation led to the formulation of a set of questions regarding the characteristics of the housing produced, and the motivations of the actors in the production of a determined built form.

It was found that these questions could not be answered directly by the literature available, which concentrated either on descriptions of informal housing production processes, or on explanations of house form in terms of cultural traditions, without explaining how cultural activities might change in a complex urban setting. Other literature sources were explored which seemed to provide useful conceptual tools for the construction of a theoretical explanation.

The theoretical explanation presented was founded on the proposition that the inhabitants of the informal settlements are integrated, socially and culturally, into the broader urban society, and that they share the behavioural norms, and cultural values of that society. However, there exists a contradiction between the housing values that people have, and the standards of housing that they have access to. This contradiction is reflected in the divergence between people's social identity, and the social significance which is expressed by the house forms to which they have access: the housing which is produced in the initial phases of informal production does not accord with the minimum standards which are considered, in that context, to be socially acceptable, and the form of this housing communicates a social identity which is not in accord with the inhabitants' perceived social identities. This contradiction gives rise to a condition which was described as the social insecurity of the inhabitants of the informal settlements: their inability to express their true social identity through the medium of their living environment. Therefore it was proposed that in the process of formal consolidation, the producers of informal housing use the social meaning ascribed to elements of built form in order to construct, and express an urban social identity.

REFERENCES

- Aguilar Arrivillaga, E 1980 *Estudio de la Vivienda Rural en Guatemala*. Guatemala: Editorial Universitaria.
- Andrade Narváez, Jorge 1981 *Dwelling Transformation in Santa Ursula, Mexico City*. Unpublished Masters Thesis. Department of Architecture, MIT.
- Andrade Narváez, Jorge, y el taller de la vivienda, Universidad Autónoma Metropolitana, Xochimilco 1988 *Alternativas de Vivienda en Barrios Populares: Documentación y Evaluación de los Proyectos Realizados por las Organizaciones Independientes a Raíz del Sismo de Septiembre de 1985 en la Ciudad de México*. México DF:Universidad Autónoma Metropolitana, Xochimilco y Secretaría de Desarrollo Urbano y Ecología.
- APASCO 1997 *Mi Casa, Manual de Autoconstrucción*. México, DF: APASCO
- Arquitecture Vernacular 1980 *Cuadernos de Arquitectura y Conservación del Patrimonio Artistico.* Arquitecture Vernacular No 10. Mexico City
- Armstrong R 1989 *The Kenyah Badeng Longhouse*: Paper presented at the Comparative Austronesia Project's Seminar on House and Household, ANU, May 1989
- Ayala Alonso, Enrique 1996 *La Casa de la Ciudad de México: Evolución y Transformaciones*. México DF: Consejo Nacional para la Cultura y las Artes, Dirección General de Publicaciones.
- Bazant Sánchez, Jan 1979 (a) *Tipología de Vivienda Urbana*. Mexico DF: Diana.
- Bazant Sánchez, Jan 1979 (b) *Aspectos Cualitativos de la Autoconstrucción*. In CIDIV, vol 2, no. 9, Sept/Oct, 1979. Mexico DF.
- Bazant Sánchez, Jan, 1985 *Autoconstrucción de Vivienda Popular*. Mexico DF: Editorial Trillas.
- Berg, Bruce L, 1989 *Qualitative Research Methods for the Social Sciences.* Needham Heights, Mass: Simon & Schuster.
- Bertens, Hans, 1995 *The Idea of the Postmodern. A History*. London and New York: Routledge.
- Blumer, Herbert, 1969 *Symbolic Interactionism: Perspective and Method.* Engelwood Cliffs, NJ: Prentice Hall.
- Bolívar, T; Mildred Guerrero; Iris Rosas; Teresa Ontiveros; Julio de Freitas; Henrique Arnal and Rodolfo Sancio 1994 *Densificación y Vivienda en los Barrios Carraqueños*. Caracas: Consejo Nacional de la Vivienda.
- Bourdieu, Pierre, 1977 *Outline of a Theory of Practice*. Translated by Richard Nice. Cambridge: Cambridge University Press.
- Bourdieu, P, 1990 *The Kabyle House, or the World Reversed*. In: Bordieu, P *The Logic of Practice*. Cambridge: Polity Press.
- Burgess, R, 1982 *Self-Help Housing Advocacy: A Curious Form of Radicalism. A Critique of the Work of John F.C. Turner.* In: Ward PM (ed) 1982 *Self-Help Housing A Critique*. Oxford: Alexandrine Press
- Calhoun, Craig; Donald Light and Suzanne Keller, 1994 *Sociology. Sixth Edition*. New York:McGraw-Hill.
- Camposortega Cruz, Sergio, 1992 *Evolución y Tendencias Demográficas de la Zona Metropolitana de la Ciudad de México.* In: *La Zona Metropolitana de la Ciudad de México. Problemática Actual y Perspectivas Demográficas y Urbanas*. México DF: CONAPO. 1992.
- Cassell, Philip (ed), 1993 *The Giddens Reader*. London: MacMillan Press.
- Cementos Tolteca, 1984 *Manual Tolteca de Autoconstrucción y Mejoramiento de la Vivienda*. México DF: Cementos Tolteca.
- CENVI, 1996 *Escenarios Demográficos y Urbanos de la Ciudad de México, 1990 - 2010; Cuadro No. 1. Principales Características de los Distintos Tipos de Poblamiento de la ZMCM en 1990*. Mexico DF: CONAPO. Versión Preliminar. Unpublished.
- Chant, SH, 1984 *Las Olvidadas: A Study of Women, Housing and Family Structure in Querétaro, Mexico.* Unpublished PhD Thesis, University of London.
- Chant, S, 1987 *Domestic Labour, Decision-making, and Dwelling Construction: the Experience of Women in Queretaro, Mexico.* In: *Women, Human Settlements and Housing*, Caroline ON Moser and Linda Peake (eds), 1987 London: Tavistock.
- Cohen, Abner, 1988 *The Politics of Ethnicity in African Towns.* In: Gugler, J, *The Urbanization of the Third World*. Oxford: OUP 1988.
- Coleman, Alice, with the Design Disadvantagement Team of the Land Use Research Unit, King's College, London,1985 *Utopia on Trial: Vision and Reality in Planned Housing*. London: H. Shipman, 1985.
- Connolly, P, 1982 *Uncontrolled Settlements and Self-build. What Kind of Solution?* In: Ward PM (ed) 1982 *Self-Help Housing A Critique*. Oxford: Alexandrine Press
- Connolly, Priscilla, 1990 *Housing and the State in Mexico*. In: *Housing Policies in Developing Countries*. G. Shildo, ed. London and New York: Routledge.
- Connolly, P; Emilio Duhau; Rene Coulomb, 1991 *Cambiar de Casa Pero no de Barrio; Estudios sobre la Reconstrucción Habitacional en la Ciudad de México*. México DF: UAM-Azcapotzalco

- Consejo Nacional de Población, 1992 *La Zona Metropolitana de la Ciudad de México. Problemática Actual y Perspectivas Demográficas y Urbanas*. México DF: CONAPO.
- Cooper, C, 1974 *The House as Symbol of the Self*. In: *Designing for Human Behaviour*. Jon Lang et al (eds). Stroudsberg, Pa: Dowden, Hutchinson and Ross.
- Corona Cuapio, Reina & Rodolfo Luque, González, 1992 *El Perfil de la Migración de la Zona Metropolitana de la Ciudad de México.* In: CONAPO 1992. *La Zona Metropolitana de la Ciudad de México. Problemática Actual y Perspectivas Demográficas y Urbanas.* Mexico DF: CONAPO.
- Coulomb B, Rene & Cristina Sánchez Mejorada, F, 1991 *Todos Propietarios? Vivienda de Alquiler y Sectores Populares en la Ciudad de México*. México DF: CENVI
- Crúz Rodríguez, Maria Soledad 1996 *Hallazgos Recientes en el Estudio de la Tenencia de la Tierra y el Proceso de Urbanización*. In: *Dinámica Urbana y Procesos Socio-Políticos. Investigaciones Recientes Sobre la Ciudad de México.* René Coulomb y Emilio Duhau, Coordinadores. Mexico DF: Observatorio de la Ciudad de México.
- Cruzate V; Marcela Tovar-Restrepo; Julian Walker 1996 *Exploring the Cultural Dimension of Urban Planning.* London: DPU Working Paper 76.
- Duhau, Emilio & Martha Schteingart, 1997 *Las Colonias Seleccionadas, Suelo y Vivienda.* In: *Schteingart, Martha, Julio Boltvinik et al. 1997 Pobreza, Condiciones de Vida y Salud en la Ciudad de México*. México DF: El Colegio de México.
- Duncan JS (ed) 1981 *Housing and Identity:Cross Cultural Perspectives.* London: Croom & Helm
- Duncan JS, 1981 *From Container of Women to Status Symbol: The Impact of Social Structure on the Meaning of the House.* In: Duncan JS (ed) 1981 *Housing and Identity:Cross Cultural Perspectives.* London: Croom & Helm.
- Duncan, JS, 1989 *Getting Respect in the Kandyan Highlands: The House, the Community and the Self in a Third World Society.* In: Low S and Chambers E, (eds) 1989 *Housing, Culture and Design, a Comparative Perspective*. Philadelphia: University of Pennsylvania Press.
- Epstein, D, 1973 *Brasilia, Plan and Reality: A Study of Planned and Spontaneous Urban Development*. London: University of California Press.
- King, AD, 1984 *The Social Production of Built Form: Theory and Research*. Environment and Planning D: Society and Space, 1984, Vol 2 Pages 429 - 446.
- Gellner, Ernest, 1983 *Nations and Nationalism*. Oxford: Blackwell.
- Giddens, Anthony, 1976 *New Rules of Sociological Method: A Positive Critique of Interpretative Sociologies*. Extracts in: Cassell (ed), 1993 - *The Giddens Reader.* London: MacMillan.
- Giddens, Anthony, 1984 *The Constitution of Society: Outline of the Theory of Structuration*. In: Cassell (ed), 1993 - *The Giddens Reader.* London: MacMillan.
- Giddens, Anthony, 1986 *Sociology. A Brief but Critical Introduction*. Second Edition. London: MacMillan Press.
- Gilbert, Alan, and Anne Varley, 1991 *Landlord and Tenant: Housing the Urban Poor in Mexico*. London: Routlegde.
- Gilbert, Alan and Peter M. Ward, 1985 *Housing, the State and the Poor: Policy and Practice in Three Latin American Cities*. Cambridge: Cambridge University Press.
- Glass, Ruth, 1989 *Cliches of Urban Doom and Other Essays*. Oxford: Blackwell.
- Guzman Ríos, Vicente, 1991 *Breve Aporte Acerca de la Problemática Habitacional en México.* D.F. Mexico: Universidad Autónoma Metropolitana de Xochimilco.
- Habitat, 1985 *The Use of Selected Indigenous Building Materials With Potential for Wide Application in Developing Countries.* Nairobi: UNHCS.
- Hockings, J, 1987 *Built form and Culture: A Theoretical Appraisal Supported by a Case Study of the Dwelling House in the Gilbert Islands, West Pacific Ocean*. Architecture & Comportement / Architecture & Behaviour vol 3 no 4 1987.
- Holston, J, 1991 *Autoconstruction in Working Class Brazil*. Cultural Anthropology, Vol 6 No 4, 1991, pp 447-465. Washington DC.
- Hummon, DM, 1989 *House, Home, and Identity in Contemporary American Culture*. In: Low S and Chambers E, eds 1989 *Housing, Culture and Design, a Comparative Perspective*. Philadelphia: University of Pennsylvania Press.
- INEGI (Instituto Nacional de Estadística, Geografía y Informática), 1995 (a) - Distrito Federal. *Conteo de Población y Vivienda 1995. Resultados Definitivos. Tabulados Básicos*. México DF: Instituto Nacional de Estadística, Geografía e Informática. Aguascalientes.
- INEGI (Instituto Nacional de Estadística, Geografía y Informática), 1995 (b) *Estado de México; Tomos I y II. Conteo de Población y Vivienda 1995. Resultados Definitivos. Tabulados Básicos*. México DF: Instituto Nacional de Estadística, Geografía e Informática. Aguascalientes.

- Ingold, Tim, 1992 *Culture and the Perception of the Environment*. In: Elisabeth Croll and David Parkin (eds) *Bush Base: Forest Farm. Culture, Environment and Development*. London: Routledge.

- Keesing, RM, 1981 *Cultural Anthropology, a Contemporary Perspective*. 2nd Edition. London: Holt, Rinehart and Winston.
- Knox, P, 1987 *The Social Production of the Built Environment: Architects, Architecture and the Post-Modern City.* Progress in Human Geography, 11.
- Legorreta, Jorge, 1984 *La Autoconstrucción de Vivienda en México. El Caso de las Ciudades Petroleras.* México DF: Centro de Ecodesarrollo.
- Legorreta, Jorge, 1991 *Expansión Urbana, Mercado del Suelo y Estructura de Poder en la Ciudad de México*. In Revista Mexicana de Ciencias Políticas y Sociales. UNAM. September 1991, No 145.
- Lezama, Jose Luis, 1993 *Teoría Social Espacio y Ciudad*. México DF: El Colegio de México.
- Lomnitz, Larissa Adler de, 1977 *Networks and Marginality: Life in a Mexican Shantytown*. New York: Academic Press.
- López Morales, Francisco Javier, 1993 *Arquitectura Vernácula en México*. Mexico DF: Ediciones Trillas.
- Mangin, W, (ed) 1970 - *Peasants in Cities: Readings in the Anthropology of Urbanization*. Boston: Houghton Miffin.
- Mathéy, Kosta (ed) 1992 *Beyond Self-Help Housing.* London: Mansell.
- Mathéy, Kosta 1992, *Positions on Self-Help Housing.* In: Mathéy, Kosta (ed) 1992 *Beyond Self-Help Housing.* London: Mansell.
- McNeill, D, 1983 *The Changing Practice of Urban Planning: The World Bank -and Other Influences*. Working Paper No. 15, Development Planning Unit, UCL, London.
- Morales Sales, Dr Edgar Samuel, 1993 *Técnicas Tradicionales para la Autoconstruccion de Vivienda en el Estado de Mexico: Implicaciones Sociales y Praxis Local*. Toluca, Mexico: Universidad Autonoma del Estado de Mexico.
- Morgan, LH, 1881 *Houses and House-Life of the American Aborigines.* New Edition Introd. by Paul Bohannan. Classics in Anthropology. Chicago & London: The University of Chicago Press. 1965.
- Moya Rubio, Victor José, 1988 *La Vivienda Indígena de México y del Mundo*. Mexico DF: Universidad Nacional Autónoma de México.
- Mumtaz, Babar 1969 *Villages on the Black Volta.* In: Oliver, Paul (ed)1969 *Shelter and Society*. London: Barrie & Jenkins.
- Newman, Oscar, 1973 *Defensible Space: People and Design in the Violent City.* London: Architectural Press.
- Norberg-Schultz, C, 1963 *Intentions in Architecture*. Universitetsforlaget. Oslo: Allen & Unwin Ltd.
- Oliver, Paul (ed)1969 *Shelter and Society.* London: Barrie & Jenkins
- Oliver, P, 1987 Dwellings: *The House Across the World*. Oxford: Phaidon.
- Pavlides, E & Hesser, JE, 1989 *Vernacular Architecture as an Expression of Its Social Context in Eressos, Greece.* In: Low, S and Chambers, E (eds) 1989 *Housing, Culture and Design, a Comparative Perspective*. Philadelphia: University of Pennsylvania Press.
- Pevsner, N, 1968 *An Outline of European Architecture*. Harmondsworth, Middlesex: Penguin Books.
- Perlman, J, 1976 *The Myth of Marginality: Urban Poverty and Politics in Rio de Janeiro.* Berkely: University of California Press.
- Porteous, JD, 1976 *Home: The Territorial Core*. Geographical Review, Vol 66, 1976.
- Pradilla, E & C Jiménez, 1973 *Arquitectura, Urbanismo y Dependencia Neocolonial*. Buenos Aires: Ediciones SIAP.
- Pratt, G, 1981 *The House as an Expression of Social Worlds*. In: Duncan JS (ed) 1981 *Housing and identity:Cross Cultural Perspectives.* London: Croom & Helm
- Ramirez, R; J Fiori; H Harms & K Mathey 1992 *The Commodification of Self-Help Housing and State Intervention*. In: Mathéy, Kosta (ed) 1992 *Beyond Self-Help Housing.* London: Mansell.
- Rapoport, A, 1969a *House Form and Culture*. Englewood Cliffs, N.J: Prentice-Hall
- Rapoport, A, 1969b *The Pueblo and the Hogan.* In: Oliver, Paul (ed)1969 *Shelter and Society.* London: Barrie & Jenkins
- Rapoport, A, 1981 *Identity and Environment: A Cross Cultural Perspective.* In: Duncan JS (ed) 1981 *Housing and Identity:Cross Cultural Perspectives.* London: Croom & Helm
- Rapoport, A, 1982 *The Meaning of the Built Environment: A Non-Verbal Communication Approach*. Beverly Hills: Sage Publications.
- Rapoport, A, 1988 *Spontaneous Settlements as Vernacular Design*. In: *Spontaneous Shelter: International Perspectives and Prospects*. C Patton (ed) Philidelphia: Temple University Press.
- Rapoport, A, 1990 *History and Precedent in Environmental Design.* New York & London: Plenum Press.
- Redfield, Robert, 1941 *Tepotzlán, a Mexican Village; A Study of Folk Life*. Chicago: The Chicago University Press.
- Robbins, E, 1989 *Culture, Policy and Production: Making Low-Cost Housing in Sri Lanka*. In: Low, S and Chambers, E, (eds) 1989 *Housing, Culture and Design, a Comparative Perspective*. Philadelphia: University of Pennsylvania Press.
- Rudofsky, B, 1964 *Architecture Without Architects*. Garden City NY: Doubleday.

- Runciman, WG, 1998 *The Social Animal*. London: Harper Collins.
- Schteingart, Martha, 1989 *Los Productores del Espacio Habitable: Estado, Empresa y Sociedad en la Ciudad de México.* México DF: El Colegio de México.
- Schteingart, Martha; Julio Boltvinik et al. 1997 *Pobreza, Condiciones de Vida y Salud en la Ciudad de México*. México DF: El Colegio de México.
- Schteingart, Martha and Maria T Torres 1997 *Políticas de Agua y Drenaje en la Ciudad de México, y su Aplicación en las Colonias Estudiadas*. In: Schteingart, Martha, Julio Boltvinik et al. 1997 *Pobreza, Condiciones de Vida y Salud en la Ciudad de México.* México DF: El Colegio de México.
- Schteingart, Martha, 1997 *La Urbanización Popular. Interpretaciones Teóricas y Orientación de los Estudios*. In: Schteingart, Martha; Julio Boltvinik et al. 1997 *Pobreza, Condiciones de Vida y Salud en la Ciudad de México*. México DF: El Colegio de México.
- Sudjic, D, 1992 *The 100 Mile City*. London: Andre Deutsch.
- Sudra, T, 1976 *Low-income Housing System in Mexico City*. MIT, Unpublished PhD Thesis.
- Tarlo, E, 1992 *Competing Identities: The Problem of What to Wear in Late Colonial and Contemporary India*. Unpublished Social Anthropology Thesis, SOAS, University of London.
- Thompson, M, 1979 *Rubbish Theory; The Creation and Destruction of Value*. Oxford: OUP.
- Trudgill, P, 1983 *Sociolinguistics; An Introduction to Language and Society*. Harmondsworth, Middlesex: Penguin Books.
- Turner, JFC, 1968 *Housing Priorities, Settlement Patterns and Urban Development in Modernising Countries*. Journal of the American Institute of Planners. No. 34, pp 354-363.
- Turner, JFC & Fichter, R, 1972 *Freedom to Build: Dweller Control of the Housing Process*. New York: MacMillan.
- Turner, JFC, 1972 *Housing as a Verb*. In: Turner, JFC & Fichter, R, 1972 *Freedom to Build: Dweller Control of the Housing Process*. New York: MacMillan.
- Turner, JFC, 1982 *Issues in Self-help and Self-managed Housing*. In: Ward PM (ed) 1982 *Self-Help Housing A Critique*. Oxford: Alexandrine Press
- Turner, JFC, 1988 Introduction and Conclusion in Turner, B (ed) *Building Community; a Third World Case Book.* London : Building Community Books.
- Vélez-Ibañez, Carlos G, 1983 *Rituals of Marginality: Politics, Process, and Culture Change in Urban Central Mexico 1969-1974*. Berkeley: University of California Press.
- Venturi, Robert, 1965 *A Justification for a Pop Architecture*. Arts and Architecture 5. April 1965
- Venturi, Robert and Denise Scott-Brown, 1970 *A Significance for A&P Parking Lots, or Learning from Las Vegas.* Architectural Forum 128, 2.
- Venturi, Robert and Denise Scott-Brown, 1971 *Ugly and Ordinary Architecture, or the Decorated Shed*. Pt I, Architectural Forum. November 1971. Part II, December 1971.
- Vliet, W van, 1993 *A House is not an Elephant: Centering the Marginal*. In: Arias EG (ed) 1993 *The Meaning and Use of Housing: International Perspectives, Approaches and Their Applications*. Aldershot, Hants: Avebury.
- Ward PM (ed) 1982 *Self-Help Housing A Critique*. Oxford: Alexandrine Press
- Wirth, Louis, 1996 (1938) *Urbanism as a Way of Life*. Extract from the American Journal of Sociology. In: Legates, Richard T. & Frederic Stout (eds) 1997 *The City Reader*. London: Routledge.
- World Bank 1980 - *Shelter.* In *Poverty and Basic Needs* Series. World Bank, Washington.

1. Many different terms are used to refer to the phenomenon of uncontrolled urban housing production, including "uncontrolled settlements", "informal housing production", "self-help housing", "self-build", "auto-construction" and "autoproduction". In this paper the terms "informal housing" and "informal settlements" will be used to reflect common usage in academic research in Mexico, and as one of the most ideologically neutral terms available.
2. My translation.
3. My translation.
4. The classification of bricks as a 'used material' results from the location of the settlement that Lomnitz studied on a disused brickworks. For this reason, bricks used in the construction of the houses were not bought, but rather were scavenged.
5. My translation.
6. My translation.
7. My translation.
8. My translation.
9. The discussion here is of norms in the sociological, not the legal sense, that is to say normal standards of behaviour within a determined social context. Legal housing norms are quite different, and their relation with social norms is complex, and will not be discussed here.
10. DF is the abbreviation for *Distrito Federal* - the Federal District, which is the name given to the administrative area which contains one half of the urban area of Mexico City. The other half lies in Mexico State.
11. My translation.
12. My translation.
13. My translation.
14. My translation.
15. My translation.
16. My translation.
17. My translation.
18. These are sheets of corrugated cardboard, normally 1.2m x 0.8m, impregnated with creosote. They are widely sold for the construction of temporary structures. They are commonly referred to in Mexico as *lámina de cartón*, or simply *lámina*, will be referred to throughout the rest of the text as cardboard, or corrugated cardboard.
19. The use of concrete bricks or blocks without foundations or supporting structure will be referred to henceforth as simple brickwork or blockwork.