Space, Politics and Autoconstruction in two settlements in Rio: a comparison between the unplanned Morro do Timbau and the planned M.Dias housing project.

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Acknowledgements

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Abstract

The thesis has its origin in the recognition that there is little knowledge of how squatter settlements and other unplanned housing environments are produced and how do they work in spatial terms.

The thesis is structured around three main ideas which take the form of assumption by many authors writing in the subject of squatter settlements. These ideas are related to the concepts of neighbourhood unit, of leadership and community participation, and of social networks and marginality.

The thesis uses two settlements in Rio, Brazil, to compare a planned with an unplanned environment. The empirical evidence of the two case studies are used to examine these there theoretical concepts and to describe the process of up-grading of the settlements. The term autoconstruction is used to name the phenomenon of social, political and spatial up-grading of the settlements.

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CHAPTER I - The Problem Definition.

Space, Politics and Auto-construction - some points for discussion

To understand built forms and the social role they play is to know the processes engaged in their production and re-production. To formulate that requires full comprehension of the working of space itself, as well as of the laws of space and of the decisions involved in its production and up-grading; or in other words, of what is logically possible that those processes can make use of. This seems obvious in the case of housing and the history of squatter settlements yet the lawfulness of space as a material is not obviuos to most people. Hence, it has been a standard literature procedure on the subject to treat the built environment as a mere neutral container for socio-political actions which in turn are seen as either having more to do with macro-politics than with the local contextual reality of those places.

This thesis has its origin in the recognition that there is very little knowledge of how squatter settlements and other unplanned housing environments are produced

and how do they work in spatial terms. But as Benevolo[1] points out : " ... *In the Third World ... the unplanned settlements often grow faster than the city number* [2] *and already in many countries they provide the majority of the population with somewhere to live.*"

The fact is that because architects and city designers do not seem able even to understand fully what is precisely the nature of planned areas as opposed to unplanned settlements, the gap in knowledge here is yet more critical.

According to a 1986 Rio Planning Local Authority survey, there are approximately 1.8 millions of inhabitants living in 406 *favelas* in Rio alone. This number actually corresponds to what could be said to be the third city of Brazil, following S. Paulo and Rio de Janeiro. This is not unlike many cities in Asia and Africa, yet population projections reveal that in Latin America, if the present trends remain, by the year 2000,

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[1] Benevolo,L., **The History of the City**, Scholar Press, London 1980, p.976.

[2] Between 1960 and 1980 the squatter population in Rio has increased 400% and nowadays represents 1/3 of the total city population with an overall growth rate of 7.6% (almost three times the rate observed between 1980 and 1990). This is in part due to an ever-increasing rural migration to urban centres, particularly the largest cities, and in part due to a process of impoverishment of the medium urban strata which is forced to move into these illegal areas.

80% of the population will be living in urban areas[3]. It is very likely that only a fraction of these people would be absorbed into the planned areas, and largest part of the population having to live in the unplanned areas which are already growing faster than the rest of the city areas[4]. As Benevolo[5] warns : *"in the very near future the majority of the world's population will be housed in unplanned settlements"*.

The problem thus becomes not only how to provide enough housing for this enormous population[6], but above all, which type of environment should be provided for them. There is enough evidence in the literature that traditional planned state housing is unable to be in qualitative and in numeric terms adequate as social housing. On the other hand, unplanned settlements can not longer be treated as a temporary urban problem but rather it seems to be a permanent group feature of most large cities outside Europe.

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[3] Gimson M, **Everybody's Doing it**, in Wates, N. and Wolmar, C. eds, 1980, notes that as much as one-tenth of the world's population already live in illegal areas.

[4] According to The Habitat Conference Secretariat, the population increase in these illegal areas is, commonly, twice or three times the rate of urban demographic growth. The UN estimates that in cities of the developing world, 50% of the inhabitants, on average, live in slum and squatter settlements.

[5] Ibid p.1007

[6] A recent survey in Brazil (Coriolano, M.S and Silva, H.S; pp.45-54; 1987) shows that 5.6 millions of new dwellers were needed to cover the demand of housing over the period between 1986 and 1990. This corresponds to more than the National Housing Bank (BNH) was able to produce in 22 years.

Several studies have already shown that given the scale of the problem and the inaccessibility of conventional low-cost housing to the poor, alternative forms of housing have to be developed[7]. The new approaches proposed are mainly centred around self-built housing and community participation. These concepts are, however, defined within a specific frame of reference, and will be explained in Chapter II of this thesis.

Under the self-built[8] housing policies, no attempt is made to utilise the strategies devised by people in the unofficial production of their built environments, apart of the use of their capacity for work, or in other words, their use as labour. Most liberal approaches will see the engagement of the inhabitants in the actual material production of their homes as a form of social integration[9] and/or will stress their economic and physical advantages[10]. On the other hand, participation is seen as a key instrument for the success of housing

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[7] The World Bank **Housing Sector Policy Paper**, Washington, D.C., 1975, reports that an average of 70% of the populations of representative samples of six Third World cities cannot afford the cheapest complete housing units at a 15 percent rate on a 25 year mortgage.

[8] This is also currently called in the literature auto-construction.

[9] Through, for instance, gaining knowledge of construction techniques and thus improving their job situation.

[10] Turner (pp.17-19, 1966) notes that a self-built house costs half of the price of one purpose-built by a private developer for a governmental body.

settlements[12]. It is a little disconcerting, however, to discover that the existing knowledge of such an important type of contemporary urban development is so simplistic and limited to a subset of the division of labour in the construction industry. If space, nevertheless, is taken a a resource the analysis of its process of production and re-production, and of its logic might help to show how actually the urban poor are solving their housing problems and what their environments mean to them. In effect, how they are contributing to tackle one of the major urban problems of the next century, which is the one of the unofficial city.

Many authors, such as Mangin[13] and Turner[14], have stressed the fact that squatter settlements have to be seen not as a problem but as a solution to some of the problems which arise from rapid urbanisation. As The Habitat Conference Secretariat notes *"the marginal settlement, in all its ramifications of providing housing, services and community to poor urban settlers, is the broadest possible application of the participatory approach albeit in an unplanned way"*.

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[12] e.g. when building one's own dwelling, the residents involvement in mutual assistance networks and any other forms of voluntary co-operative behaviour aiming at the improvement of their houses or of their community and which in turn can be summarised as people's use of their own labour.

[13] Mangin, W.P., **Peasants in Cities**, Houghton Mifflin, Boston, 1970.

[14] Turner,J.F., in **Freedom to Build**, Macmillan, New York, 1972.

Despite that, as mentioned before, the existing knowledge of both the mechanisms involved in the achievemnt of these goals and in the unplanned process and its physical manifestations is very scarce (see table on page 42-44 of Chapter II). Unfortunately, there are very few descriptions of squatter settlements socio-political life and of their urban spatial structure. Moreover, many of those studies which do exist are full of assumptions about how people in these communities relate to each other and how they structure and build their homes and settlements.

Little is known about the socio-spatial and political logic of unplanned settlements[15]. There is hardly any knowledge about how the urban poor build their environments such as to provide a clear understanding of the processes which are involved on that. It is disappointing to realise that the available ideas[16] which are the basis for housing policies can have their foundations on a full set of preconceptions which are rather related to speculation about the space and the socio-political structure of those settlements.

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[15] This means not only the way the group structures itself socially, but also what is their arrangement in space and how is the spatial arrangement of the settlement itself.

[16] The most important set of ideas which are directly relevant from this thesis will be presented and discussed at the literature review in Chapter II.

L.Lomnitz is typical of these who see those groups as marginal[17]. According to her, a marginal group may be defined on the basis of two characteristic features: "(1) it lacks a formal articulation or insertion in the urban industrial process of production, and (2) it suffers from chronic insecurity of employment". The pattern that emerges from her data of a squatter settlement study in Mexico suggests the existence of a cultural and socio-economic system, based in reciprocity networks[18], which lack articulation with local or national formal associations. This is to say, it is segregated (socially, politically and physically) from the urban industrial system as a whole[19]. This view carries assumptions of both the process of social grouping and its physical product. The main assumption is that the poor are physically and socially marginal as a result of their social and economic segregation. It is the view of this thesis however that even the marginal definition itsel no longer holds good, because, these

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[17] Departing from that idea , she explains (Lomnitz,L.A., p.209, **Networks and Marginality**, 1977): "Since marginals are barred from full membership in the urban industrial economy they have had to build their own economic system. The basic social economic structure of the shantytown is the reciprocity network. This is not a social group or institution; rather, it is a social field defined by an intense flow of reciprocal exchange between neighbours. The main purpose of a reciprocity network is to provide a minimum level of economic security to its members".

[18] Lomnitz use the term networks meaning " a field of relationship between individuals ", as suggested by Barnes, **Class committee in a Norwegian island parish**, 1954.

[19] In Lomnitz words (ibid,p.208,1977) : "To borrow an example from ecology, the marginals live like crabs; they inhabit the interstices of the urban industrial system and feed on its waste."

forms of environments already provide in many large cities the alternative for a vast number of inhabitants. Thus the whole set of concepts available to explain such phenomena seem very imprecise. This thesis sets out to redress a situation which is long overdue. A generation of urban policies related to low income housing has been erected on the basis of such assumptions which have little in the way of detailed, careful socio-spatial and political descriptions to substantiate them.

This gap in knowledge originates in a real conceptual difficulty. This is at root to do with the way the available social descriptions of such settlements are devoid of any spatial content and vice-versa[20]. Most of the available writings on the subject pay very little attention to the spatial environment, their principal concern lies with social relationships.

By taking two settlements in Rio as a vehicle, the general aim of this study is to describe how these environments have acquired their form and social order as a result of a socio-political process in which spatial, social and political shifts seem to emerge virtually as

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[20] Syntax was set up as an attempts to face this problem, as explained in the preface of **The Social Logic of Space**, Hillier, B. and Hanson, J., Cambridge University Press, Cambridge 1984 : *"the aim is to outline a new theory and method for the investigation of the society-space relation ...it attempts to build a conceptual model within which the relation can be investigated on the basis of the social content of spatial patterning and the spatial content of social patterning."*

vital dimensions of each other. It is nevertheless, the spatial form which is taken as the key variable, with the spatial environment taken as central to the analysis. The question thus arises as to what extent could the physical environment be seen as a main motor for political engagement, becoming itself both the means by which space is up-graded and the political system itself increases in complexity[21].

Through careful and detailed analysis it is hoped to characterise the urban configurational structure of the cases, to describe how space might control and produce patterns of socio-political relations between people and how political action has a direct outcome in the physical transformation of the settlement, to identify patterns of use and activities and to see if physical changes correspond in any way to the unfolding of political events. The strategy adopted for that is one which prefers an accurate consideration of the statistical description of phenomena to the speculative form in which socio-spatial and political process of unplanned and self-built settlements are currently approached in the literature. Turner[22] notes that the

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[21] Turner's suggestion that *"people's needs and priorities in housing (in terms of a shelter, location and stability) change according to the their situation and social expectations "* brings support to the idea proposed here that space, politics and social structures have to be seen as part of a single phenomena which systematically changes as the individual or the collectivity alters.

[22] Turner, J.F., **O uso da terra nas cidades**, Arquitetura nº 47, May, Brazil, 1966, pp.17-19.

main reason for the failure of architects and planners in providing adequate housing for the poor lies precisely in this lack of understanding of the whole urban process and of these social groups's actual demands. This seems to suggest that understanding what people do to solve their problems may give some clue as to their cultural priorities, however imperfectly expressed.

The primary intention of this work is to use the case studies not only as a basis for discussing and reviewing widely accepted concepts in the literature on housing, but also as a means by which, through a rational understanding of their socio-spatial logic, it is possible to devise strategies and planning ideas for action. The analysis will use the concept of auto-construction to name those authentic strategies and action involved by the poor in the process of construction (and production) of their actual environment.

Ideas we think with[23] - What do we think we know about these kind of settlements.

The ideas and values which motivate the current actual form of planning policies and their attitude towards squatter settlements can be traced back to the utopian writings of the late nineteen century and early early twenty century[24]. Authors such as Lynch and Jacobs suggests that concepts such as the one of a community seen as a relatively self-sufficient, homogeneous and ordered group of individuals living in an enclosed spatial environment, which is central to the neighbourhood unit model[25], were already explicit in Morris', Howard's and Wright's utopian physical proposals. Often, goals such as the strengthening of social ties, and the stimulation of a sense of group identity and community - and a series of linked issues such as users's control, participation and social stability, are clearly stated in such proposals.

All these beliefs, nevertheless, are rooted in the same mistaken notion that society and space are completely separate entities, linked only, if at all, by some

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[23] Due to Hillier, B.; who use this phrase in a MSc. seminar at the University College to distinguish between ideas we think with and ideas we think of.

[24] Howard, Unwin, Morris,

[25] This was first explicitly proposed by Clarence Perry in the first regional Plan for New York, Vol.7.

mechanical and deterministic relation[26]. This causal
correspondence between society and space, in turn, has
led to the notion that social stability could be achieved
by ordering the physical environment[27]. This idea has
been pervasive in the way low income housing policies
have so far been formulated.

In the last twenty years, however, housing policies have
been progressively changing their view of the housing
problem with an increasing stress on the importance of
self-help as one of the only adequate and feasible forms
of dealing with the problem of shortage of places to
house the urban poor. Along with that, nevertheless, a
growing criticism[28] has arisen to argue that self help
policies allow labour to be doubly exploited (i.e. at work
and as self- builders) as well as it releases government
from its responsibilities of providing adequate housing.

The idea of an autonomous community corresponding to
a neighbourhood has continued to rule design and public
self-help policies - in the form of policy rhetoric, if not
otherwise. Popular participation thus arises as a
central concern for the creation of good settlements.

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[26] Kevin Lynch calls attention to this fact in his book **Good City Form**,
The MIT Press, Massachusetts,1989, pp.66-67, noting that, in cases of
association between space and society, this is only observed by a *"match of
form with behaviour"*.

[27] e.g.Newman, O., **Defensible Space: Crime Prevention Through
Urban Design**, New York, Macmillan, 1972.

[28] Pradilla, E.,1976; Burguess, R., 1978, 1985 and 1987.

This suggests that although the mode of housing provision has in the last twenty years changed from state provision to self help, the vision of the target group at which provision is aimed at and of the role housing plays on their lifes has persisted without much changes. In other words, housing, as a material entity is seen as the only end product aimed at.

Low income housing policies are frequently inspired by the neighbourhood idea of some small integrated community, where residents which are in face-to-face contact - and are on intimate terms with each other because they live in close spatial proximity - will support each other. In relation to this, two points are worth noting: first, as Jane Jacobs notes[29], these communities might not be as naturally cohesive as they look to outsiders; and second, if cohesiveness plays so important part in the life of these communities it seems a paradox to see self-help policies as an instrument for community development[30]. In fact, self-help projects rest on the very idea of low income groups being natural neighbourhoods to be successful, thus community development has to exist in the first place

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[29] Jacobs, J.; **The Death and Life of Great American Cities**, Penguin Books, 1984, p.148.

[30] It is currently accepted in the literature on housing that the self-built process itself can be a key element in the development of solidarity relations as well as a main form of making the construction process more efficient and more economic.

before a project can be implemented. Thus <u>community development</u> becomes the <u>means</u>[31] rather than the <u>end</u> o f self-help policies, with neighbourhood cohesiveness commonly accepted as an integral and essential project component. In many cases, nevertheless, participation is equated with the community providing labour and the interaction only takes place between the local political leader and the agency, thus not involving the large part of the social segment which the project is intended to benefit. In other words, the self-built process[32] is itself frequently seen as a form of increasing <u>group solidarity</u> and <u>political leadership</u>. This, however, seems to be a serious contradiction since the success and effectiveness of self-help projects from its very inception is strongly dependent on the prior existence of these two conditions.

Above all, perhaps, it is the deterministic view that by merely changing the physical setting it is possible to have a direct outcome in the society and vice-versa which is the most obvious characteristic of current planning policies. Authors such as Turner and Mangin claim the existence of this congruence between social

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[31] Moser, C, et al; **Women Human Settlements**, Tavistock Publications, 1987, suggests that *"where participation is a mean it generally becomes a form of mobilisation to get things done'.*

[32] Self-help supporters unwisely assume that, as part of a rural tradition, the pure self-help - where residents build everything with their own hands - is extensively practised in unplanned urban settlements.

and spatial processes[33] and agree that the improvement of the built environment can be seen as a powerful factor towards the socio-economic and political integration of low income groups.

The view adopted here is different from those presented above. First of all, it is believed that auto-construction[34] is the term which best expresses those processes undertaken by the urban poor in the production of their built environment. By this term it is meant first of all that processes (socio-political) and their physical settings are indivisible. This refers to a situation of constant and supportive interchange between socio-political and spatial patterns which are not, if at all, easily separable. More specifically it invokes a situation in which people not only house themselves, but above all, they regulate, control and shape[35] their own physical and social environment.

Space, in this sense, can not be seen as neutral technical support for those processes to happen, rather

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[33] as, for example, Turner reveals in the following paragraph: " ... *the process of building a house is in itself a vehicle for social change... communities and families are building themselves when they build their e physical environments*" (Ibid, p.18).

[34] This term is frequently used in the literature with the same meaning of self-built, or in other words, to express the owner's direct involvement as labour in the construction of his/her house.

[35] In terms of resources allocation, definition of priorities, as well as, socio-spatial regulations.

it is itself constructing them through the very act of improving and up-grading the built environment. This in turn structures space, which on the other hand, structures patterns of movement and avoidances and though their working out in everyday life create a potential field of encounter and social interaction[36]. So the very production and construction of the built environment structures patterns of relations among community members and between these members and outsiders[37].

On the other hand, the socio-political rules devised by the group aiming at goals of physical nature, define a set of forms of solidarities and social groupings[38], with space becoming the means by which these are constituted and realised. Since auto-construction is a process which is simultaneously social, political and spatial, changes in any of these dimensions might be retrieved and embedded as a means of increasing the complexity and sophistication of the whole system[39].

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[36] Hillier and Hanson, **The Social logic of space**, Cambridge University Press, 1987.

[37] Ibid, pp. 198-199, note that because space has its own autonomous reality it has a dialectic relation to society, and even sometimes imposes its own constrains on society.

[38] See Chapter IV for a detailed description of the way in which goals are achieved.

[39] Socially, politically or spatially speaking. This means that embodiment can be either realised concretely (or expressively) in space or can remain at the abstract level (or instrumental) and have implications in the way the group organizes itself social and politically.

The essence of the argument to be put forward in this thesis follows from this. It expects to show, through the detailed analysis of the two observed and analysed actual cases, the convergence on the notion of a system which is at once social, spatial and political[40]. By conducting the case studies it was sought to give practical answers to questions such as: What kinds of strategies people use to go about achieving the goals they establish? How do they structure and organize and manage their social and physical environment? How do they engage in demand-making activities and what influence do they have in shaping the local spatial, social and political patterns? What are the individual perceived needs, problems and motivations? What is the role of community participation and how is it organized and perpetuated? These are among the major issues that are raised in the analytical part of the thesis.

Finally, it is hoped that these analysis throw light in the way planning and design should approach the subject of unplanned settlements and help to answer the following subsequent questions: Should we stop, replace or reproduce this type of urban development? How could this be done, in any case?

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[40] The Habitat Conference Secretariat suggest, for example, that "*By working co-operatively with others to improve their own lot and that of the community through the political process, the residents improve their political competence in dealing with administrative authorities*".

The cases and why were they selected

Similarities and differences

Timbau and Marcilio Dias were taken as case studies because their similarities and differences provide the scope for a rich comparison. At this stage it is important to say that both settlements are located in relative spatial proximity on the outskirts of Rio and have developed as part of an urban trend which was the illegal occupation of back-land areas on the shores of the Guanabara Bay along the Av.Brasil/ Leopoldina axis[41]

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Despite the social and political similarities among the two groups[42] and their settlements which were characterized by a lack of government-supplied social and public services, the squatters have adopted two different courses of action in order to provide for the collective needs of the community which have resulted in completely different spatial forms.

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[41] M. Abreu in his book entitled the **Urban Evolution of Rio de Janeiro**, Iplanrio, Jorge Zahar Editor, 1988, p.107, explains that this was precisely the area which was also at that time being occupied by industries.

[42] The two settlements do not differ significantly in terms of such standard socio-economic characteristic as income level, migration origin, occupational status and length of residence in the city. This will, however, be the subject of a later chapter where both settlements will be described comparing their individual and group characteristics.

Fig.1.1. The two settlements, the Av.Brasil and the suburbs around.
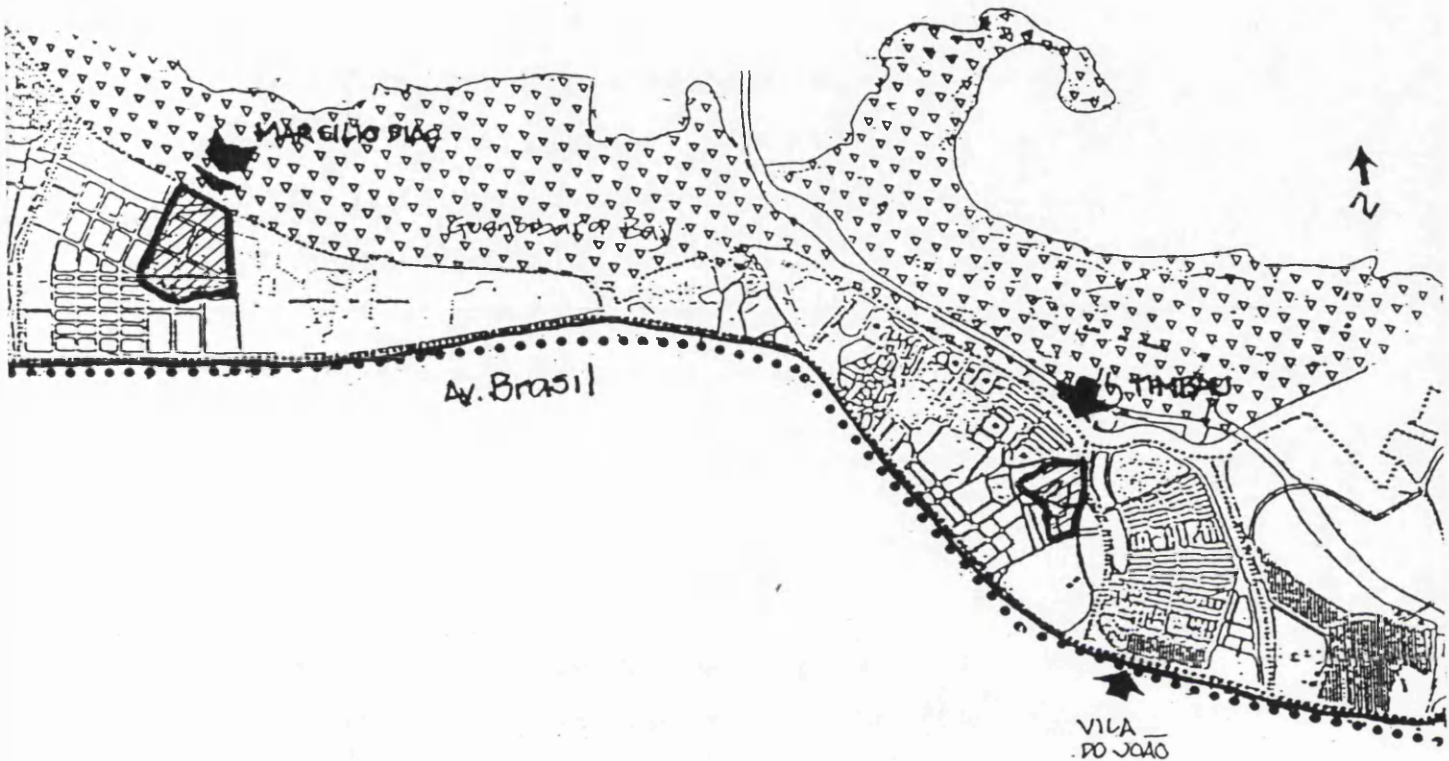
Community Organization was first established in both cases to resist efforts to oust them from the land which they have illegally occupied. In the first twenty years of both settlements' development the strategy adopted was similar, that is to organize themselves to provide and secure community services either through

engaging in demand-making activities[43] or through self-provision. In the 80's, however, the perceived needs and thus the established priorities have substantially changed. While Timbau's main aim still remained to get their urban and legal situation regularized, in M.Dias a major new point has emerged as part of their agenda of negotiation with external authorities, namely: to get the area re-urbanized as part of a recently launched self-help housing programme.

This represented a major change in the routes followed by the two settlements. Timbau sustained its original form of self-management, self-regulation and self-production of their built environment, or as it was here proposed to call: the auto-construction process. By contrast, M.Dias in being the object of a centrally administered self-built project, and having thus experienced the resettling and re-construction of the whole physical environment, has completely shifted the way it was previously socially, politically and physically structured and organized[44]. The cases, despite their obvious differences, are both community based

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[43] i.e. joining with the leader in petitioning the government to deliver specific urban improvements and/or to secure the settlers land tenure rights.

[44] Turner, J.F, **Popular Participation in Housing** in Aspects of Human Settlements in Planning, The Habitat Conference Secretariat, p. 269, suggests the terms self-governing settlements and centrally administered participatory programmes to name these two different types of housing approaches.

housing approaches which provide a good opportunity for examining two different participatory experiences.

The two settlements

Timbau is a self-generated settlement ("auto-constructed") in Rio de Janeiro, Brazil. Data from a household survey named census Maré undertaken in 1987 show a population of 4638 inhabitants distributed among 1236 families and 1115 homes which corresponds to 3.75 inhabitants per family. This number is relatively low if compared to the average number in Brasil of 4.03 inhabitants per family, suggesting that the families are relatively small, contrary to what is commonly suggested in the literature on squatter settlements in general.

Timbau forms part of a complex of squatter settlements known as Maré, located on the western shores of the Guanabara Bay. The whole area resulted from a long process of auto-construction of the habitat, involving both the creation of solid land itself, through a process of landfill of what was the bay's water, and the gradual construction of the houses.

The Maré area runs all the way along Av. Brasil[45], from the Ilha do Fundão bridge - which gives access to the Federal University Campus - to the bridge providing access to Ilha do Governador[46] and to the Rio de Janeiro's International Airport. Across Av.Brasil, lie some important suburbs with large population and strong commerce, such as Bonsucesso and Penha. However the Mare area is mainly industrial and the site has clear physical limits being surrounded by industrial warehouses and institutional buildings.

The whole urban fabric in the area is structured by large industrial blocks connected through major roads which in turn are connected to Av.Brasil[47]. Av. Brasil in fact works as a strong element of division and segregation between the mixed suburbia type of use on its left hand side and industrial, institutional and illegal residential occupation on its right hand side. So the illegal settlements, including Marcilio Dias and Timbau, which occupy this region, lack of any community or public services such as health care, schools and so on.

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[45] Av.Brasil is one of the major arterial route of access to Rio city centre. It is also the main approach road for people coming from several cities including São Paulo.

[46] Ilha do Fundão is an island were the university is located and Ilha do Governador is a large island, nearby the first, were there is the International Airport of Rio. Both islands are in the vicinity of Timbau and M.Dias and they are connected through bridges to the Av.Brasil.

[47] In 1978 a private enterprise has urbanized the site and sub-divided it into industrial blocks.

Up to the late 1970's the group of settlements which form the Maré area were : Timbau, Baixa do Sapateiro, Parque Maré, Nova Holanda, Parque Rubens Vaz and Parque União. The first occupation of the area dates back to the 1940's, when Rio experienced a significant proliferation of illegal occupations. Three neighbour housing estates were recently built in the area, namely : Vila do João, Vila Pinheiros and Conjunto Pinheiros, therefore the number of neighbourhoods in the area increased to nine.

Fig.1.2. The Maré Area
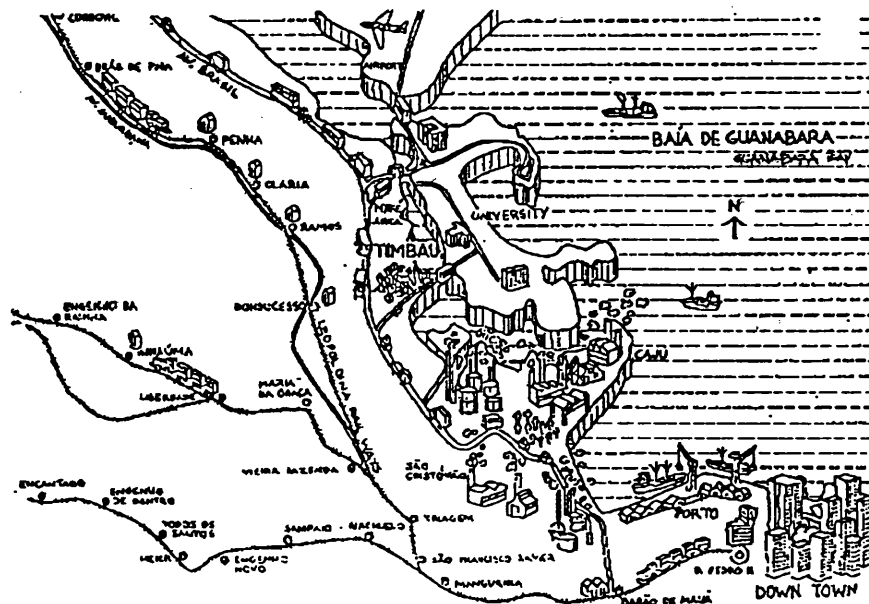
The total number of inhabitants in all the settlements varies from 4638 to 13009 with Timbau corresponding to 8% of the total. The area has been in constant physical transformation. Each settlement is singular, both spatially (and configurationally), social and historically, yet they arise from similar social backgrounds. Densities also vary significantly (from 18,20 to 110,51 inhabitants per 1000m2), with relatively low density for Timbau: 31.15 inhabitants /1000m2.

These squatter settlements form a very consolidated continuum space on the back of Av. Brasil , taking the shape of a conurbation, with Timbau occupying an area of 1282.96 m2 (only 10% of the population in Timbau have been living there for less than ten years[48]). Nova Holanda and Timbau, nevertheless, are two breaks in that continuity. In the case of Nova Holanda, the differentiation is given by the fact that it is formed by a row of minimal houses, built in wood by the government in the early 60's to provide temporary accommodation to squatters from elsewhere which had their houses destroyed by natural causes. On the other hand, the outstanding privileged characteristics of

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[48] It is perhaps, as suggested by Santos, **Morro do Timbau**, Ibam, Rio de Janeiro, 1984, p.38, the most stabilised squatter settlement in the entire group.

Timbau is given by the fact of being localized in a hilly place having thus dry ground which is a unique feature among the predominant swamp-land. Marcilio Dias is also in this same strip of land, located between Av. Brasil and the Guanabara Bay.

Fig.1.3. The Mare squatter settlements
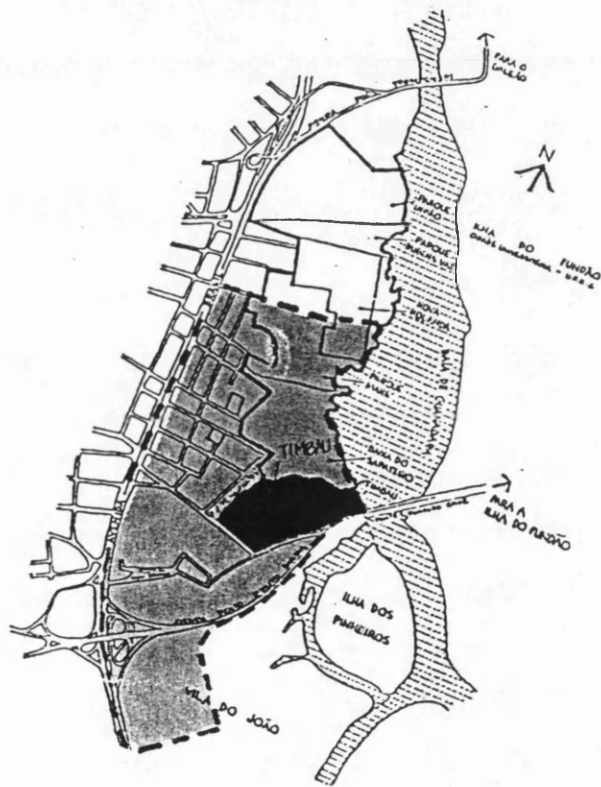
The Marcilio Dias squatter settlement was formed originally like many of the squatter settlements along the Guanabara Bay including Timbau. That is, through a small group of fishermen in the early 1940's which settled themselves illegally along the swamp mangrove

land on the shores of the Bay. The opening of the Av. Brasil in the 50's would then speed up the growth of these areas. During the 50's with the occupation of part of the area by the Navy, the fishermen's group is removed to the southwest of the site. They then received the Navy's authorization to occupy what became known as favela Marcilio Dias. It is this statutory situation that, as observed in IBAM's[49] report to BNH (1986), would back up future settlers' claims of their legal rights of occupation of the area, which partially justifies the fishermen's strong local attachment.

In 1980 as a result of strong local community pressure the area was the object of a state planned self-built project. The project was designed to house the whole population to be decanted from the neighbour squatter settlement. Data from a BHN survey undertaken at early stages of the project (1983) show that there were in this area a total number 882 families living in 753 wood shacks (see map of the area - **figures 4 and 5**). A further BNH survey in 1984 has also shown that only 3.4% of the houses were in brick and concrete.

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[49] Ibam was a nongovernmental institution which was contracted by the National Housing Bank (the governmental body which launched the project) to implement on site the self-help scheme.

The irregularity and high density of the squatter area will later contrast with the geometry and regularity of the planned new scheme.

Fig.1.4. The settlements, Av.Brasil and the vicinity
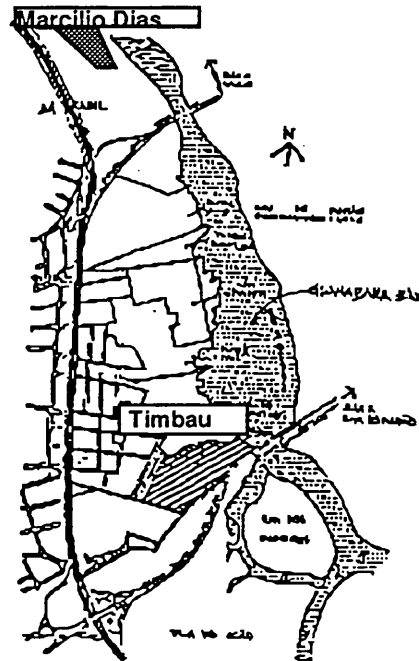
Fig.1.5. M.Dias and its immediate surroundings
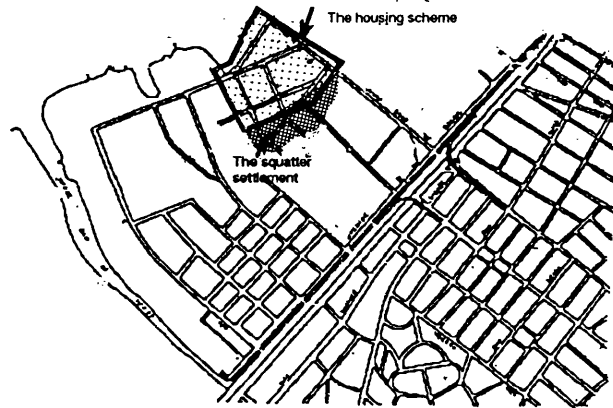
It seems clear from the descriptions above that, despite of the similarities in their trajectory of growth and development, the two settlements represent two very distinct forms of approaching the housing problem. M.Dias, unlike Timbau, has experienced a radical change in its initial up-grading trajectory by being the object of planning.

This, generates the major question addressed in this thesis which is: if space is not a mere neutral container for social and political patterns, what kind of social and political shifts have happened in connection to the actual development of the configuration and arrangement of these two physical environments?

In trying to answer this question a set of secondary questions arise. The first of these questions is what could be the relevance of the physical form of the grid and its functioning for those social and political patterns? The second is about the shifts in the social and political patterns and how have they been realized and embodied in space. Finally, the third and more global one, questions the planning idea [50] of reducing housing to the provision of a mere spatial container as opposed to a main form of political action. These are the specific issues and questions on which the main body of this study is focused.

How is the problem to be tackled - Space as the frame of reference.

To start addressing these questions it is vital to separate two pairs of ideas, which are frequently conflated in the literature on the subject. The first of these, for example, is the idea of a cause-effect relationship between participation and the concept of neighbourhood communities. This is, in turn, linked with the organic urban type of growth present for instance in

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[50] And all forms of physical intervention on the built environment.

squatter settlements. Christopher Alexander[51] clearly illustrates that as follows: *"Only people who are members of a community are able to manage an organic process of growth. Only them know their needs and only they are able to decide if the relationship between building and public spaces are appropriate".*

The second is the assumption that there is an unequivocal correspondence between spatially discrete physical domains and the well-defined harmonious social grouping which characterize the so-called neighbourhood communities. But even accepting the validity of such ideas, they do not, however, explain, how architecture can in principle have such a direct outcome in society.

It is argued here, instead, that any form of <u>social grouping</u> and <u>structuring</u> happens <u>in and through space</u>. Space is therefore taken as the key unifying variable to the understanding of the interplay of society and politics. Thus urban space, studied through its morphology, is the major preoccupation of this thesis.

Another confusion is that which establishes a mechanic relationship between <u>community participation</u> ,

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[51] Alexander, C., **Planning and Participation - The case of the Oregon University**, The Centre for Environmental Structure, Berkeley, California, 1975.

neighbourhood and marginality. This is currently found in numerous studies on Third World squatter settlements which share the view presented by Castells, for instance, in a study based on the settlement struggle in the Mexican city of Monterey[52]. In this case study he argues that, despite settlers' developed and advanced level of community organization with the settlement's infrastructure[53] provided by them, the group was isolated from the mainstream society. The fundamental point he, among other authors, supports is that the social relationships of these neighbourhoods with the nation are mainly those of dependency.

To be more precise the idea which lies behind this argument is that squatter settlements are a sort of natural neighbourhood, somewhat organized by an informal local government-within-a-governement based on community participation[54], which is nevertheless marginally (socially and physically) integrated to the society as a whole. In this sense, settlers are normally regarded as having atypical urban values associated to a supposedly rural origin or to an insecure marginal unsettled urban life.

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[52] Castells,M., **The City and the Grassroots**, Edward Arnold, London,1983.

[53] e.g. schools, clinic, roads, electricity, water and sewage.

[54] A kind of harmonious co-operative self-governing entities.

Moreover, emphasis is placed upon neighbourhood and community participation as the underlying social generator of physical marginality. Some of the consequences of that are perversive in modern town planning, namely the idea that space could only be good to settlers by virtue of being associated with a clearly discrete closed social group[55], separated physically and socially from the city at large and thus being free of the undesirable presence of strangers.

This thesis aims to asses this view by taking space as the starting point for studying local social and political behaviour. It is questioned that if space is to be taken, at most, as mere by-product of social changes[56], somehow physical segregation would have to correspond to social segregation. The problem definition as it stands has the effect of dealing with space and society as being a reflection of each other.

The methodology adopted here, nevertheless, approaches the problem from a different perspective. It attempts to first describe how spatial patterns and the ordering of the physical environment originates in social life, and second, to describe social and political behaviour showing how these can be understood through its

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[55] Or a community. This ideas is found for instance in Castells, Alexander C, Rapaport, A., Mumford, L.

[56] With space and society acting as completely different entities.

intrinsic spatiality. In this way, it proposes a descriptive methodology, whereby space, society and politics can be seen as an intrinsic part of each other and even to some extent generative of each other, but not necessarily a reflection of each other.

The set of techniques used in these descriptions can be briefly summarised as follows[57] : first, the use of space syntax techniques for the analysis of the settlements's urban configuration and structure; second, the observation of patterns of space use and movement in order to construct a statistical picture of the existing encounter field; third, by correlating patterns of use to the configurational properties of the grid as a form of having a statistical picture of the way social relations may be realised in space; fourth, questionnaire data which focuses on the space-time dimensions of networks is used to build a picture of the work of the group, its networks and associations, and last, social data from questionnaires and interviews are used to highlight individual trends, if any, within the patterns identified for the group.

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[57] These techniques will be described in detail at the introduction of the empirical chapters where they will be extensively used.

The structure of the thesis

Having specified the problems which are to be dealt, and having broadly sketched the approach which will be adopted in addressing them, the structure of the argument that will be presented needs to be defined. The argument is more or less organized around the discussion of three major problems, which have already been introduced in the present chapter. The first is the concept of the neighbourhood unit, the second is the one of leadership and community participation and the third is that of marginality.

The chapters are also structured in terms of the types of description and techniques they deal with. The early parts of the thesis which are concerned with the present physical situation of the settlements, use the spatial description as the enquiry source and are based on cartographic records which were checked on site, as well as first hand observation data.

The later chapters are mainly engaged on the detailed description of social and political patterns and their spatial-temporal dimensions and they are based on field survey material. These chapters are prefaced by one which attempts to review the current state of art and to carefully present the main methodological prerequisites for the empirical analysis which follows.

The thesis concludes by summarising the main findings and drawing some lessons for planning action and design for low income housing.

Chapter II aims at presenting a review of the relevant literature in the subject of squatter settlements. Deliberately the range of material presented is restricted. The literature review therefore excludes all studies which have no connection with the specific area of interest of this thesis. It covers the following main general headings which structure this study, namely: neighbourhood unit, community participation and leadership, social networks, and marginality. No subject matter is included in the literature review unless it has its foundations in one of the topics mentioned above. Likewise, an full account of "space syntax" will not be presented. The account will be restricted to allow for an understanding of the concepts, methodology and techniques used in this thesis[58] .

Chapter III is the first of a set of three linked chapters which set out to explore empirically the case studies. It addresses the issue of neighbourhood unit specifically in connection with the morphology and social logic of the urban grid as it is nowadays in the

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[58] Readers who require a full account of these techniques and concepts should consult **The Social Logic of Space**, Hillier, B. and Hanson, J., Cambridge University Press, 1984.

two settlements. It focus on a comparison between the patterns of movements and interaction of inhabitants and strangers and the gender differences present in the two settlements. This nevertheless is analysed by counterpoising the existing clear visual and morphological differences represented by the disorderly, organic and deformed shape of the Timbau's grid and the geometry of M.Dias' fabric.

Chapter IV is concerned with the second main problem of this thesis which is that of community participation and leadership. It attempts not just a precise description of the internal social and political dynamics of the two settlements, but also to explore the role of space in generating and sustaining that process. Here the idea of auto-construction as an authentic spatial, social and political process is explored as a form to describe and name the whole dynamics of the two case studies' historical development.

To the extent that space and society are seen as part of a singular reality, an analysis of the historic development of political and leadership patterns can only be understood by knowing what actually took place in the development of the configuration of the urban grid. Consequently, this chapter will also be focused on space, yet from two different perspectives. One will be

in terms of political structures as an instrumental form of producing and shaping the physical environment[59], and the other in relation to the actual role space plays in ordering and structuring global and local political relations. The chapter thus proceeds in the opposite direction of chapter three, attempting first to give a socio-political account and its intrinsic spatiality, giving then at the end of the chapter a configurational account of the grid development using "space syntax" representations and measures. It uses the questionnaire data for the socio-political description, presenting first a full data table and second a series of figures scattered through the test which aim to offer a statistical picture of the data. Finnally, the configuration account is based on a sequence of hisatoric maps.

Chapter V focuses on the question of <u>marginality</u> which is the core issue of the third main problem of this thesis. It examines the evidences for and against the preposition that squatter settlements in the third world have a peripheral-dependent situation in relation to the urban society as a whole, living apart from the rest of the city and behaving unlike most of the official

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[59] i.e. Through the achievement of physical goals such as infrastructure which have a direct consequence on the physical environment or through the implementation of local regulations which have the ultimate role of defining the shape of the urban grid itself.

city inhabitants[60]. It uses mainly individual accounts of people from both settlements which are contained in the questionnaire data and in the interviews.

Chapter VI draws together the various issues which have been addressed in the opening chapter of the thesis and re-examines them on the light of the empirical data and of the findings of chapters three, four and five. The principal aim of this section is, nevertheless, to use the main findings of the empirical chapters in order to evaluate the ideas planning practice think with when dealing with low income housing in recent years.

These ideas, as already stated, have mainly their origin in three far-reaching assumptions. The first was that the traditional masses have remained largely segregated (economically, socially and physically segregated) from the urban capitalist industrial system, and therefore squatter settlements are "marginal oasis" in the urban system where traditional social and political relations are predominant. The second was that the squatters settlements are an outstanding example of an organic settlement which has grown unplanned spatially and treated as a "community" organized through "natural neighbourhoods" as in the traditional anthropological and urban sense. The final assumption

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[60] i.e. Operating on the basis of mutual reciprocity support networks rather than through common capitalist relations.

was that visual and formal properties of the built form are understood and experienced as regarded in the architectural <u>vernacular</u> or <u>community architecture</u> sense.

Finally, the thesis discusses both the role designers and the science of urbanism might play in the XXI century, arguing that the current normative and prescriptive character of planning might need to be revised. The planning process as it is currently devised establishes a paradox. How can architects and planners lay down lines of action when they do not seem to understand precisely how cities work and develop. In order to understand cities it is necessary first to be able to describe and analyse them. Thus the dominant problem becomes that of having adequate descriptive and analytical tools which allow for a better knowledge of the built environment. If this is so, then the lessons taken from the description and analysis of the case studies and of their auto-construction may indeed be significant for the design and shaping of future urban settlements.

CHAPTER II - Literature Review and Methodological Prerequisites[1].

Abstract

The review is prefaced with a section which presents briefly the existing squatter settlements literature focused on case studies. The aim is to provide a specific frame of reference to the three main question which will structure the literature review which follows. These questions are: Can squatter settlements be thought of as organic unplanned natural neighbourhoods organized through community participation? Can settlers be regarded as being social and spatial marginally integrated to the city? Can squatters be seen as mainly operating on the basis of reciprocal local networks which are liminal to larger networks? In addressing these three questions the purpose of this chapter is to examine only the literature relevant to these issues in terms of the present assumptions. It is expected that the examination of these assumptions would reveal the need to provide conceptual and empirical frameworks for a precise description of how those people live and build their settlements if more realistic practical and theoretical strategies are to be developed. The chapter does not cover material which is oriented to technical and broad major aspects of housing or to demography, unless it bears a direct relation to the local spatial and social contextual properties of the cases. The chapter concludes by presenting the concepts, methods and techniques used to describe and analyse the case studies. An attempt will therefore be made in this last section to set the descriptive power of the techniques and methods selected to answer the questions.

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[1] Readers who are not particularly interested in the methodological details might skip the final section of the present chapter.

Brief case study literature search

This section aims to preface the subsequent literature review with a summary of some of the existing studies of cases of life in squatter settlements and other illegal occupations in order to provide a more accurate and concrete framework to place the analysis which follows. A table will be used to assemble and summarize the material listing the case studies, their main focus of attention, type of data and main methodology of analysis. This table will show the percentage of cases in the existing literature of studies of illegal settlements of a sociological urban anthropological nature which provide a spatial analysis of those places.

Main Area: **HOUSING IN BRAZIL**

Author	Case Study	Main focus	Type of Analysis
Leeds & Leeds (1978)	Rio de Janeiro	Life in squatter settlements	Social/political
Santos (1981)	Bras de Pina, Rio	Community Development	Social/political
Bolnick (1982)	São Paulo	Life in a working	Social/spatial
Santos (1984)	Timbau, Rio.	Community Development	Social/political spatial
Edgerly (1980)	Guararapes, Rio.	Community Development	Social/spatial

Main Field: HOUSING

Author	Case Study	Subject	Type of Analysis
Verres (1973)	Bogota,Medellin Colombia	Housing finance	Political/economic
Lomnitz (1977)	C. el Condor, Mexico City.	Social networks	Social/economic
Payne & Del Rio (1981)	Ancara, Turkey	Settlement Development	Social/political spatial
Blaesser (1981)	Medellin, Colombia	The pirate submarket	Political/economic
Tribillion (1984)	Medellin, Colombia	The pirate submarket	Political/economic
Gilbert & Ward (1985)	Valencia,Bogota, Mexico City.	Land aquisition	Political/economic social
Ferreira (1985)	Lisbon	Illegal housing and hous. supply	Political/economic social
Varley (1985)	Mexico City	Impact of urban regularization	Social/economic
Beninger (1986)	Pine, India	Assesing housing supply	Social/economic
Chant (1987)	Queretaro Mexico	Women/ Housing	Social/economic
Moser (1987)	Guayaquil Equador	Women & local protest	Social/political
Yonder's (1987)	Istanbul Turkey.	Typology of submarkets	Political/economic
Perlman	L. America & U.S.A.	Poverty & marginality.	Political/economic social
Leibbrandt (1990)	B. Aires, Argentina	Dwellings typology	Architectural
Vega-Cent. (1990)	Lima, Peru	Auto-construction	Social
Vidal (1990)	Lima Peru	Houses'	Architectural/ technical.

Main Field: PLANNING

Author	Case Study	Subject	Type of Analysis
Young & Willmot (1957)	East London England	Life and networks in a working class suburb.	Social/networks
Gans	West End of Boston.	Social structure and netwroks.	Social/networks

The table above shows that only a small proportion of the case studies have been focused on space. Most of the studies though do not use any type of spatial data and none aim at providing a precise spataial description of the settlements morphology or patterns of movemetn. In addition, concepts such as the ones which follows of neighbourhhod unit, marginality and community participation are taken for granted in most of these cases. In other words, these studies tend to depart from these concepts rather than use the empitical evidence of the case studies to review and assess them. in this sense the literature review below will attempt to show how the those concepts are used in the literature to explain life in squatter settlements.

Squatter Settlements - a collection of
organic and unplanned natural neighbourhoods
organized through community participation?

According to Rapaport *"Most traditional
environments were for homogeneous groups and of
much smaller scale .*[2] *In such cases the congruence
of culture was much simpler and easier to achieve ...
some of the best new environments today are to be
found among the spontaneous ("squatter")
settlements in developing countries ... Such
environments communicated effectively and fully to
users whereas currently there is a concern that
environments do not respond and do not
communicate effectively"* [3]. In arguing this,
Rapaport attempts to distinguish and characterise
two built environments which he believes to be
crucially opposed: the <u>planned</u> and <u>unplanned</u>
settlements. This idea of planned and unplanned
settlements meaning respectively bad and good
environments has often been employed in current
town planning and urban design theoretical and
empirical works.

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[2] This, as stated by the author, refers to situation where multiple cultures
and subcultures are absent. He, in fact, counterposes these type of
vernacular, spontaneous, popular and traditional environments to the new
pluralist and large scale modern ones.

[3] Rapaport, A., **On The Culture Responsiveness of
Architecture**, Journal of Architectural Education, 1987, nº41, pp.10-15.

J. Turner[4] was one of the chief authors to stress the enormous capacity for creating and maintaining useful things that people have when they can get hold of the land, tools and material they need. Conversely, he notes, corporate urban industrial housing by monopolising the design, construction and management of homes, ignores and wastes user's resources and is bound to create mismatches between housing supply and demand. The debate is thus centred around the production of the built environment. The dominant idea is that the inappropriateness of housing production and development is the greatest single reason for the failure of modern town planning. Preindustrial cities and traditional forms of housing with their "progressive type of development" are therefore taken as the paradigm for good environments.

This idea goes back to Thomas More's description of Utopia (1516) where he gives the following account of the process of development of this city island: " *...the houses in the beginning were very low and like homely cottages or poor shepherd houses, made, at all adventures, of every rude piece of timber that came first to hand, with mud walls and ridged roofs thatched over with straw. But now the houses be curiously builded after a gorgeous*

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[4] Turner, J.F., **Housing in Three Dimensions: Terms of reference for the Housing Question to be redefined**, in Paper of the Development Planning Unit, University College of London, 1978.

and gallant sort, with three storeys one over another[5]. This imaginary account rests on a principle not only of spatial harmony but also of social justice and equality[6]. Hence More's vision of a communal society, based on social harmony and on progressive development will pervade much of the modern town planning thought.

Social harmony and a correspondence between social and physical forms will then be assumed as rules of thumb for good design. Perry's idea of the neighbourhood unit[7] is precisely developed within this framework. The neighbourhood formula appears to be based upon the idea of self-enclosure, self-sufficiency and hierarchy. At the centre of each unit was an elementary school and the population of the neighbourhood was calculated in terms of the families needed to support an elementary school[8]. Each unit was then limited in growth and in space by having clear outer boundaries. The spatial

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[5] More,T., **Utopia,** Guernsey Press Co.Ltd., 1988, p.61.

[6] The idea of social equality and harmony is contemporarily best expressed, for example, by the concept of *communitas* proposed by Turner, V., **The Ritual Process**, Chicago, Aldine, 1969. Varied manifestations of *communitas* , he remarks, can be found in the events of May 1968 in France or in situation such as monasteries, convents, socialist bastions, communes in the modern countercultures. This involves the idea of a group which shares the same humanity and which has often found necessary to define itself by establishing real (physical) and symbolic boundaries.

[7] Perry, C.A., **The neighborhood unit formula**, first published in **Housing for the Machine Age**, Russel Sage Foundation, 1939, pp.49-76 and reprinted in **Housing in the Neighbourhood**, pp.95-109.

[8] This corresponded to approximately seven thousand inhabitants.

structure was thought in terms of enabling the inhabitants to have a sense of belonging together, of being a local community of neighbours[9] .

As Jacobs[10] notes a few planners have nevertheless already begun to question whether the idea of neighbourhood units have any meaning at all since mobility, global movement and *"fluidity of use and choice* " are intrinsic qualities of urban life which are excluded from those spatial units. On the other hand, the interpretation of urban development as a piecemeal process, derived from traditional societies, will become the reference point for many authors writing in the field of architecture and urban design. Ancient cities such as London or traditional towns like Canterbury and Oxford are extensively given as examples (for instance by Alexander, C. in **The Oregon Experiment**, pp.47-48 and by Mumford, L. in **In defense of the neighbourhood**, pp.115-116) of this urban type of development where social grouping correspond to well-defined architectural units[11], and where growth takes place in increments. This is the case, for example, of Christopher

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[9] Neighbours meaning, as Lewis Mumford proposes, **In defence of the neighbourhood**, Town Planning Review, Vol.24, Jan.1954 p.256-270, *"people united primarily not by common origins or common purposes but by the proximity of their dwellings in space"*.

[10] Jacobs, J., **The Death and Life of Great American Cities**, Penguin Books, 1984, pp.126-128.

[11] In the case of London, Hanson, J., **The City of London**, unpublished PhD Thesis of the University of London, 1989, op. cit., p.5, questions the current notion that the City is ... " sociologically speaking, a collection of local regions or even of inchoate neighbourhood units".

Alexander[12] who argues that traditionally a house or a city is not produced at once, rather it is the product of a steady process in which building takes place day by day, year by year. Mumford, for example, gives the following account of the mediaeval city[13]: *"it was a congeries of little cities, each with a certain degree of autonomy and self-sufficiency, each formed so naturally out of common needs and purposes that it only enriched and supplemented the whole ...this integration into primary residential units, composed of families and neighbours, was complemented by another kind of division into precincts, based on vocation and interest ..."* [14]. It is this occupational and functional association of zones, by means of which professions or industries of the same sort tend to form well defined precincts, sometimes grouped along a same street which, Mumford suggests, is the main lesson to be learned from the preindustrial city for modern town planning action.

Almost planning theorist starting with Howard and including more recently authors as different as Alexander, Rapoport and Turner use traditional vernacular social and spatial forms of organisation[15]

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[12] Alexander, C., **A Pattern Language**, Oxford University Press, 1977.
The Oregon Experiment, Oxford University Press, 1975.

[13] The mediaeval city is commonly taken in the literature as the example of a typical organic environment.

[14] Mumford,L., **The City In History**, Penguin, Harmondsworth,1966, paperback edition, pp. 353-355.

[15] The so called 'architecture without architects'.

as the model for good design. These forms are by and large taken as the true example of congruence between form and users' needs and as the genuine representation of a <u>participatory process</u>.

The general conclusion that authors have drawn is that one of the main reasons for the poor design of modern environments is the alienation of people from participating in the production of their settlements and buildings (Chermayeff and Alexander, 1966; C. Alexander, 1973; Turner, 1976). This whole set of ideas contained in concepts such as <u>neighbourhood</u>, <u>community</u>, <u>progressive</u> <u>development</u> and <u>participation</u> carried a step further the earlier ideal notion, first introduced by More's Utopia, of commonwealth.

The United Nations' Habitat International Conference in Vancouver in 1976 marked a turning point on the way housing was to be approached. <u>Community participation</u> become thenceforth the central theme in every debate on human settlements. In this Conference it was recognized that there is a crisis in

human settlements[16]. Emphasis was placed in the importance of squatter settlements as a form of dealing with the challenge posed by the enormous necessity to create human settlements to house the urban poor[17].

The importance of community participation in housing projects is now widely recognised not only in the implementation, management and execution of projects but also in terms of involvement in the decision-making process regarding design and financial aspects[18].

In the introductory chapter of this thesis it was mentioned that unplanned squatter settlements are becoming one of the major forms of housing. According to the United Nations World Housing Survey, in 1970 already one third of the world population was living in such settlements. It is also estimated that, by the year 2000, approximately

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[16] According to the United Nations estimates, one billion people around the world lack adequate shelter, water supply, sanitation and services. At least one hundred million are thought to be literally homeless. An extra six hundred million homes are likely to be needed worldwide in the next thirty-five years, a total that will amount to the creation of 3,500 new cities of a million people. Just three hundred of those cities exist. About sixty cities, by the year 2000, will have more than 5 million inhabitants and forty-five of these cities will be in developing countries. Consider for instance that, if current trends remain, in the space of 16 years Mexico City will have 31 million inhabitants, São Paulo, 25.8 million and greater Bombay, 16.8 million.

[17] In the cities of the developing world, 50 percent of the inhabitants, on average, live in in slum and squatter settlements.

[18] Moser, C., et al., **Women Human Settlements and Housing**, Tavistock Publications, 1987, p.15.

fifty percent of the population of developing countries will be urban, making the housing problem even more acute. Despite that, few urbanists and housing specialists would claim that this spontaneous unplanned type of urban phenomena is well understood.

The set of concepts available in the literature for dealing with the problem of human settlements will be described in this section. It includes for instance the idea that community neighbourhoods such as squatter settlements are, as described by Castells,[19] territorially defined local social entities based on face-to-face relations which are in opposition to the technocratic city. Squatter neighbourhoods are thus equated to self-governing and marginal settlements which are largely segregated from the capitalist city. They are seen as the embryos of alternative forms of social and spatial organization which could populate cities in the future. Thus the ultimate vision of cities would be that of a collection of self-governing community neighbourhoods, each one of them clearly spatially defined. This shows that the neighbourhood unit formula is pervasive not only in the way traditional urban forms are understood butalso in the form of which future environments are envisaged.

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[19] Castells, M., **The City and the Grassroots**, Edward Arnold, London, 1983, p.284.

The situation as it stands suggests that both the current appreciation of present urban forms, including squatter settlements, and the way future housing policies are thought, might stem from a systematic misunderstanding of traditional organic environments and their progressive process of development. This notion of a city as a mosaic of community neighbourhoods, each one of them having clear natural or obvious spatial limits and boundaries seems to be paradoxically the antithesis of the urban form and life. Cities and organic urban environments seem to be rather a *"continuity of differences, not an aggregation of parts"*[20] Urban forms seem to be about continuity instead of discontinuity.

A deeper consideration of what lies behind the assumption that discontinuity is a property of organic unplanned growth reveals a number of, yet unanswered questions[21]. The first question is as to what extent can unplanned squatter settlements be seen as local self-contained, self-governed and self-referential social and spatial enclaves? And the second question is can a city be thought as an aggregation of discrete autonomous sub-areas

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[20] This definition is given in Hillier, B., and Penn, A., **Is Dense Civilisation Possible?: Or the shape of cities in the 21st century**, The Bartlett, University College of London, 1991, p.2.Ibid, p.4.

[21] These are specific questions which are addressed in the main empirical body of this thesis. It is expected that the precise description of the configuration of the urban grid of the case studies presented in Chapter III helps to throw a light in the first problem. The second one, nevertheless, will be dealt in more detail in the final discussion chapter.

without losing its intrinsic property of being a continuous system?

The secret seems to be in understanding how the parts of the city can maintain their local properties and differentiation without losing the city its continuity and globallity. In other words, the key to the problem might be to grasp what Hillier and Penn have called the *"continuity of differences"* [22] instead of attempting to understand it as a hierarchical collection of autonomous parts. It seems that, as Jacobs remarks," *the lack of economic or social self-containment is natural and necessary to city neighbourhoods — simply because they are parts of cities".*[23] Despite that the proportion of urban population living in self-produced settlements is staggering high, the ideas presented so far reveal that architects know little about those settlements.

Throughout history, J. Hardoy[24] notes, in both rural and urban areas, the poor have almost always produced their own houses and settlements without following any official sanctioned norms or codes and without the direct intervention of professionals. But they create their own habitats

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[22] Ibid, p.4.

[23] Jacobs, J., **The Life and Death of Great American Cities**, Penguin Books, 1987, p.126.

[24] Hardoy, J.E., **The Human Dimensions of the Environments of Poverty**, Institute of Latin American Studies, University of North Carolina at Chapel Hill, 1986.

using, when possible, materials, construction techniques and settlement layouts which evolved over time. Settlements whose construction was organised by the settlers themselves are becoming undoubtedly the predominant environment of the urban poor. This besides the incapacity conventional housing has to deal with the growing shortage of housing has led to squatter settlements being viewed as a sensible and viable alternative. Turner and Mangin's work in Lima, Peru, was particularly relevant, as observed by Moser[25], for the widespread acceptance by international agencies[26] and national governments of squatters as a solution for the housing shortage rather than a problem. The proportion of architects and urbanists engaged on research work in areas such as those of spontaneous and unplanned urbanization is, nevertheless, probably small. Architects and urbanists have generally been more interested in the elites, in their buildings and in the 'legal city' than in the ways the majority of poor have built their 'illegal or unauthorized' urban settlements' and buildings; this explains why so little is known about the settlements of the poor and why so many ideas are taken for granted.

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[25] Moser, C., et al., **Women Human Settlements and Housing**, Tavistock Publications, London, 1987.

[26] Moser, Ibid, p.5, remarks that The World Bank since 1974 has endorsed officially self-help schemes with funds and loans for their financing increasing substantially.

As the table in Chpater II of this thesis shows to date most of the scarce research on squatter and illegal settlements has placed emphasis almost entirely on the economic relations, being focused essentially on issues such as urban housing markets, land tenure, and the role of the state in housing provision. Incomparably less attention has been paid to the social, spatial and political relations of housing examined in relation to specific planning context and local-level groups.

Poverty, Marginality and Segregation

The literature on housing in the Third World is full of examples showing that conventionally produced housing is often not affordable by at least fifty percent of the urban population of those countries. Governments, notwithstanding, still neglect those settlements and keep building cities and buildings which bear no relation to the needs and possibilities of the urban poor. Over the last thirty years several large urban agglomerations entirely produced by the poor were built, yet no one has a clear idea of how to deal with the construction and management of those environments.

According to Hardoy[27] "*the way the poor build their own urban 'popular settlements' is a combination of the sites they can illegally occupy, the resources they can invest, the strength of the organizations they form, and the attitude of government towards squatting; this combined with their cultural values, produces* **the urban environment of poverty** " (authors' emphasis).

The current approach in the literature which deals with poverty is to equate that to <u>marginality</u>. For Hardoy[28] "*to be poor often means to dwell, to work and to commute, even to drink water, purchase food and secure health assistance outside the law, with no safeguards for health and safety*". This view was developed in Latin America mostly by a Catholic Group of scholars whose intellectual leader was a Belgian Jesuit priest called Roger Vekemans. This theory, as Ferguson and Portes[29] observe, became at that time the official viewpoint on rural poverty by the Chilean Christian Democratic parties.

Low income groups are often seen as transgressors or as living outside the legal system and therefore

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[27] Hardoy, **The Human Dimensions of the Environments of Poverty**, Occasional Paper Series, University of North Caroline as Chapel Hill, 1986, p.8.

[28] Ibid, p.4.

[29] Ferguson, F., and Portes, A., **Comparative Ideologies of Poverty :**
Latin America and the United States, in Comparative Urbanisation Studies, School of Architecture and Urban Planning, UCLA, p.40.

having their own system of values and their own codes. Authors such as Oscar Lewis[30] and the ones inspired in the work of the DESAL[31] and the theory of marginality have often stressed the idea of squatter settlements as a social malaise. The marginal " is in, a sense, a 'different man', with aspirations, yes, but acting on the basis of mechanisms completely ineffective to attain them. He is a diminished man, not in his moral values which are frequently heroic, but in his initiative and capacity to act individually and collectively".[32] Marginality was used to express a social existence which remains at the margin[33] of the dominant economic, politic and social system. An existence which constitutes a way of life, characterized by segregation from the normal —physical, social and political— life of modern society and by economic insecurity[34]. This was said to occur for two reasons: first by their lack of capacity of getting integrated

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[30] Lewis, O., The Culture of Poverty, Scientific American, n°215, Vol.4, pp.19-25.

[31] DESAL (Centro para el Desarollo Economico y Social de America Latina) was Vekemans' organisation. It is a Catholic scientific institution which started in Santiago, Chile and later with the advent of the Unidad Popular Government it moved to Bogota, Colombia. Its publications have presented and elaborated this idea of marginality.

[32] Vekemans, R., **Una Estrategia Para La Miseria**, DESAL, 1967, p.7.

[33] Or nominally apart, as suggested by Lomnitz, L., **Networks and Marginality**, Academic Press Inc., London, 1977, .10.

[34] Lomnitz,L., **Networks and Marginality**, Academic Press, Inc., London,1977, p.208, argues that one of the strategies developed by the squatters to overcome this is to convert social resources, such as kinship and other forms of solidarity, into economic security.

into society[35], and second because society itself neglects them. The solution suggested, as Ferguson and Portes[36] comment, *"is to alert elite groups to the needs and demands of the poor and to 'promote' the poor into skills and orientation necessary for life in the modern world"* .[37]

Squatters, therefore, were generally regarded as people who, using Lomnitz definition, *"were barred from full membership in the urban industrial system. The basic social economic structure of the shanty-town is the reciprocity network ... It is a social field defined by an intense flow of reciprocal exchange between neighbours. The main purpose ... is to provide a minimum level of economic security to its members."* Borrowing an example from ecology, she also says *"the marginal live like crabs; they inhabit the interstices of the urban system and feed on its waste".*[38]

Yet, for many observers (e.g. Ray, 1969; Cornelius, 1975; Turner, 1976; Portes and Walton, 1975) the problem did not lie in their *cultural inability* to take

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[35] Normally this is also associated to their non urban background and rural origins.

[36] Ferguson, F., and Portes, A., **Comparative Ideologies of Poverty** :
Latin America and the United States, in Comparative Urbanisation Studies, School of Architecture and Urban Planning, UCLA, p.40.Lomnitz, L., Ibid, p. 208.

[37] Since as they note the poor are taken as *"ill-prepared to cope with modern reality"*, Ibid, p.40.

[38] Lomnitz, L., Ibid, p.208.

advantage of the modern urban situations but in the *non-existence* of such situations. Squatter settlements have frequently been classified as marginal not only in the geographical, ecological and urbanistic sense, but in many social, economic and political aspects of squatters' life. Leeds and Leeds[39] call the attention to the fact that, over and above this marginal attribute, observers have spoken of squatter settlements as rural enclaves[40] in the city. Yet, as they show, there are many evidences against this rurality[41]. Migration and rurality are linked phenomenon. Fergurson and Portes note that migration brought the issues of poverty and marginality back to the discussion. Lomnitz argue, nevertheless that migration should be understood within an ecological framework with " *migration process corresponding to an ecological catastrophe"* [42] . She describes migration" *as a process of geographical displacement of human populations from one ecological niche to another".* [43]

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[39] Leeds, A. and Leeds,E., Brasil and the Myth of Urban Rurality: Urban Experience, Work, and Values in 'Squatments' of Rio de Janeiro and Lima, in Arthur, J.F. Ed., City and Country in the Third World, Cambridge, Massachusetts,1970.

[40] In terms of both social value structure and organization.

[41] For instance the fact that in some squatter settlements,people have been living there form more than two or three generations; or that the adopted family structure in those areas resembles typical urban patterns.

[42] Lomnitz,L., **Networks and Marginality**, Academic Press, Inc., London,1977, p. 6.

[43] Ibid, p.39.

However, it was the massive proportions of the phenomenon and their spatial concentration within the cities which have made them so visible and so vulnerable to be classified as deviant and marginal. In fact, both groups of authors — the ones covered in the last section who have focused in the idea of the city as a collection of natural neighbourhoods, and the ones covered in the present section who consider unplanned squatter settlements within a framework of marginality— agree in terms of the form a city should take. This form is based on the notion that a city might be thought as an <u>organism</u>. As such it should be autonomous, have an optimum size and a well defined boundary[44] and it should be organized by clearly differentiated functional parts, like the organs of animals. Its parts, as Lynch[45] remarks, *"are in constant interchange with each other, participating mutually in the total functioning of the community ... In general, the internal organisation of a settlement should be a hierarchy — a branching tree — with units which include subunits, which themselves include sub-subunits"*. In the same line of thought, any mal-functioning of the 'city-organism' has to be interpreted as something pathological. This metaphor was used later by the marginality school to explain squatter settlements. It has given the theoretical support for many of the

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[44] This coincides with the properties established by a neighbourhood unit.

[45] Lynch, K., **Good City Form**, Massachusetts Institute of technology, 1981, p.91.

clearance policies adopted throughout Third World cities. Such actions were justified on the grounds that the settlements constituted a form of *'urban cancer'*[46] populated by *marginals*.

Despite of the obvious ineptness of the 'city-organism' metaphor to explain city forms and their functioning, it has been widespread among planning professional and authors dealing with housing. As suggested by Lynch, the roots of this theory can be traced back to the nineteenth century in the work, for example, of social reformers such as Ebenezer Howard, the romantic landscape designs and of naturalists. But authors such as Lewis Mumford, Clarence Perry, the ecology school and all the literature on marginality have helped to disseminate that assumption through a significant number of fields throughout the twenty century.

Networks, Marginality, Rurality and Poverty

Network analysis has often been used as a conceptual and methodological tool to describe patterns of relations found in communities. The concept was

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[46] Moser, C. et al., **Women Human Settlements and Housing**, Tavistock Publications, London, 1987. Ibid, p.248.

used[47] by Barnes[48] meaning a field of relationships between individuals[49], and developed by Bott[50] in her study of conjugal roles in London. Barnes developed the concept to account for a category of relationships that were neither territorial nor industrial based, but rather based on personal choices of the individuals (such as friendship, neighbourliness and kinship). His aim was to describe how notions of class equality were applied and how individuals made use of personal ties of kinship and friendship in the delimited Norwegian social scene. Bott extended the term to describe *"a set of social relationships for which there is a common boundary* [51] *... a situation of being in contact with a set of people and organizations some of whom were in contact with each other and some not* ".[52]

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[47] Radcliffe-Brown, A.R., has however already used the term metaphorically, as in his definition of social structure as *"a complex network of social relations"* , **On Social Structure**, Journal of the Royal Anthropology Institute, Vol. 70, pp.1-12. Barnes himself acknowledges to Radcliffe-Brown's metaphor of social structures and to Fortes' idea that kinship and filial ties provide a 'web' uniting unilinear descent groups; in Fortes, M., **The Web of Kinship among the Tallensi**, Oxford University Press, London, 1949..

[48] Barnes, J.A., **Class and Committees in a Norwegian Island Parish**, Human Relations, Vol. 7, pp. 39-58, 1954. Bott, E., **Family and Social Network**, Tavistock Publications, 1957 (first publication).

[49] Barnes uses the concept of field as follows *" Each person is, as it were, in touch with a number of people, some of whom are directly in touch with each other and some of whom are not.... I find it convenient to talk of a social field of this kind as a network. The image I have is of points some of which are joined by lines. The points of the image are people, or sometimes groups, and the lines indicate which people interact with each other* ", Ibid, p.43. This model similar to patterns which are studied in electrical and communications engineering, formed a so-called network.

[50] Bott, E., **Family and Social Network**, Tavistock Publications, 1957 (first publication).

[51] Ibid, p.59.

[52] Ibid, p.313.

Bott's empirical findings has lead her to question the idea of communities in the sense that they form cohesive social groups. She proposes instead that attention should be paid to the <u>network of actual relations</u> people maintain regardless of whether they are confined to the local area or spread beyond that[53]. In recent years, nevertheless, the term <u>network</u> has increasingly being used in the more specific meaning assigned to it primarily by British social anthropologists such as Mayer, 1962; Boissevian, 1964; Mitchell, 1969; and Arnold, 1969. There is also in the field a fertile tradition of experimental research and studies of cases both in England and United States (e.g. Boissevian, 1969; Wheeldon, 1969; Kapferer, 1969; Granovetter, 1982; Wellman, 1982). Network as an analytic and methodological tool for describing and analysing social interaction has been applied to a variety of social contexts - from work to political situations — including the study of the network of relations of individuals in squatter settlements.

Relations with other kin, apart of the nuclear family, have not been considered important by anthropologist and sociologists in the study of contemporary societies, except in certain rural areas or in squatter

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[53] Mitchell,C., **Social Networks in Urban Situations**, Manchester University Press, Manchester, p.9. will suggest later that the very foundation of social network theory rests precisely upon the failure of *"structural/functional"* analysis to characterize social processes within contemporary societies, which are neither socially bounded nor spatially discrete. Ibid, p. 133.

settlements[54]. By contrast, authors[55] studying the network patterns of squatter settlements have often stressed that the social patterns followed by those members are strongly based on the extended family as the main mean of mutual support. This assumption is frequently linked in the literature to the marginal situation of poverty and the need for the urban poor to use social networks as a form of compensating for a lack of other resources (economic and political for instance). In addition to that, some important studies of urban areas such as the ones developed by Bott and by Young and Willmott[56] have found that certain working class families, at least, have a great deal of contact with their relatives beyond the elementary family (at least with parents and with some of the siblings, uncles and aunts, and cousins of the husband and wife).

Lomnitz's[57] empirical study focused on a Mexican community is specially relevant to this thesis. In this study, as mentioned before, she shows through her findings that the pattern of relation in the shanty town is characterised by *reciprocity networks* which

[54] Leeds, A., **Locality Power in relation to Supra-local Power Institutions**, in Urban Anthropology — Cross - cultural Studies of Urbanization, Oxford University Press, 1973, pp. 15-41.

[55] For instance Leeds, A. and Leeds, E., **A sociologia do Brasil Urbano**, Zahar Editores, 1977; and Lomnitz, L., **Networks and Marginality**, Academic Press, Inc., London,1977.

[56] Bott, E., **Family and Social Network**, Tavistock Publications, 1957 (first publication), p.99.

[57] Lomnitz, L., **Networks and Marginality**, Academic Press, Inc., London,1977.

are closely connected to traditional structures such as the family, kinship and friendship. Those forms have origin, she argues, in the recent rural origins of such populations[58]. M. Granovetter, like Lomnitz, supports the view that there is a pervasive use of <u>strong ties</u> by the poor and insecure as a response to economic pressures. In his study of the importance of <u>weak ties</u>[59] for individuals in affecting cohesion in complex systems he suggests that" *the heavy concentration of social energy in strong ties has the impact of fragmenting communities of the poor into encapsulated networks with poor connections between those units; individuals so encapsulated may then lose some of the advantages associated with the outbreak of weak ties. This may be one more factor that makes poverty self-perpetuating".* [60] Since weak ties are regarded by the author as being vital for the integration of individuals into modern society or into any kind of politically based movements, groups which solely depend on strong ties will be enclosed and segregated." *Without weak ties"* , as he put it, " *any momentum generated does not spread beyond the clique, with the result that most of the population is untouched".*[61]

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[58] Ibid, p. 133.

[59] Granovetter, M., **The Strength of Weak Ties**, in Social Structure and Network Analysis in Urban Situations, SAGE Publications, New York, 1982, pp. 105-131. The author uses the term weak ties meaning *"our acquaitances"* and strong ties meaning *"our close friends"* (Ibid, p. 105).

[60] Ibid, p. 116.

[61] Ibid, pp. 106-107.

Several studies have attempted to cast a light on the relationship between the dominance of strong ties and a strong presence of migrants in the group. In many squatters settlements such predominance of migrants is obvious[62] but this does not necessarily correspond to the above or fits in the description given by Castells, as it is expected to show later in the empirical chapters, that *"once in the big city, newcomers try to settle in stable communities* [63] *, build up neighbourhoods, and rely on local networks".* [64] In addition, marginality theory suggests that when 'rural villagers'[65] migrate to cities they tend to maintain their behaviour in terms of local solidary group norms. Many researches have already offered evidences of the opposite, showing that several migrants living in urban situations have a quite heterogeneous, cross cutting social networks

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[62] In our case studies, as the data which will be presented in Chapter IV reveals, most migrations are urban-metropolitan rather than rural-urban.

[63] Castells uses the term communities meaning urban movements aiming at the maintenance or creation of local autonomous cultures, ethnically or historically originated. He speaks of these autonomous communities as agents of social change, locally-based and territorially-defined which tend to mobilise around major issues of opposition against the dominant logic of *capitalism, informalism, and statism.* This, nevertheless, is arguable and it will have to be evaluated on the basis of empirical research as it expected to endure in this thesis.

[64] Castells, M., **The City and the Grassroots**, Edward Arnold, London, 1983, p.292, follows further with this argument and prophetises that *the rootless world economy* and this *local co-operative communities* are two faces of the same coin heading towards a potentially decisive confrontation.

[65] This is in reference to the H.Gans' term and book title, **The Urban Villagers**, Collier-Macmillan Limited, London, 1962. Wellman, B., **Studying Personal Communities**, in Social Structure and Network Analysis in Urban Situations, SAGE Publications, New York, 1982, pp.61-80.

which often are far reaching and involve a mix of different types of ties (i.e. kin or friends, strong or weak, local or long-distance). This contradicts the prevailing view of studies where local communities are seen as bounded groups, with boundaries strongly marked and with ties and support systems which do not extend beyond the neighbourhood. Gans in a study of the West End area of Boston even denies the existence of communities as a physical and social unit. He then goes on to suggest that "*West Enders were concerned with some of the people who lived in the area, but not with the entire population. Their interest in the physical features of the area was limited generally to the street on which they lived, and the stores which they frequented.*"[66]

A recent study on the inner-residential Toronto area of East-York by Wellman[67] has, nevertheless, found that most ties in the community were not local nor were they mutually supportive. The study tries to show that it is often misleading to think of communities as solidary clusters composed only of supportive ties. Furthermore, as he notes, "*this goes against empirical reality and creates the dubious expectation that solidary systems are*

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[66] Gans, H.,**The Urban Villagers**, Collier-Macmillan Limited, London, 1962, p.105.

[67] Wellman, B., **Studying Personal Communities**, in Social Structure and Network Analysis in Urban Situations, SAGE Publications, New York, 1982, pp.61-80.

invariably more desirable". [68] This whole set of assumptions are linked to what Hardoy called, as it was mentioned before, *"the environment of poverty"* referring to an abnormal situation that should be removed. As he explains *"the environments of poverty are essentially political and moral issues, which can only be overcome when national societies and the world society assume shared responsibility for the removal of causes and consequences of poverty".* [69]

The fundamental idea behind it is that poverty is a malaise. Therefore its physical, social and political environments have to be treated as deviant and in need of being better integrated to society as a whole and rehabilitated. Squatter settlements were therefore considered as areas of social breakdown and marginality thus as places to be physically eradicated [70]. But as Portes and Ferguson [71] note that poverty in Latin America *"...does not easily tolerate definition as an enclave phenomena. Even when limited to highly visible slum compounds and*

[68] Ibid, p. 70.

[69] Hardoy, J.E., **The Human Dimensions of the Environments of Poverty**, Institute of Latin American Studies, University of North Carolina at Chapel Hill, p. 10, 1986.

[70] Perlman, J., **The Myth of Marginality: Urban Poverty and Politics in Rio de Janeiro**, University of California Press, Berkeley, 1975.

[71] Ferguson, F., and Portes, A., **Comparative Ideologies of Poverty :Latin America and the United States**, in Comparative Urbanisation Studies, School of Architecture and Urban Planning, UCLA., p.39.

precarious squatter settlements, their extension throughout the city-core and specially the urban periphery negates every definition as 'exceptional' or isolated elements in an otherwise established population ... to account for their situation in terms of 'deviation' from the mainstream fails to cope with the fact that in many cities the poor represents a significant proportion, if not the majority of the population". [72]

Authors such as Castells, 1974; Lewis; 1966, Mangin; 1970; Roberts, 1973 and Turner,1970; have often tried to argue such negative pictures of squatter settlements. The alternative presented by them, nevertheless, is that they should be understood as a kind of 'communities of hope', in the sense that they represent an alternative form of society[73] and way of life from the prevailing one[74]. These authors, nevertheless, warn that any attempt of becoming part or integrated to society as a whole (social, physical and spatially), to become institutionalized should be understood as a trend which will fatally

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[72] Ferguson, F., and Portes, A., Ibid, p.23., estimate that as many as one-third of the economically active population in Brazil is not covered by social security. By contrast, in the United States this amounts to only about 10% of the economically active population.

[73] The authors calls the attention to the *extensiveness* of poverty and their spatial concentration in such contexts. They estimate that poverty in in many primary, as well as secondary, Latin American cities comprises over half of the population.

[74] The authors calls the attention to the *extensiveness* of poverty and their spatial concentration in such contexts. They estimate that poverty in in many primary, as well as secondary, Latin American cities comprises over half of the population.

lead to their ruin. It is common to use historical examples such as the *Commune of Paris* or of mediaeval organizations like the *comunidades* of Castilla, to illustrate similar situations where the issue in debate was *"the self management of a free space versus the global reach of new empires"*, as Castells puts it[75].

Thus, it could be said that the crucial issue seems to be the struggle[76] between two different modes of production, modes of development, gender relationships and power relationships; in sum between two different social, spatial, economic and political forms of organization, to impose itself and dominate the other. This struggle is to be interpreted as an inherent, permanent and widespread consequence of the capitalism. Roughly it seems that those views represent two main forms of interpreting poverty : the first sees that as a *"dysfunction"* and the second defines poverty as *" intrinsic and necessary for the maintenance of the existing social order"* [77]. This would correspond broadly to two strands dealt here — the one covered by the marginality concept and the Oscar Lewis' notion of subculture-of-poverty; and the other

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[75] Or in Castells'terms *"reactive utopias"*, Ibid, p.328.

[76] Or a class conflict.

[77] Ferguson, F., and Portes, A., **Comparative Ideologies of Poverty :**
Latin America and the United States, in Comparative Urbanisation Studies, School of Architecture and Urban Planning, UCLA., p.39.

comprised by a <u>structural</u> interpretation of poverty and inequality as necessary and intrinsic to the capitalist order.

Liminality and Marginality.

It is proposed in this thesis to employ an alternative form of understanding squatter settlements. For that the concept of <u>liminality</u> presented by Victor Turner[78] will be used. The term liminality, as used by Turner, means the state or situation in which an individual or group is *"aside not only from one's own position but from all social positions and is even able to formulate a potentially unlimited series of alternative social arrangements"*. Thus liminality includes all the situations of structural change, *" when seemingly fundamental social principles lose*

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[78] The term, is explained by Turner in relation to the concept of communitas: ... *"is most evident in 'liminality', a concept I extend from its use in Van Gennep's* **Les Rites de passage** *to refer to any condition outside or on the peripheries of everyday life. It is often a sacred condition or can readily became one. For example the world over, millenarian movements originate in periods when societies are in liminal transition between different structures"* (Ibid, p.47).

Further in the same book (p.50) he adds an explanation which seems to clarify exactly the concept of liminality in relation to his theoretical ideas: *"The components of what I have called anti-structure* (for instance Turner, 1969, The Ritual Process: Structure and Anti-structure, Chicago, Aldine), *such as communitas and liminality, are the conditions for the production of root metaphors, conceptual archetypes, paradigms, models for the rest".* As characterized by Turner, liminality and communitas are thus anti-structural. The following paragraphs briefly illustrate what this means (Ibid, p.45-46) : ... *" Here we have what I called 'communitas' or social anti-structure (since it a bound uniting...people over and above any formal social bonds..." and " Briefly to recapitulate the argument in* **The Ritual Process**, *the bonds of communitas are anti-structural in that they are undifferentiated, eqalitarian, direct, nonrational (though not irrational)...".*

their former efficacy, their capacity to operate as axioms for social behaviour, and new modes of social organization emerge, at first to transect and, later, to replace traditional ones". This, as suggested by Turner, may take the form of a revivalistic movement such as the one which happened in the 1968 events in France when students adopted symbols from earlier French revolution. The use of the concept of liminality, it is not of course here seen in the striclty structural perspective applied by Turner to define that situations characterized by the opportunities created to a person outside his/her everyday structural position[79]. It is rather used in this thesis to name an <u>alternative permanent</u>, instead of a <u>transitional</u>, state of confrontation of a group of individuals of their problems and difficulties and the ways they have faced and ordered such difficulties. This does not necessarily is concerned only with relations between persons outside their structural and their status-role capacity as proposed by Turner in his idea of liminality.

Undoubtedly in the case of squatter settlements <u>liminality</u> is not the same as <u>marginality.</u> Firstly, to be in a liminar' position it is necessary for squatters to be an integral part of the system as a whole (and integrated to it) rather than outside it (or

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[79] Ibid, p.45.

outside society, segregated and marginal). Integration is a precondition for liminality whereas for marginality it is segregation. Secondly, to be able to create social alternative arrangements, squatters depart from the current basic factors yet recombining them to create a new pattern, thus they are not a social malaise. Thirdly, the system created is not independent from the institutionalized one, since its existence depends on the second; moreover, there is not a dominant relationship between the traditional and the alternative system, since the latter might even transcend or replace the first, becoming the predominant one.

Therefore, the ecological model which classifies squatters as pathological and marginal seems obviously unable to give an adequate account of the processes and systems engaged by them in their everyday life. An example of that alternative systems can be illustrated by the role the 'informal economy' plays in Third World Countries. Despite its alternative status, the 'informal economy' operates well integrated to the economy of those countries, the rules it is based on are the current market ones, and last it is so expressive that in the future it might become the predominant one. In some cases, as the in the example offered by Steadman[80] , the informal economy becomes a necessary structural

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[80] Steadman, G., **Outcast London**, Clarandon Press, Oxford 1971.

condition for the formal economy. The form housing is produced in squatter settlements is also another good example of liminality. The codes and elements — *the repertoire* — people use are the ones which have been for centuries helping people build cities, but given the scarceness of resources (spatial, technical, political and economical) and the constraints, new alternative patterns of relations and structures within the current system have emerged. Particularly in relation to the organization of the urban spatial structure, the *repertoire* used is a common one — it results from the arrangement of the dwelling into streets, squares, courts, alleys and lanes — but the configuration of the space is new[81]. Also the course of action taken by them to build their houses could be used to exemplify what it is meant by liminality. Altough informal housing resambles most conventional housing, the form in which resources are allocated, priorities are defined and people are involved varies substantially from the last. The efficiency of such alternatives suggests that[82], resembling the informal economy, those strategies might become the rule rather than the exception[83]. In any case it is important to keep in mind that in many Third World cities the poor are not a rarity but rather the norm of vast areas, precisely in the same way as the informal economy, they in fact might be seen as a

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[81] This will be the subject matter of Chapter III and V.

[82] the alternative condition will be homelesness.

[83] If they still can be called exceptional et all!

in-build structural part of the urban economy and spatial nature of those cities.

Conclusions

It is the view of this thesis that urban poverty in Latin American cities instead should be seen as a situation of difficulty, of lack of resources, and above all, of complete neglect by public and private social systems[84]. Thus, without the State provision of housing and basic services, the local group is forced to take the responsibility for allocating the limited available resources to ensure their survival. These, however, should not be interpreted as necessarily generating deviant or marginal behaviours and social patterns such as the ones found by Lomnitz (i.e. the existence of reciprocity networks which are not present in society at large). If nothing more, the failure of the State in delivering the needed goods, drives the local group to get involved in *community managing* activities and to get organized at the community and individual level in relation to the provision of those goods. This might constitute a form of increasing political consciousness as well as a means of opening up their political space and to advance the structure and nature of their spatial habitat.

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[84] Ferguson and Portes, Ibid , p.23., estimate that as many as one-third of the economically active population in Brazil is not covered by social security. By contrast, in the United States this amounts to only about 10% of the economically active population.

The assumption that the urban poor form a kind of subculture (pathological or not) which have its own values and rules and that they live like that because they could not live differently[85] seems to be inadequate to give a precise account of the phenomena. Otherwise it appears that such communities are more likely to act as unbounded social groups which operate within the structured opportunities and constraints created by urban system. It is thus the argument of this thesis that the dichotomy <u>integrated / segregated</u> is incapable of providing a suitable framework for dealing with the problem of urban poverty. A reasonable interpretation of poverty is offered by the critics of the marginality theory (e.g. Quijano, 1967; Roberts, 1973; Peattie, 1974). They suggest that despite the *distinctiveness* of the urban poor, they remain an integral and necessary inextricable part of the urban system. It is precisely their <u>form</u> of <u>integration</u> rather than the lack of it that should be understood.

Further to the above, it is important to have in mind that in a period of hundred years, the poor have moved to the cities, they have conquered their spaces in these cities and now represent the majority[86]. This suggests that a good understanding of how do people

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[85] Ibid, p.70.

[86] Santos, C.F., **Vivenda para las personas sin hogar**, in Projecto PNUD/Habitat - Ibam, Rio de Janeiro, 1988.

actually live and how do their habitats precisely are structured and developed is urgently needed. Furthermore, it apperas that in order to act planners and housing professionals and policy makers will have first to understand those habitats. The challenge for the year 2000 is that: do professionals and researchers have appropriate methods for describing the built environment? Even supposing that the first question has a positive answer a second question arises which is will professionals be able to propose appropriate solutions for the problem on the basis of these descriptions?

The literature review presented so far in this chapter aimed at examining the assumptions that underlie the current understanding of unplanned squatter settlements and it has suggested that the available theories and concepts do not seem to provide an adequate account of the phenomena. By contrast, the case studies which follow are intended largely to show the ways in which low income people are actually producing their environments and how those places are in spatial configurational terms. The main aim of the empirical work is to give a social picture of the inhabitants' life style, of where they meet each other, and of the importance and role of space in the making of social relations and the structuring of encounter and interaction patterns. In making this review of the literature one feature has

emerged, is an absence of precise concepts and methods of representation which could allow the description, the analysis and the understanding of the actual urban phenomena which unplanned squatters settlements constitute.

Methodology and Field Techniques

The thesis proposes to tackle this <u>representational and descriptive difficulty</u>, through a very precise form of description. In order to analyse and understand the social, political and spatial patterns which characterize the two case studies three main techniques were applied. Firstly, the <u>'space syntax'</u> model was used for the representation, quantification, characterization, and interpretation of the settlements' urban space[87] and their patterns of use and movement. The analysis of the real cases were based on cartographic material as well as numerical observation data. The first is used to obtain a picture of how space is structuring itself syntactically and the second is used to allow for a social interpretation of these syntactic characteristics. The main 'space syntax' definitions of techniques, measures and concepts which are specifically relevant to the morphological analysis of the cases are set out below.

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[87] The definition of urban space used is the one provided by Hillier, B. et al, **Syntactic Analysis of Settlements**, Architecture and Behaviour, Vol.3, n°3, 1987, pp.217-231 as " *that part of the built volume of a town that is defined by buildings, but not contained by them.*"

The spatial analysis of the cases will be on the basis of the axial map[88]. The axial map is defined by the least set of longest straight lines which cover the system of public open spaces of an urban area. Each of these lines carries two properties: <u>visibility</u>, that is how far one can see; and <u>permeability</u>, which is how far one can move.

The axial map gives rise to a series of syntactic measures of the properties of the configuration of the grid. The most important of these measures is <u>integration</u>. Integration is a function of the mean number of axial lines and changes of direction[89] that are needed to go from one space or line in the system to all other spaces and it measures the accessibility of a system. This is indicated through **Real Relative Asymmetry** (<u>RRA</u>) values or by its reciprocal which is an index of the depth of the line and of the system. **RRA** values vary between 0 and 1 with

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[88]   The axial map is the linear or one-dimensional form of braking up space commonly used by syntax. In addition to that, syntax uses convex and isovist maps as two other forms of representing space. Axial maps are, nevertheless, the most global representations of the spatial structure, accounting for the global spatial properties of the grid. This is also the representation which has performed better in empirical studies in predicting the patterns of use and movement of urban spaces.

[89]   Each change of direction to go from one space to the other in the system is called a step of depth. A line which is at depth one from another is the one which is directly linked to it, at depth two if two change of directions are required because there is one intervening line segment between them, and so on. The more you have to pass through intermediate spaces or lines to access the one aimed at, the more segregated that line or space will be. The RRA of the system measures the number of steps from every line in the system to every other one. It is calculated through the following formula:

$$\frac{2(MD-1)}{k-2}$$

with MD = mean depth and k= total number of spaces in the system.

smaller values indicating integration and bigger values segregation[90]. In this thesis the reciprocal of RRA will be used to analyse integration thus high values will indicate integration and low values segregation. The integration measure has been shown to be a strong predictor of the distribution of use and movement patterns through the grid, with the best integrated spaces corresponding to the busiest ones and the more segregated to the less occupied spaces in the system. This has been shown through the correlation of observation data of how people move and where they are in space with the integration value of the observed space or line.

The measures currently used in syntax to express that patterns are the <u>encounter rates</u>[91] for different categories of people — moving/static; men/woman; adults/children. In the specific cases of this study it was found that given the high proportions of static behaviour it was necessary to break it up in three categories, namely — playing, talking nd walking[92]. The patterns of movement and use will then give information about the potential fields of encounter and interaction between the categories and

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[90] If the reciprocal of RRA is used the smaller values will indicate segregation whereas the bigger ones will correspond to integration. Hillier, B., **The architecture of the urban object**, Ekistics 334 and 335, note that a typical mean integration value for London is .96 whereas in Housing Estates segregation increases to .76.

[91] The rates are expressed in terms of the number of people per hundred meters length per minute.

[92] The rates are expressed in terms of number of people per hundred meters length per minute.

between inhabitants and strangers, revealing thus how social relations are actually built in and by space though the spatial configuration of the grid.

The <u>integration core</u> of the system is then the one formed by the lines corresponding to the upper bound of integration values in the system. It can take several forms with the deformed wheel as the most common type of urban core[93]. Many observational studies have shown[94] that urban grids vary quite significantly in terms of the shape, spread, coverage and build-up of the integration core.

The other measures of the configuration of the grid referred in this thesis are <u>connectivity</u>, <u>control value</u>, <u>integration radius three</u> and <u>intelligibility</u>. <u>Connectivity</u> is a measure which express how well connected is one line or space in relation to its neighbouring lines or spaces, or in other words, how many immediate neighbours it has intersecting itself. <u>Control value</u>[95] measures how important a space is to its neighbours as destination. It varies between 0 and 1, with high values corresponding to the more important spaces which might be considered to strongly control local relations, and

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[93] Hillier, B., **The architecture of the urban object**, Ekistics 334 and 335, p.9.

[94] The several studies which have been produced by the **Unit for Advanced Architectural Studies**, Bartlett School of Architecture and Planning, University College of London, as well as many PhD thesis on the subject have dealt with the different types of integration cores.

[95] This is calculated by the formula $CV(a) = \Sigma 1/Conn.(b); \forall b; D(a,b) = 1$.

with low values corresponding to weak control spaces. It depends not just on the connection of the line or space itself but also on the degree of connectivity of the neighbour spaces or lines. Connectivity and control are both <u>local measures</u>[96], since they only take into account relations between a space or line and its immediate neighbours.<u>Integration Radius three</u> is a measure which gives the value for integration among spaces up to three spaces away from a given observed space or line.It accounts for intermediate configurational properties which are not local nor global. <u>Intelligibility</u> is defined by the degree of correlation between the connectivity and the integration values of each line or space of the system. Intelligibility values also vary between o and 1 respectively for low and high intelligibility. It is a measure which relates local — *and visible* — to global — *and merely inferable* — properties of the system. This allows an individual moving through space to have simultaneous information about the local and the global structure of the grid[97]. Percentage cores can be drawn not only for integration but also for Radius three, control and connectivity.

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[96] By contrast, integration is a global measure because it is a function of the line in relation to every other space in the system.

[97] Hillier, B., in a paper entitled **Urban morphology and the Laws of the Object**, Bartlett School of Architecture and Planning, 1986, observes that the degree of intelligibility of street areas is .61 against only .26 for estates.

These are the main representations and measures which will be used throughout the thesis for the spatial analysis of the settlements and in the understanding of how social relations and patterns of interaction are constructed through space[98]. The study of social network patterns and the role space plays on them is then described through questionnaires, interviews and network analysis[99] .In contrast to the spatial data, most of the social data has relied little on observation [100] and more on interviews and questionnaires. These were the main tactics adopted for collecting social data. Tape recorded-interviews structured by an agenda of issues were undertaken with key people such as community leaders, prominent senior community members, and influential outsiders. The object of these interviews was to collect more information about community ties, the structure of leadership,

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[98] This corresponds to the understanding of what Hillier, H. and Hanson, J. **The Architecture of Community: Some New Proposals on the Social Consequences of Architectural and Planning Decisions**, Architecture and Behaviour, Vol.3, n°3, pp.252-273, have defined as the *"arrangement of space by society: The ways in which every culture transforms its environments by means of boundaries, solid objects and sifferentiated spaces, into the patterns of buildings and settlements which are recognise as giving a society a distinct architectural identity "*.

[99] Ibid, p.263, this corresponds to the *"arrangement of society to space: The ways in which members of a society are themselves deployed in space, in both social groups and networks, to construct the patterns of avoidance which are chracteristic of that society....But it is important that they can, and must also be seen as spatial phenomena. The living out of systems of kinship, clanship, clubmembership, work and association produce material spatial results,in terms of who lives with whom, who meets whom, and so on"*.

[100] the only observational social data is that one of observed patterns of space use and movement.

and the articulations of the group with distant parts of the social system, that is, beyond the local group. The idea was that these interviews would provide in-depth detailed information on the main aspects covered by the research against which the output of the questionnaires could be discussed. They actually will be used as a means to have complementary data about the political and spatial mechanisms and processes taking place in the settlements and the role of the different people involved. The questionnaires were structured in two sections. The first part was characterised by open-ended extended questions which were aimed at obtaining information about the individuals and their personal motivations, the mechanisms used by the individuals or by the group to implement goals of a spatial nature[101], and last, the growth and up-grading of the settlement and the networks involved in that. The questionnaire was conducted by adopting a conversational approach with the respondent's replies being noted by the surveyor. Any additional detailed data given by the respondent, even if not strictly related to the question, was recorded.

The second section was then characterised by closed-ended questions and it was designed to obtain data about the composition and content of the social network in both settlements. Respondents were

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[101] It is suggested in this thesis these might be understood by analysing crucial decisive or conflicting moments or events of the community life.

asked, for example, how have they obtained help to deal with specific problems, or what were the links of individual community members with each other and with strangers and outsiders.

These links were sorted according to the following criteria: a. the density of the network in terms of people known; b. the spatial distance measured in four categories (next door neighbour, the same street, the same part of the settlement or neighbourhood, the settlement and the local district or borough); c. the frequency of interaction (every day; more than once a week; every week, every month and once a year), d. the content of ties (the nature of the tie and the type of resource flowing through it) e. the respondents' feeling of closeness or intimacy to the other. The number of people for the application of the questionnaire was defined in order to have a representative sample of the whole settlement. The choice of the sample was carried out by following the normal sociologists' procedure of random sampling selection. A table of random numbers was applied to the whole population, then after assigning a number to each house of a block a household was picked according to a table of random numbers. Further details about the samples, as well as the statistical criteria adopted for dimensioning the size are in the Appendix together with the questionnaire and a sample answered questionnaire.

These data was recorded in the following ways:

1. Complete interview transcripts.

2. Questionnaire disaggregate data.

3. Questionnaire statistical analysis of grouped data.

A copy of these records can be found also in the Appendix. The data was then further analysed in order to check whether there was any clear gender and political leadership differences. This was investigated by checking whether there were any clear distinct network and interaction patterns between men and women, and between politically active and non-active individuals.

In turn the field techniques and methodologies applied have been specially developed for obtaining the three necessary types of data: material about the spatial structure of the system and of the way it has grown; and facts related to the social and political structure of the group. This section has described the end result, a unique combination of space syntax, case study and network analysis techniques. The technique bears however little resemblance to that of a survey method except that it tries to collect roughly the same information from each respondent so that they can be compared. The interviews are also more intensive and extended that those of a survey. The techniques have, however, served the purpose of the research very well as it is expected to show in the three empirical chapters which follow.

CHAPTER III - Spatial morphology as a social generator.

Abstract

This is the first of three linked chapters which set out to explore empirically the case studies. This chapter is mainly concerned with the settlements' present situation and it focus is primarily on the structuring of physical space in order to describe the making of social and political relations. The descriptive methods used are part of the space syntax[1] analysis. The structure adopted here will start from a more intuitive description of the settlements which aims at giving a general picture of the settlement and their inhabitants' social nature and social practices. This is followed by a syntactic description of the spatial structure of the settlements which intends to offer an understanding of the global and local configurational properties of the settlements, of the way they insert themselves into the city as a whole, and of the movement and encounter patterns and the type of interfaces between strangers and inhabitants[2] which they structure. Thirdly, it looks at observation data in order to analyse in detail the spatial structure of the settlements[3] and the distribution of movement and of use associated to it. Finally, a pilot study plotting the origins and destinations of journeys by individuals moving through selected streets is presented to complete the picture of these patterns of use and movement. The chapter concludes with a recapitulation of the spatial and social patterns found in the settlements today, discussing if the neighbourhood unit idea of an identifiable spatial domain corresponding to a social bounded grouping or neighbourhood is applicable to them.

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[1] This method, as highlighted in the previous chapter, offers a way of covering simultaneously two levels of description: the physical morphology of the urban grid and the system of encounters supported and generated from it.

[2] The spatial structure is seen in space syntax as a means of interfacing two kinds of relations: those between inhabitants of a settlement and visitors or strangers, and those between inhabitants.

[3] Specifically their structure of integration and accessibility.

Timbau and M.Dias - Unplanned x Planned

Despite the visual physical dissimilarities, Timbau and M.Dias have many characteristics in common[4]. Both settlements, as mentioned in the introductory chapter, are part of the area known as Maré situated on the western shores of the Guanabara Bay. All settlements in this area result from a process of auto-construction[5].

Timbau has grown 'organically' over more than 50 years through a piecemeal process, and has emerged from the action and negotiation of its settlers. Santos[6] describes this growth in waves or stages of occupation as he shown in the map below. *" The first portion taken up , as he explains it, was at the foot of the hill, on the slope facing westward, closest to the roadways of access and to water availabilities. Then the favela extended in the direction of Rua Capivari and Rua Alabama ...".*[7]

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[4] See Chapter V for a more detailed description.

[5] See p. 12 of the Introductory Chapter for the definition of this term given in this thesis.

[6] Santos, C. ; Pereira, L., **Morro do Timbau**, Ibam, Rio de Janeiro, 1983.

[7] Ibid, p.84.

Fig.3.1. Timbau's stages of growth after Santos.

UP TO 50

UP TO 49

65/80

UP TO 55

The settlement nowadays is made up of thirty three urban blocks of contiguous buildings mostly outward facing, organized to form a relatively continuous but very deformed urban grid. The fabric is in fact very fragmented and irregular geometrically, with small and large islands[8] defined by a chicaned network of spaces. Shops are concentrated upon roads which have more air and light and where access to car is possible. The

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[8] The term islands here is used to define the amount of built space which is contained by open space around.

interior zones of the blocks are predominantly residential and served only by tortuous pedestrian access streets or lanes.

Fig. 3.2. A residential street in Timbau

Fig. 3.3. A shopping street in Timbau
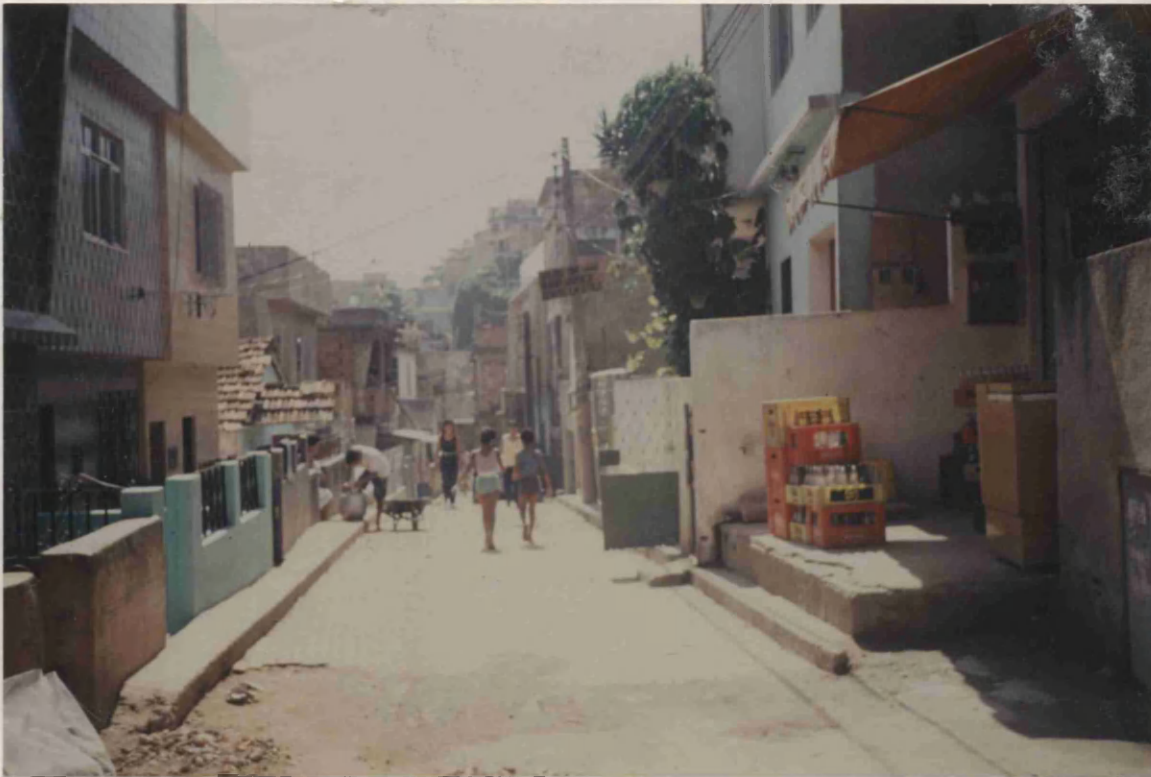
Fig.3.4. A residential street in M.Dias


Fig. 3.5. A shopping street in M.Dias

Fig. 3.6. The map of Timbau (a larger version of the map which includes all the streets names for easier reading is presented in a pocket on the back cover of this thesis).

The irregularity of Timbau contrasts with the highly geometric layout of M.Dias. The scheme is made up of 45 urban regular blocks with buildings placed centred on

the plot to avoid a terraced type of arrangement[9]. The blocks are formed by two rows of 8 to 19 houses arranged back to back and facing streets on only two sides of the block. The total number of regular plots with dimensions of 7.0 x 12 m amounts to 1002. The total area occupied to house the 888 families is 14.3 hectare.

Most of the homes in Timbau are dwellings occupied by a single family rather than flats (according to the Census Maré 87, 88.52% were single houses against only 11.48% of flats) and built in concrete and brick (92.2%) with flat roof (81.35%) and well finished inside. There are, nevertheless several two and three storey houses. The most frequent type of dwelling has from three to five rooms (64.3%), housing approximately 62% of the settlers. However, it is significant that there are a number of dwelling with six or more rooms (26.53%) housing 31.69% of the settlers, and a number of large-sized houses (about 60% of the homes have a construction area exceeding 50m2).

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[9] Residents have included in their petition list made to the government the non construction of terrace houses.

Fig. 3.7. Map of Marcilio Dias
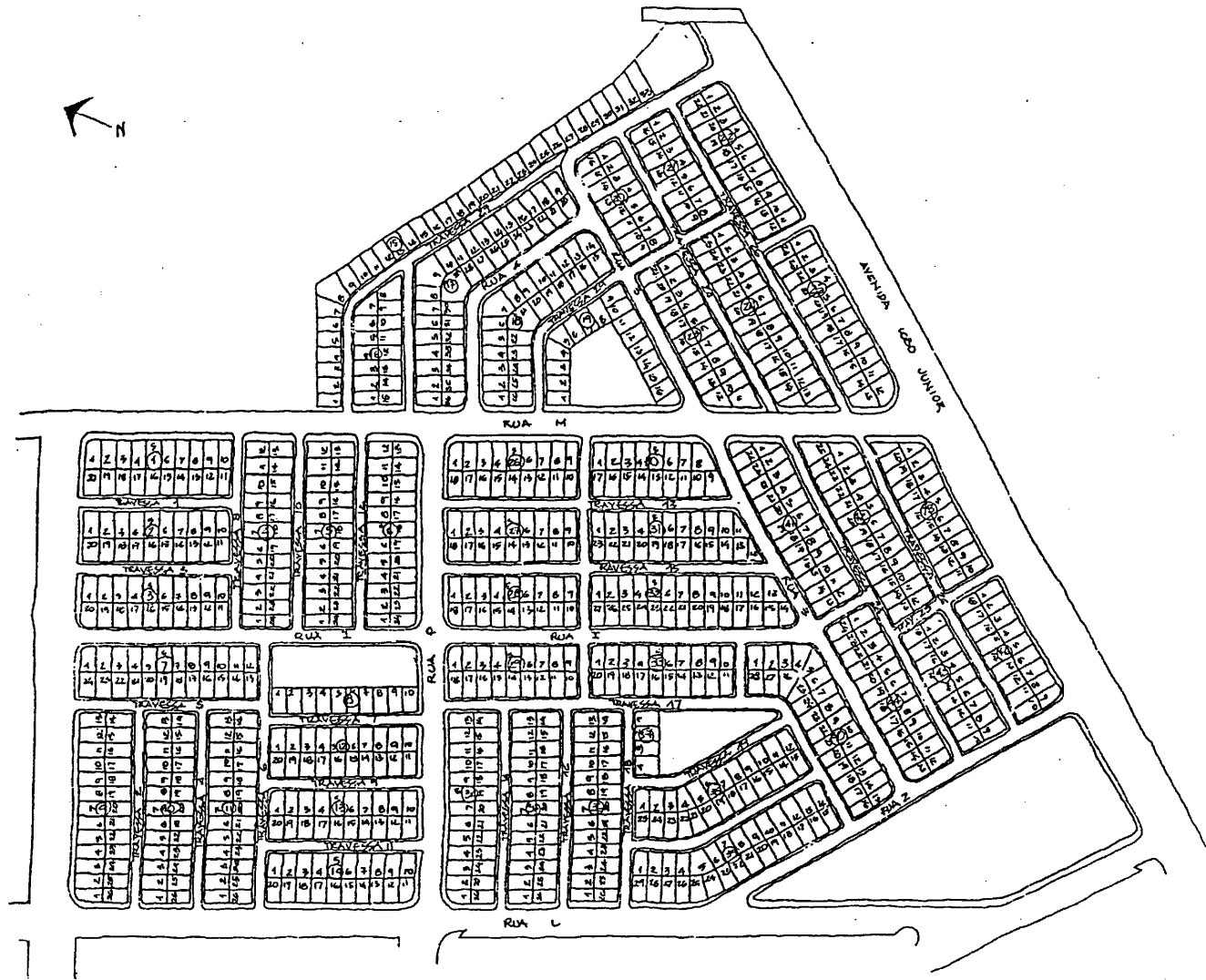
Fig. 3.8. Dwelling's facade in Timbau

Fig.3.9. Dwelling's facade in M.Dias

Despite its unofficial status, more than 90% of the dwellings in Timbau are served with running water, sewage network and electric lighting.

In M.Dias housing scheme, like Timbau, most of the homes are occupied by single families and there are no flats. The construction area of the houses according to the project was 34 m2 comprising a living room, a bedroom, a verandah, a kitchen and a bathroom. In a significant number of cases, however, houses have been already extended and the area increased. The plans of the houses although established by the project have been also extensively altered by the residents.

Constructions are all in brick with pitched or flat concrete roofs. Despite the fact that the settlement was planned as a self-built project, in 50% of the cases people used paid labour to help in the construction, though as many as 78% of the houses were built with the participation of the household.

According to Santos (1983, p.36, **Morro do Timbau**) the predominant job occupations in Timbau are house keeping and the building industry respectively for women and men. This pattern shows that despite the existence of a clear division of labour, both men and women are involved in occupations related to the house.

The male occupation is related to the production of the house — the construction — whereas women's activities are related to the maintenance of the house — housekeeping. The questionnaire data has shown that most of the population in both settlements are migrants (60%)[10] from other regions of Brasil with 40% coming from the Northeast region. In Timbau almost 40% of the settlers are below twenty years old. The average time of residence in the area is quite high corresponding respectively for M.Dias and Timbau to approximately 15 and 27 years. The main means of transport used in Timbau, according to a statistical census undertaken in the area by the University in 1987, is bus (70.08%), yet a significant part of the population (25%) goes on foot to work, thus suggesting that jobs are nearby the settlement. According to IBAM's survey, as in Timbau, most jobs in M.Dias are local.[11] The prevailing female job occupation is also housekeeping while most male job occupations in M. Dias are odd jobs (25%), workers of the neighbour industries and only 20% are

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[10] Most favelas in Rio are very well located in relation to accessibility to job markets. The Secretaria Municipal de Desenvolvimento Social (Municipal Secretary for Social Development) in 1982 estimated that almost 50% of the favelas in Rio were in the northern neighbourhoods of the city and in the close peripheral metropolitan areas. The rest were spread South, which is the richest part of the city, and adjacent regions beside the city centre. The survey also revealed that approximately 86% of the favelas were well attended by transport, with 67% served by bus and 19% by train and bus.

[11] See Chapter V for a more detailed description based on data from individual questionnaires.

fishermen. The fishermen's group in M.Dias, despite its
relatively small number, is very active and maintains a
very corporate attitude which is followed by a
relatively enclosed perception of the settlement as a
spatial place. In fact, the fishermen were the group
whom first occupied the area as well as the first to
organize the residents association of Marcilio Dias.

These indications back up the more immediate
impressions obtained from the settlements. Though
there is a certain similarity in social terms between
Timbau and the other squatter settlements ('favelas') in
the area, it is evident that it comprises an urban space
which differs from both the statutory grid-like lay-out
of the city as a whole, including that of M.Dias, and the
more or less deformed grid of the neighbouring
settlements. In Timbau there are roomy approach roads
and a well defined street system, but there are also a
enormous number of sinuous narrow alleys sometimes
interposed by stairs that give access to higher parts of
the settlement. Lanes often do not lead to anywhere.
Timbau alike M.Dias seem to be structured by three
different type of roads: main roads for vehicular traffic
articulated to the carriers or peripheral roads, local
roads for local vehicular and pedestrian traffic linking
the first with the third one which are the pedestrian
roads (see figures 3.10 and 11).

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Fig. 3.10. Typology of roads in Timbau

Typology

Main roads
Local roads
Pedestrian roads

Fig. 3.11. Typology of roads in M.Dias

N

Typology

Main roads
Local roads
Pedestrian roads
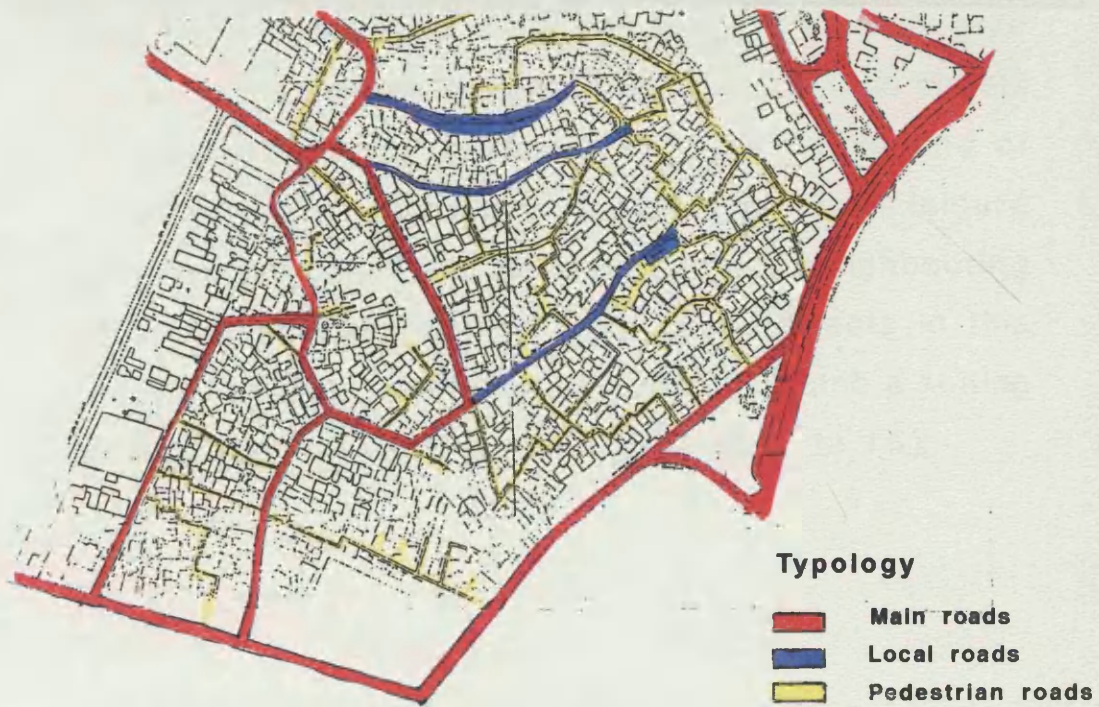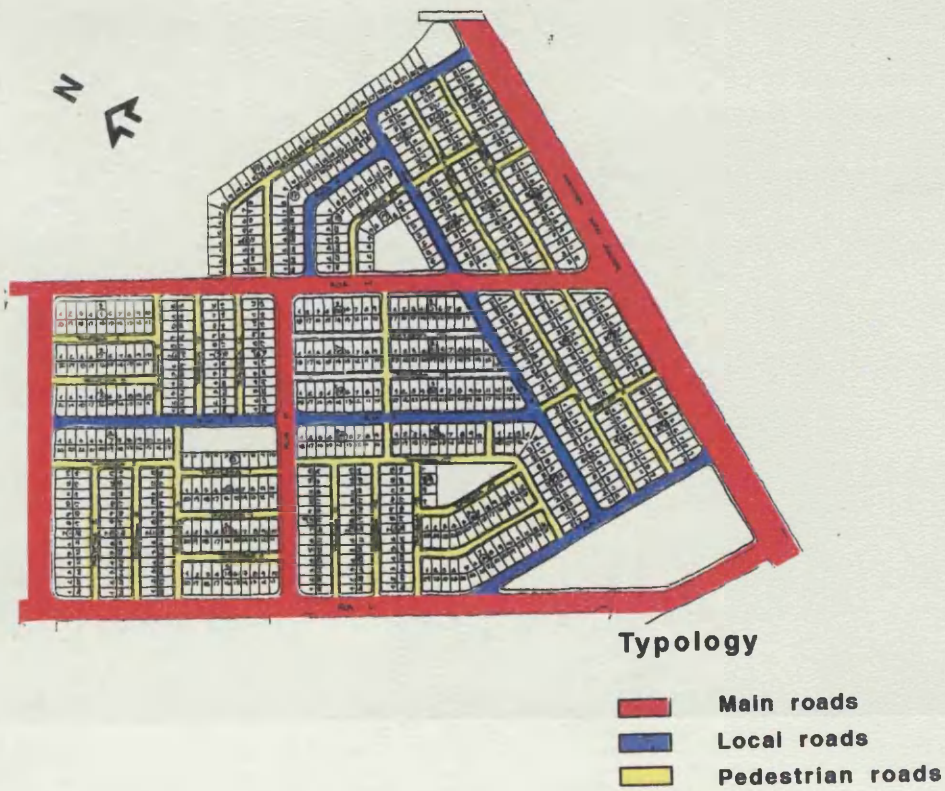
In M.Dias there are many pedestrian streets which can also occasionally be used for local traffic to give access to the houses. In both Timbau and M.Dias streets constitute important extensions of the house and of shops and are intensively used for children leisure activities, adults direct personal contact, neighbouring activities, commercial and work uses. Streets in this sense are places for communal interaction and a setting for watching and vending (see **figure 3.11** to **16**).

Fig. 3.11. Main street in Timbau

Fig. 3.12. Local street in Timbau

Fig. 3.13. Pedestrian street in Timbau

Fig. 3.14. Main street in M.Dias

3.15. Local street in M.Dias

Fig. 3.16. Pedestrian street in M.Dias

The limit of the plots and of the houses in Timbau are very imprecise, and there are no pavements with the houses lining the roads. Most of the roads are paved, and there are a lot of trees, despite the general shortage of free space between the houses. There are also three squares in the settlement (see **figure 3.17 to 19**): Praça dos Caetes (Caetes Square), Praça Bangu (Bangu Square) and Largo do Meirelles (Meirelles Plaza).

Fig. 3.17. Location of open spaces and squares in Timbau

Squares

1. Caetes square
2. Bangu square
3. Meirelles Plaza

Fig. 3.17. Location of open spaces and squares in M.Dias

Open spaces

1. Football field
2. Future Square
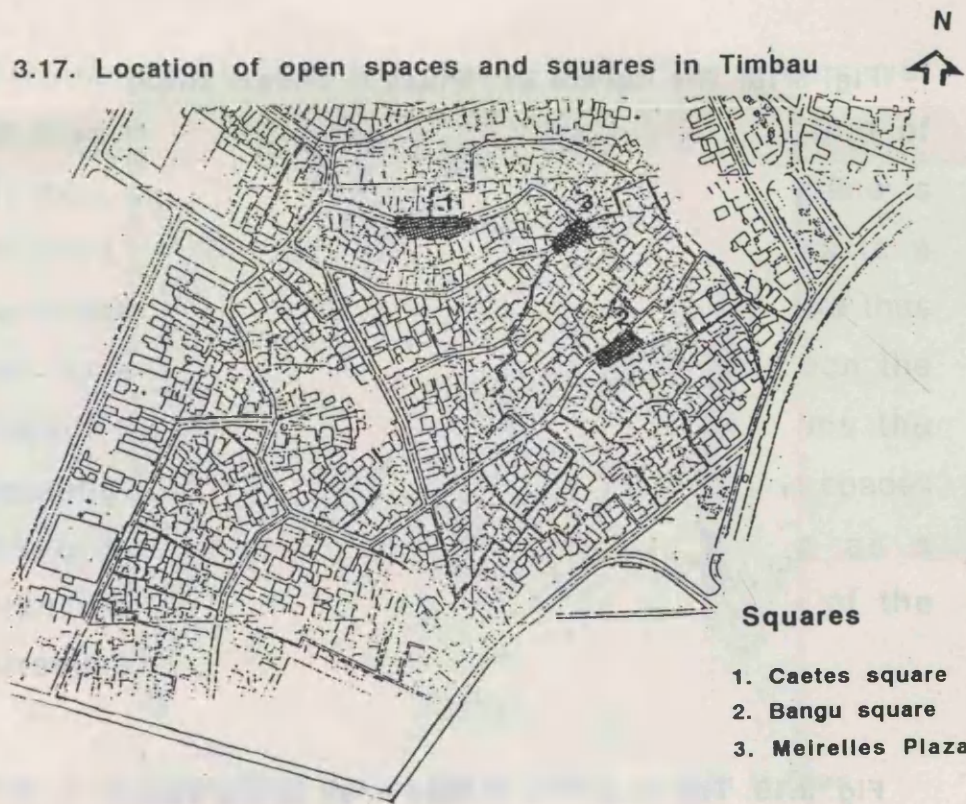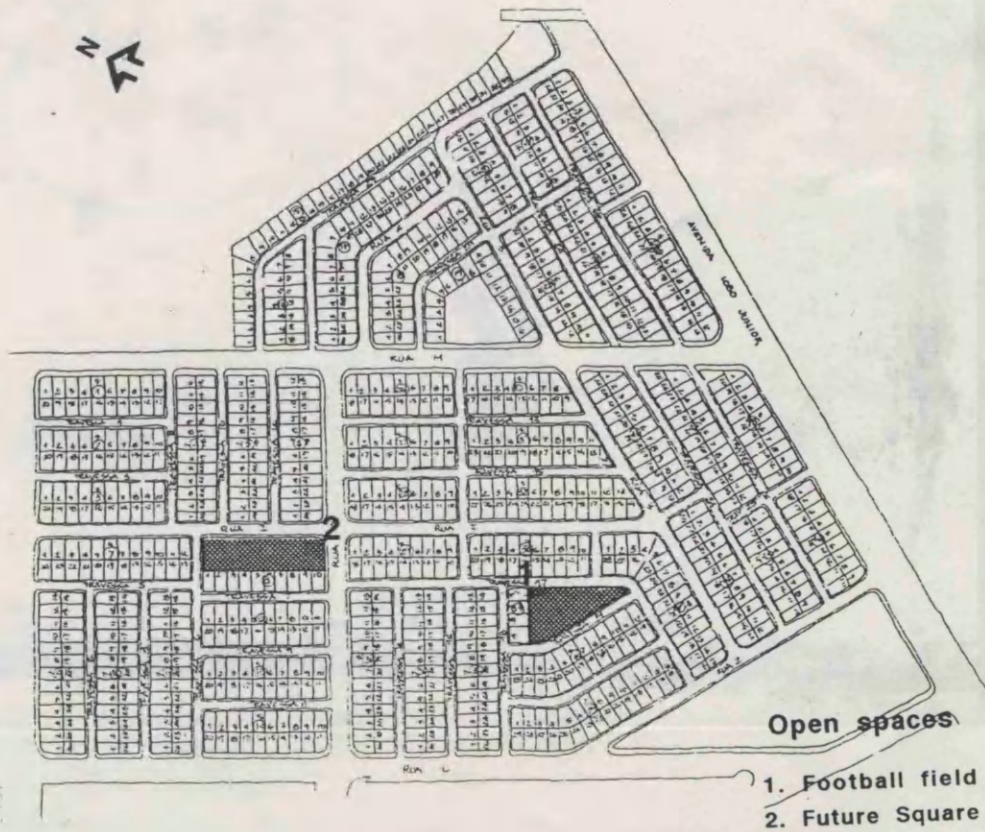
Fig. 3.18. The Square in Timbau is a local street
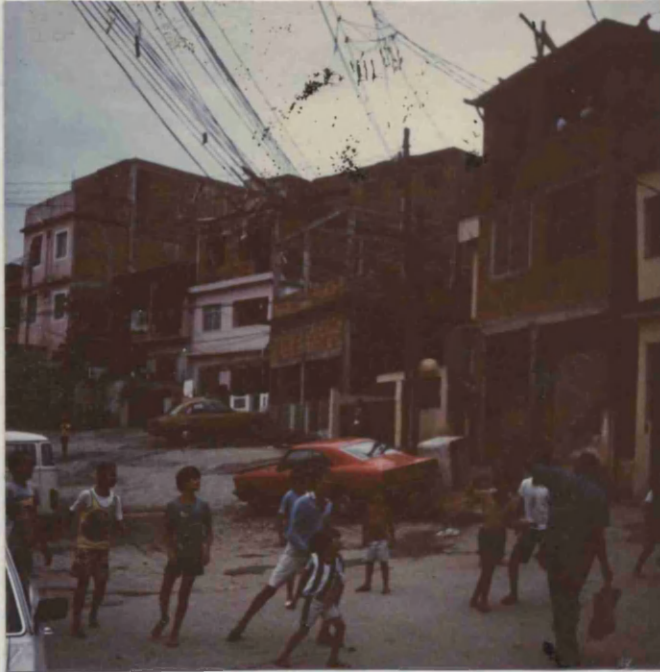
Fig. 3.19. The square in M.Dias is an empty space

Entrances to houses are always facing the streets, yet M.Dias shows a slight different pattern from that of Timbau. This is because in M.Dias the property line is defined by walls and gates which give access to a verandah in the front of the house. The houses are thus set back from the street line. The space between the facade of the house and the street line forms the verandah. These verandahs although being private spaces have the fundamental quality of working as a transitional space between the public realm of the streets and the private domain of the houses.

Fig. 3.20. Verandahs define the property line in M.Dias
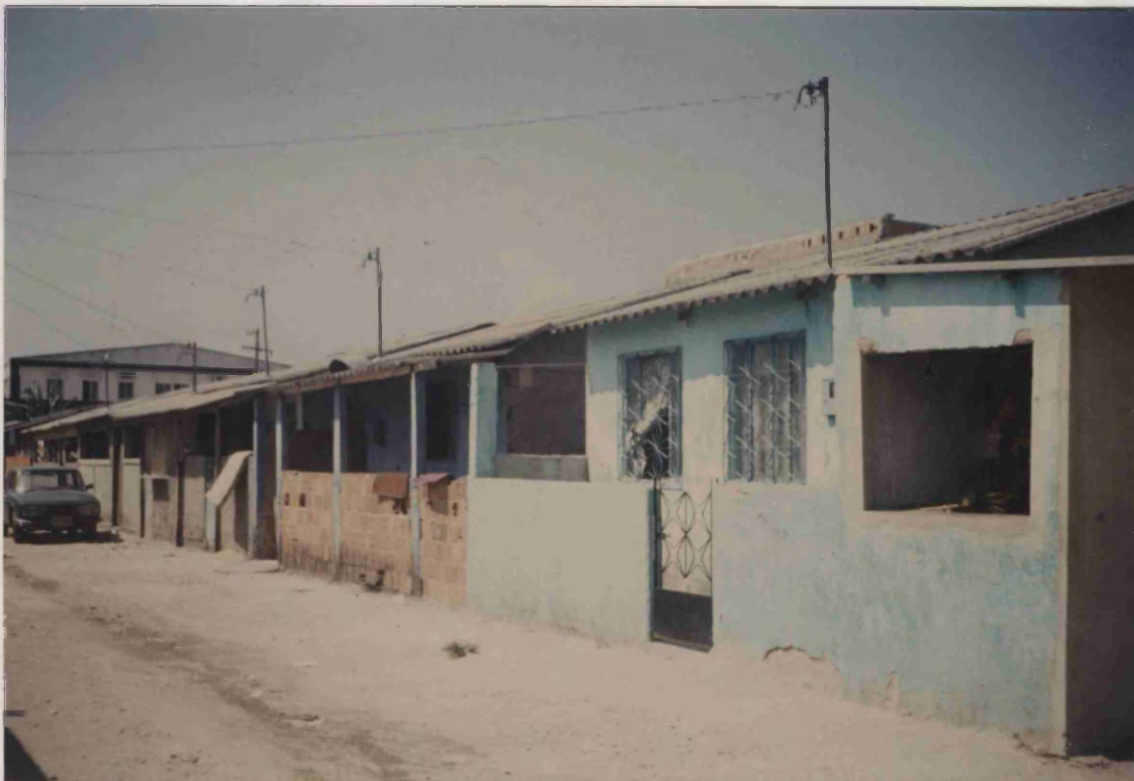
While in Timbau yet this pattern is present, normally entrances open directly to the street. Doors are normally kept closed and there is a strong and clear boundary between the street and the houses, with quite high boundary walls and few permeabilities. By contrast to M.Dias, houses in Timbau are mostly terraced and only a very few have gardens at the front.

Fig. 3.21. Houses define the streets in Timbau

Furthermore, both M.Dias and Timbau inhabitants treat the street in front of their houses as a space for local social interaction, where they spend their leisure time and meet friends at the same time they see the world pass by and get informed[12] (see **figs 3.22** and **23**).

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[12] In this sense the idea of it as a spatial neighbourhood defined by a given spatial territory would fit perfectly. This nevertheless can not be assumed to be the case without first describing precisely and analysing the way the settlement structures itself and it is connected globally to the city fabric.

Fig. 3.22. Social Interaction in Timbau's streets

Fig. 3.23. Social interaction in M.Dias' streets

Facades are in general very well kept, painted in strong colours such as yellow, blue, green and brown. In M.Dias there are small frontage gardens but fenced with relatively high concrete walls in which entrances are clearly signalled by doors and gates. There is still a general appearance of an unfinished place since many houses are still being extended and up-graded. Houses resemble the characteristic type of suburban dwelling with verandahs and high density occupation of the plot.

Openings are in general small and few, with exception to shops where almost the whole facade is opened as the street is incorporated as part of the shop itself. This allows shopkeepers to use the streets as an extension of their domain. In this sense, bars place their seats and tables along the streets, or construction shops set their stock of material outside (see **figures 3.24** to **27**).

Fig. 3.24. Facades openings in Timbau

Fig. 3.25. Facades' openings in M.Dias

Fig. 3.26. Shops have large openings in Timbau

Fig. 3.26. Shops have large openings in Timbau

Fig. 3.27. Shops have large openings in M.Dias

Fig. 3.27. Shops have large openings in M.Dias

Streets are filled with people moving around and chatting. Women meet outside at the doors in the late afternoon when they have finished their domestic work and chat while they watch their children playing. Over the weekend and after work, bars are full with groups talking and playing snooker or cards and on Saturday morning there are always football games. Children are spread all over the settlement. They play with kites at the top of the flat roofs, they invent ball games and play in the streets, even in the narrowest alleys. Around the corners there are vendors in the streets and lanes with their small stalls full of goods for sale.

Fig. 3.28. People in a street of Timbau

Fig. 3.29. People in a street of M.Dias

Fig. 3.30. Children play in the streets of Timbau

Fig. 3.31. A children' street group in M.Dias

A first analysis of the questionnaire data ('see data table enclosed on page 122, the questionnaire and a list of the type of answers for each question at the Appendix) shows some interesting points about the settlements' space culture. The place favoured by children seems to be any kind of open space where they are able to play such as squares, the street, alleys with no circulation of cars or even on the top of flat roofs (see **figures 3.30** and 31). In M.Dias, though, roughly 30% of the settlers have said to prefer alleys rather than streets because *"they are safer"*, yet 33% people say that *"there are more children playing in the streets that in alleys"*. It might be that as suggested by one resident *"there are children everywhere"*. In some cases, however, the mother believes that outside places are not safe for children because, among other things, there are *"all sort of people"* , so they stay at home or in friends' houses (5 cases in Timbau and only 1 in M.Dias respectively out of 30 and 26). As a respondents explains: *"I don't let my children go to places where I can't watch them"*.

Analysing the set of answers given by the respondents about the places that people more circulate within the settlement some key features have been found: Firstly, five interviewed in M.Dias and four in Timbau have stressed the fact that they don't go out frequently, that

they stay mostly inside home and that the street is the place which entitles you to be well informed : *"I don't like to stay in the street, I prefer to stay inside home because to stay outside generates a lot of gossip ... I have a lot to do so I don't have time to stay outside"* or *I don't usually stay outside so I'm not well informed"* or *"I don't need to go outside to know the gossips, everybody comes to my house to tell me"*. Secondly, it seems that the street is connoted by a profane character: *"We are Christians so we don't like to be gossiping, everything is inside home. People say we don't like to mix"*. The exception to this rule is the members of the Church which claim to walk the whole settlement and to know everybody. Five respondents in M.Dias have said to frequent just the streets where they have relations, the commerce or the Church, and six just the main streets. Six other settlers in M.Dias and two in Timbau have said, nevertheless, that the place they more often circulate are *"the streets which lead to outside"* and that everything they do is outside the settlement. One M.Dias respondent, by contrast, has said that he seldom leaves the settlement to go out.

The Junina party[13], among other popular parties, are the only events organised by the community where

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[13] Junina party is a typical religious event which takes place in June (which is the origin of the name "Junina") in reverence to two saints and where there are dances and typical dishes.

everybody meets. They normally take place in squares or main streets. In turn, squares are generally acknowledged as *"the places where everybody meets"*. In the case of M.Dias, the pier is also included on the list of meeting places and leisure areas, specially for children. The data presented in **figs. 3.36 to 40** suggest that there seem to be a clear division in terms of gender and use of the space. The spaces mentioned as more used for children respectively out of thirty and twenty six in Timbau and in M. Dias are the streets/alleys (almost 60% for Timbau and 100% for M.Dias's answers), followed by the Squares in the case of Timbau (40%) and by the Pier and the football field in M.Dias (roughly 15% for each category). There seems to be a differential gender pattern of use of space in which women have said that they meet at the doors (85% for Timbau and 95% for M.Dias) whereas men responded that they meet at the bars (100% of the cases in Timbau and 75% of the cases in M.Dias). The degree of overlapping in terms of the differential use of space appears to be small, with only a few men joining women at the doors (only one case in Timbau and two in M.Dias) and relatively few women joining man at the bars (only one case in Timbau and five in M.Dias). Yet, women and children replied that they meet in spaces which are non exclusive, and which to an extent allow for the women to keep an eye on children.

Questionnaire Data table

Quest. data MDiAgrup.ft

M.Dias

Quest. Tim.Agrup.ft

Timbau

Quest. State WGAgrup.t

Quest. Tim Agrup.t

Quest. Tim Agrup.t

Quest. Stats MD/Agrup./t

Quest. Stats MD/Agrup./t

olved	Q.19.Growth of sett.	Q.21a.Children	Q.21.b.Woman	Q.21.c.Met.pl/Man	Q.21.Meet.Place	Q.22.Pol.Event/Place	Q.22.Actors	Q.22.Pol.Events/D	Q.22.Pol.Events/Aim	Q.22.Pol.Events/Person	Q.23.P.Event/Stay	Q.24.Involvement	Q.2 You RA Particip.	Q.25.People Involved	Q.28.a/Imp.Issue-you	Q.28.b/Imp.Issue- RA	29.a.5+Imp.Issues	Q.29.b.5+Imp.Actors	Q.30.Changes sett	Q.31.Pl.of Change	Q.32.a.Good changes	Q.32.b.Bad Changes
	Dens+Psubdiv.	St/all+Pier	Doors+In.Home	Bars+S/P+Pier	Streef'org.	•	Children	Show/Music	To win votes	•	In.home	Not Part.	No	Res+Pol/P.team+P.con	Comm.Services	Services	Serv+Comm.Serv.	Res+RA+Gov/Not	Serv&Infra+Walls	Near F.Field+M.Sts	Service	House payment
	Houses imp.	Streets/all.	Doors	Bars	D.Oliveira	Favela+Estate	Childre+The Church	S/M+Walked+In.cars	Title of land	Church+Pol/Notable	Street	Part Activ.	No	Res+The Curch+Inst.	Comm.Services	Comm.Serv+Title...	Serv.+C.Serv+Title	Res+RA+G/N+Church	Serv.&Infra+Imp.H.	Main sts	Service	Parliz.of works
	H.imp+P.sub+Nofloors	•	Doors	Bars	Pier	Av.Lobo Jr.	RA	Ass.+speech at RA	Check impr.	Church+Pol/Notable	In.home	Not Part.	No	Not aware	Comm.Services	•	Serv+C.Serv+G.Imp.	Res+RA	No answer	Main sts	Transport	No C.Serv&Infra.prob
	Dens.houses	Streets/all.	Doors	Bars	D.Oliveira	Favela+Estate	Residents	Show/Music	To win votes	Loc.Ass.candidate	In.home	Not Part.	No	Res+P./P.team	Comm.Services	•	Serv+G.Imp.	Residents	S&I+Imp.H+Walls	Whole Estate	Service	•
	Dens.houses	Streets/all.	Flat roofs	Bars	L.Junior+E.Salles	Av.Lobo Jr.	Residents	Walked	T. land+Check impr.	Church+Pol/Notable	Street	Not Part.	No	RA+P/P.team+Res	Comm.Services	Comm.Services	C.Serv+G.Imp.	Res+RA	Const.of walls	Whole Estate	•	•
	Plot subdiv.	Streets/all.	Doors	Bars	Pier	Av.Lobo Jr.	RA+residents	Show/Music	Title of land	Church+Pol/Notable	In.home	Not Part.	Yes	RA+Res+Chil+Ch.	Tittle/Land	Title/Land	Serv+G.Imp+Title	RA+Gov/Not+Church	No answer	Whole Estate	•	House payment
	No floors	•	Doors+Bars	Bars+S/P	D.Oliveira+Bars	Av.Lobo Jr.	Residents+Children	Walked	To win votes	Loc.Ass.candidate	Door	Participating	No	RA+P/P.team+P.con.	Comm.Services	Nothing	Serv+Comm.Serv.	Res+RA	Serv&Infra+Walls	Main sts	Service	•
	Dens.houses	Streets/all.	Doors	Bars	Alleys	D.Oliv/21A+LoboJr	RA+residents	Show/Music	To win votes	Loc.Ass.candidate	In.home	Not Part.	No	Res+P./P.team	Comm.Services	Comm.Services	Serv+G.Imp.	•	Serv&Infra+Walls	Main sts	Service	•
	Dens+Psubdiv.	F.Field+StxAll+Pie	Doors+In.Home	Bars+S/P	Pier	•	RA+residents	S/M+Walked	To win votes	L.Ass.Can+Auth.Camp	D.Oliv+21Abril	Participating	No	RA+Res+P/P.team	Comm.Services	Comm.Services	Serv+Comm.Serv.	RA+Gov/Not	Imp.H+Walls	Main sts	Service	•
	Dens+Psubdiv.	F.Field+In.H+Stxall	Doors	Bars+S/P	•	•	Residents+Children	Show/Music	To win votes	Loc.Ass.candidate	D.Oliv+21Abril	Participating	No	Res+Chil+P/P.team	Others	Others	Serv+Comm.Serv.	Residents	Services&Infra	Whole Estate	Service	No C.Serv&Infra.prob
	Plot subdiv.	Streets/all.	Doors	Bars	D.Oliveira	•	Residents+Children	Show/Music	To win votes	Loc.Ass.candidate	Other	Not aware	No	Res+Chil+P/P.team	Comm.Services	Comm.Services	Serv+G.Imp.	RA	Serv&Infra+Walls	Main st+Pier	•	Crime
	Dens.houses	Streets/all.	Doors	Bars	Alleys	•	Residents	S/In.cars	To win votes	L.Ass.Can+Auth.Camp	In.home	Not Part.	No	Res+P./P.team	Others	Others	Serv+Comm.Serv.	RA	Services&Infra	Main sts	•	•
	Dens+Psubdiv.	St/all+Pier	Doors+In.Home	Bars+S/P	•	•	Residents	S/M+Walked	To win votes	L.Ass.Can+Auth.Camp	D.Oliv+21Abril	Participating	No	Res+P./P.team	Not aware	•	Serv+Comm.Serv.	Residents	Imp.H+Walls	Main st+Pier	Service	Crime
	Dens+No.floors	Streets/all.	Doors	Bars	Alleys	•	Residents	Show/Music	Win votes+Tilte	L.Ass.+Church+Pol.	D.Oliv+21Abril	Participating	No	Res+P./P.team	Comm.Services	•	Serv+C.Serv+G.Imp.	Res+RA	Imp.Houses	Main sts	Service	•
	Dens.houses	St/all+Pier	Doors	Bars+F.Field	Pier	•	Residents	S/In.cars	To win votes	Loc.Ass.candidate	D.Oliv+21Abril	Participating	No	Res+Chil+P/P.team	Comm.Services	Comm.Services	Services	RA	Services&Infra	Whole Estate	Service	House payment
	Dens.houses	Streets/all.	Doors	Bars	D.Oliveira	•	Residents	Walked+V.res.	To win votes	Loc.Ass.candidate	in.home	Not aware	•	Not aware	Comm.Services	•	Serv+Comm.Serv.	RA	Serv.&Infra+Imp.H.	Whole Estate	Service	•
	Dens.houses	Streets/all.	Doors	Bars+Doors	Pier	•	Residents	Walked	To win votes	Loc.Ass.candidate	In.home	Not aware	No	RA+P/P.team+P.con.	Others	Serv.+others	Serv.+C.Serv+Title	RA	S&I+Imp.H+Walls	Whole Estate	Service	•
	Dens+Psubdiv.	F.Field+Stxall	Doors+Bars	Bars	E.Salles	•	RA+residents	Walked	To win votes	Authority in camp.	Door	Participating	No	RA+Res+P/P.team	Others	Comm.Serv.Others	Serv+C.Serv+G.Imp.	Res+RA	Services&Infra	Whole Estate	Service	No C.Serv&Infra.prob
	H.imp+Nofloors	Streets/all.	Doors+Bars	Bars+S/P+F.Field	Pier	•	RA+residents	Show/Music	To win votes	Loc.Ass.candidate	D.Oliv+21Ab.il	Participating	No	RA+Res+P/P.t+P.con	Comm.Serv.+Others	Others	Services	•	Services&Infra	•	Service	•
	H.imp+Nofloors	•	Doors+Bars	Bars+F.Field	D.Oliveira+Pier+Bars	•	RA	Show/Music	Title of land	Church	D.Oliv+21Abril	Participating	No	RA+Church+Inst...	Comm.Services	Others	•	•	Imp.Houses	Whole Estate	Service	Parliz.of works
	Plot subdiv.	Streets/all.	Doors	Bars+F.Field	Pier	•	RA+residents	Walked+V.res.	Check impr.	L.Ass+Auth+Pol/not	Door	Participating	No	RA+Res+P/P.team	Comm.Services	Comm.Services	Serv+C.Serv+G.Imp.	Res+RA	S&I+Imp.H+Walls	Main sts	Service	Crime+No C.S/infra
	P.subdiv+Nofloors	Streets/all.	•	Bars	Alleys	•	Residents	Walked	Win votes+Tilte	Loc.Ass.candidate	D.Oliv+21Abril	Participating	No	Res+P./P.team	Not aware	•	Serv+G.Imp.	Residents	S&I+Imp.H+Walls	Whole Estate	Service	House payment
	Dens+Psubdiv.	Streets/all.	Doors	Bars+S/P	Pier	•	•	•	•	•	•	Not aware	No	Not aware	Comm.Services	•	Gen.Improvements	•	•	•	•	Bad peo+No C.S&Infr.
	Dens.houses	Streets/all.	Doors+Bars	Bars+S/P	•	•	Residents+Children	Show/Music	•	Loc.Ass.candidate	D.Oliv+21Abril	Participating	No	Res+Chil+P/P.team	Comm.Services	Comm.Services	Serv+G.Imp.	Res+RA+Gov/Not	Imp.H+Walls	•	•	Crime+H.payment

Quest.Tim.Agrup./t

Quest.Tim.Agrup./t

21b.Woman	Q.21c.Man/Meet.Pl	Q.21.b.Meet.Place	Q.22.Pol.Event/Place	Q.22.Pol.Event/Actors	Q.22.Pol.Events/Desc	Q.22.Pol.Events/Aim	Q.22.Pol.Events/Person	Q.23.P.Event/Stay	Q.24.Involvement	Q.26.You RA Participant	Q.25.People Involved	Q.28.a.Imp.Issue/you	Q.28.b.Imp.Issue/RA	Q.29.a.5+Imp.Issues	Q.29.b.5+Imp Issues/Actors	Q.31.Changes sett+st+ar	Q.32.Bad Changes	Q.32.Good changes	Q.31.Pl of change
the Doors	In the Bars	L.Caetes+L.Meirel.	Bangu sq	RA+Res+Child+Eld.	Show/Music	•	Loc.Ass.Candidate	Street	Participating	No	RA+Res+Chil+Ed	Not aware	Services	Services	•	Houses impr.	None	Urbanization/Pav.	Whole sett.
the Doors	Samba/Pagode	Pca Bangu	Bangu sq+M.streets	•	Show/Music+Walked	•	L.Ass.Cand+Auth.camp	The Sqs	Not participating	No	Res+Pol/Pol'team	Comm.Services	Nothing	Services	Res+RA	Serv&i+H.imp+Walls	None	Urbanization/Pav.	Whole sett.
the Doors	In the Bars	L.Caetes+L.Meirel.	Bangu sq	RA+Res+Child+Eld.	Show/Music	•	Loc.Ass.Candidate	Street	Participating	No	RA+Res+Chil+Ed	Not aware	Services	Services	•	Houses impr.	Crime	Urbanization/Pav.	Whole sett.
the Doors	Samba/Pagode	L.Caet+P.Ban+J.Mag.	Main sts	Pol'contact	Walked	To win Votes	Authority in Camp.	Street	Participating	No	RA+res+Pol/Pol'team	Comm.Services	Not aware	Serv+G.Improv.	•	Serv&I+H.impr.	None	None	Not aware other ar
	In the Bars	Lgo Caetes	M.Strees+In home	•	Visited res.	To win Votes	Authority in Camp.	In.Home	Not aware	No	Pol/Pol'team	Others	Services	Services	RA+Gov/Not+Army	Serv&I+H.impr.	None	Services&Infra	Whole sett.
side Home	In the Bars	P.Ban+L.Irac.	Capivari	•	Truck with camp.	To win Votes	•	In.Home	Not aware	No	Res+Pol/Pol'team	Services	Services	Serv+Comm.Serv.	RA	Houses impr.	None	•	Whole sett.
the Doors	In the Bars	In the streets	B.Sq+M.Streets+RAh.	•	In.cars+Ass/Sp RA	To win Votes	•	Door	Participating	No	Child+Pol/Pol'team	Services	•	Services	•	Title	•	•	Whole sett.
oors+In Home	S/P+At the doors	Capivari	M.Streets+V.Ppinh	•	Walked	To win Votes	Authority in Camp.	Door+Streets	Participating	Yes	Res+Pol/Pol'team	Comm.Services	Services	Serv+G.Improv.	RA+Res+Gov/Not	Serv&I+H.impr.	Bad peop/new comer	Title	Whole sett.
the Doors	•	L.Caet+J.Mag.	RA head.	RA	•	To win Votes	Authority in Camp.	Other	Participating	Yes	RA+ad res.	Services	Services	Services	RA+Res+Gov/Not	Serv&I+H.impr.	•	•	Whole sett.
the Doors	In the Bars	•	M.Streets+RA head.	Residents	Ass+speech at RA	To win Votes	L.Ass.Cand+Auth.camp	In.Home	Not participating	Yes	Ad.residents	Services	Comm.serv+Title	Serv+G.Improv.	•	H.impr+Walls	Monotony	None	Prob.in higher parts
the Doors	In the Bars	•	M.Streets+RA head.	Ra+Res	Walk+Ass/Sp RA	To win Votes	L.Ass.Cand+Auth.camp	In.Home	Not aware	No	RA+ad res.	Services	Services	Services	Res+RA	Serv.&Infra	None	Services&Infra	Whole sett.
the Doors	Samba/Pagode	•	B.Sq+RA head+V.Pin	RA	Truck+Ass/Sp RA	To win Votes	L.Ass.Cand+Auth camp	The Sqs	Participating	No	RA+res+Child	Not aware	Not aware	Serv+Comm.Serv.	Gov./Notable	Serv&i+H.imp+Walls	None	•	Whole sett.
	In the Bars	L.Caet+J.Mag.	M.Streets+Cap+RAh.	RA+Res+Pol.Cont	Vis.Res+Ass?Sp RA	To win Votes	Loc.Ass.Candidate	The Sqs	Participating	No	RA+Res+Pol'l.cont	•	•	•	•	•	•	•	•
the Doors	In the Bars	Lgo Caetes	V.Pinheiro	•	Inside cars	To win Votes	Authority in Camp.	In.Home	Not participating	No	Pol/Pol'team	Comm.Services	Nothing	Serv+G.Improv.	•	Serv&I+H.impr.	Bad peop/new comer	None	Whole sett.
oors+In.Home	•	J.Mag+Cap.	M.Streets+RA head.	RA+res+Child	Ass+speech at RA	•	•	Door	Participating	•	•	Services	Not aware	Serv+Comm.Serv.	•	Serv&I+H.impr.	Crime+bad peop...	Urb+Transport	Whole sett.
the Doors	In the Bars	Pca Bangu	RA head.	•	Inside cars	To win Votes	Authority in Camp.	Door	Participating	No	Res+Child+Pol/Pol'team	Serv+Comm.Serv.	Not aware	Serv+Title	Residents	Serv&I+H.impr.	None	None	Whole sett.
the Doors	•	Pca Bangu	Main sts	•	Walked	To win Votes	Authority in Camp.	Street	Not aware	No	Res+Pol/Pol'team	Services	Not aware	Services	•	Serv.&Infra	Bad peop/new comer	None	st m.sts/2sd alls
oors+Church	In the Bars	Pca Bangu	Bangu sq+M.streets	•	Show/Music+Walked	To win Votes	Loc.Ass.Candidate	In.Home	Not participating	No	•	Comm.Services	Nothing	Services	Res+Gov/Not	Serv.&Infra	Bad peop/new comer	None	Whole sett.
the Doors	In the Bars	Pca Bangu	B.Sq+M.Streets+V.Pin	•	Show/Mus=In cars	To win Votes	Loc.Ass.Candidate	Other	Participating	No	Res+Pol/Pol'team	Comm.Services	Not aware	Services	•	Serv.&Infra	Crime	None	Whole sett.
the Doors	In the Bars	•	In.Homes+RA head.	RA	Visited res.	To win Votes	•	In.Home	Not participating	No	RA+ad res.	Serv+Comm.Serv.	Nothing	Serv+Comm.Serv+G.Imp	•	Serv&I+H.impr.	Bad peop/new comer	None	Whole sett.
the Doors	In the Bars	J.Mag+N.Jerus.	•	•	•	To win Votes	Authority in Camp.	In.Home	Not aware	No	•	Comm.Services	Nothing	Services	Gov./Notable	Serv.&Infra	None	Services&Infra	Whole sett.
e Church	In the Bars	Pca Bangu	M.Streets+RA head.	Ra+Res	Walk+In cars+Ass/RA	To win Votes	L.Ass.Cand+Auth.camp	Street	Participating	No	RA+ad res.	Serv+Comm.Serv.	Nothing	Serv+G.Improv.	RA+Gov/Not	Serv&I+H.impr.	Crime+bad peop..	Title	Whole sett.
the Doors	Inside Home	In the streets	Main sts	Residents	Walked	To win Votes	L.Ass.Cand+Auth.camp	In.Home	Part.Actively	No	RA+res+Child	Serv+Comm.Serv.	Not aware	Serv+G.Improv.	Res+Gov/Not	Houses impr.	None	Services&Infra	Whole sett.
oors+In.Home	At the Doors	In the streets	•	•	Walked	To win Votes	•	Door	Participating	No	Children	Services	Not aware	Serv+Comm.Serv.	RA+Res+Gov/Not	Serv.&Infra	None	Services&Infra	Whole sett.
the Doors	In the Bars	Lgo Caetes	V.Pinheiro	•	Walk+In cars	To win Votes	•	Street	Participating	No	Ad.residents	Comm.Services	Not aware	Services	•	Crime increase	Bad peop/new comer	None	Whole sett.
e Church	In the Bars	J.Magalhaes	Main sts	Residents	Walk+Vis.res+In cars	To win Votes	Authority in Camp.	Door	Not participating	No	•	Serv+Comm.Serv.	Not aware	Serv+Comm.Serv+Title	•	Serv.&Infra	None	None	The hill benef.+
the Doors	•	•	M.Streets+RA head.	RA	Walk+Ass/Sp RA	•	Authority in Camp.	Door	Participating	No	Res+Child+Pol/Pol'team	•	Not aware	Serv+Comm.Serv.	•	Crime increase	Crime	None	Whole sett.
	•	•	•	•	•	•	•	•	•	•	•	Services	•	Serv+G.Improv.	Gov./Notable	Serv&I+H.impr.	None	Services&Infra	Whole sett.
the Bars	In the Bars	•	B.Sq+M.Streets+RAh.	Ra+Res	Show/M+Walk+Ass/RA	•	Loc.Ass.Candidate	The Sqs	Participating	No	RA	Others	Not aware	Services	Res+RA	Serv.&Infra	None	•	Not aware other ar
the Doors	•	Pca Bangu	RA head.	RA+Pol.Cont.	Ass+speech at RA	•	Loc.Ass.Candidate	Other	Act.Engaged	No	RA+res+Pol'l.con.	Not aware	Services+Others	Serv+Comm.Serv+Title	Res+RA+G/Not+Army	Houses impr.	None	None	The hill benef.+

Fig. 3.32. Timbau's main institutional buildings
The Church

The RA headquarter

Fig. 3.33. The Church is the only M.Dias's institutional building

The tables of **figures 3.34** and **37** show that, in both Timbau and M.Dias, there seem to be some places generally acknowledged by the settlers as meeting places. Seven were the places mentioned by the twenty two Timbau's respondents, namely : Lgo. Iracema (one case), Lgo. Caetes (twenty two cases), Lgo.Meirelles (two cases), Bangu Sq. (nine cases), J.Magalhães St. (five cases); Capivari St. (two cases) and N. Jerusalem St. (one case). While in M.Dias, the patterns were as follows: D. Oliveira (six cases), the pier (nine cases), E.Salles st. (two cases), the bars (two cases), the alleys

(four cases) and Av. Lobo Jr. (one case). From the mode, which represents the answer that occurs more frequently in the sample, it can be concluded that the place most frequently suggested as a meeting place is the Bangu Square for Timbau (roughly 35% of the answers) and the pier for M.Dias (43% of the answers). This data gives a general picture of the spatial culture of the settlements. A further analysis of that culture will be undertaken in the subsequent sections of this chapter.

Fig. 3.34. Children' meeting places
Timbau

Q.21a.Children' places

Bar:	Element:	Count:	Percent:	
1	The Square	4	18.182	
2	Inside home	4	18.182	
3	Streets/Alleys	8	36.364	- Mode
4	Sq+St/Alleys	3	13.636	
5	Sq+St/Alleys+Fl.Roof	1	4.545	
6	Sq+St/Alleys+outside	1	4.545	
7	Inside Home+Flat Roofs	1	4.545	
Total		22	100	

M.Dias

Q.21a.Children's meeting place

Bar:	Element:	Count:	Percent:	
1	F.Field	0	0	
2	Inside home	0	0	
3	Streets &Alleys	15	71.429	- Mode
4	Flat roofs	0	0	
5	Pier	0	0	
6	St & All+Pier	3	14.286	
7	Football Field+StxAll+Pier	1	4.762	
8	Football Field+In.H+StxAll	1	4.762	
9	Football Field+StxAll	1	4.762	
Total	No answer	21	100	

Fig. 3.35. Women' meeting places

Timbau

Q.21b.Women' places

Bar:	Element:	Count:	Percent:	
1	At the Doors	19	70.37	-Mode
2	Inside Home	1	3.704	
3	The Church	2	7.407	
4	In the Bars	1	3.704	
5	Doors+In.Home	3	11.111	
6	Doors+Church	1	3.704	
Total		27	100	

M.Dias

Q.21.b.Women's meeting place

Bar:	Element:	Count:	Percent:	
1	Doors	14	60.87	-Mode
2	Inside Home	0	0	
3	Flat roofs	1	4.348	
4	Bars	0	0	
5	Doors+Inside Home	3	13.043	
6	Doors+Bars	5	21.739	
Total		23	100	

Fig. 3.36. Men' meeting place

Timbau

Q.21c.Man' meeting places

Bar:	Element:	Count:	Percent:	
1	In the Bars	18	75	-Mode
2	Samba/Pagode	3	12.5	
3	At the Doors	1	4.167	
4	Inside Home	1	4.167	
5	Others	0	0	
6	S/P+At the doors	1	4.167	
Total		24	100	

M.Dias

Q.21.c.Man' meeting places

Bar:	Element:	Count:	Percent:	
1	Bars	12	50	-Mode
2	Samba/Pagode	0	0	
3	Doors	0	0	
4	Inside.home	0	0	
5	F.Field	0	0	
6	Pier	0	0	
7	Bars+S/P+Pier	1	4.167	
8	Bars+S/P	6	25	
9	Bars+F.Field	3	12.5	
10	Bars+Doors	1	4.167	
11	Bars+S/P+F.Field	1	4.167	
Total		24	100	

Fig. 3.37. Residents' Meeting places

Timbau

Q.21.b.Meeting Place

Bar:	Element:	Count:	Percent:	
1	Lgo Caetes	3	13.043	
2	Lgo Meirelles	0	0	
3	Pca Bangu	7	30.435	- Mode
4	J.Magalhaes	1	4.348	
5	Lgolracema	0	0	
6	N.Jerusalem	0	0	
7	Capivari	1	4.348	
8	In the streets	3	13.043	
9	L.Caetes+L.Meireles	2	8.696	
10	L.Caet+P.Ban+J.Mag.	1	4.348	
11	Pca.Bangu+L.Iracema	1	4.348	
12	L.Caetes+J.Magal.	2	8.696	
13	J.Magal.+Capivari	1	4.348	
14	J.Magal+N.Jerus.	1	4.348	
Total		22	100	

M.Dias

Q.21.Meeting' Place

Bar:	Element:	Count:	Percent:	
1	Street'org.	1	4.762	
2	D.Oliveira	4	19.048	
3	Pier	8	38.095	- Mode
4	E.Salles	1	4.762	
5	Bars	0	0	
6	Alleys	4	19.048	
7	L.Junior+E.Salles	1	4.762	
8	D.Oliveira+Bars	1	4.762	
9	D.Oliveira+Pier+Bars	1	4.762	
Total		21	100	

The respondents have answered differently according to the place where they live (spatial location), when asked about places where they most often circulate in their everyday life and the boundaries of the settlement. This seems to suggest that people's perception and people's habits also change according to their spatial position. The questionnaire data has indicated also that there

seems to be, however, a general rule, that is the movement of people has a centrifugal nature, or in other words, is directed towards the outside. Several people have mentioned the fact of not circulating frequently inside of the settlement with the exception of the religious people.

For instance according to the questionnaire, people who live on the boundaries of the settlements nearby the super-grid[14] tend to stress a relationship with the "exterior" opposed to the "interior of the settlement". There is even a negative tone of some respondents, who live at the boundaries, when referring to the "Morro" meaning "the hill" (or Timbau) or "inside there" (of Marcílio Dias Estate). In the case of Timbau being or not "legalised" (meaning as having the ownership) is another artifact used for some people on the outskirts of the settlement to differentiate themselves from those living in the "favela" (or squatter settlement).

In contrast with Timbau, in M.Dias there is a general impression of open space, small scale and emptiness with very few green spaces. This may be due to the wideness of streets inherited from the preexisting

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[14] The super-grid is defined in this report as the main city spatial links (streets) which are connected to the area of study). It appears to be that the boundary areas are more strongly related to the global form (and strongly connected to the super-grid) and this may explain why the inhabitants of such parts of the settlement reinforce more their relations across space (transpatial).

In the main streets houses have more open permeabilities with larger openings to the streets than in the other streets. As mentioned previously, shops have specially made their interfaces with the public space more open and permeable. This may be in fact in itself a marketing strategy allowing the goods to be closer to the passers-by and more accessible thus taking more advantage of pedestrian movement (see **figures 3.24** to **27**).

Shops are scattered around the settlements yet in M.Dias there seems to be a concentration of shops at the corner plots. Marcilio Dias shop-owners probably have favoured these plots because normally they are larger and also have two frontages. The numbers of shops is higher in M.Dias than in Timbau amounting respectively to 88 against 62. Religious buildings in both settlements are strikingly numerous. In M.Dias there are nine of those buildings and in M.Dias five (see **figures 3.38** and **39**).

Fig. 3.38. The land use map of Timbau

Land use

■ Shops
▦ Services
▥ Religious Bulidilngs
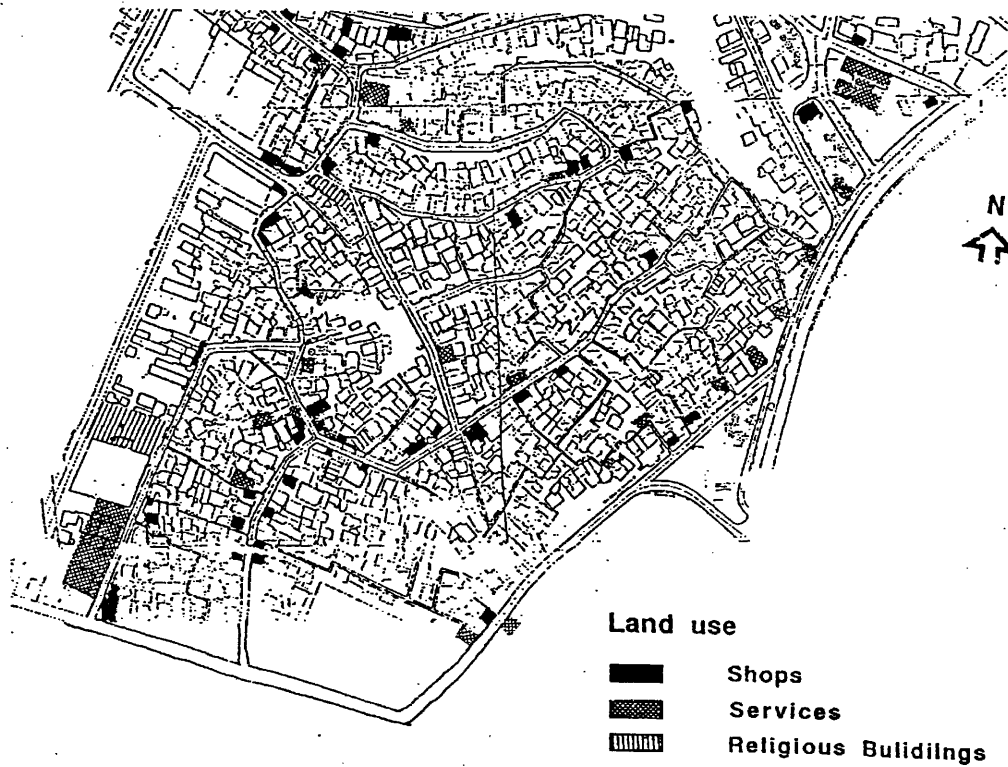
Fig. 3.39. The land use map of M.Dias

Land use

■ Shops
▦ Services
▥ Religious Bulidilngs
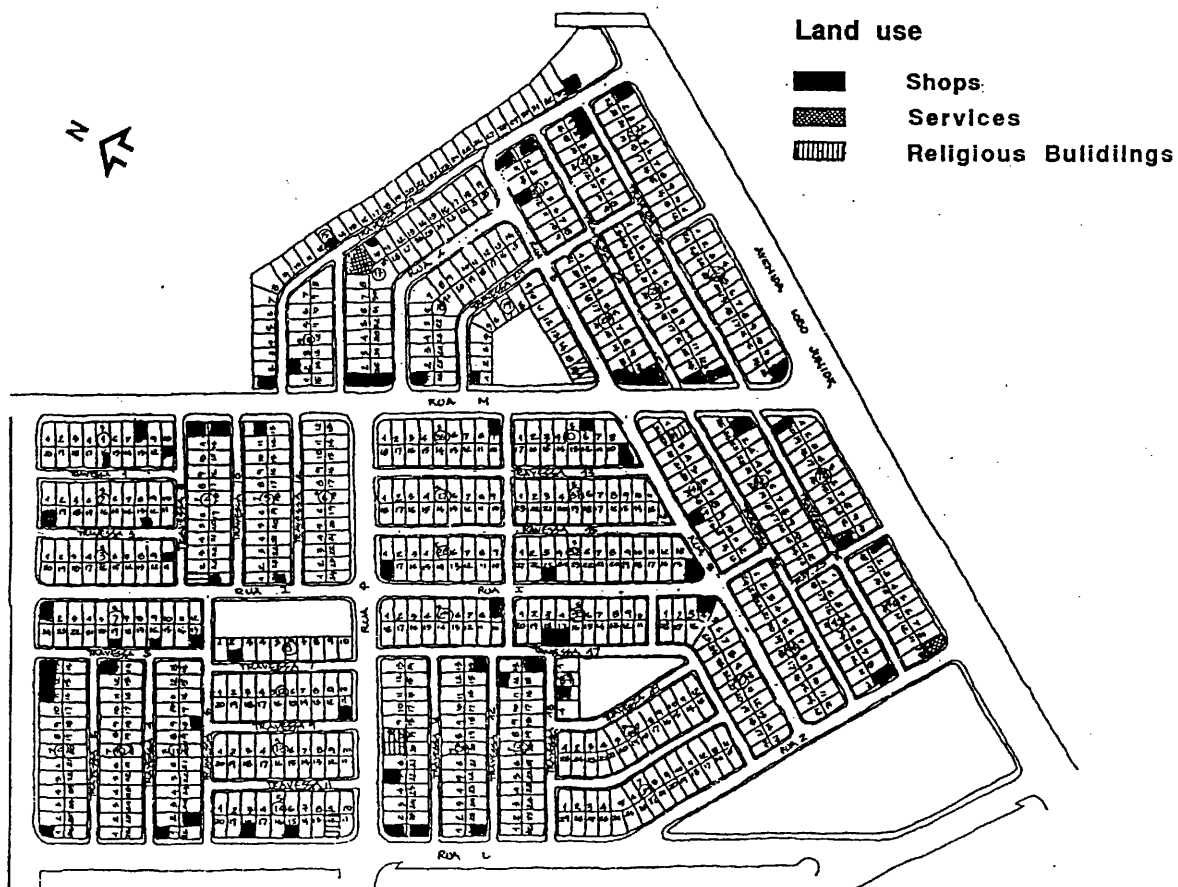
These intuitive descriptions give a general idea about what the settlements are like as a place and how people live there. The intention in the next sections is to offer a more precise description about the settlement and its inhabitants, trying to understand it as an 'unplanned' object, created through a process of 'auto-construction' (social and spatial), and which has a life on its own.

In the next sections of this chapter space syntax will be applied aiming to have a better understanding of how the settlements are working spatially and socially in terms of the types of interface between residents and visitors created. Syntax will also be used to investigate specific question which arise out of this introduction as for example if there is any local or global variable influencing the location of shops. To sum up, the next section will be dedicated to provide a more thorough description and understanding of the two settlements and their socio-spatial structure.

The spatial structure of Timbau

The street grid of Timbau appears highly deformed, irregular and fragmented. It is the result of a complex process of auto-construction, in which lanes, streets, squares and other urban entities were gradually shaped

by the growth of the houses and the increase of density of the settlement. Nonetheless, despite its complexity, of its irregularity and apparent disorder, it is possible to identify a clear urban structure.

At first glance, the settlement is quite spatially and physically marginal in relation to the overall structure of the city (see **figure 3.40**). Having strongly marked boundaries, which are the Guanabara Bay at North, two major roads of traffic at northeast and south and the neighbour squatter settlements of Nova Holanda e Baixa do Sapateiro at southwest and northwest, it could be described as a city of the poor.

Fig. 3.40. Views of Timbau's boundaries and main access approaches.

Southwest boundary - surrounded by industrial buildings

Southeast boundary and the access to the University

Rua Alabama - main approach from the southwest edge
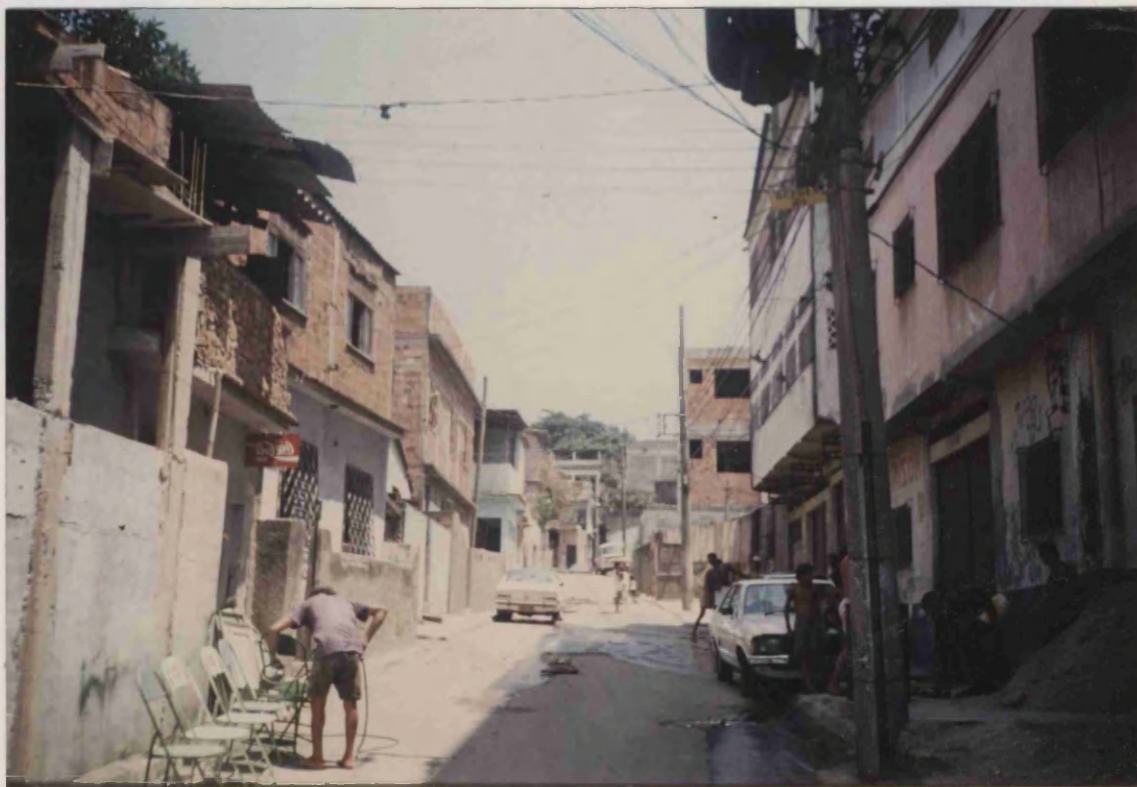
Beco Esperança - entrance from southwest boundary

Travessa Muzzi - main approach from the southeast edge

Travessa Bonifacio - main route leading to the southwest edge

Both the block and the grid structure are highly deformed, with thirty three islands which vary substantially in size (see **figure 3.34**). Since houses are normally terraced and aligned with the streets they define the shape and size of blocks. The urban fabric results from the organic and irregular arrangement of these islands defined by the buildings. Squares constitute large lumps of open space in this fabric and are strategically located in areas of transition which connect the end of local streets, or roads of local traffic as defined in the previous section, to the beginning of the narrow network of pedestrian lanes

(see **figure 3.17**). In this sense, these squares seem to work as a kind of intermediate spaces between the very local territories of pedestrian streets and the more globally oriented spaces which are the internal roads. Squares in Timbau operate at two scales at once: the local and the global. That is, they are local enclosed spaces which, nevertheless, are related to the global structure of space in the settlement.

Fig. 3.41. The black and white map of Timbau
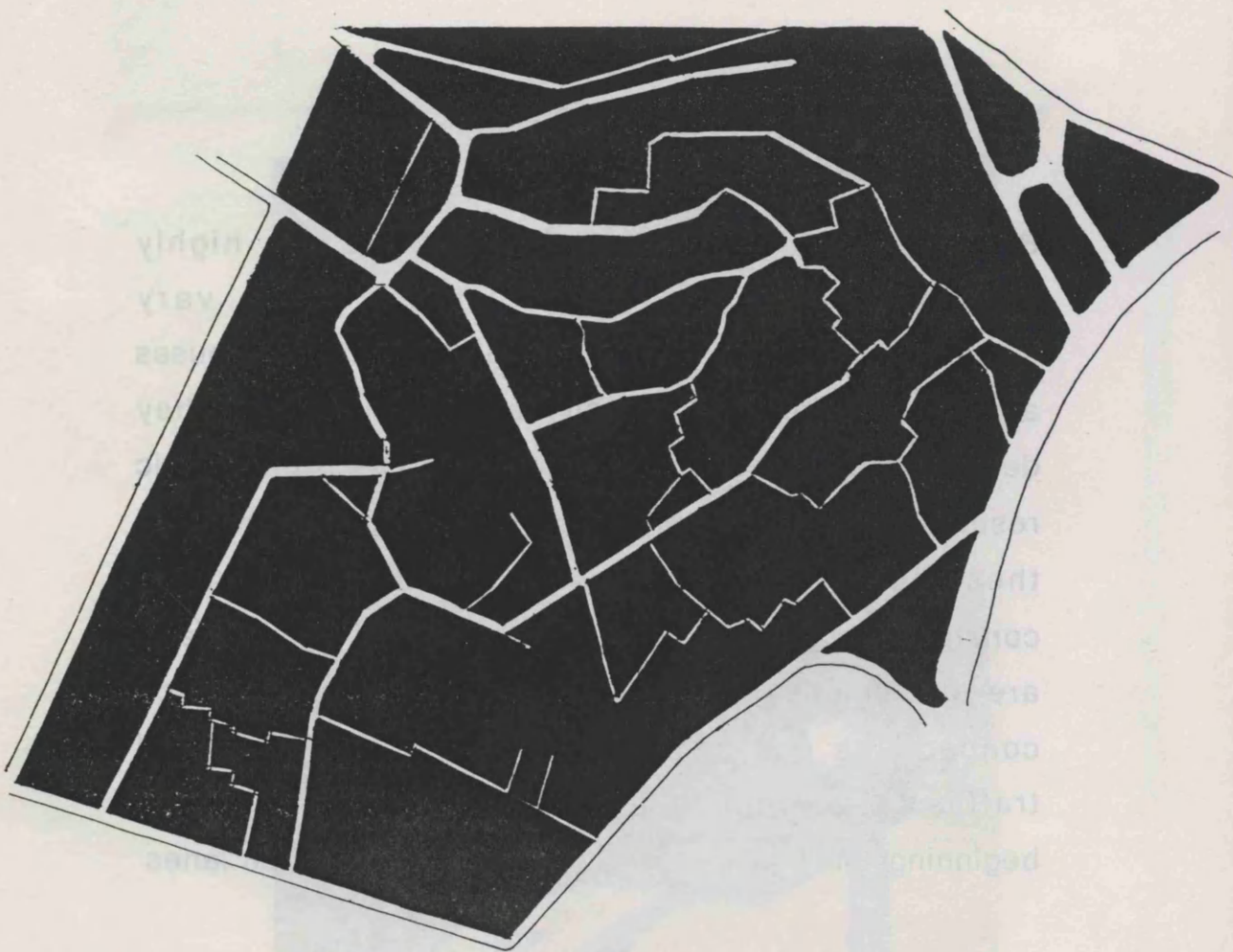
The figure-ground transcription shown above in which all the public space is shown in white on a black background gives a more clear idea of the proportion and location of open public spaces in the settlement (see also the large scale map in the back pocket of this thesis).

The three peripheral roads[15] which are Praia de Inhauma (Inhauma Beach) at the northeast and southeast boundaries of the settlement, Rua Guilherme Maxwell (Guilherme Maxwell Street) at the south boundary and Rua João de Magalhães (João de Magalhães Street) at the west form a continuous network of through routes which are linked to the main internal system of roads. Ruas Alabama, Capivari, dos Caetes and Nova Jerusalem are the only internal through routes of the settlement[16]. These streets traverse the system in its north-south direction connecting the outside carriers with the neighbour squatter settlement, being also the main channels for vehicular access to Timbau. They are the streets which carry most through movement in the settlement and as such they are bound to be globally oriented spaces where the interface between strangers and inhabitants is more intense.

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[15] which were called in the syntax analysis the adjoining lines.

[16] The adjoining and internal through routes correspond to the streets assigned in red in **figure 3.10**.

There are no through routes linking the west to the east area of the settlement. This connection is made through a few local roads[17] which are linked to an extensive network of pedestrian lanes. Metaphorically, these local roads are like "fingers"[18] which start from the main system —mainly from Rua dos Caetes (Caetes Street)— and point towards the internal relatively inaccessible areas of the settlement. These areas can only be approached through a chicaned network of narrow pedestrian streets many of which are dead ends[19].

It seems that this spatial and morphological differentiation of streets influences the way pedestrian movement is structured, the way public spaces are used socially and the distribution of land-uses. A mere visual inspection shows that some street environments either permit or inhibit certain type of land-uses and range of social interaction which is reflected on their social use and individual activity.

In broad terms, if the three categories of streets (i.e. main, local and pedestrian streets) already mentioned on page 99 are taken, it seems that individual

[17] The term is used in the sense defined previously in a previous section of this chapter.

[18] See **figure 3.10** for a precise visualisation of that metaphor. The "fingers" correspond to the streets assigned in blue.

[19] The number of dead end streets in the system amounts to fourteen, with 50% of them being at the east internal area of the settlement.

female activities are concentrated in and around the houses, while spontaneous pedestrian and collective activities take place in the three types of streets. Local and pedestrian streets, however, appear to work as important extensions of the private domain and are intensively used for local activities (i.e. neighbouring interaction, leisure, domestic work). These activities seem to induce substantial pedestrian movement but mainly by inhabitants.

Pedestrian streets are very locally oriented and constitute a sort of discrete local territories. Land uses on those streets are restricted to the residential one. Shops and other non-residential uses are scattered around the settlement on peripheral, internal main and local streets. This seems reasonable since commercial activities and other transpatial kind of uses (i.e. schools, temples, the community association headquarter) tend to locate themselves along more permeable routes from outside which are strategic positions in terms of taking advantage of both local and global movement. By contrast, goal-directed structured activities (i.e. garages) are only found in the carriers of the settlement (see **figure 3.38**).

These observations seem to point the importance of the local and global properties of space in structuring movement, encounter and interaction patterns, on the distribution of land uses and in the making of social relations.

Looking in more detail at the urban structure of the settlement using the space syntax analysis might shed a light in explaining this configurational structure and its functional implications.

Timbau - The procedure of analysis

The procedure to analyse Timbau was to study it at four levels. First, the settlement excluding its adjoining lines or in other words only the system of incident lines (i.e. internal structure). This system was suffixed one. Second, the settlement including the adjoining (i.e.surrounding roads) and incident lines (i.e. internal structure)[20], which was suffixed two. Third, the system suffixed three which corresponds to the settlement embedded in a larger area but excluding the neighbouring housing estates, and fourth, the system suffixed four which is the settlement embedded in a larger

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[20] This corresponds to the whole settlement on its own — main internal and peripheral lines

context including the housing estate (see **figure 3.42**).
The areas are transcribed into the axial maps shown
ahead in **figures 3.55** to **58**.

Fig. 3.42. The areas of study
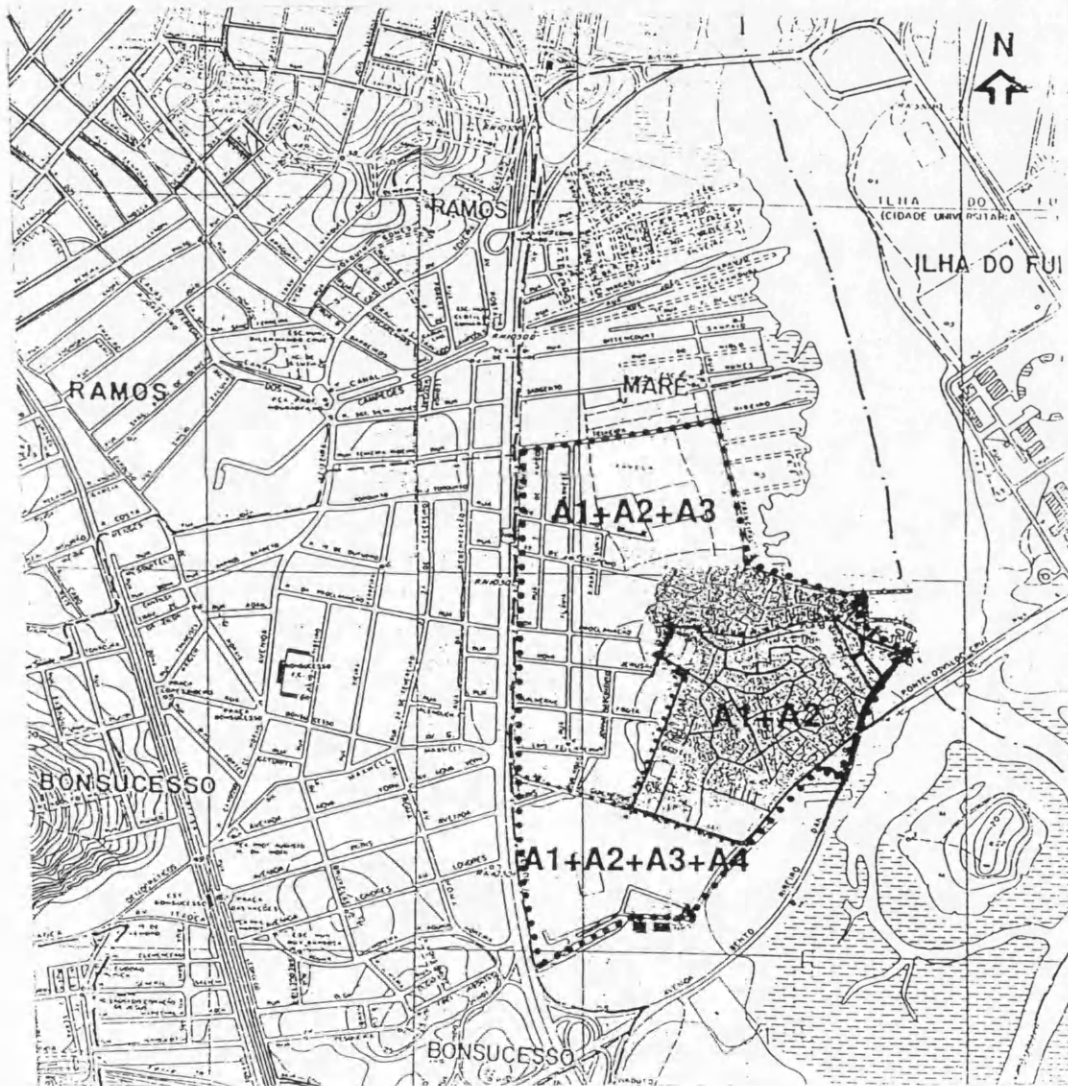
The scale of the settlement area is based on the current description given in the interviews by the settlers as being the boundaries of the settlement, and complemented by visual observation on site. The size of the larger system was established by using more or less existing clear boundaries and to be reasonably large enough to allow any "edge effect"[21] in the spatial analysis to be away from the area of interest.

The axial maps were drawn[22] using the most up-dated available version of the urban systems, corrected on site for the prime area of study to avoid discrepancies between the map and the information on the ground.

The axial representation and analysis

The complete axial break-up of Timbau embedded in a larger area with the neighbour housing estate (system 4) and without it (system 3), the sub-set of Timbau which includes its incident and adjoining lines[23]

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[21] Edge effects are as explained by Hillier, B. and Penn, A., **Is Dense Civilisation Possible?: or the shape of cities in the 21st century**, The Bartlett School of Architecture and Planning, University College of London, 1991, p.6. *"as the inaccuracies towards the edge of the representation because these areas are close to the place where the grid has been cut"*.

[22] The map is actually drawn by setting the ruler against a vertex in the map and aligning it until it meets the furthest vertex on the opposite side of the street. The least set of all these lines which covers the whole system of open spaces in the system is thus the axial map.

[23] This correspond to the settlement on its own.

(system 2) and the sub-set which includes only Timbau's incident lines (system 1) is shown below. A map with the name of the streets and a axial map with the number of the axial spaces is in the back pocket of this thesis.

Fig. 3.43. System 1
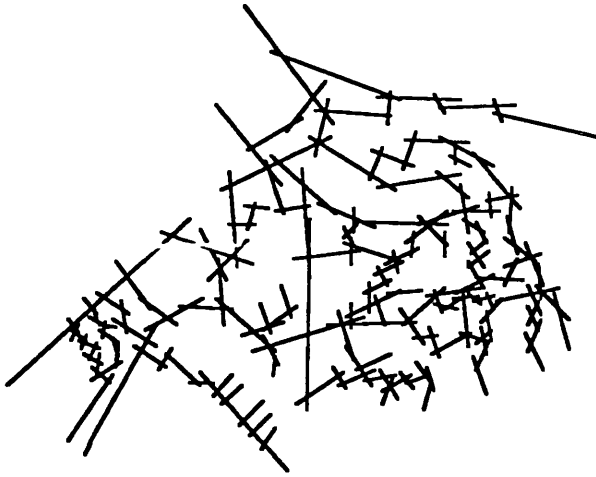
Fig. 3.44. System 2
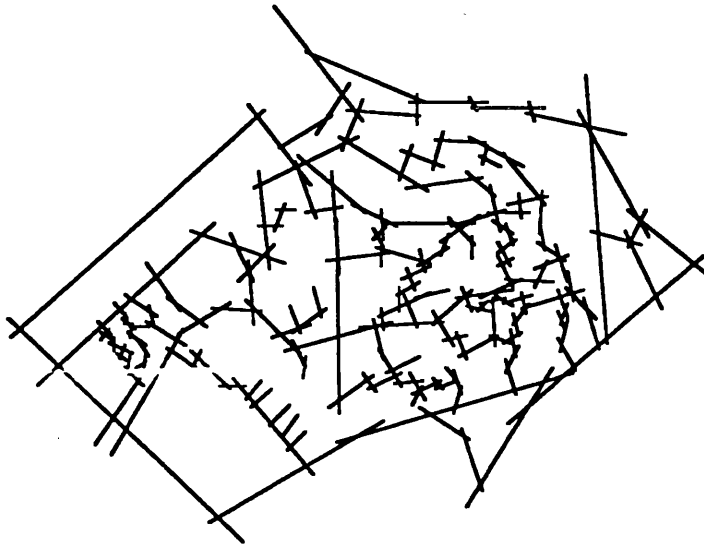
Fig. 3.45. System 3

Fig. 3.46. System 4

Fig. 3.46. System 4
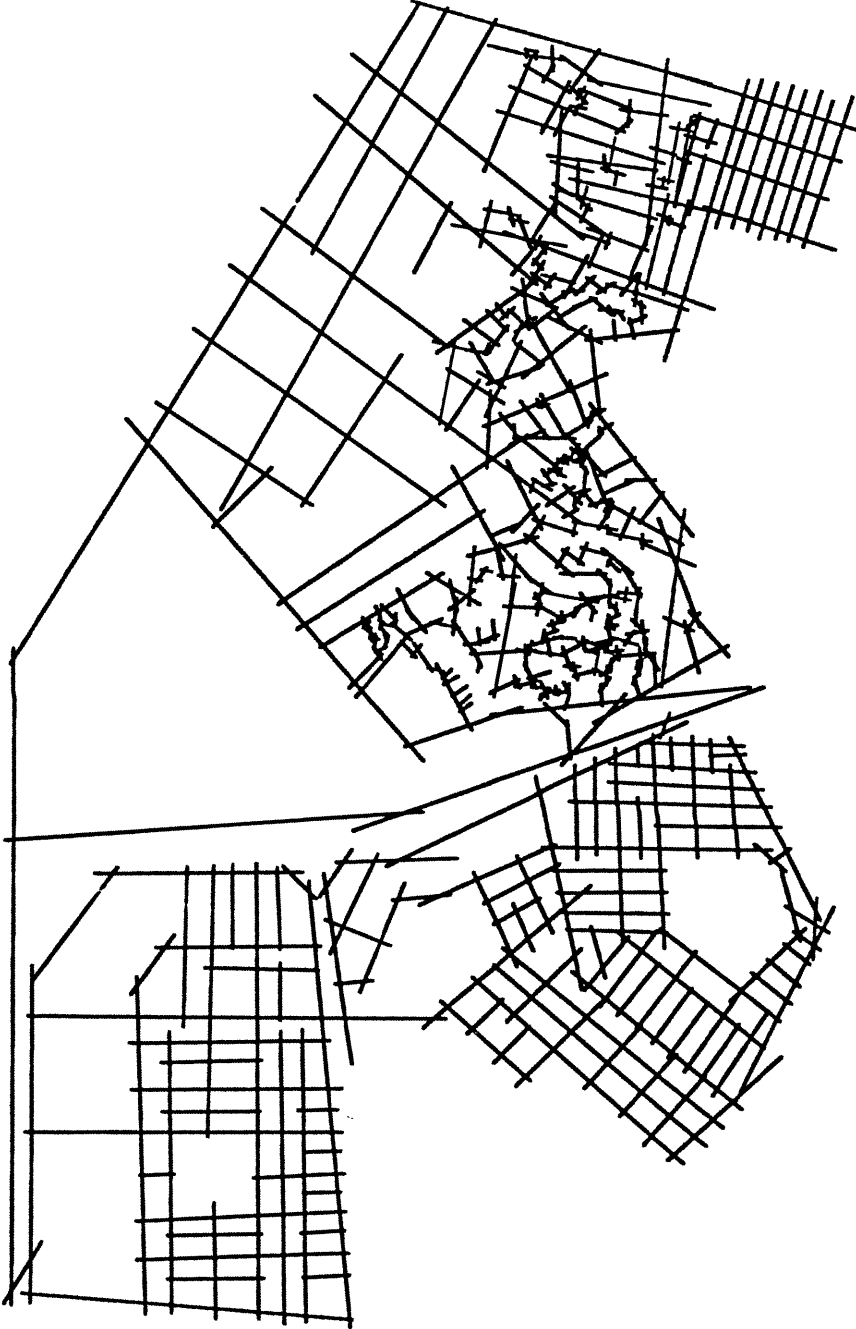
Understanding the Syntax of Timbau

The spatial analysis of Timbau looking at the settlement on its own (system suffixed 2^{24}) will be the subject of this section. A comparison between the several systems with a view to understand the properties of the internal grid configuration of Timbau, as well as, the influence of the global structure in the local one will be the theme of the next section.

The axial structure of Timbau shown in **figure 3.44** read in connection with the axial depth map on **figure 3.47** below reveals some interesting patterns. The axial depth map from the outside indicates the degree of accessibility of the various spaces in the system. More shallow spaces (or axial lines in the case of the axial representation) are the ones in which routes chosen from any point ouside the system to this space are more direct[25].

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[24] This is suffixed 2 because the system suffixed 1, which is the subject of the next section, corresponds to the settlement excluding its boundary lines.

[25] A space is integrated if less axial steps are required to access the space from any point in the system. Axial steps are, as defined previously, the number of changes of direction or of intervening spaces which one person going from one particular origin to a destination in the system is required to take (see **fig. 3.55**). Integration or RRA is a global index of the relative depth of each space and the mean RRA represents the depth of the system as a whole. Or in other words, which are part of a local context.

Fig. 3.47. Axial depth from the outside map
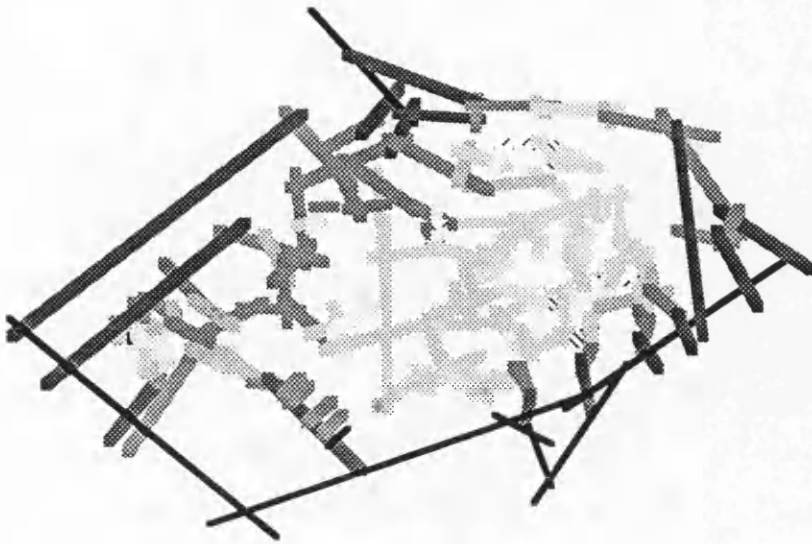
Looking at the two maps of Timbau isolated in **figures 3.44 and 3.47** it can be observed that the urban grid seems to be structured in three levels: first, by long and shallow adjoining lines (the carriers) including also few incident lines which create a system of through-routes continuous from the super-grid; second, by a system of medium length lines[26] continuous to the first system and linking the last, which is the third network of lines. This third network of lines is characterized by almost invisible very fragmented narrow and tortuous routes, formed by short and

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[26] The map in **fig.3.50** shows this secondary system of lines which are internal to Timbau and part of the integration core.

relatively deep lines sometimes in cul-de-sac (**figure 3.47**). It is striking that these three configurational categories of spaces seem also to more or less correspond to the functionally different categories of streets already identified in this chapter on page 95: main roads for traffic, being part of or articulated to the carriers; local roads for local traffic; and last, pedestrian roads. **Figure 3.10** has shown respectively in red, blue and yellow, the main roads for traffic, the local[27] and the pedestrian streets. The three categories are, it turn, organized into two main systems: a primary one accessible by cars (i.e. the main and local roads), and a secondary one which is only accessible on foot (i.e. the pedestrian roads).[28]

The settlement is also characterized by a general lack of large scale, public open spaces with exception of the three squares located strategically in an area of transition between the primary system (i.e. the internal and local roads) and the secondary one (i.e. the pedestrian network). In fact, these open spaces are at the end of relatively long and shallow lines, but they are spaces from where a significant number of short lines start. In **figure 3.17** these areas are indicated by dots.

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[27] See the depth map of M.Dias in a later section of this chapter.

[28] In fig. 3.47 these is shown, respectively fro the primary and secondary systems, by the darkest shades of grey which represent the shallowest lines and the paled shades which are the deeper spaces.

The street grid works to render the main centres of the settlements, the squares, relatively deep to the outside and to the majority of spaces in the interior of the settlement.

Fig. 3.48. Number of axial steps for each axial line.
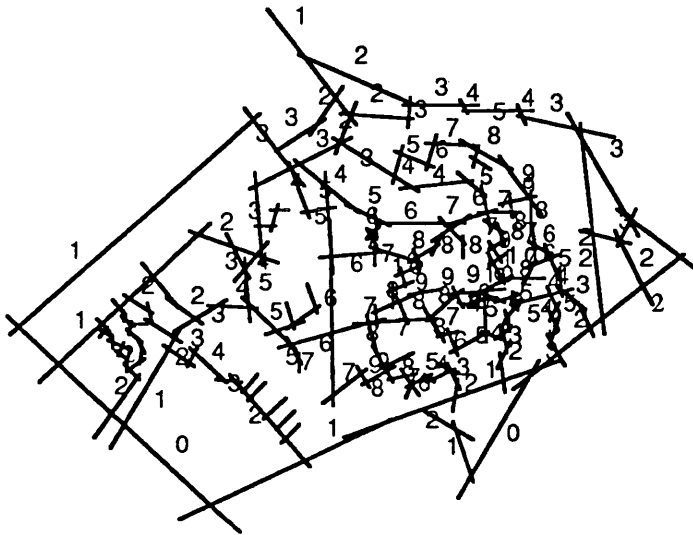
The depth from the outside maps[29] in **figure 3.47** and **48** show that shallow spaces are peripheral while the heart of the settlement remains deep. Taken together, in Timbau like M.Dias the relation between depth from inside and depth from the outside (**figures 3.47 to 3.50**) suggests that the interface between inhabitants and strangers is differentially constructed in its different areas. There is a more or less clear separation between areas, peripheral to the settlement, that are shallow thus easy to reach as a visitor, and the some

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[29] Depth from outside is given by the number of changes of direction to access the line from the outside or from the carrier.

internal areas of the settlement which are deep therefore both difficult to reach as an inhabitant and as a visitor. The configurational structure is completed by a third intermediate system of internal relatively shallow spaces which work as a kind of local structure linking the peripheral to the internal areas and it is more or less identified by the three axial steps from a main internal road[30] map (fig. 3.50).

Fig. 3.49.Three axial steps from the carriers
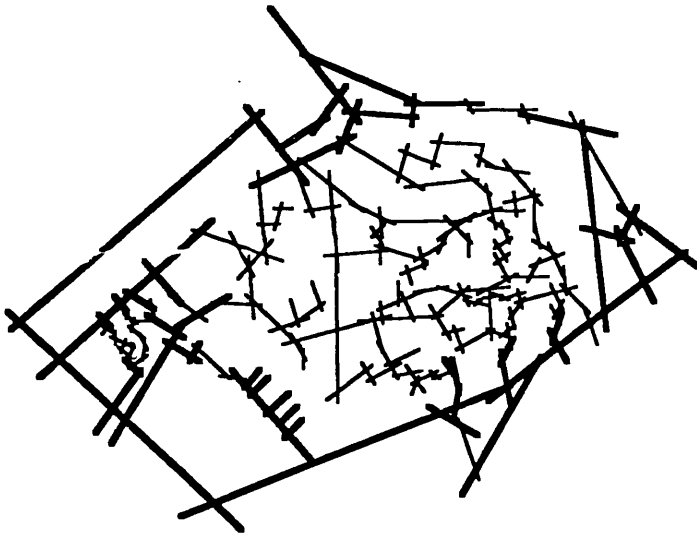
The depth maps shown from figs. 3.47 to 50 highlight the self-containment of the settlement's centre and its separation from the edge. The edge, which is constituted by a continuous system of peripheral lines, seems to be working to hold the whole system together.

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[30] This road was selected given its importance in terms of the internal urban structure of the settlement.

Fig. 3.50.Three axial steps from an internal road ,
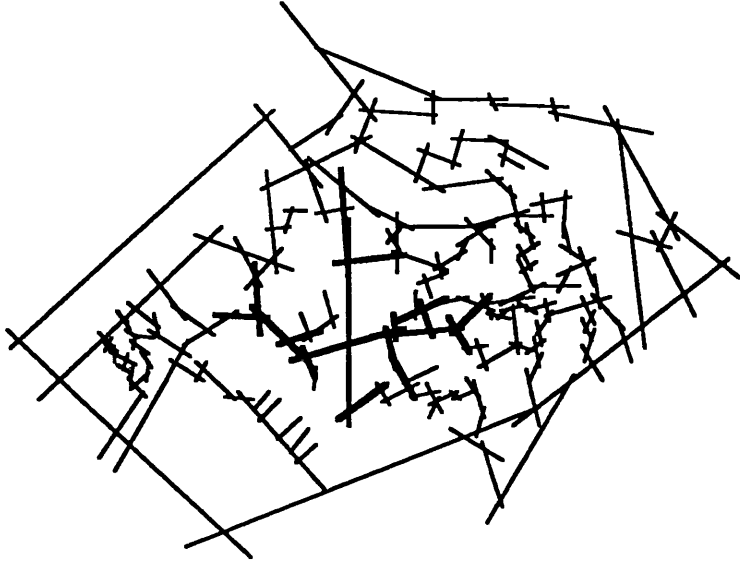
Fig. 3.51. 15% Longest lines of Timbau
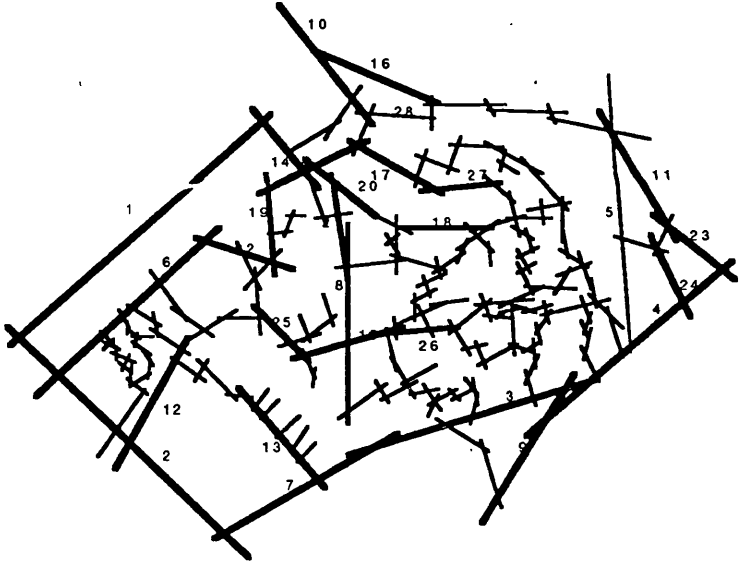
A comparison between the 15% longest lines and depth maps of Timbau reveals a relationship between the two properties (i.e depth and axial length). The table below (**figure 3.52**) picks out that relation by showing that mean length decreases significantly with depth. There

is a substantial drop from depth 2 to 3 where mean length its almost reduced to 50% of mean length at depth 2. This rapid fall-off in length brings support to the idea that the settlement is indeed divided into a small number of relative shallow and long lines structured so as to draw strangers in from the perimeter, which surround by a larger number of relatively short, inaccessible and deeper lines. The table also shows that the concentration of long lines at depth 1 and 2 seems to mask the small numbers of long lines at depth above 2 which are part of the integration core as it can be seen by comparing **figures 3.51** and **3.55.** A comparison between **figures 3.52** and **3.57** shows also that the existence at depth 2 of a number of short lines allows the average length of main streets to be higher than the average length of lines at depth 1 and 2.

Fig. 3.52. Comparison of length and depth

Depth	1+2	3+4	5+6	7+8	9+10	11
Length	65	28.43	22.12	18.61	17.09	10

An inspection on other syntatic variables might help to discuss further the configurational properties of Timbau. **Figures 3.53** to **56** show, respectively, the connectivity map, the control map, the integration map and the radius three integration map of Timbau on its

own (system suffixed 2) with the 15% higher value[31] represented by bold black lines. A comparison between these figures with the 15% longest lines map of Timbau (**Fig.3.51**) is revealing. Firstly, only four lines out of the eleven which form the connectivity core (corresponding to 27.5% of the total number of lines) are also long lines and their presence is in the several cases due to their connectivity to adjacent edge spaces. Secondly, looking at the connectivity map two types of lines can be distinguished: long peripheral or adjoining lines and relatively short incident lines. In the second group feature the two streets which lead to two of the three squares of the settlement. Thirdly, although there seems to be a relationship between integration and length, the settlement's southwest side has several long not so well integrated lines which are also adjoining peripheral lines. In the centre of the settlement in the vicinity of the squares there is a number of relatively long, integrated and well connected lines. These lines seem to form a kind of local structure which is identified by the three axial steps from an internal road map in **fig.3.50.**

Control like connectivity is a local measure and as such it tends not to produce continuous cores. Control varies between values below and above 1, with the high values

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[31] as opposed to lines

corresponding to strong control spaces. The control map in **fig. 3.54** suggests that some lines might have a key role in terms of the relationship between the edge and the internal parts of the settlement.

Fig. 3.53. Connectivity map of Timbau
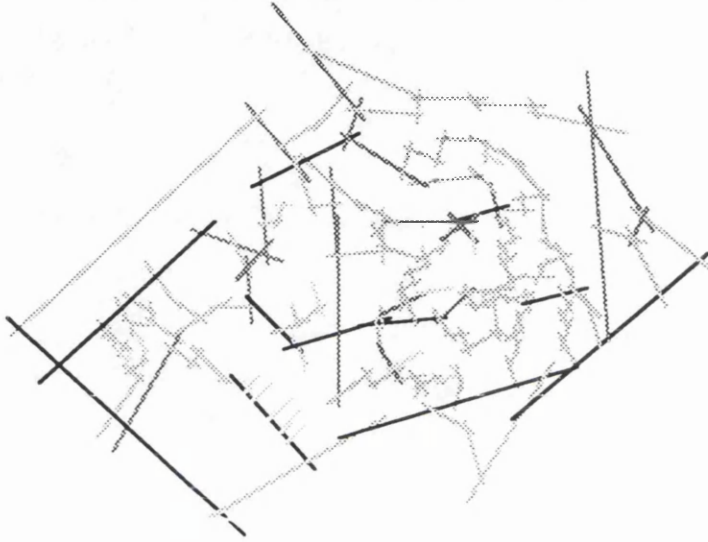
Fig. 3.54. The Control map of Timbau
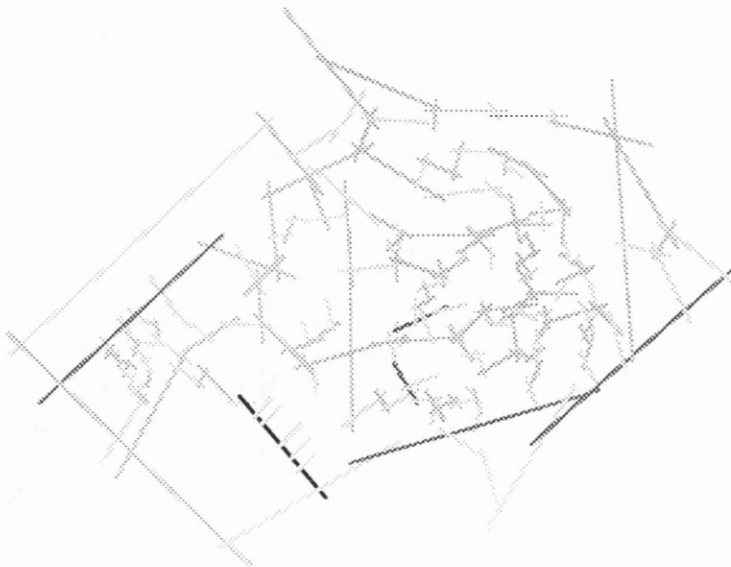
This, in turn, might be indicating that peripheral or boundary lines may have a different spatial logic than the incident or internal ones. The first might be globally oriented or even part of a larger area, whereas the second may be more locally oriented.

Fig. 3.55 . The integration map of Timbau
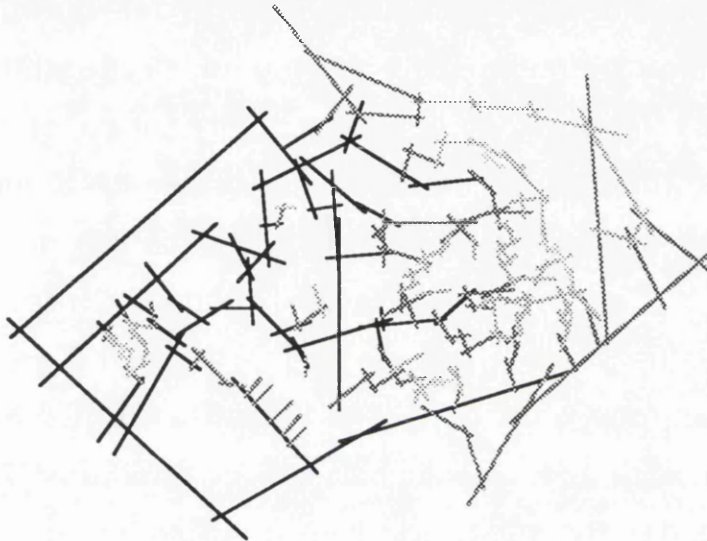
The actual pattern of distribution of the more integrated or shallowest spaces of Timbau is also interesting. If the integration map is taken and the order of integration is plotted, beginning with the most integrated, than the core of most integrating spaces can be described in more detail (see **fig.3.55**). The integration core which represents the 40 most integrated spaces, accounting for 15% of the total integration value, is concentrated in the oldest parts of the settlement at the east side. The pattern made by the distribution is revealing. The first eight lines (see the

bold black lines in **fig. 3.55.1**) sketch out a linear core of relatively long lines which connect the neighbouring squatter settlement (Nova Holanda) to the super-grid (i.e. the south Timbau's carrier named Av. Bento Ribeiro Dantas).

The core in fact connects origins and destinations outside the settlement. This seems to suggest that through movement might circulate on the edge of the settlement[32], thus strangers may be encouraged to pass on the boundary rather than through the centre of the settlement. The north peripheral Timbau's street of Caetes[33] is the most integrated space as a whole (i.e. that space from which all other streets, lanes and alleys are most easily accessible as a destination). The second space is the super-grid line at the south edge of the settlement called Av.Ribeiro Dantas confirming the importance of peripheral lines in structuring the global movement of the settlement. The lines which follow up to the twenty fourth place channel movement from the south to the north edge of the settlement, but leave the east area completely unconnected. This system is basically covered by Rua Capivari, Rua dos Caetes, Rua Alabama and Rua João de Magalhães (i.e. the main

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[32] This hypothesis will be further investigated at the end of this chapter in the origin and destination study.

[33] See large scale map with streets names on the back pocket of this thesis for better visualisation.

internal streets). The rest of the lines which form part of the core merely add a few streets adjacent to this main system without nevertheless penetrating into the heart of the more residential and pedestrian area.

The Radius three integration confirms the pattern presented by integration in Timbau. In both maps, which are very similar, there seems to be a clear division between the west and the east side of the system with the first been much more integrated than the second and with Radius 3 leaning slightly to the east. The east side, by contrast to the west, is characterized by a concentration of pedestrian roads (see **figure 3.10**), and the connection between east and west, as mentioned previously, is made through main throughfares routes. It is interesting that the connectivity map appears to pick up key streets of the integration core which in a certain way hold the system together by linking the periphery to the internal structure, the west to the east and the main system (i.e. internal and local roads) to the secondary one (i.e. pedestrian spaces). It is interesting to observe that the east side of the settlement, that is the more segregated one and with higher number of

pedestrian streets, is the one which according to Santos (see **fig.3.1**) has only recently been occupied[34] .

Fig. 3.55.1. The order of Integration in the core map.
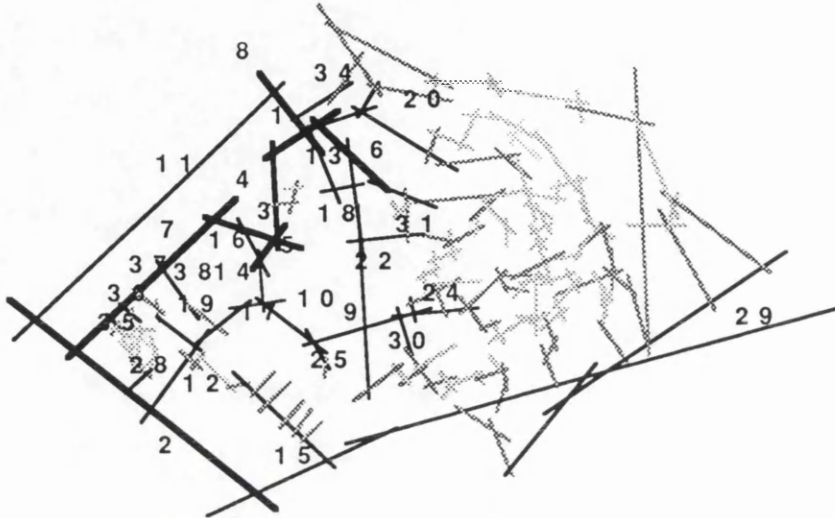
Fig. 3.56. Radius three integration of Timbau

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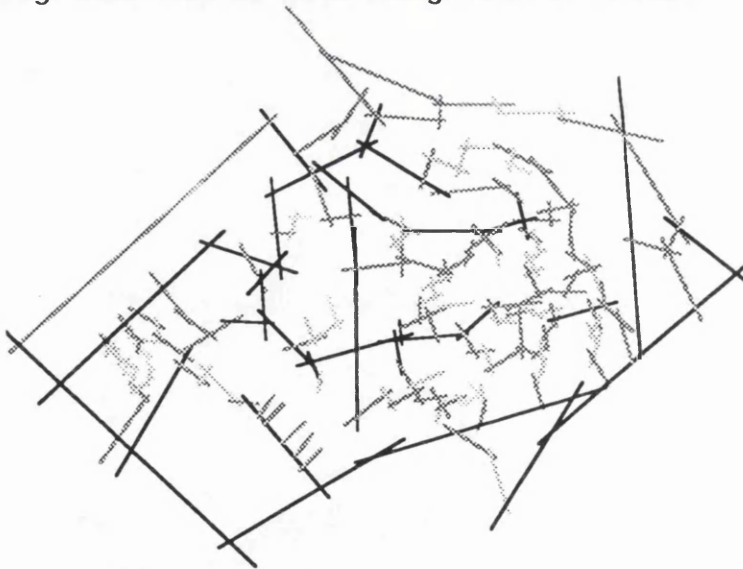
[34] It is interesting to note here, however, that this property of newer parts of Timbau being predominantly structured by short and more segregated lines is the reverse of what have happened in many historic small towns in Europe where the newer parts are on longer lines and the old town are on short lines. This subject will be further developed in Chapter V which deals with the growth of Timbau. It will attempt to give a precise description of the spatial properties of each stage of growth.

A comparison between the map of **figure 3.10** on page 100 which shows the typology of streets in Timbau and the integration map of Timbau (**figure 3.54**) reveals that there seems to be a certain correspondence between spatial and physical characteristics and the syntatic and configurational property of integration. More simply the system of main streets seems to correspond more or less to the more integrated lines, while the net of local streets almost coincide with the medium integrated lines and the pedestrian spaces to the more segregated lines. This relationship, as it should be expected, is also revealed, yet less clearly, by the axial depth map in **figure 3.47**.

To check whether there was also any quantitative trend differentiating the three types of roads (i.e. main, local and pedestrian streets) mean measures for length, depth, connectivity, control and integration were taken (see **figure 3.57**). In terms of length, main roads are the longest ones with pedestrian roads more than three times shorter in average. It is striking though that local roads are in average deeper than pedestrian ones. The number of main, local and pedestrian spaces, which corresponds respectively to 25, 14 and 148 spaces, offers nevertheless a better understanding of Timbau's spatial structure, demonstrating the spread and importance of the pedestrian network in terms of

distributing local movement in the settlement and giving access to extensive areas of it.

Fig. 3.57.

	Main	Local	Pedestrian
Ax.length	69.833	42.692	19.483
Depth	2.917	6.692	5.837
Con	3.769	4.167	2.395
RA1	.784	1.059	.743
CV	1.153	1.269	.945
RA3	1.595	1.819	1.158

Main and local streets, which form what was called here the primary system of Timbau, differ substantially syntatically and in terms of mean length and depth. The differences in length and depth among main and local streets suggest, nevertheless, that strangers and through movement are bound to be restricted more to the first ones, yet the mean integration value has shown local streets as the most accessible ones of the three categories (i.e. main, local and pedestrian). By contrast, all variables point at pedestrian streets as being segregated, fragmented and highly localized territories.

In syntatic terms, it is nevertheless, surprising that the more integrated, best connected and more controlled spaces are performed by the local streets rather than the main ones which are more shallow and globally

oriented. This may be due to the fact that in Timbau segregation as well as integration seem to have a crucial role in structuring the system, and local streets as the ones which connect the segregated to the integrated parts of the settlement work as key elements in the distribution of movement. Far from obvious, however, squares are strategically located at local streets, which are spaces in average well integrated, yet giving access to segregated areas. A possible inference is that squares are spaces which spatially work to maximise the interaction between visitors and inhabitants.

To sum up it seems that segregation, as well as integration, has an instrumental and pervasive role in the form in which the structure of open spaces and streets are organized in Timbau.

The comparative analysis of the several axial systems (suffixed 1 to 4) to be undertaken in the next section might help to the understanding the role of the grid configuration of the settlement in structuring the locally and globally the settlement.

The Syntax of the several systems

This section will deal with the syntax of Timbau taking into account its immediate neighbourhood. Several systems will be compared in order to understand the interplay between the global and the local grid of Timbau. The analysis will look at the various measures already used in the previous section for Timbau studied on its own (system suffixed 2) and will start from the local to the global configurational properties of the systems. One form of measuring local spatial properties, which was already explored for Timbau isolated, syntatically looks at relations between a space and its immediate neighbours. This measure, which is termed control takes into account the amount of choice a space represents to its immediate neighbours in terms of somewhere to go and measures relations locally among neighbouring spaces[35].

Figures 3.58 to **61** show the high control value lines for systems 1, 2, 3 & 4. In all systems one of the top control spaces is in a chicane access route to the settlement from the edge[36]. It is interesting that during field work this line (named Travessa Conrado das Neves)

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[35] This definition of control is proposed by Hanson, J., University of London, PhD Thesis 1989, p.315. The original definition is in Hillier, B; Hanson, J; Burdett, R; Peponis, J; and Penn, A; "**Creating life: Or does Architecture determine anything?**", Architecture et Comportment/Architecture and behaviour, vol.3, pp.233-250.

[36] This means that this space has the property of being better connected than its neighbours by in large.

have shown to be under strong local surveillance thus suggesting that the street in not only well connected with its neighbouring lines but also well watched by local inhabitants. This effect is,nevertheless, produced by the fact that the space has many non-distributed intersecting lines.

Fig. 3.58. Control for System 1
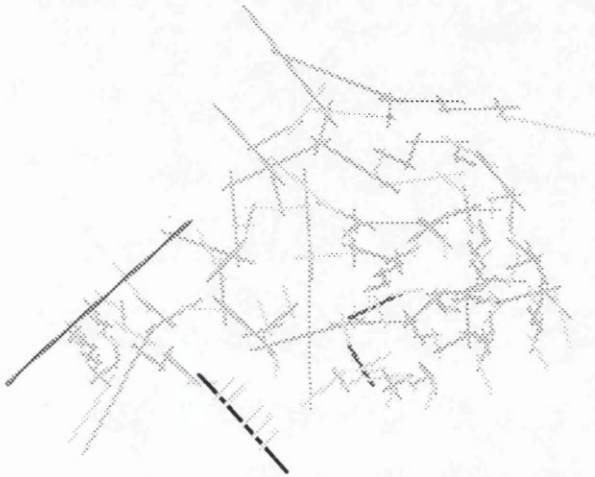
Fig. 3.59. Control for System 2
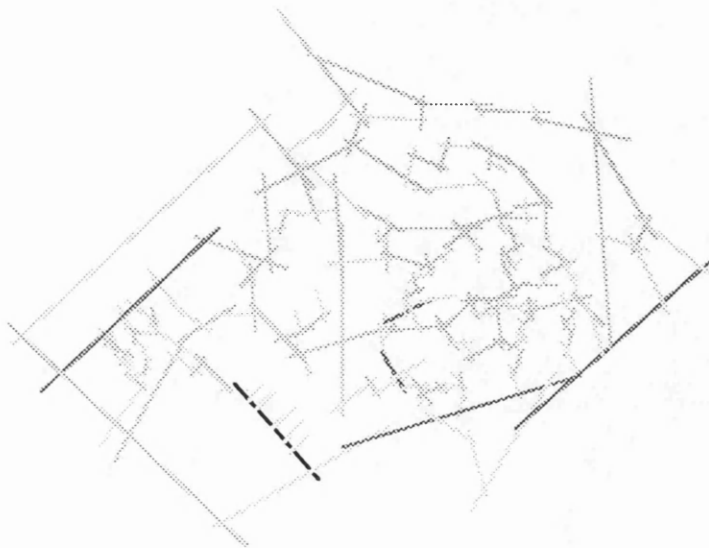
Fig. 3.60. Control Value for System 3

Fig. 3.61. Control Value for System 4

Fig. 3.61. Control Value for System 4
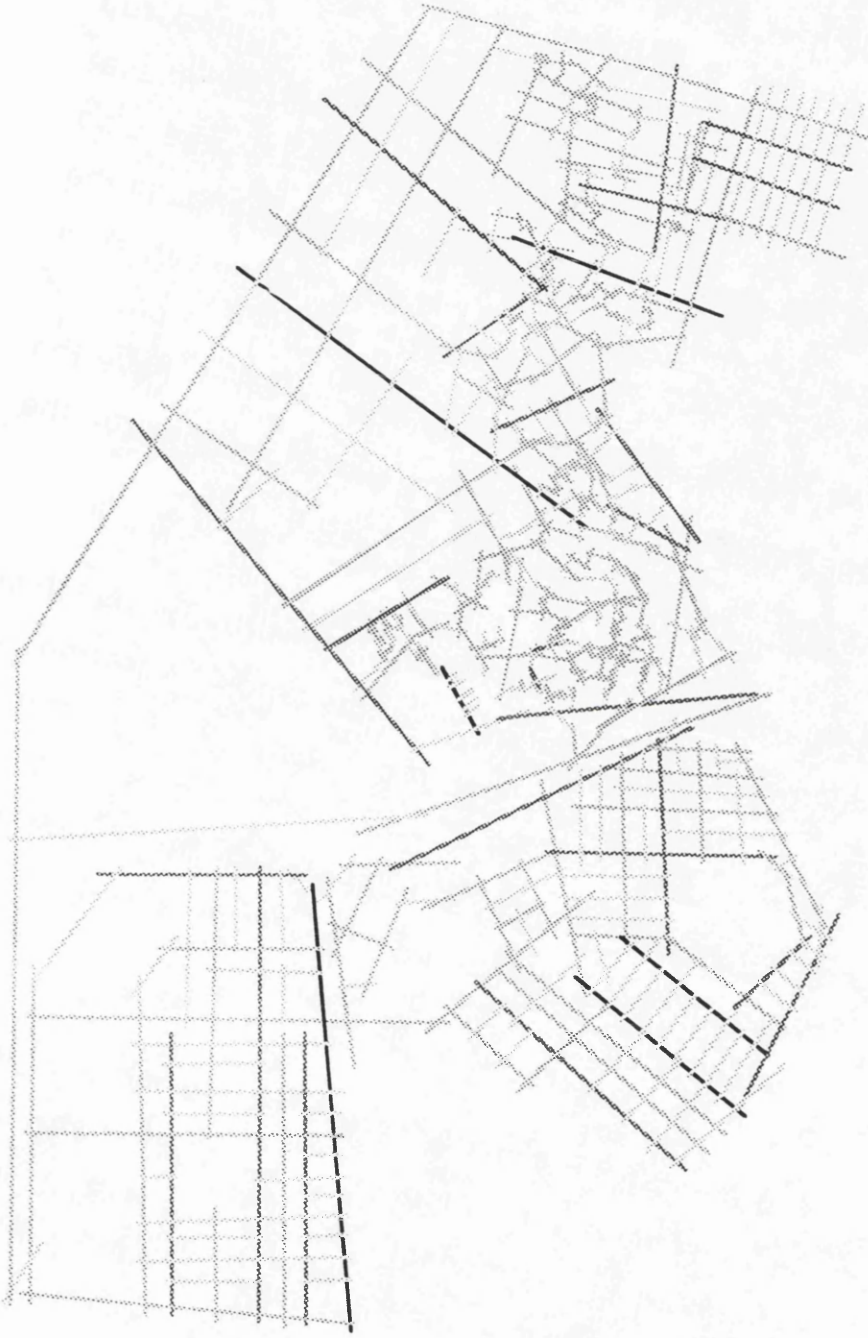
Looking at Timbau embedded in a larger area in **figures 3.60** and **61**, they show that also another important access line to the settlement, on its north edge, is introduced as part of the control core (named rua Guilherme Maxwell). This is actually important in that it is powerful in the surrounding grid locally and also reaches the chicaned area of Timbau itself. Although the the strong control lines have mainly local reasons for appearing powerful it is interesting that in the case of Timbau the top control lines are spaces which have the strategic position of linking the global system (or the edge) to the internal parts of the settlement.

Another local syntatic measure, as already explained and explored in relation to depth and integration for Timbau on its own, is that of connectivity. The interest now is to look at the variation of the core from the smaller to the larger system and see if this measure is able to pick up more important streets within more localized areas of the settlement[37].

Figures 3.62 and **63** show that the more connected lines remain the same for Timbau with and without adjoining lines, respectively systems 1 & 2, with the inclusion of few peripheral lines also well connected in the second system. These lines can be identified with

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[37] This property was suggested in previous UAS studies and in the PhD Thesis of Hanson, J., University College of London, 1989.

streets of major importance locally, either in terms of their concentration of non-residential uses or for being access routes to the settlement and to important spaces such as squares or main roads.

Figures 3.64 and **65** reveal that, with the exception of one major through access route to Timbau from the neighbouring area at the north edge (Rua dos Caetes[38]), no other line is well connected to the larger context. Looking at the control maps for system 3 and 4 (see **figs. 3.60** and **61**) this line is also part of the core, showing that global important well connected routes which lead to the settlement have however strong control. This is an important finding in terms of explaining the way the system constructs its global interface (where the strangers x inhabitants interface is locally controlled).

A mean connectivity shows how well axially connected is the system as a whole. In the internal structure of Timbau where the peripheral roads are excluded (system suffixed 1) this value is 2.529. The inclusion of the peripheral roads (system suffixed 2) does not significantly changes this value which increase to 2.638. But the extension of the catchment area to cover the neighbouring settlements increases the connectivity

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[38] See appendix and back pocket for a map with the name of the roads.

of the system to respectively without and with the nearby housing estate to 3.05 and 3.472[39].

Fig. 3.62. Connectivity for System 1
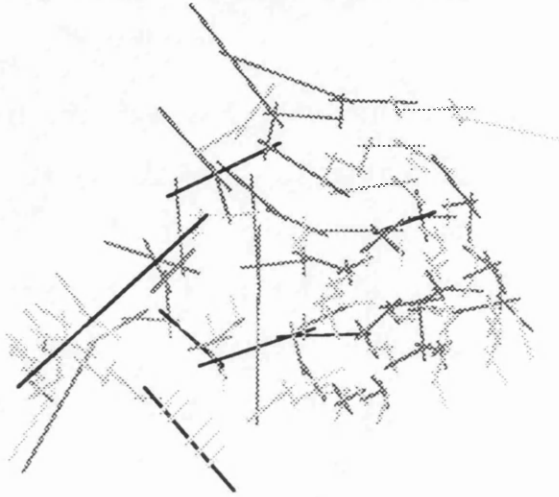
Fig. 3.63. Connectivity for System 2

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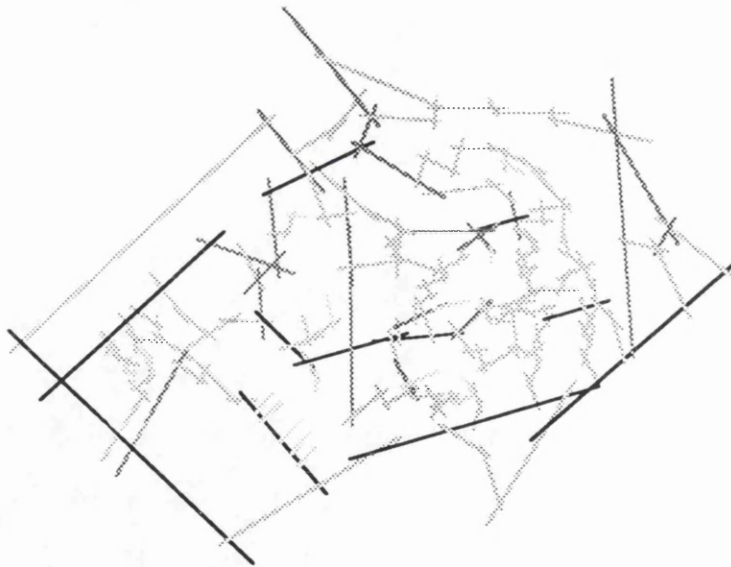
[39] This again is the opposite relation found in European historically evolved organic areas where mean connectivity is high and is reduced by housing estates which tend to have a dominance of poorly connected streets.

Fig. 3.64. Connectivity for System 3

Fig. 3.65. Connectivity for System 4

Fig. 3.65. Connectivity for System 4

Figures 3.66 to **69** show the integration map of all systems. In system 1 (see **figure 3.66**), which is Timbau without its adjoining lines (i.e. only the internal spaces), there is a clear distinction between a system of longer and more integrated lines in a direct relationship with traffic roads, and a system of relatively short, chicane and segregated pedestrian lines which tend to cluster in the east and south edges of the settlement.

In systems 1 & 2 (**figures 3.66** and **67**), the southwest and northwest part of the settlement are more integrated than the rest, with the integration core covering almost the whole system of adjoining lines and including some of the longest incident lines. There seems to be almost a split in terms of integration and segregation between the southwest/northwest part of the settlement and the southeast/northeast. As observed previously, this separation is particularly strong in the settlement analysed on its own (system suffixed 2) where the system is strongly biased in the direction of the nearest neighbouring squatter settlement and towards much of the periphery, but strong integrating lines also pass through the settlement, linking it to the periphery. Yet, segregation in the periphery in system one is large due to an artifact of the edge line exclusion in the analysis.

Fig. 3.66. Integration (RA1) of System 1

Fig. 3.67. Integration (RA1) of System 2
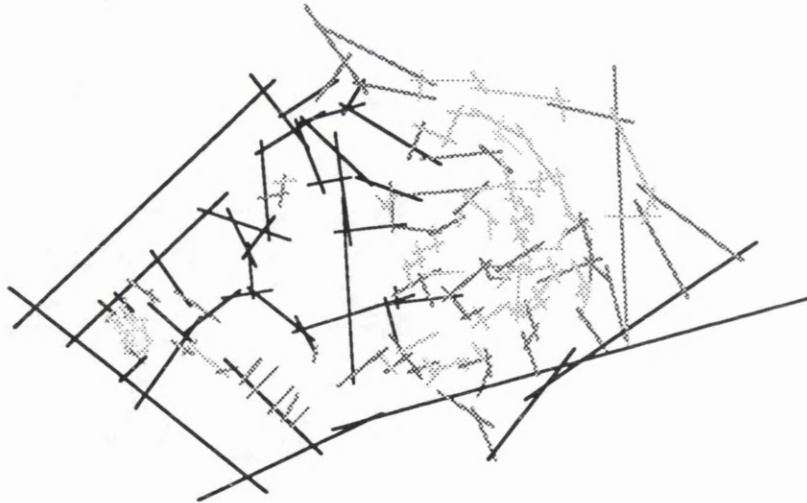
Fig. 3.68. Integration (RA1) of System 3

Fig. 3.69. Integration (RA1) of System 4

Comparing the integration core of system 1 and 3 (see **figures 3.66** and **67**), it seems that they are almost complementary to each other. This might indicate that by excluding Timbau's adjoining lines (edge lines), the spatial structure of the system becomes very localized and central to the settlement, and almost opposed to the one developed by the settlement within a larger context which is more globally oriented and external to Timbau.

A comparison between all systems shows (see **figures 3.66** to **69**) that the integration core[40] gradually moves to outside Timbau towards northeast as the system gets bigger and the settlement is embedded in its interland (i.e. in the larger context). The integration core almost surrounds the settlement when looking at it in its urban context. Very few lines are internal to Timbau, but do not penetrate its heart. The bigger the system the more discrete Timbau becomes, with the integration core gradually moving out in waves.

Extending the system to include the peripheral lines (i.e. from system 1 to 2) raises the number of lines, including the peripheral streets and consolidates the

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[40] Integration, as explained previously, is a global syntatic measure which for each line measures the depth of every other line in the system from that line, and the core is the system of lines which are more shallow. The concept of shallowness involves the notion of depth or the number of spaces it is necessary to pass in order to reach any other space in the system.

picture of the system 1. Embedding the settlement in its interland pushes the core towards outside and only its peripheral lines remain part of the integration core (i.e. system 3). The inclusion of the neighbouring housing estate in the catchment area (i.e. system 4) moves the core completely outside Timbau including only external lines leading to it but not penetrating at all. It seems that the integration pattern works by simultaneously reinforcing the local structure and integrating it to the larger system through its edges in a quite controlled way. In other words, the spatial structure of the urban local grid works just integrating peripherally the settlement with the surroundings. This suggests that the settlement can be seen as a pronounced case of a self-contained system, relatively marginal to the city as a whole, which depends on its outside peripheral structure to hold the system together and to connect it globally.

This effect is so strong and pronounced that it is proposed to name the phenomena <u>marginal integration</u> (i.e. integration in the edge of the settlement rather than by a strong cohesive core). This integration is a complementary process to that reviewed in the previous section which looked at system 2, where too there was a wave-like penetration from edge-centre which seemed to prevent the interior from easy access.

In addition to this marginal integration, the system is also submitted to a strong control of access by allowing only very few lines of the settlement to be part of the larger core and thus making penetration from outside difficult to strangers. Timbau's syntatic separation to its surroundings might be an instrumental strategy adopted to compensate by the lack of visual segregation created by its outstanding hilly topography among the flat neighbourhood. The spatial structure described so far brings support to the idea that, unlike most organic cities, the settlement has grown from an outside pressure rather than from the core (i.e. from inside). This, nevertheless, is an aspect which will be more closely examined in the next chapter when the growth of the settlement will be described.

In system 3 & 4 (see **figures 3.68** and **69**), the integration core almost moves completely to outside Timbau with the few exceptions of the adjoining lines at the west of the settlement. Rather, it passes mainly around the perimeter of the settlement. This makes the settlement relatively segregated globally, yet viewed only internally (system suffixed 1), the system is well integrated. It appears that Timbau structures itself axially by means of two strategies: by rendering the areas that are farther from the edges (or adjoining lines) segregated and inaccessible to strangers,

emphasising their local character and control, and by constructing few lines which allow relative penetration of strangers into the settlement. In doing so, the spatial structure seems to operate by establishing areas of relative shallowness and easy accessibility and areas which are more difficult to reach and where more axial steps are required.

This suggests that the settlement is mainly constructed by maximizing a local interface, while at the same time integration seems related to the construction of an interface between inhabitants and strangers at the periphery of the settlement and in a few internal spaces. In this sense the settlement could be described as constructing integration in a very localized and controlled form.

To summarise, what seems to emerge is a picture of the settlement where the integration core is structured to keep strangers in the periphery, at the same time as to draw people in from the perimeter and channel them into a restricted area of relative shallow more globally oriented streets[41], while the rest of the settlement remains relatively inaccessible to visitors. This

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[41] A recent PhD study by Loumi, A., University of London, 1988, of traditional Algerian Towns have found a relatively similar pattern with the integration core passing mainly around the perimeter of the towns,, with a slight penetration into the geometric centres where the market and other facilities where concentrated.

however does not mean that the presence of strangers is unimportant to Timbau and that it can be interpreted as a neighbourhood with streets populated only by people who live there[42]. This thesis suggests instead that it is the interplay of segregation and integration which produces a movement interface in which strangers are not excluded from Timbau but are under strong surveillance of its inhabitants. Thus the field of co-presence and encounter between inhabitants and strangers generated by this movement interface is locally controlled and depends on the interplay of the local and the global configuration to structure itself.

Additionally, the idea put forward in the very beginning of this chapter that the settlement is structured by streets which are typologically different from each other holds good in relation to integration. Furthermore, the analysis of the settlement in relation to its hinterlands shows a very subtle complex pattern where typologically differentiated streets are not only structuring Timbau internally, but they also seem to be linking that to the super-grid and articulating pedestrian to vehicular movement. At the same time, the main streets (i.e main internal and peripheral roads) are the part of the grid which draws people in from outside the settlement and knit the system together.

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[42] as commonly assumed in architecture to be the case of urban neighbourhoods.

The syntatic maps which have been presented so far suggest that the settlement is relatively segregated, but the analysis has not found any evidence that it constitutes a clear and well defined discrete spatially segregated neighbourhood[43]. The analysis has shown instead that the settlement has a complex structure in which integration and segregation are both key features. Furthermore, it has found that its structure is much more complex that the one which the idea of a neighbourhood encapsulates. Complexity features at the urban grid of Timbau at every level, from the definition of streets and major blocks to the definition of journey destinations or thoroughfare routes.

The picture given by integration has shown how the system is globally structured and how is that organizing movement patterns and potential fields of interaction. By contrast, control and connectivity have informed about the local relation of spaces with their neighbours. Radius three analysis as an intermediate form of measuring syntatic properties of configurations by looking at integration, or depth distribution, of spaces

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[43] A separate world of its own with a separate marginal culture.

up to three steps away[44] will complete the picture and give information about the system which are not global nor local.

The picture of Radius three analysis in Timbau reveals a very dissimilar picture from that produced by integration when looking to the system of only incident lines, that is excluding the boundary lines of the settlement (see **figure 3.70**). In this case, there is not a core, nor clearly defined sub-areas. Rather, the analysis seems to pick up a selection of three non consecutive separated lines from the integration core at strategic locations. One at the north edge of the settlement, nearby the access line to the neighbour squatter settlement, the second one at the geometric heart of the settlement on the intersection of few other integrated lines, and the third, the higher control line, in the south, which is also a main access from the edge to the interior. Radius three in the local context of Timbau (excluding its peripheral lines) seems to bring support to the picture already presented by other syntatic measures which indicated that the

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[44] J. Hanson in her PhD Thesis at the University of London (1989, p.322) in a recent study of the city of London observes that "the expectation of a Radius three analysis is that, to the extent that parts of a network are differentially connected within and between, this should be revealed by the rank order which will select those spaces which draw together local concentrations of streets and ignore the lines of cleavage between sub-areas, where linkages are consequently sparse".

idea that the construction of the interface between strangers and inhabitants in Timbau is controlled by locals, and it is restricted to specific areas and locations of the system which are more accessible and globalised. In system 2 (see **figures 3.71**) the radius three integration core is not separated, on the contrary, it forms a continuous pattern of a more or less deformed wheel, almost completely congruent with that picked out by the integration core.

Radius three integration, alike other syntatic measures, suggests that whatever Timbau is, it is working as a whole. In this sense, all its morphological characteristics, including its relative marginality and segregation have to be understood as instrumental, rather than dysfunctional, properties of the system.

The relation between parts and whole and between integration and segregation is never clear-cut and obvious. Therefore, it is necessary to take a less simplified view of unplanned settlements. A view which admits that in the first instance that complexity and ambiguity are intrinsic components of those systems. The more obvious form of dealing with the phenomena is to try first to describe and understand it before classifying it. It is this intrinsic complexity and ambiguity that needs to be understood in giving an

answer to the question which addresses the issue of a correspondence between spatial neighbourhoods and social communities.

Fig. 3.70. Radius three Integration for System 1
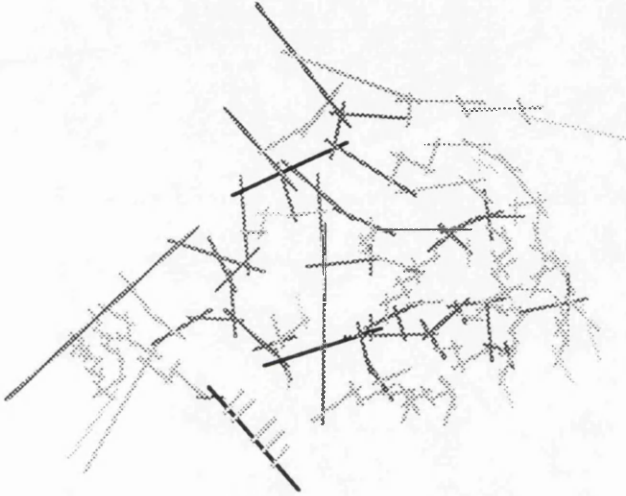
Fig. 3.71. Radius three Integration for System 2
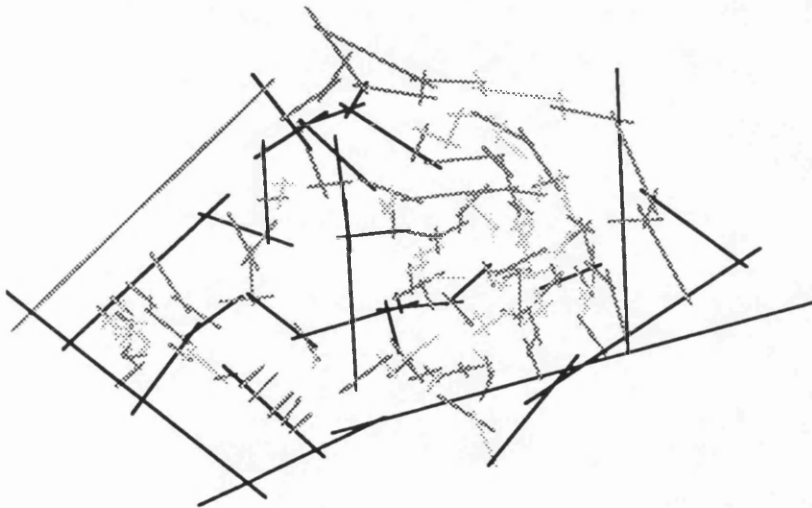
Fig. 3.72.   Radius three Integration for System 3
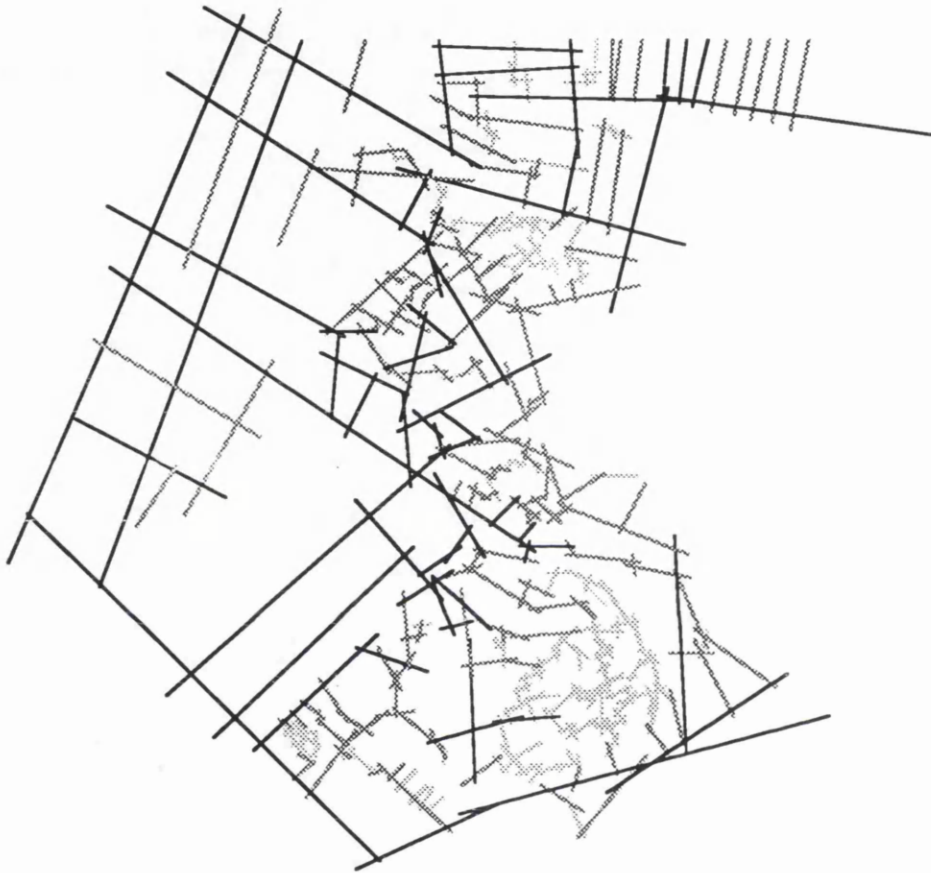
Fig. 3.73. Radius three Integration for System 4
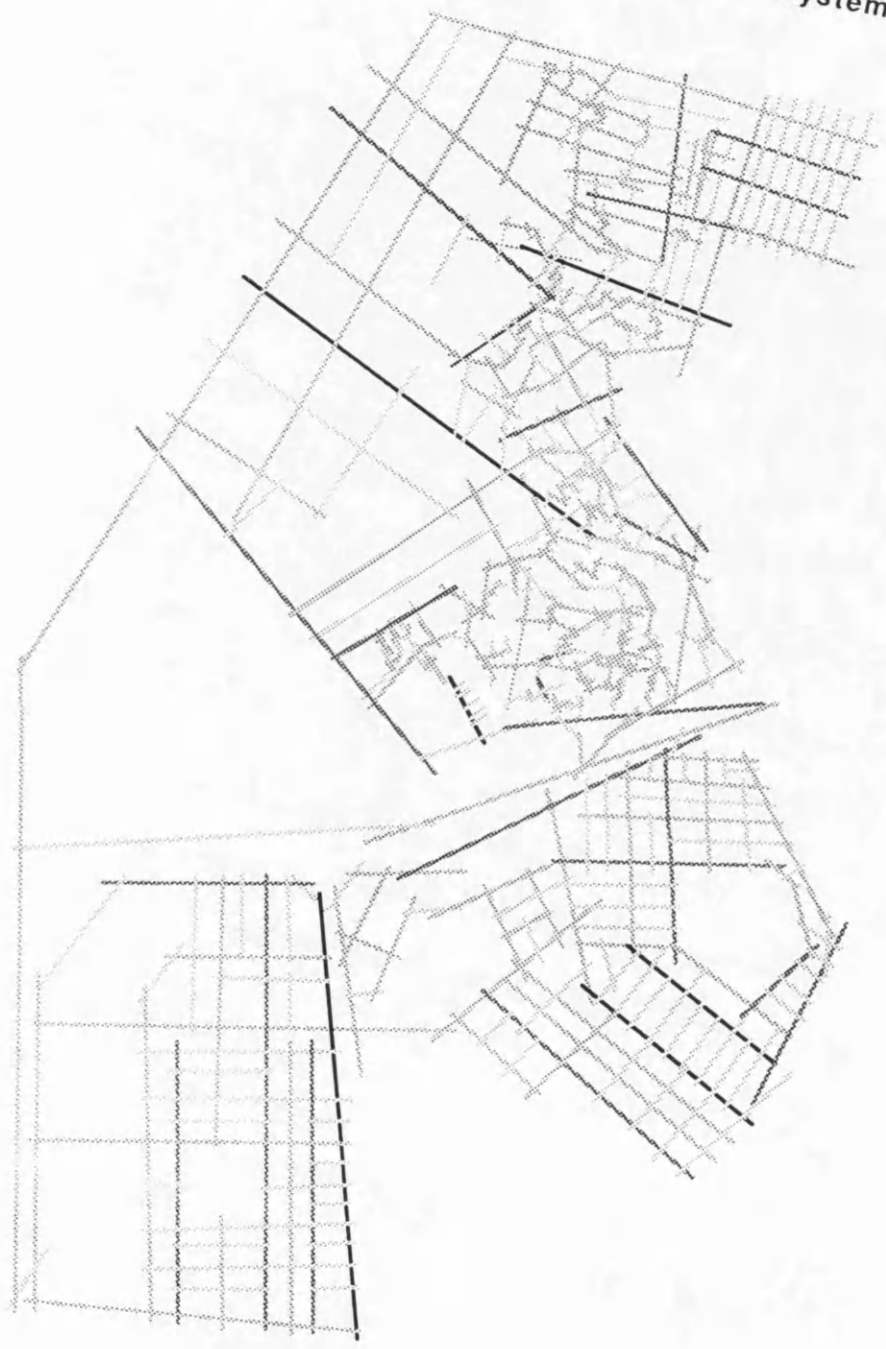
A comparison of syntatic measures

Figures 3.74 to **78** illustrate a more rigorous form of comparing syntatic variables and looking at their relations through correlations. The first set of correlations (**figures 3.74** to **77**) look at the relationship between reciprocal of integration (RRA 1) and connectivity, known as <u>intelligibility</u>, for the different systems. In this sequence of diagrams it can be noticed that the most intelligible system is Timbau without its adjoining lines, followed closely by Timbau embedded in its immediate neighbouring area without the housing estates and the settlement on its own (adjoining and incident lines) as shown in **figures 3.74** to **76.** The intelligibility of the system as the housing estates are included, nevertheless, drops substantially (a high value express more intelligibility) - see **figure 3.77**. This measure indicates how intelligible the global system is from the local and gives an idea of the extent in which a moving observer may be able to understand the global logic of the system from the local. So, in the case of Timbau, it might be said that to take into account the neighbouring housing estates, makes the system almost unintelligible (**figure 3.77**). This is keeping in mind that typical urban areas, according to

research findings[45], tend to have an intelligibility correlation of about 0.45, while unintelligible systems will have values of 0.2 and below.

In the case of Timbau the intelligibility correlation values are respectively for systems 1, 2, 3 and 4: 0.507, 0.485, 0.501 and 0.293. Thus, the settlement despite of its irregularity and fragmentation, performs well on this measure.

The second set of diagrams (see **figures 3.78** and **79**) looks at the relation between two local variables, connectivity and control value, and between two global variables, integration and radius three integration for Timbau on its own.

Taken together, the relation between depth from the outside and generalized depth (expressed by Integration) shows that the interface between visitors and locals is differentially constructed in the systems analysed (see **figures 3.80** to **81**).

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[45] For instance, Hillier, B; Hanson, J; Burdett, R; Peponis, J; and Penn, A; "**Creating life: Or does Architecture determine anything?**", Architecture et Comportament/Architecture and Behaviour, vol.3, pp.233-250. See also the several papers of the Unit for Advanced Architectural Studies which deal with intelligibility.

Fig. 3.74. Intelligibility for System 1
(Connectivity x Integration)
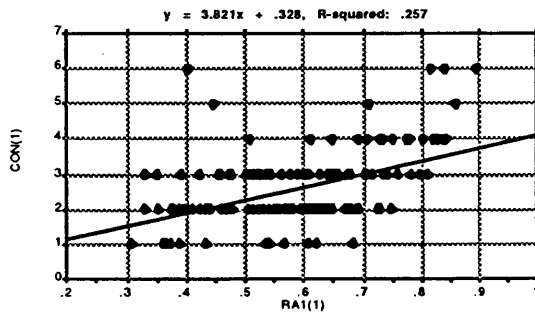
Fig. 3.75. Intelligibility for System 2
(Connectivity x Integration)
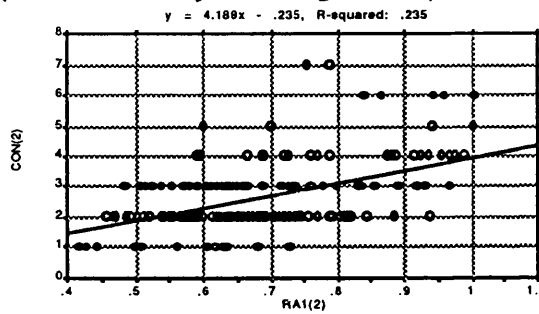
Fig. 3.76. Intelligibility for System 3
(Connectivity x Integration)
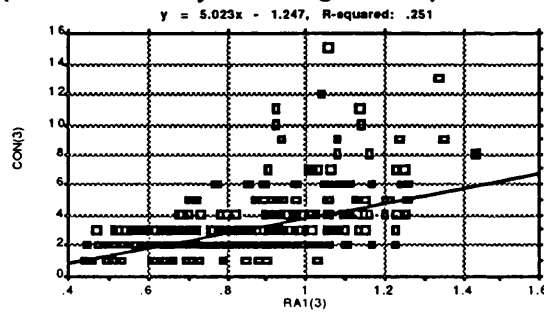
Fig. 3.77. Intelligibility for System 4
(Connectivity x Integration)
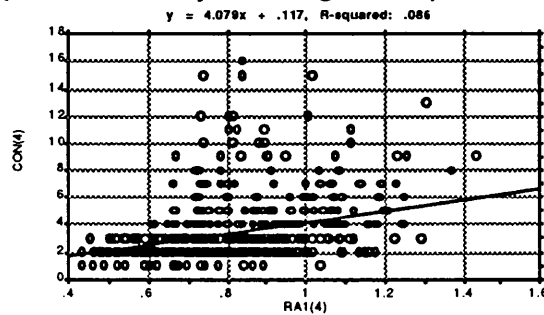
The diagrams show first that there is a strong correlation between control value and connectivity[46], and second that there is also a strong correlation between integration and radius three integration. This expresses the degree of control by the local inhabitants of the movement interface between inhabitants and strangers and how spatially this interface is restricted to a few streets within the Timbau's system.

Fig. 3.78. Correlation of Connectivity x Control Value for System 2

y = 1.549x + 1.089, R-squared: .571
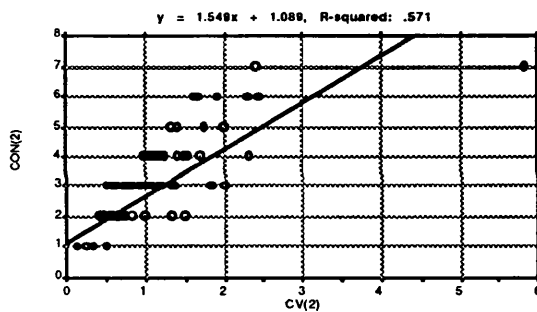
Fig. 3.79. Correlation of Radius three Integration and Integration for System 2

y = 1.965x - .118, R-squared: .503

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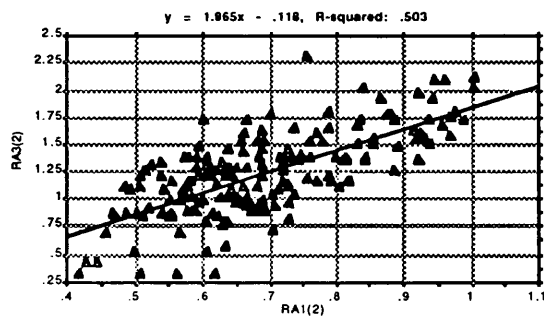
[46] The correlation coefficient of control value against connectivity is 0.571.

Taken together, the relation between depth from the outside and integration shows that the interface between visitors and locals is differentially constructed in the system analysed (see **figures 3.80 to 81**). In the systems 3 and 4 - or in Timbau embedded in its local urban context-depth from outside is strongly positively correlated with integration[47], making the deep parts of the system difficult to reach either as a visitor or as an inhabitant. In the other two systems (1 and 2) - or Timbau isolated without and with boundaries - there is not an agreement between depth and integration. This may be another evidence that Timbau is much more oriented to being a destination for within-settlement journeys than to being easily accessible to strangers.

Some conclusions about Timbau syntax

Up to this point, the main effect of space in Timbau which has been stressed is to reinforce the local character of the urban fabric yet enabling local residents to take advantage of the through movement to create global relatedness. It was also suggested that spatially there is a general tendency towards physical discreteness and autonomy which seems to encourage strangers to pass around the edge of the settlement.

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[47] The squared correlation coefficients of depth against integration for system 3 and 4 are respectively $r2 = .593$ and $.472$.

Fig. 3.80. Correlation of Depth and Integration for System 1

y = 3.301x + 3.898, R-squared: .034
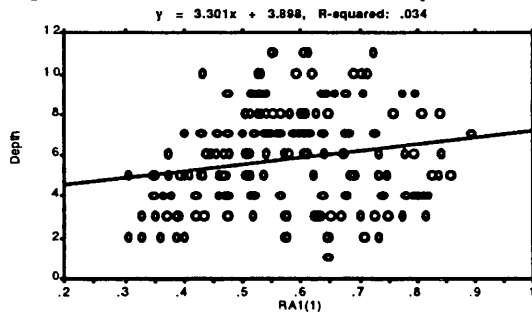
Fig. 3.81. Correlation of Depth and Integration for System 2

y = -7.384x + 10.572, R-squared: .148
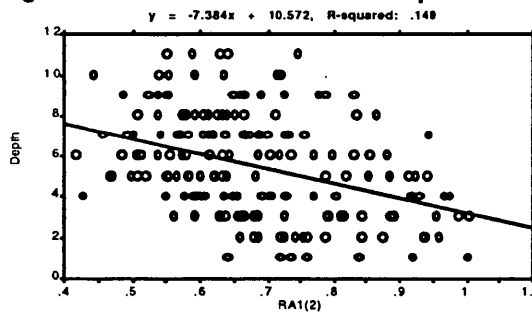
Fig. 3.82. Correlation of Depth and Integration for System 3

y = -8.783x + 13.205, R-squared: .583
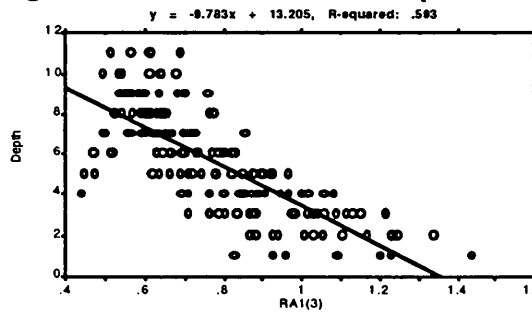
Fig. 3.83. Correlation of Depth and Integration for System 4

y = -8.894x + 12.378, R-squared: .472
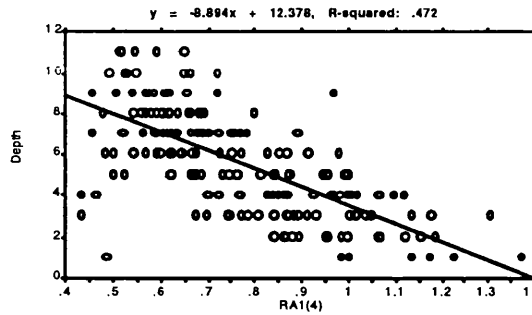
Observing movement in Timbau

The observation of space use and movement was done by selecting a continuous path as to include quiet and busy spaces (mixing integration and segregation as far as possible), small lanes and main streets, residential and commercial ones, that were observed 30 times during a week through different times of the day. The route covered a total of 85 corresponding to 45 % of the total number of axial lines of Timbau's urban system[48]. The routes are shown as the dark lines in **figure 3.84**. A moving observer recorded the numbers of different categories of people along the route, as follows:

1. Moving people : men, women and children.

2. Static people: men playing, men working, men talking, women playing, women working, women talking, children playing, children working and children talking.

These numbers which can be found in the data table enclosed in the next page were, then, expressed as densities per 100 metres and standardized for length of line observed (or phm/m) and called encounter rates or movement rates. The relativized rates where then called:

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[48] This percentage was defined such as to include a good sample of the different spaces in each settlement (e.g. more integrated and more segregated).

Relativized moving men = **RMM**

Relativized moving women = **RMW**

Relativized moving children = **RMCh**

Relativized playing = **Play**

Relativized working = **Working**

Relativized talking = **Talking**

Relativized moving adults = **Movingad**

Relativized moving = **Moving**

Relativized static = **Static**

It is important, nevertheless, to set the figures against the urban norm for residential streets of about an average of 2.7 per hundred metres/minute (phm/m). The results of the observations are shown in a series of **movement and dot maps (figures 3.85** and **86).** These maps transcribe the results of thirty rounds onto a single plan observed and show the total average number of people (phm/m) along the observed axial line.[49] Each dot in the dot map represents one person per hundred metres/minute. Maps have been produced for each category observed (i.e. moving men, women and

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[49] The figures in the maps alongside each line show the observed average number of observed people on that line for all observation periods, standardized for length of line observed to a norm of people per hundred metres for each minute.

children, playing, working and talking) with a summary map combining the three moving categories of men, women and children and the three static ones. In addition a set of average rates for the different times of the day was also produced.

Spatial Configuration and Movement in Timbau

The strategy adopted in the subsequent sections of this chapter dealing with movement, and, like the one used to analyse the morphology of the settlements, starts from a more intuitive description of the data and moves gradually towards a more detailed analysis. In this sense observation maps are first presented in order to offer a general picture of the spatial distribution of movement through the settlement. By comparing the patterns presented by each major group, that is between adults and children; and moving and static people, these maps also provide an initial grasp of the patterns of potential co-presence among people in the settlement. This is followed by a numerical and statistical analysis of the overall encounter rates which through the examination of the different mean rates for each social group and their location in space (i.e. internal streets, local streets and pedestrian streets, shopping streets and residential streets) aims at giving a more precise picture of the patterns observed earlier only through

visual inspection of the observation maps. The last part of the analysis is then the detailed statistical investigation of both the *probabilistic interface* [50] patterns between the different categories observed and of the effects of configuration properties, identified by the measure of integration, on the distribution of movement. The statistical means used to identify and quantify those patterns of relations are the examination of scattegrams and correlation coefficients.

Fig. 3.84. Observation route map of Timbau
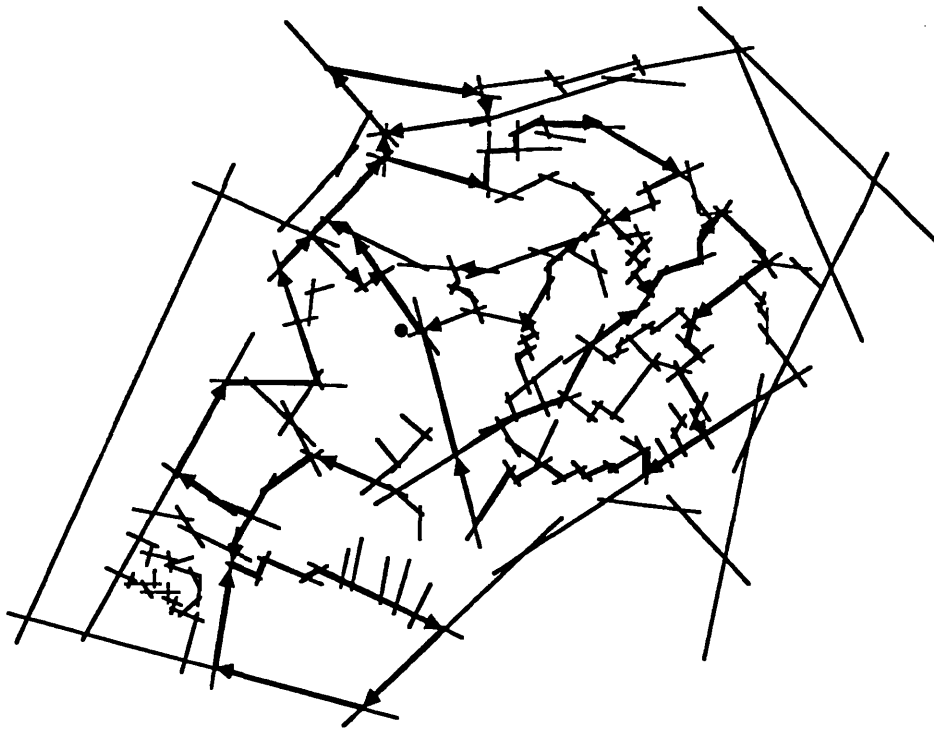
[50] The term is due to Hillier, et al; **Natural Movements**, Unit for Architectural Studies, 1990, p. 40, and is defined as *"the statistical probability of numbers of people of different categories being in the same space at the same time"*.

Movement Data table of Timbau

Moving Woman
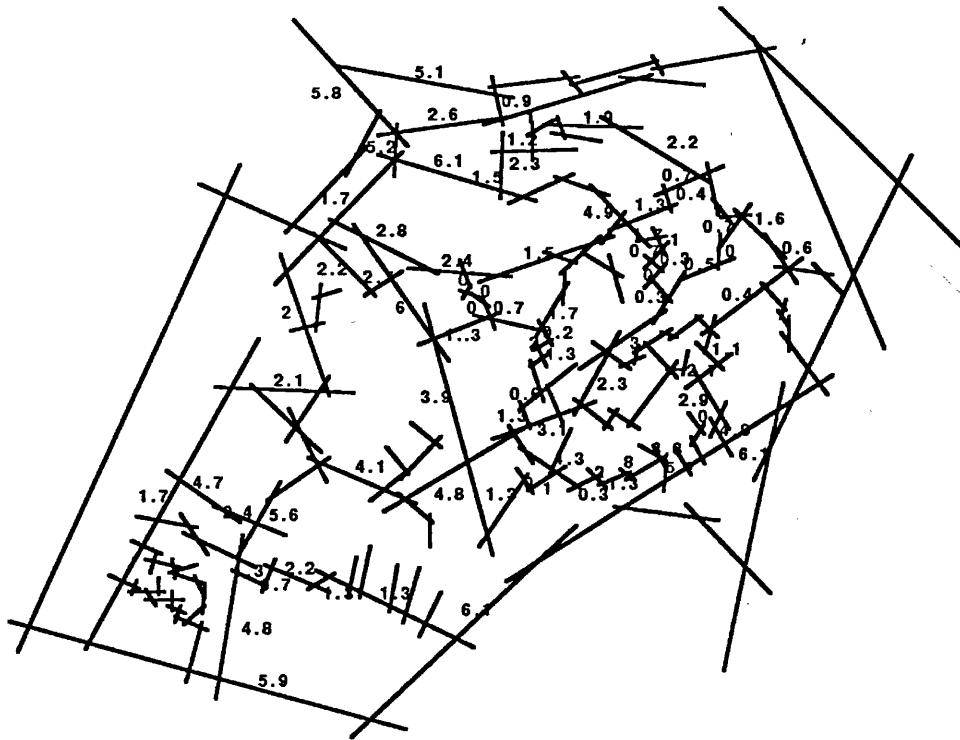
Moving Children

Talk
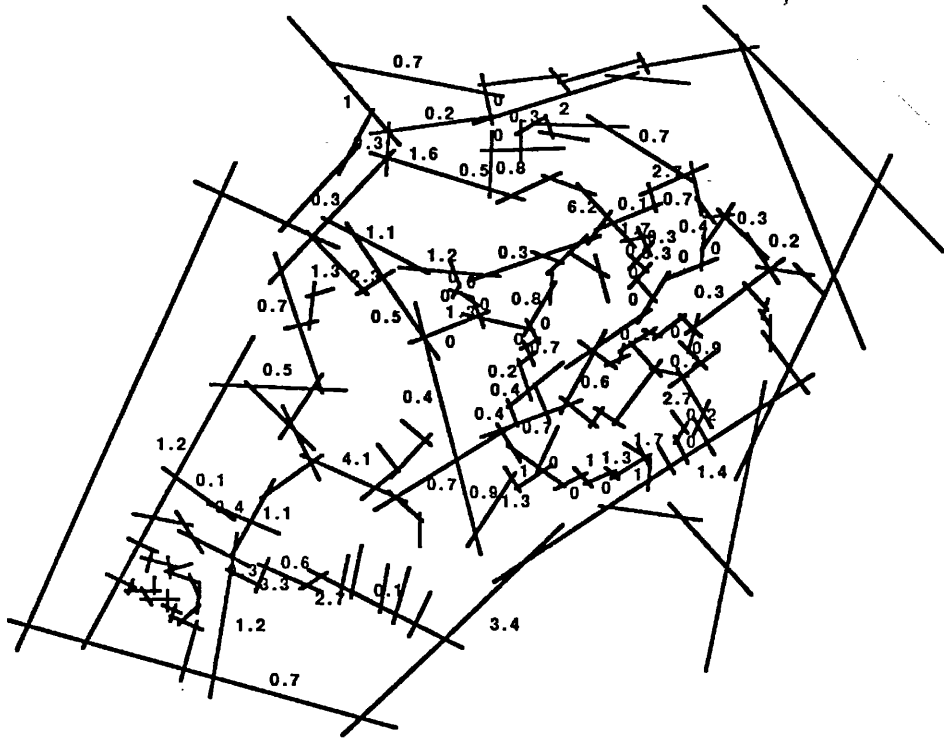
Moving Adults
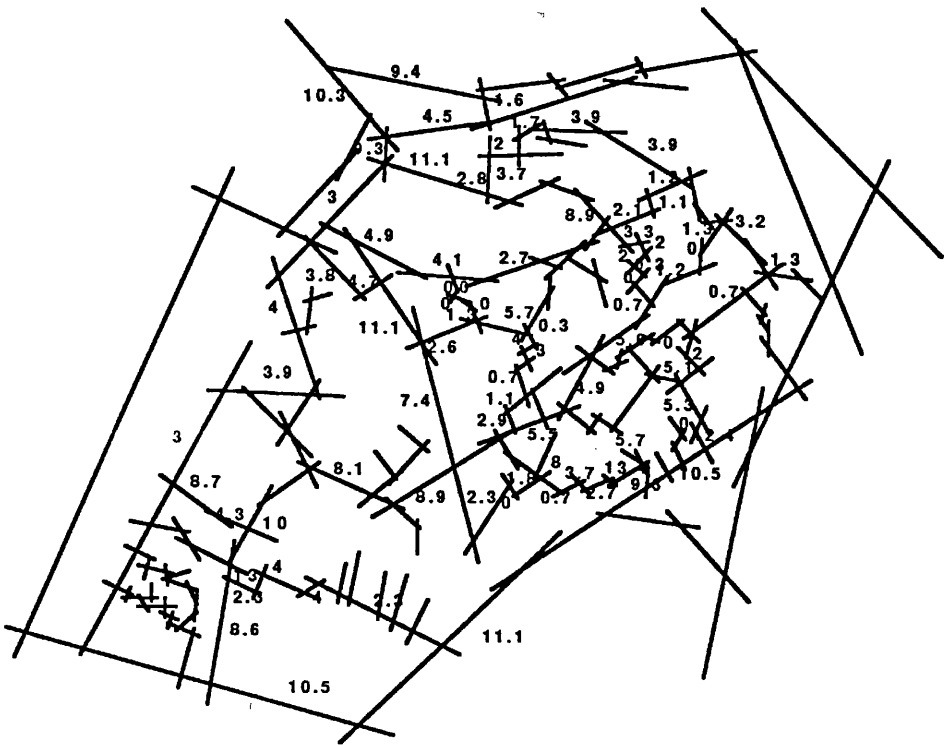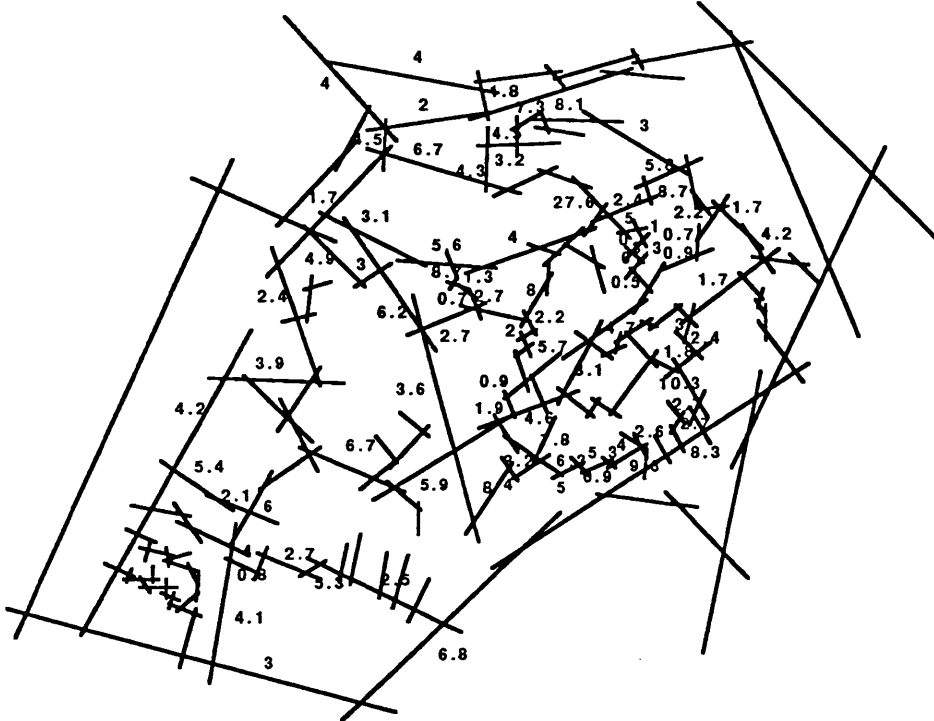
Static people

Fig. 3.86. Dot maps of Timbau

Moving people
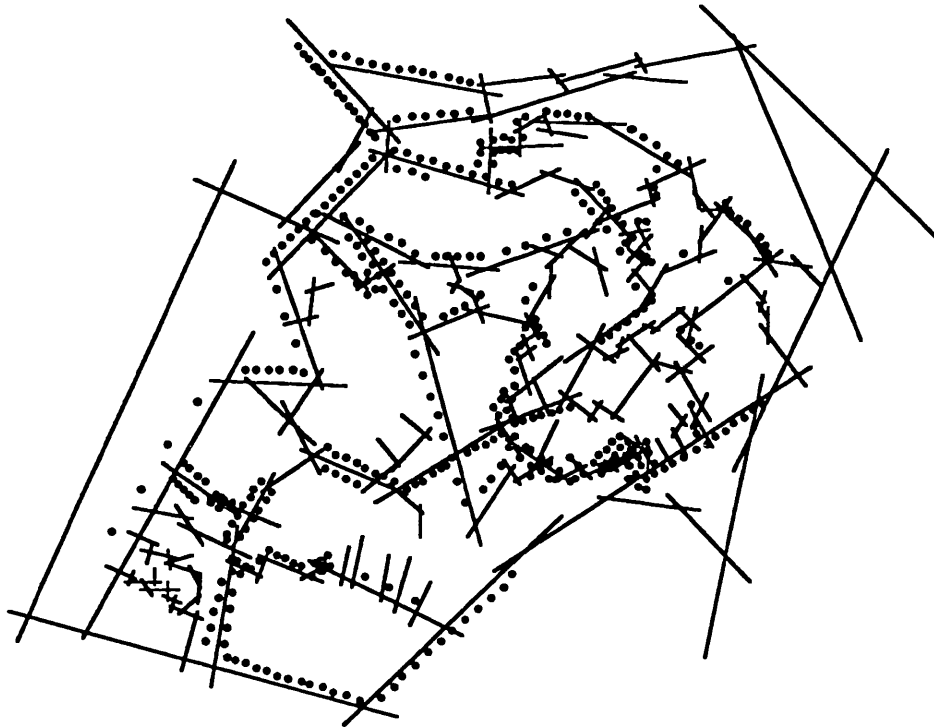
Static people
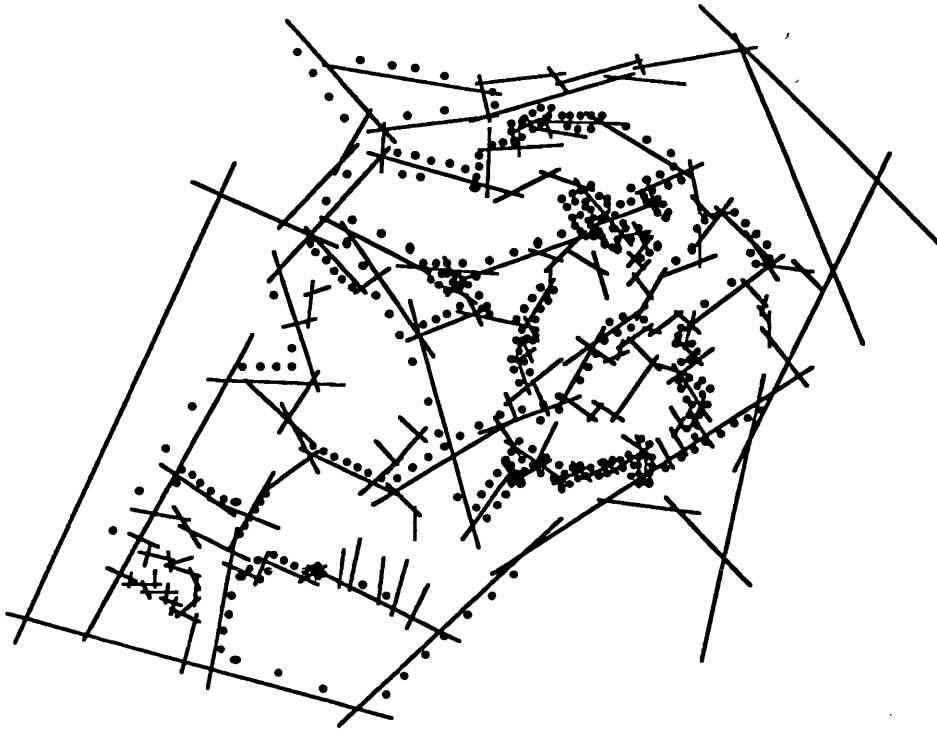
Moving Adults
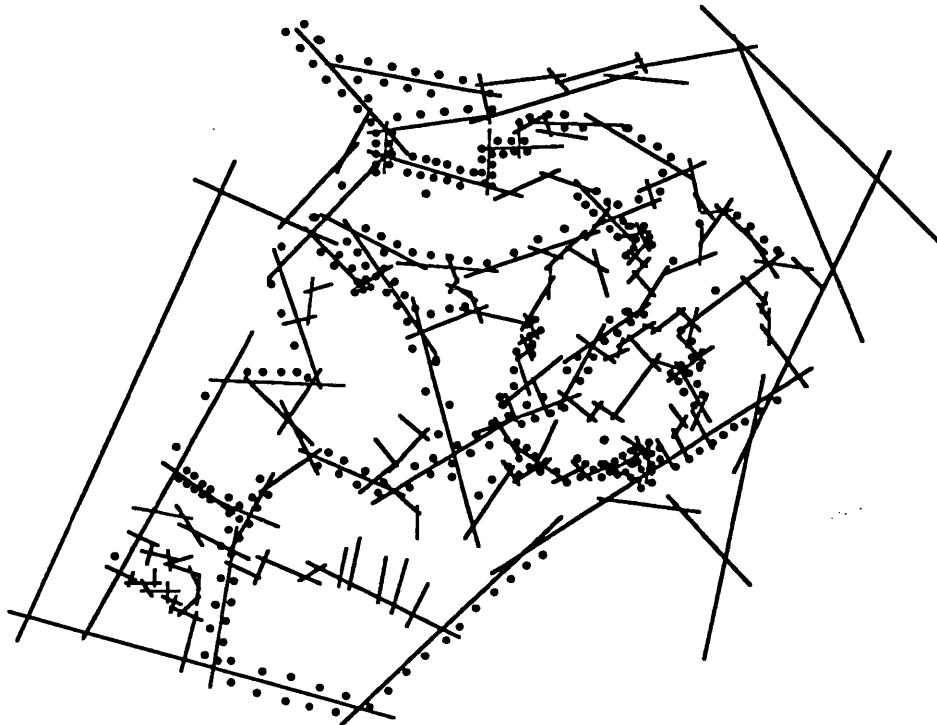
Moving Children

The observation maps of **figures 3.84** and **85** highlight some aspects related to the patterns of movement and interaction in Timbau. First, all maps show a concentration of moving and static people for all categories at the south entrance of the settlement, where there is a concentration of few and short axial access lines which over-perform in all observed categories. Those spaces that stood out from the rest of the spaces because of their unusually high rates which are coupled to very short lengths are treated in this

study as <u>abnormal</u>[51]. Second, the pattern of moving people seems to be more or less uniformly distributed through all the lines, in direct relation to the morphological importance of each space. The pattern of movement through the settlement appears to be dispersed, with people diverting from the main routes of access to the settlement once they are inside it, thus spreading in many directions through the settlement. As a consequence of that, it is difficult by looking at the moving people map to identify a major single route which channels movement through the settlement.

By contrast, static behaviour is unevenly distributed. A concentration of people around certain areas of the settlement is found, specially in the pedestrian streets and in the more localized and secluded territories at the heart of Timbau. This might be an indication that static behaviour is locally based (socially and spatially) and as

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[51] Lines which are too short might not be observed time enough to give a reliable picture of their movement densities. In addition to that, the short length of lines might also increase artificially the relativized rate of moving people (phm/m) and in extreme cases this figure might be even higher than the observed row data. To avoid this problem, syntatic studies tend to eliminate lines which are too short. In the present study the importance of short lines for Timbau (i.e. 50% of the observed lines are under 20 m. of length) prevent it from doing that. The strategy adopted here was to exclude from the correlations and scattegrams all lines which have less than five metres of length and which presented raw rates lower than 2 times their relativazed rates. This is represented by lines 39, 41, 61, 75, 122, 123 and 135 in the axial numbered map presented in the Appendix. For a more detailed discussion of the procedure see the Appendix.

such has more to do with the construction of the inhabitants to/with inhabitants interface than of inhabitants to/with strangers. The location of one of the settlement's squares in the space of highest concentration of static people shows that space and its configuration has a major role in terms of inhabitants interaction, that is in terms of those relationships created locally. A comparison between the dot maps of moving and static people shows, nevertheless, that the interaction pattern does not fully coincide with that of movement. This means that although people are likely to stop and interact where there are also people moving through space, it does not depend on movement to happen. People seem to select certain spaces as major places of interaction regardless of their importance as movement channels. Static behaviour is not exactly the opposite of the moving pattern, but it does show how systematically concentrations of static people occur in spaces that are poorly used by moving people.

Finally, looking at the pattern of moving children, men and women, it seems that despite the low density of children in comparison to the other two categories, they tend to use more or less the same spaces as the adults. Unlike many housing estates in England, which were studied through syntax, in Timbau spaces are well populated and dominated by adults with no disjunction

between the adult movement and the places more frequented by children. This reveals the presence in Timbau of the important urban principle of natural surveillance of children by adults.

The only places which have behaved abnormally are the spaces identified earlier as abnormal where the concentration of children in proportion to adults is much higher than in the one found in ordinary spaces (compare moving adults and moving children dot maps). In addition to that, the very high proportion of adult movement in Timbau, suggests that despite its relative global syntatic segregation, the settlement is able to take advantage from patterns of natural movement in the area thus avoiding to become too isolated.

Distribution of movement density and social interfaces

Since the view taken in this study is that movement potentially creates a field of formal and informal encounters and avoidances within and between sexes[52], it is expected that the detailed numeric and statistical analysis of movement patterns will give information about the types of interfaces, and the solidarity

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[52] This hypothesis was first proposed by Hillier and Hanson (1984) and it was supported by many subsequent syntatic studies (p.5, Hillier et all, Jan. 1990).

patterns between different social groups (i.e. inhabitants and strangers, men and women, adults and children, and so on) taking place in Timbau. This argument may be developed by examining first the movement density patterns found in Timbau[53]. Looking at the mean movement rates respectively for men (2.122 phm/m), women (1.885 phm/m) and children (2.049 phm/m), as shown in **figure 3.87**, and contrasting them to the mean movement rate of 2.7 phm/m for all categories for urban residential streets of western towns,[54] it could be said that the total moving rate in the settlement is well above the average. In addition, it is remarkable that there are almost four times fewer children moving in the settlement than adults. This gives a picture of the settlement where there are a lot of people moving around, where the streets and open spaces are important spaces for social interaction which have a virtual presence of informal surveillance by adults of children.

The high average rates of static people around the settlement are the factual underpinning of the strong

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[53] The abnormal streets were not excluded from that because it was seen that their inclusion did not substantially affect the movement rates. This is in opposition to the current idea that patterns of movement are generated by flows to and from attractors.

[54] Hillier et all., **Natural Movements**, Unit for Architectural Studies, 1990, p.13.

impression found in visiting Timbau, that streets and public spaces have the important role of creating a potential field of interaction among people.

Fig. 3.87. Mean activity rates for Timbau

RMM (relativized moving men)	2.122
RMW (relativized moving women)	1.885
RMCh(relativized moving children)	2.049
Play (relativized playing)	1.939
Work(relativized working)	1.119
Talk (relativized working)	3.361
Movingad (relativized moving adult)	4.004
Moving (relativized moving people)	6.052
Static (relativized static people)	6.419

All figures in people per hundred metres/minute.

The data above give an idea of the density of movement and static behaviour through the settlement. The patterns of movement and interaction can be explained further by analysing the distribution of movement throughout the day. The table below (figure 3.88) tabulates the movement rates for each of the 5 time periods of the day for the route observed:

Fig. 3.88. The distribution of activity throughout the day

	8:30	11:00	14:00	16:00	17:30	Total
RMM	2.091	2.177	1.67	2.109	2.565	10.612
RMW	1.724	1.622	1.661	1.411	3.009	9.427
RMCh	1.314	2.319	1.462	1.671	3.476	10.242
Play	.622	1.828	1.528	3.716	2.001	9.695
Work	1.045	.533	2.296	.877	.842	5.593
Talk	3.989	4.782	1.093	3.471	3.471	16.806
Movad	3.815	3.799	3.31	3.520	5.574	20.018
Moving	5.129	6.118	4.772	5.191	9.050	30.26
Static	5.656	7.143	4.917	8.064	6.314	32.094

All figures in people per hundred metres/minute

The table above shows that movement is more or less evenly distributed through the for the four periods of the day with exception of the last one (17:30) where the rate increases 100% in all the three categories observed and just after lunch where the number of moving men drops approximately 20% compared with the mean moving men rate.

The increase in moving women in the last observed period suggests that women favour the end of the afternoon to interact. This coincides with women's behaviour as described by settlers in their interviews: women meet each other and talk outside at this time of the day and occasionally watch children playing[55]. Static behaviour, which include the activities of play, work and talk, nevertheless, is very high but similar for the morning and afternoon periods, with an average for each of the periods of approximately 6 phm/m.

Using a more crude interpretation of depth from the outside, it could be said that if depth correlates to

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[55] Playing rates increase substantially after 16:00 and they are very low early in the day.

movement[56] so the more accessible lines (or the shallowest ones) in the system are the ones that also have more presence and movement of people. The pattern of axial depth and length, the presence of shops and their influence in the density distribution of movement in Timbau, can be better explained with the help of the table below (**figure 3.89**) which shows the variation of movement rates, shops density and axial length with axial steps (or depth from the outside).

Fig.3.89. Variation of activity rates with depth, density of shops and axial length of the line.

Depth	1+2	3+4	5+6	7+8	9+10	11	Mean
RMM	5.79	2.05	2.53	2.70	1.51	1.12	2.12
RMW	4.32	1.60	2.18	2.38	1.57	1.10	1.88
RMCh	2.08	2.62	1.54	1.96	2.84	1.25	2.05
Play	1.92	1.35	1.30	1.16	3.10	1.92	1.94
Work	1.60	.82	.89	1.10	.94	1.61	1.12
Talk	3.42	3.37	3.56	3.59	3.27	3.05	3.36
Movad	10.12	3.63	4.70	5.09	3.08	2.23	4.01
Moving	12.20	6.25	6.25	7.04	5.92	3.55	6.06
Static	4.39	4.17	5.09	4.27	5.30	2.18	6.42
D.shops	1	.94	1.10	1.1	.86	0	.88
Ax.length	54.44	44.87	23.4	23.44	25.57	14.57	27.47

(actual axial length)

Movement figures in people per hundred metres/minute.

The table reveals that there is a relation between depth and movement rates, with rates dropping in general

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[56] Many syntatic studies have already shown to exist this relationship, which is best expressed by the correlation of the mathematical measure called integration (which gives the relativized depth of each line in the system) and the distribution of movement through the system.

gradually from the edge to deep inside the settlement while static behaviour is more evenly distributed but reaching its maximum value at depth 7+8. Shops are everywhere, but the higher density of shops is also at depth 3+4 and 5+6. This may be indicating that both shops and static behaviour, along with the number of people playing, are an important of the local culture and related to inhabitants rather than to strangers. It can thus be said that the shops in Timbau place themselves strategically to keep themselves relatively deep in the settlement as to take the maximum advantage of local movement and static behaviour. This may suggests that shops in Timbau seem to be local rather than global oriented[57]and best served by to-movement than through-movement. The average length of lines in Timbau is 27.473 m. Shop streets, nevertheless[58], are well above that with 46.538 m, whereas non shop streets have an average length of 21.569 m.

The comparison below (see **figure 3.90**) between the mean moving rates of Timbau and of its shop and non shop streets highlights some additional points.

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[57] Using Hillier and Hanson's (1984) terms, shops seem to be in Timbau spatially rather than transpatially placed.

[58] This refers to the streets with shops' density above the average. The average density of shops in Timbau is 2.201 per hundred metres.

Fig. 3.90. Activity rates for shop and non shop streets.

	Mean	Shop streets	Non shop
RMM	2.122	3.098	1.611
RMW	1.885	3.578	1.757
RMCh	2.049	1.798	1.179
Play	1.939	1.814	1.316
Work	1.119	2.566	1.72
Talk	3.361	1.318	0.616
Movingad	4.004	6.725	3.368
Moving	6.052	8.565	4.548
Static	6.419	5.698	3.712

All figures in people per hundred metres/minute.

All rates are significantly higher for shop streets. Moving men, moving women and moving children rates are almost 50% higher for shop streets than mean rates and at least 80% higher than for non shop streets. Play and talk are also more concentrated in shop streets, dropping from non shop streets, while work increases substantially for shop streets. Looking at total numbers, it seems evident that increases in rates are more clearly happening in shop streets, whereas non shop streets perform similar to the average street. A closer examination of the picture presented above highlights an important feature of shops, that is they locate themselves in space as to take advantage of both strangers and inhabitants movement, as well as, static and moving people.

The data presented above suggests, as other syntatic studies[59] have, that attractors such as shops may work as multipliers on the pattern of movement primarily influenced by the configuration of the grid, yet they can not be considered as generators of movement. In the case of Timbau it seems clear that the location of shops is strategic regarding movement, such as to take advantage of both, local and global encounter patterns. This leads one to believe that the configurational properties of the grid and the patterns of movement structured by it have a pervasive role in the location of shops rather than the other way around. In other words, since shops are not necessarily located in the areas of more movement, it is unwise to assume that movement could be explained by their presence.

To explore further the relationship between depth and the distribution of movement in the settlement **figure 3.91** illustrates the variation of movement rates in Timbau according to integration values. The movement rates are expressed in terms of the average rates for the lines above and below mean integration and the lines corresponding to the integration core (or 15% higher integration values).

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[59] For instance, **Natural Movements**, a UAS paper presented at the European Conference on Management at Cambridge in 1990.

Fig. 3.91. Mean activity rates in relation to Integration.

15%higher values		Above mean	Below mean
RMM	3.059	2.853	1.10
RMW	3.47	1.258	3.229
RMCh	1.74	1.8	0.87
Play	1.656	1.747	1.21
Work	1.181	2.178	1.551
Talk	1.386	0.976	0.646
Movad	6.352	4.111	4.329
Moving	8.092	5.911	5.199
Static	4.223	4.9	3.407

All figures in people per hundred metres/minute.

The table above shows that movement rates increase with integration for most of the variables. This is not to say that movement does not take different characteristics within different categories of person or activity undertaken in space. The detailed descriptions of the probabilistic interfaces between different categories of person and the space pattern linked to that will be explored later in this section through the analysis of correlation coefficients and scattegrams which show the strength of the relationship between spatial configurational properties of lines and the movement of people they carry.

Figure 3.91 also shows that encounter patterns are very alike for women and men. Women's movement densities are marginally lower than men's, and its distribution according to integration differs slightly.

The study of the distribution of movement rates by the different bands of integration value may throw light on this. The integration maps, as explained previously, were produced by selecting five bands of integration value- 15% higher values, 15% to 40%, 40% to 65% , 65% to 90% and the 10% lower values. The table bellow shows the distribution of mean movement rates for each of these bands.

Fig. 3.92. Activity density in bands of Integration Value.

	15%	15-40%	40-65%	65-90%	>90%
RMM	3.50	2.76	2.27	0.88	2.93
RMW	2.90	2.38	2.13	0.81	2.21
RMCh	2.71	2.01	2.88	0.90	1.0
Play	1.90	2.08	2.41	1.41	1.36
Work	1.28	1.06	1.42	0.82	0.07
Talk	4.10	3.83	3.23	2.63	0.67
Movad	6.40	5.12	4.40	1.70	5.14
Moving	9.11	7.13	7.28	2.60	6.14
Static	7.28	6.98	7.06	4.86	8.14

All figures in people per hundred metre/minute

Looking in detail to this table (**figure 3.92**) it certainly seems that there are important differences on the patterns of movement. Moving men and moving women are more or less evenly distributed and remains without major changes in all bounds with exception to the 15% more integrated and the 40-65% higher integration value lines. In the 15% more integrated lines these rates increase around 25%, while in the 40-65% higher integration values they drops more than 100%.

As a whole the table suggests that both women and men favour to walk in the more globally oriented streets of the settlement, or the more integrated lines. Thus, women and men seem to use space both to organize the local interface with strangers and locals and project wider global networks across space guaranteeing that their encounter field does not become too localized. In addition to that, women also use as a strategy to guarantee that their encounter field does not become too sparse, to have an intensive field of interaction with neighbours at their neighbours place or inside their own homes. Data from the field work offered evidence, for instance, as it will be recalled later, that streets have a bad connotation - " *the place of gossip*", and women normally either stay at home or choose the main streets to walk and interact.

Scatters to investigate movement

This last part of the movement analysis looks first at the effects on configuration properties of the grid on movement and second at the *probabilistic interface*[60] patterns.

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[60] The term is due to Hillier, B. et al, **Natural Movement**, Unit for Architectural Studies, 1990.

The use of scatters and correlation coefficients between the different categories of people and activities are first used to examine the strength of the relation between configuration and movement and second to illustrate with more precision the field of co-presence and avoidance between the different social groups in Timbau which have already been described in this chapter. Correlations and scatters, as told before, are powerful statistical analytical tools to show and explain the relationship between the grid configurational properties and the patterns of natural movement in urban spaces. Syntatic studies have invariably shown that the best measure which picks up this relationship is the configurational axial quantity of 'integration'.

Four different levels of presentation were used for calculating the spatial values (including integration) starting from the settlement excluding its edge or adjoining streets (suffixed 1), to the settlement set into a reasonably large urban context (suffixed 4). This same four different levels of presentation will be used to discuss the relationship between the integration value of a street segment and the observed density movement and use rate for that same segment. The scatters show on the vertical scale the integration

value of the observed segment and its movement density in people per 100m is shown horizontally (**figures 3.93** to **98**). The analysis has, however, excluded the lines which were too short to give a reliable picture of their movement pattern (see appendix).

The best representation for all observed categories is given by the system suffixed 3 (i.e. Timbau plus its surrounding but excluding the neighbouring housing estates). The best correlation, however, is between integration (or reciprocal RRA) and moving people, which gives a correlation coefficient of r= .651 (p=.0001), followed closely by moving women and moving children with a correlation coefficient respectively of r= .645 (p=.0001) and .594 (p=.0001).

Figure 3.99 which complements **figures 3.93** to **98** is a correlation matrix between movement rates and the reciprocal of the integration value of every spatial system, reading integration values from the smallest system to the largest one.

Fig. 3.93. Correlations of Integration x Moving Men

System 1 - p=.0254

y = .022x + .581, R-squared: .068

System 2 - p=.0001

y = .049x + .628, R-squared: .288

System 3 - p=.0001

y = .081x + .649, R-squared: .32

System 4 - p=.0001

y = .067x + .638, R-squared: .269
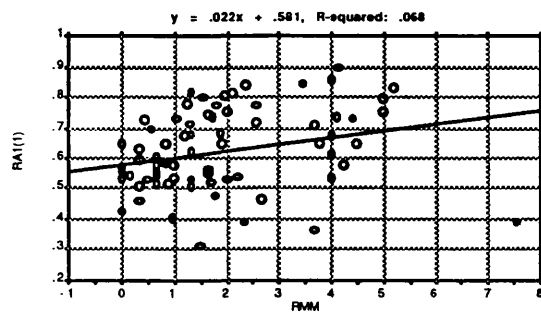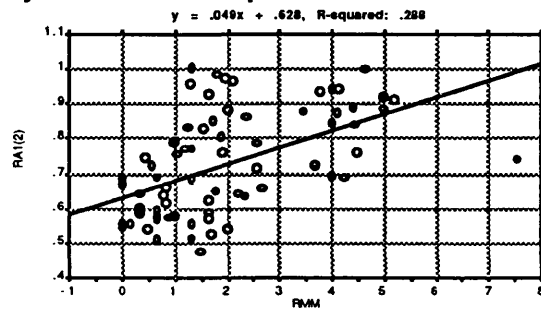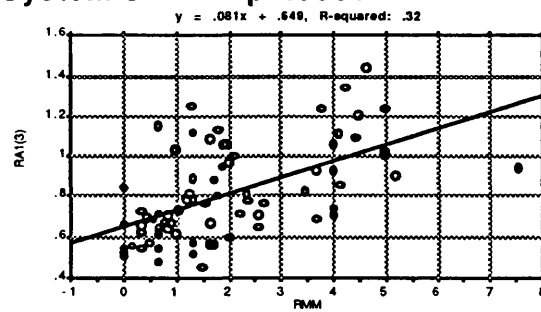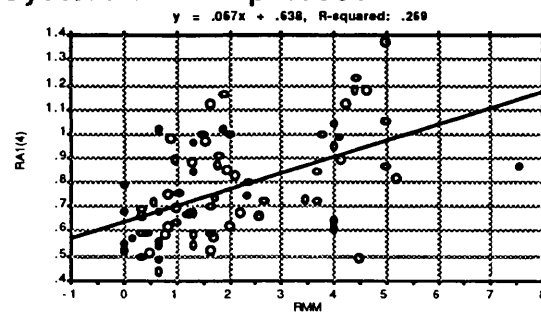
Fig. 3.94. Correlations of Integration x Moving Women

System 1 - p=0.108

y = .023x + .572, R-squared: .088

System 2 - p=.0001

y = .046x + .619, R-squared: .33

System 3 - p=.0001

y = .082x + .623, R-squared: .416

System 4 - p=.0001

y = .053x + .646, R-squared: .255
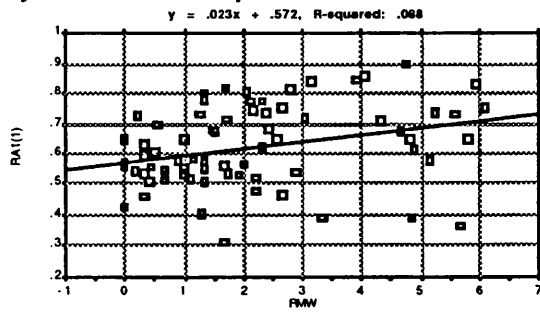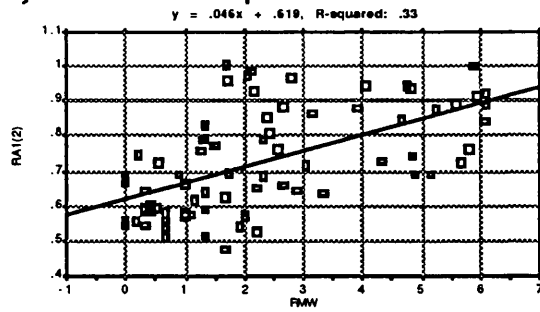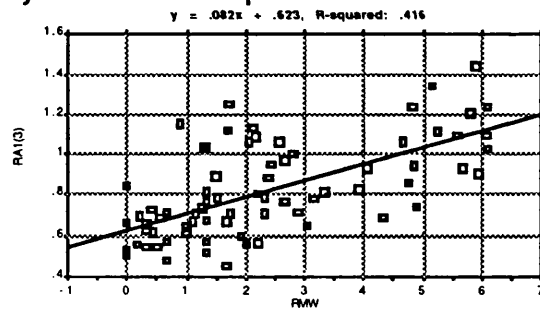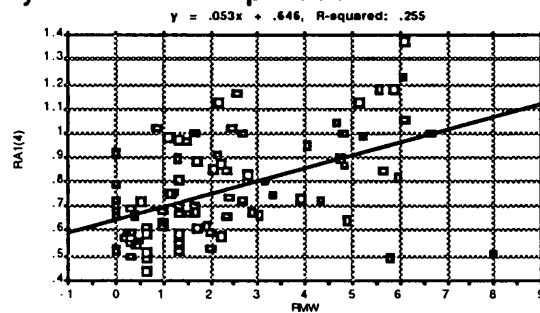
Fig. 3.95. Correlations of Integration x Moving Children

System 1 - p=.0326

y = .032x + .577, R-squared: .063

System 2 - p=.0001

y = .067x + .629, R-squared: .228

System 3 - p=.0001

y = .132x + .622, R-squared: .353

System 4 - p=.0001

y = .095x + .637, R-squared: .224
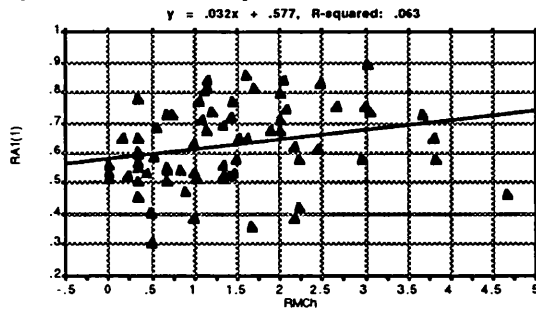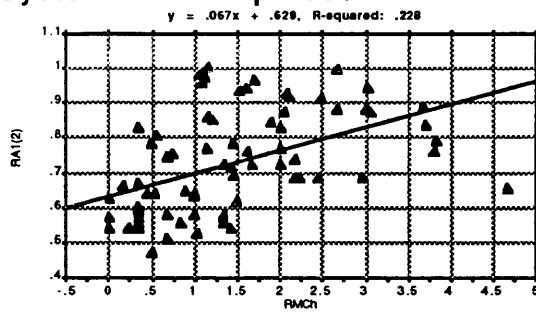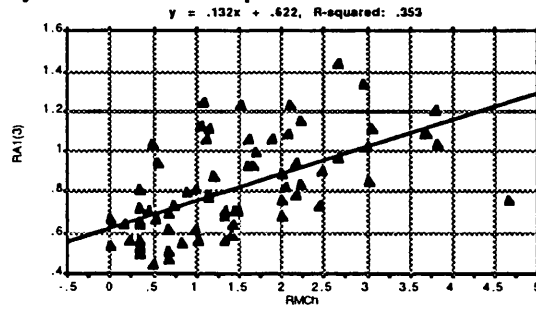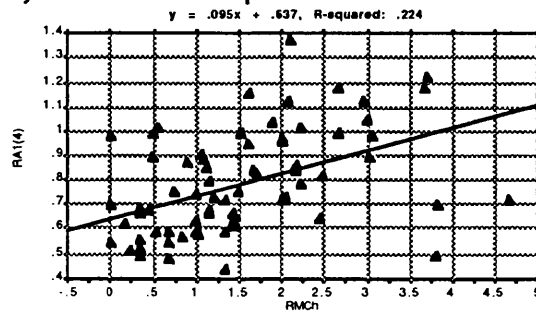
Fig. 3.96. Correlations of Integration x Play

System 1   -   p= .1214

y = .02x + .591, R-squared: .033

System 2   -   p= .0636

y = .033x + .674, R-squared: .072

System 3   -   p= .0412

y = .05x + .736, R-squared: .065

System 4   -   p= .2448

y = .031x + .727, R-squared: .03
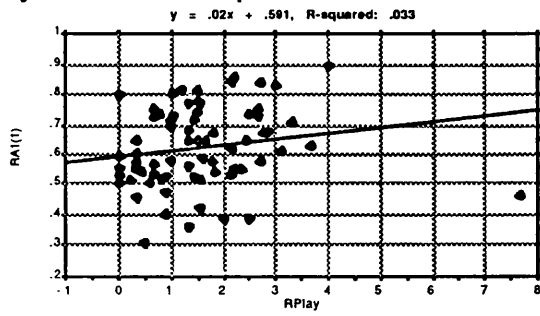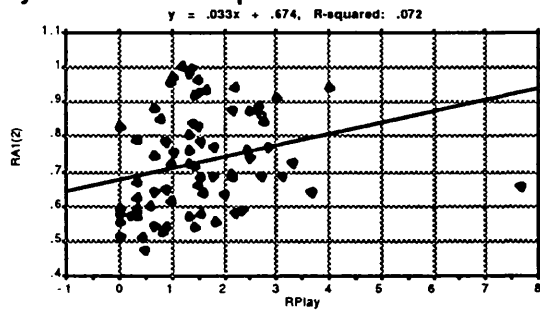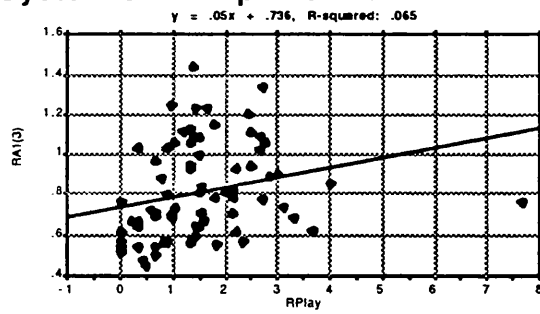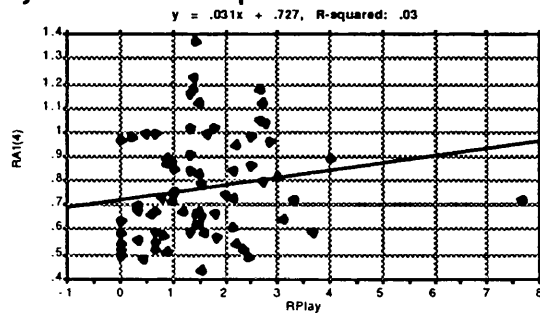
Fig. 3.97. Correlations of Integration x Work

System 1   -   p= .5058

y = .003x + .615, R-squared: .004

System 2   -   p= .9264

y = -.002x + .729, R-squared: .002

System 3   -   p= .4598

y = -.011x + .832, R-squared: .014

System 4   -   p= .9802

y = -.003x + .779, R-squared: .001
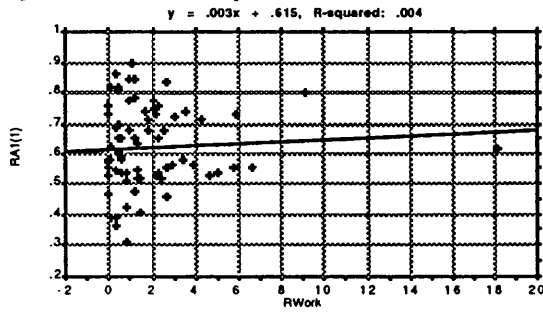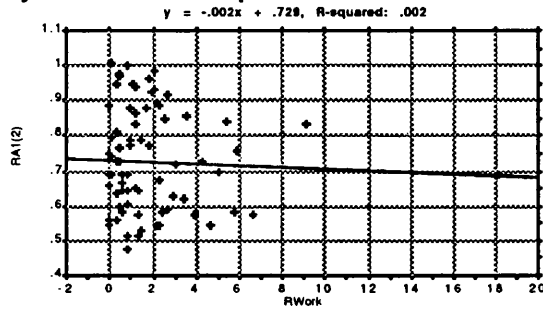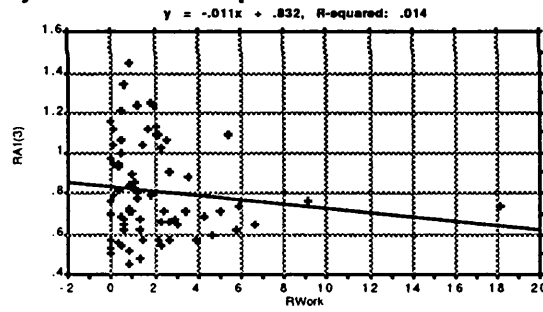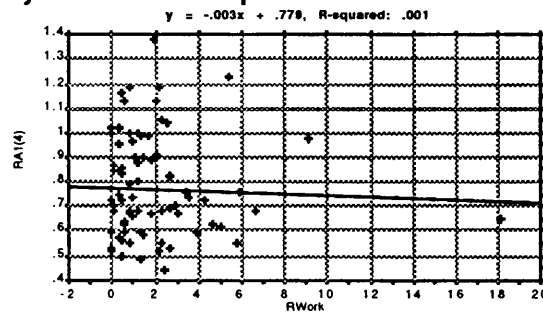
Fig. 3.98. Correlations of Integration x Talk

System 1 - p= .1094

y = .014x + .61, R-squared: .012

System 2 - p= .136

y = .027x + .703, R-squared: .035

System 3 - p= .1087

y = .038x + .781, R-squared: .027

System 4 - p= .0567

y = .04x + .741, R-squared: .038
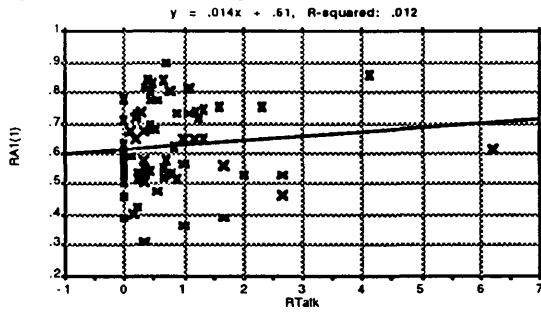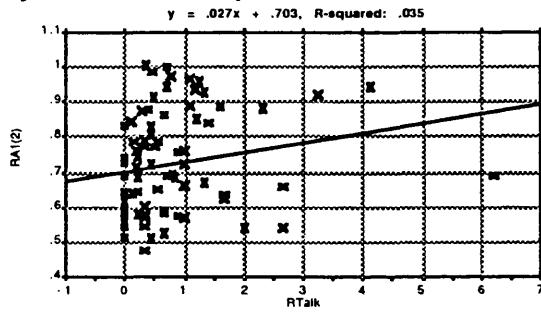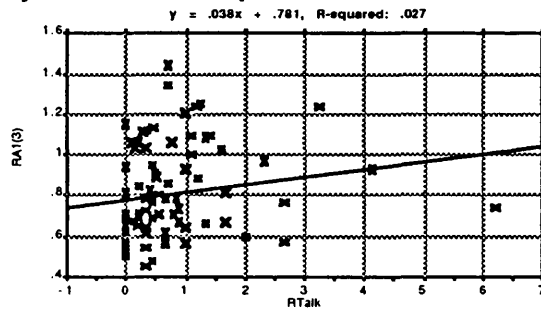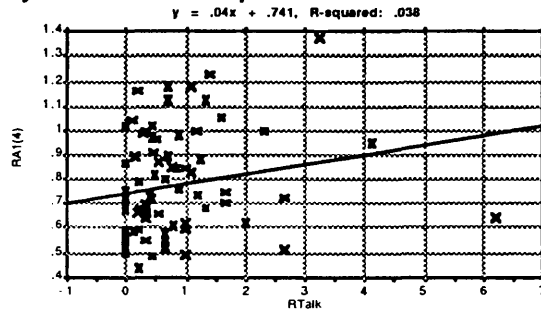
Observing the squared correlation coefficient of **fig. 3.93** to **3.98**, a point is particularly relevant: first, that correlations do improve as the system is embedded in a larger area, similarly to what normally happened in other western urban areas observed by syntax[61],with the best correlation values read from the system 3 or the settlement within a larger context excluding the housing estates.

Finally, the pattern found in Timbau differs to the one normally found in space syntax studies of urban movement with movement usually post-dicted best by integration against logged movement rates[62]. Shops, however, unlike many other areas studied by syntax, do not shift the linear relation between integration into a logarithmic relation. This may be due to the fact that shops in Timbau might relate to the grid more locally than other areas studied by Syntax appear to do.

In view of these data, it can be concluded that alike previous syntatic studies the distribution of movement patterns in Timbau is globally, not locally determined. This distribution, nevertheless, is better explained with reference to the settlement embedded in a larger system but not including the neighbouring housing

[61] Hillier and Hanson, 1984; Pepponis et al., **The spatial core of urban culture**, Ekistics Jan./April 1989, p. 52; Hillier et al., **Natural Movement**, Unit for Architectural Studies, 1990, p. 11.

[62] Hillier et al., **Natural Movement**, Unit for Architectural Studies, 1990, pp.15.

estates. The importance of integration in structuring movement is also found in relation to gender groups with moving men being also strongly correlated with integration[63], as well as women and children for most of the systems[64].

In fact, it is easy to see that if integration is a main spatial factor in explaining the distribution of movement, there also should be a strong agreement between depth and movement. In Timbau, correlation values for movement rates against integration show that this is the case, with values high and statistically significant for the category moving people.

The location of shops seems to have, as suggested previously, no relation with the integration value of the space. The exclusion of shop spaces in the scatters do not help to improve the correlations[65]. A comparison between the two scatters in **figure 3.99** shows that the correlation turns out to be worse with the exclusion of shop streets (respectively r=.471— p= .0001 and .561

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[63] 0.297 & 0.25, 0.574 & 0.478, 0.645 & 0.594, 0.36 & 0.473, are the correlation coefficients for woman and children respectively for systems 1, 2, 3 & 4.

[64] This is in opposition to the current idea that patterns of movement are generated by flows to and from attractors.

[65] The following values correspond to exclusion of shop streets from the scatters respectively for man, woman, children, play, work and talk: 0.385(p=.0024),   0.421(p=.0008)   0.478(p=.0001), 0.136(p=.2985), 0.079(p=.5486) and 0.138(.2933).

— p=.0001). This suggests that, though shop streets in Timbau posses movement densities above average, natural movement patterns through the settlement are structured independently of such attractors.

Fig. 3.99. Correlation of Integration x Moving people

Excluding shop streets   -   p=.0001

$y = .024x + .639$, R-squared: .222

Including shop streets   -   p=.0001

$y = .029x + .635$, R-squared: .315
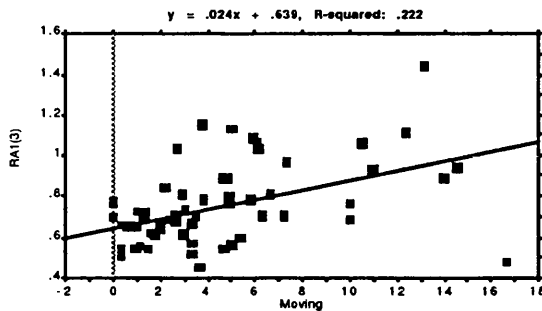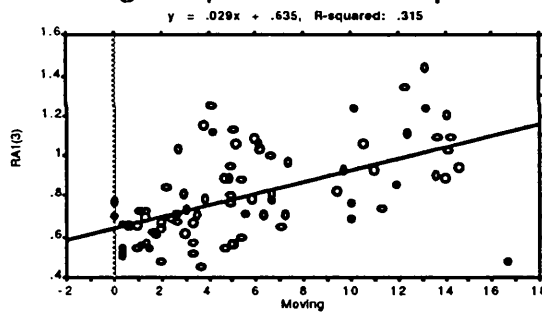
Figure 3.100 shows that the exclusion of the line 61, which is a very short line at the south entrance of the settlement, improves the correlations. Yet, the exclusion of shops in the scatter remains not helping to improve the overall correlation between movement and integration.

Fig. 3.100. Correlation of Integration x Moving people excluding the higher movement rate space.

Excluding shop streets   -   p=.0001

y = .033x + .609, R-squared: .354

Including shop streets   -   p-.0001

y = .034x + .616, R-squared: .406
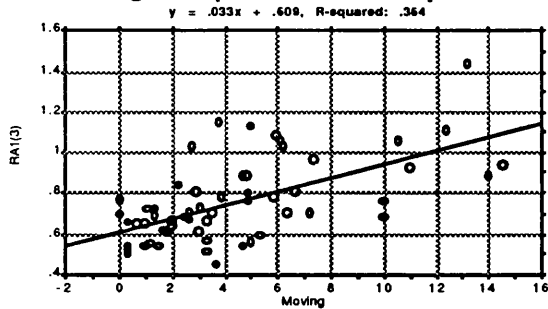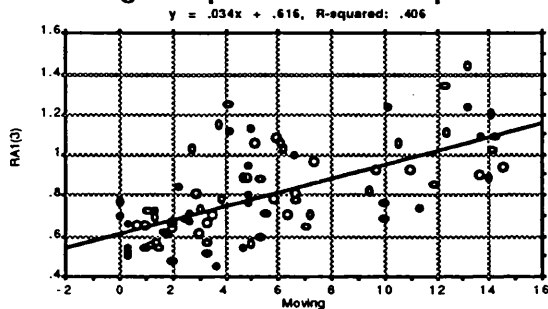
The data presented so far here is a clear evidence that both increase and reduction of pedestrian movement rates are a configurational effect of spatial segregation and integration.

This section so far have looked at the effects of the grid configuration on the distribution of movement. The last part of the analysis of movement in Timbau below will then be focused on the description of the *probabilistic interface* patterns and the co-presence of different gender groups, social activities and land uses (i.e. shops and non-shops) in space.

Fig. 3.101. Correlation for moving children x moving men.

y = .384x + .594, R-squared: .375
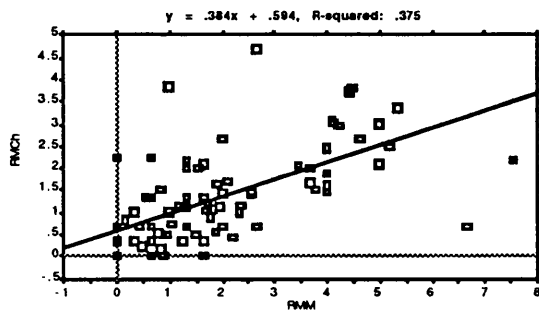
Fig. 3.102. Correlation of moving women x moving children

y = 1.24x + .618, R-squared: .444
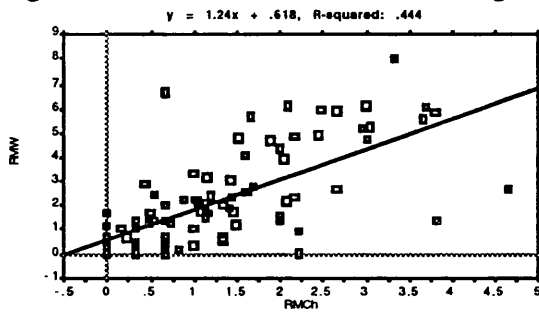
Fig. 3.103. Correlation of moving adults x moving children.

y = .192x + .538, R-squared: .425
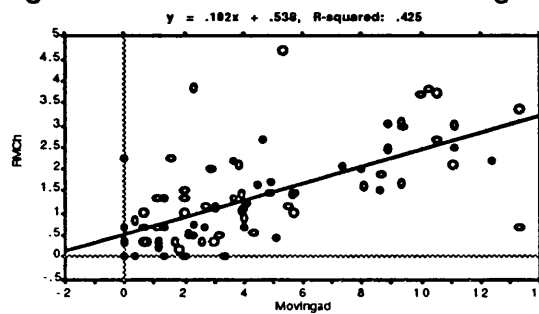
Fig. 3.104. Correlation of moving men x moving women.

y = 1.093x + .114, R-squared: .876
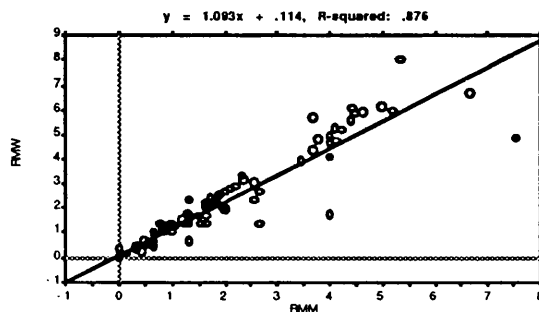
Figures **3.101** to **104** are respectively a plot of moving children against moving men and moving women, moving children against playing, moving adult against moving children and moving men against moving women. Observing these scatters it can be noted that there is strong agreement between the patterns of movements of children and woman[66], as well as between men and women or moving adults and children. A similar result was found by other syntatic studies for urban streets in the UK (Natural movement: or, configuration and attraction in pedestrian movement, UAS 1990, p. 41).

It is interesting, however, that, in the less well used spaces the agreement is stronger, though less so in the better used spaces. This could be in part due to the importance played by the internal areas at the heart of the settlement in structuring the local patterns of social interaction among inhabitants.

There is also a relatively weak agreement between movement and static behaviour - talking, working and so on, in terms of a linear relationship as **figure 3.105** illustrates. This could mean that there are indeed differences in the way moving and static behaviour is manifested, thus in areas which differentially construct the interfaces between strangers and inhabitants and

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[66] Corresponding respectively to a squared correlation coefficient of .876 and .425.

among inhabitants. This suggests that the grid
morphology of Timbau may be better explained in terms
of the ways in which it maximizes or controls the
construction of probabilistic interfaces between
inhabitants and strangers, thus morphological
differences might be associated to differences in the
the type of social interface and its degree of
interaction between visitors and inhabitants. This idea
will be further explored on the light of the empirical
evidences offered by the origin and destination study at
the end of the chapter.

Fig. 3.105. Correlation of moving x static behaviour.

y = .277x + 2.629, R-squared: .121
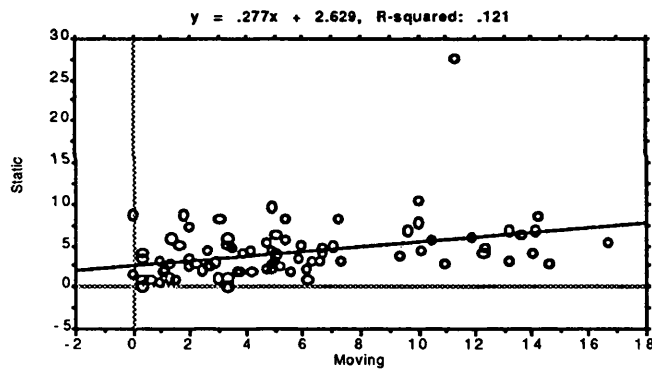
Correlation of moving x static behaviour excluding the higher static rate space.

y = .198x + 2.813, R-squared: .133
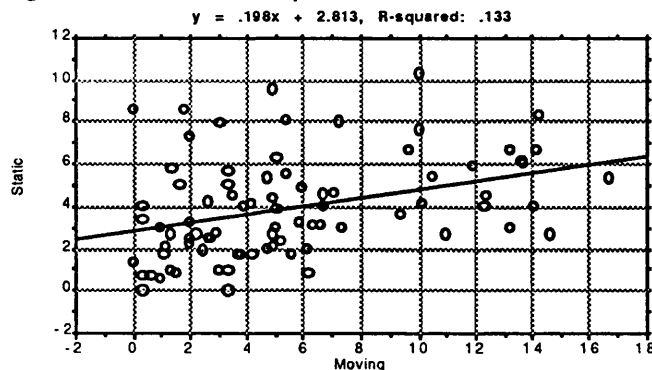
The second graph above shows that the exclusion of the higher static rate space helps to improve the correlation between static and moving. This space is one of the short streets which lead to Meirelles square in Timbau.

From the data presented so far in this section some conclusions can be drawn. First, that in Timbau there is a strong probabilistic interface between rather similar numbers of men, women, and children; as well as between children and adults. This might be indicating that the configuration of the grid is the prime determinant of how people move through the settlement. It should be kept in mind that there seems to be a quite notable division between static behaviour and movement as shown by the scatter in **figure 3.105.** This scatter shows that in general best used spaces for static people tend to be different from those chosen for moving people.

In many of these respects, the grid of Timbau, seems to be quantitatively and configurationally unlike the grids of other urban areas studied by syntax in Western European towns. Yet, what seems to by invariant is the influence of grid configuration on movement.

The analysis of movement patterns so far has not found any improvement in movement rates by the presence of attractors such as shops or other non-residential types of land use. The presence of shops, on the other hand, seem not to have any special effect either on the movement density of men, children and women[67]. This suggests in turn that the location of shops in Timbau seems to have no relation to the gender distribution of movement (e.g. men, women and children) or to the static activities distribution (e.g. play, work and talk).

It is interesting nevertheless that the presence of shops in the case of Timbau, as suggested previously, seems to hold a relation with the length of the lines. This is not to say that the length of the line had influenced the presence of shops. But it may be that because longer lines in Timbau are the ones which constitute the major thoroughfares (the main roads), and they are in a direct relationship with the status of the street as a traffic road, that they make a good location for shops[68] .

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[67] 0.365, 0.418, 0.306, 0.12, 0.196 and 0.32 are the correlation coefficients between shops and the distribution of respectively men, women, children, playing, working and talking. This corresponds for the squared correlation coefficient to respectively 0.134, 0.175, .094, .014, .039 and .102. These numbers show that the correlation between the distribution of shops and the distribution of movement by gender groups and activities is weak and non significant statistically.

[68] The numeric analysis of the density of shops however has not show any clear connection with the typology of the street.

Some conclusions about movement patterns in Timbau

To conclude this section it could be said that in Timbau the grid is highly structured in terms of both its integration and segregation patterns. The settlement, contrary to what unwisely could be supposed, has a very complex morphological grid structure with movement and the patterns of co-presence in space being a functional and instrumental product of the ambiguous and complex nature of its urban grid.

Up to this point, the main effects of space in Timbau which have been stressed are to reinforce the local character of the urban fabric whilst enabling local residents to take advantage of movement to create global relatedness. It was also seen that syntatically there is a general tendency towards some physical discreteness and autonomy.

The configuration of the urban grid of Timbau gave rise to a specific type of interface among inhabitants which was described in the previous section. It is the subject of the next section, by using the same type of systematic description and methodology used before, is to characterize the patterns of human co-presence and encounter taking place in M.Dias, and to describe the

specific characteristics of the interface defined by that group of settlers. As before, the aim is to offer an understanding of the everyday reality of the settlements as it is experienced spatially by the residents as well as to give a statistical picture of its spatial and social patterns.

The spatial structure of Marcilio Dias

The urban fabric of Marcilio Dias is very different in its appearance from the one just described for Timbau. Its grid layout is highly geometrical and ordered, and the urban blocks instead of the street were taken as the basic unit for its spatial organization[69]. In spite of that highly-ordered grid composition, experiencing it as a built form at the ground poses some difficulties in terms of spatial intelligibility and orientation. This grid-like organization of M.Dias, which is a planned housing project launched by the federal government, is basically structured according to a traditional pattern of residential blocks and orthogonal streets with street oriented low rise detached single family houses. The settlement has a lower concentration of dwelling units than Timbau.

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[69] The presence of the block concept as a main instrument for explaining the spatial structure of the settlement, as it will be seen in Chapter V, was always present in the settlers interviews descriptions.

Like Timbau the settlement is relatively bounded
spatially, which to some extent makes it physically
marginal in relation to the global grid of Rio (see
figure 3.107).

Fig. 3.107. M.Dias and its surroundings
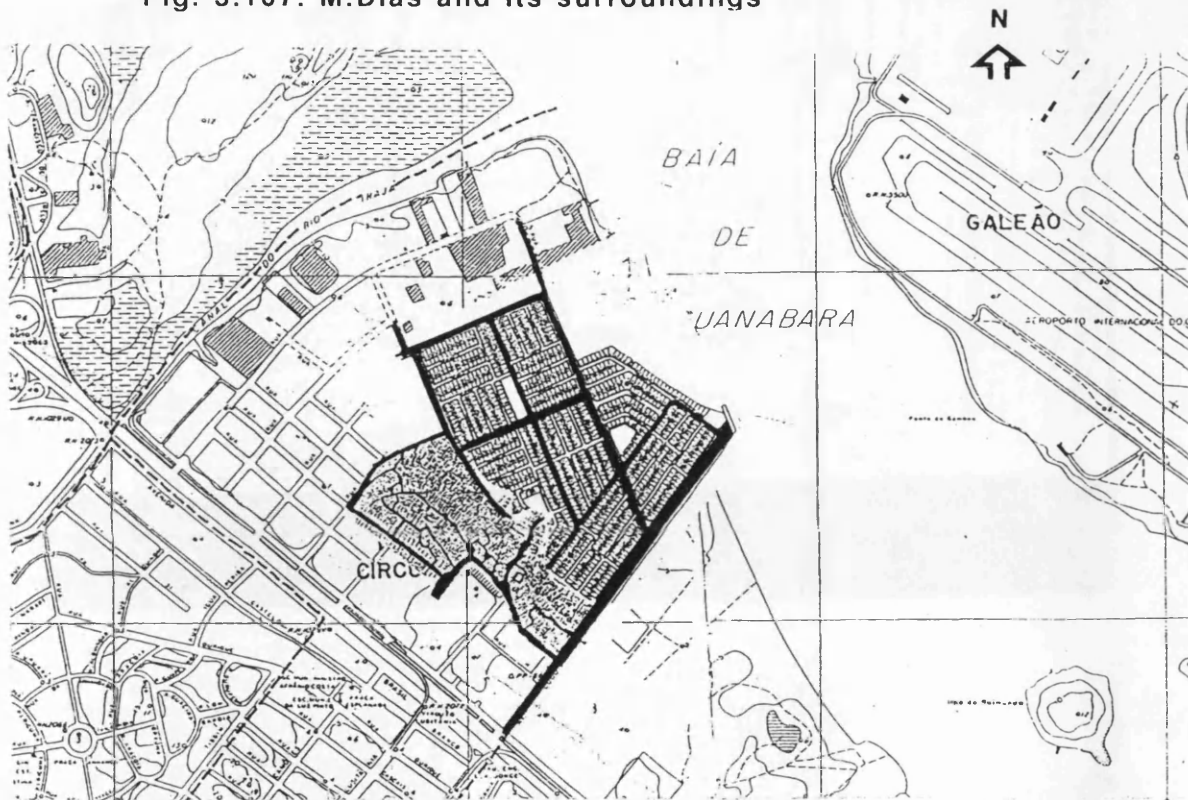
The existence of clear boundaries which are at North the
Guanabara Bay, at South and West large industrial
warehouses and at the east a Navy quarter accentuate
this impression of relative self-containment[70] (see
figure 3.108).

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[70] As extensively discussed in early chapters, this self-containment
as believed in orthodox city planning, to be one of the virtues for the
existence of community neighbourhoods. This, nevertheless, is a subject
which will be examined later in this section by understanding first how
the settlement works.

Fig. 3.108. M.Dias' boundaries

The favela

The Pier and the Guanabara Bay

Industrial warehouses

The urban structure as well as the blocks are regular, with forty six islands. Block size does not vary greatly across the settlement with the main throughfares lined by houses which have shops at the ground floor (see **figure 3.109**). The slightly deformed shape of the blocks resulted from the design adopted for the urban grid which used the existing industrial network of streets as the primary guides. An attempt was made within the housing project, nevertheless, to have blocks as similar to each other as possible, not only in terms of the number of houses contained, but also in the size of the plots and in their position in the grid. Hence, in contrast to Timbau but as normally happens in any planned area, it was the size and shape of blocks which have defined that of the plots.

Fig. 3.109. The black and white map of M.Dias
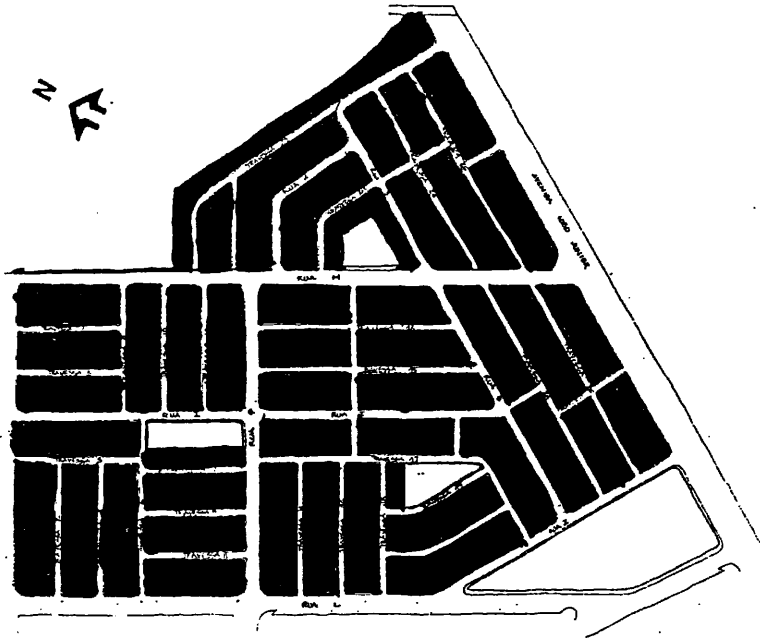
Houses, detached and semi-detached, are normally set back from the street line. This is thus defined by walls and fences. The interface between the houses and the streets, as observed previously, varies significantly between main throughfares, and local and pedestrian streets. In the first ones (i.e. main streets), the boundaries between the houses and the public space are softer than in the pedestrian streets which have relatively high walls enclosing the houses.

M.Dias does not have squares but instead it has 'open spaces'. They are four in number and three of them are designated for the later construction of institutional buildings (i.e. a local creche and health centre, a catholic church and the residents association headquarter). The only peculiarity in terms of location of this area which can be grasped visually is that they are located on important streets which are accessible by car (i.e. R. 21 de Abril, R. Dom Eugenio Salles, R. Barão de Maua and Av. Lobo Junior). The figure ground transcription in **figure 3.109** with all the public spaces shown in black on a white background shows the location and size of those open spaces in the settlement.

The three peripheral roads which are Av. Lobo Junior (Lobo Junior Avenue) at the east boundary of the settlement, Rua Nossa Senhora da Penha (Nossa Senhora da Penha Street) at the south edge of the settlement, and Rua do Alpiste (Alpiste Street) at the west, together with two streets inside of the settlement, which traverses it north-south (21 de Abril Street) and east-west (Dom Eugenio Salles Street), form a continuous network of main throughfares[71] which are accessible by cars (see **figure 3.11**). These streets, which had their width reduced from 18 to 10 and 15

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[71] These streets correspond to the spaces assigned in red in **figure 3.10.**

metres, are significantly wider than the rest of the streets in the settlement. They were part of the former existing industrial grid which was organized in three large blocks. Av. Lobo Junior, (Lobo Junior Av.) the widest one with 30m. width, links the settlement to Av.Brasil[72], crossing over this main road and continuing on the other side. This street is in fact the main channel for vehicular and pedestrian access to M.Dias.

There are no through routes giving access to the north part[73] of the settlement. The main access to this area is made through two local roads — R. João de Deus and R. Barão de Maua. The south part of R. João de Deus, below R. Dom Eugenio Salles, is connected to another local street which crosses the settlement in its east-west direction (R. Dalva de Oliveira). This system forms a

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[72] Av. Brasil, as explained before, is one of the main roads approaching Rio. It develops along the Guanabara Bay and links cities as important as Rio and São Paulo. Along the Bay shores a group of squatter settlements have occupied the area, but the neighbourhoods around have important military and industrial premises, and they constitute one of the most important suburban residential western areas of Rio

[73] Interesting enough, this area which is less easily accessible from outside is the fishermen quarter.

sort of <u>local network</u>[74], that consists of traffic roads of reduced width of 6 metres in comparison to the main roads and are connected to the main system. A third system of even narrower <u>pedestrian lanes</u>[75] of 4 metres width, which complements the local network and only occasionally is used by automobile users to give access to the houses, covers the internal areas of the settlement. **Figure 3.11** in the beginning of this chapter illustrates these different categories of street existing in M.Dias.

A mere visual inspection of the distribution of land uses through the settlement as well as the range of social use predominant in each type of street shows that some common threads emerge. In broad terms pedestrian movement is spread throughout the settlement. Pedestrian streets are residential zones and as such they are intensively used, like Timbau, for local activities (i.e. people sitting and talking, children playing, people doing their domestic work outside, and so on). These areas seem however to be inhabited and mostly used by locals. Land uses are dominantly residential, yet some kind of mixed-use occupying only part of the dwelling at ground floor can be found. These are mainly local small shops.

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[74] This local network corresponds to the streets assigned in blue in figure 3.11.

[75] The pedestrian stress are colured in yellow in **figure 3.11**.

In general, however, shops and other non-residential uses are scattered around the settlement but main streets tend to have a slight concentration of them. This pattern, which was also found in Timbau, seems very logical, since non-residential land uses have to operate at two scales at once. That is, they have to take advantage of and to be related to both the local and global patterns of movement in the settlement. By contrast, activities which depend largely on the frequency of strangers, such as the local fish-market, are only found in the carrier of the settlement at Av. Lobo Junior.

It is hoped that through the application of syntax in the subsequent sections it will be possible to have a better understanding of how the the settlement is working socially in terms of the types of interface between residents and visitors, and spatially. The observations, analysis and descriptions which will follow aim to look at the way in which the spatial structure and the morphology of the grid might be structuring natural movement, patterns of co-presence and the distribution of land uses throughout the housing estate. The idea is to analyse and describe the grid configuration of M.Dias using a similar strategy to the one applied to Timbau. This strategy is explained next.

M.Dias - The procedure of analysis

In order to study the syntax of Marcilio Dias it will be analysed at three levels (see **figure 3.110**). The first is with the settlement on its own (system suffixed 1), the second including its immediate surroundings but excluding the neighbour squatter settlement (system suffixed 2), and the third embedded in the surroundings including the squatter settlement (system suffixed 3). The size of the larger system is big enough to guarantee that any edge effect[76] is well removed from the catchment area of the settlement. The general procedure used is similar to the one applied to Timbau, with a syntatic analysis followed by a movement and space use analysis.

Fig. 3.110. The areas of study

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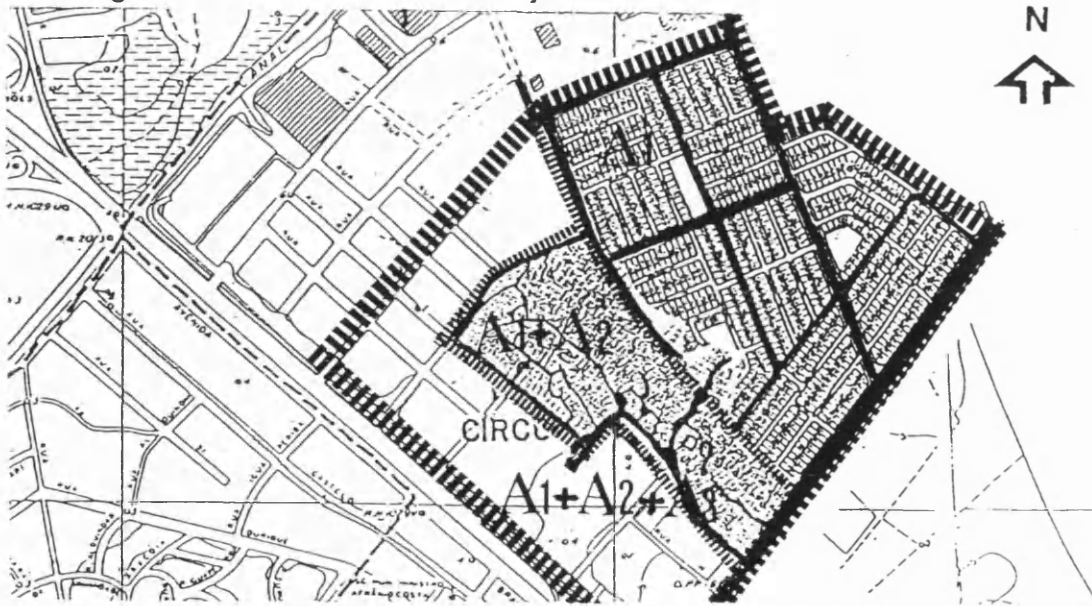
[76] See footnote 21 earlier in this chapter for the definition of that.

The axial representation and analysis

The complete M.Dias axial break-up of its street system on its own (system suffixed 1), of its street system embedded into its wider urban context without including the adjoining squatter settlement (system suffixed 2) and then including this squatter settlement (system suffixed 3) is shown in **figure 3.111.**

Fig. 3.111. The Axial Maps

System 1
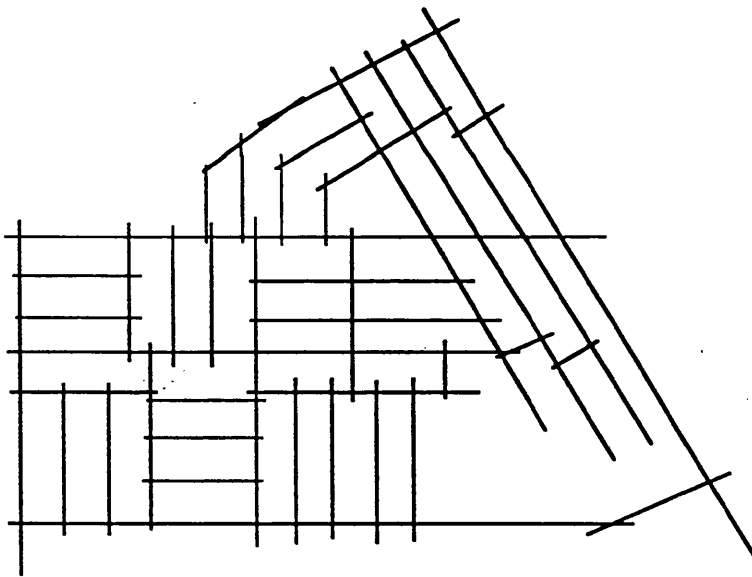
System 2
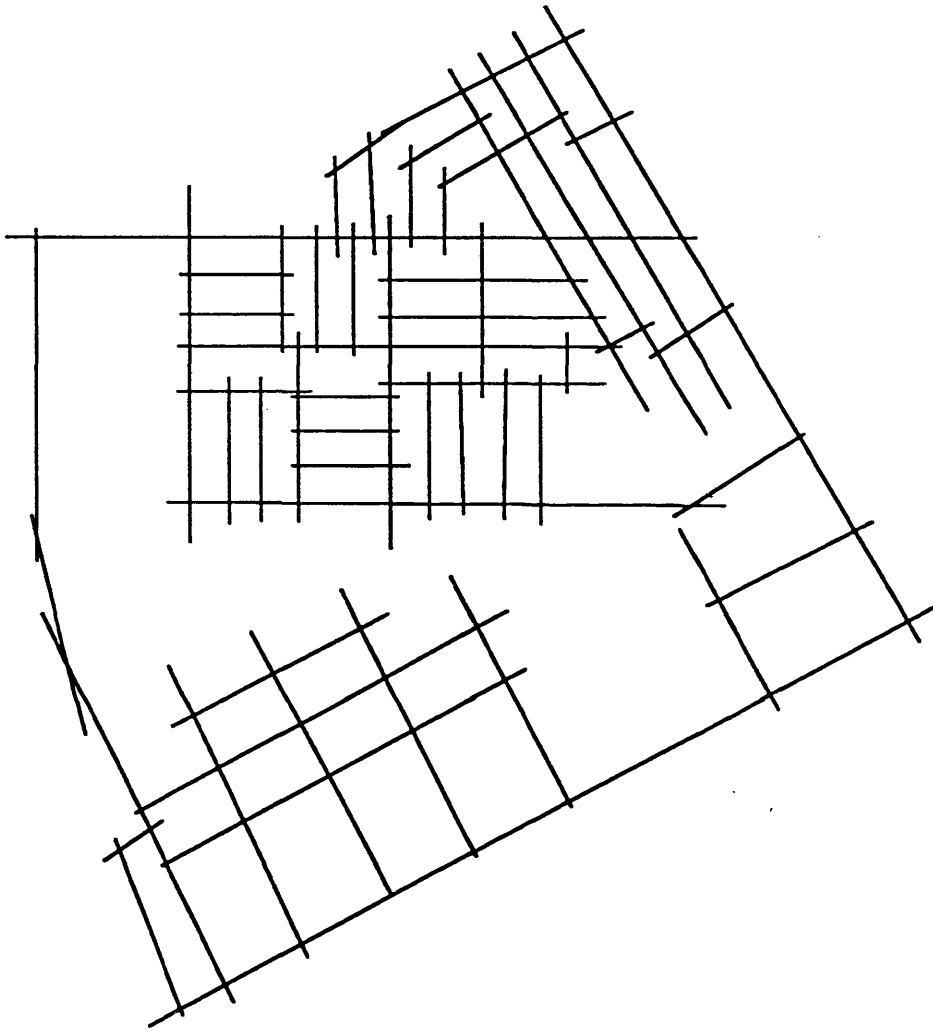
System 3
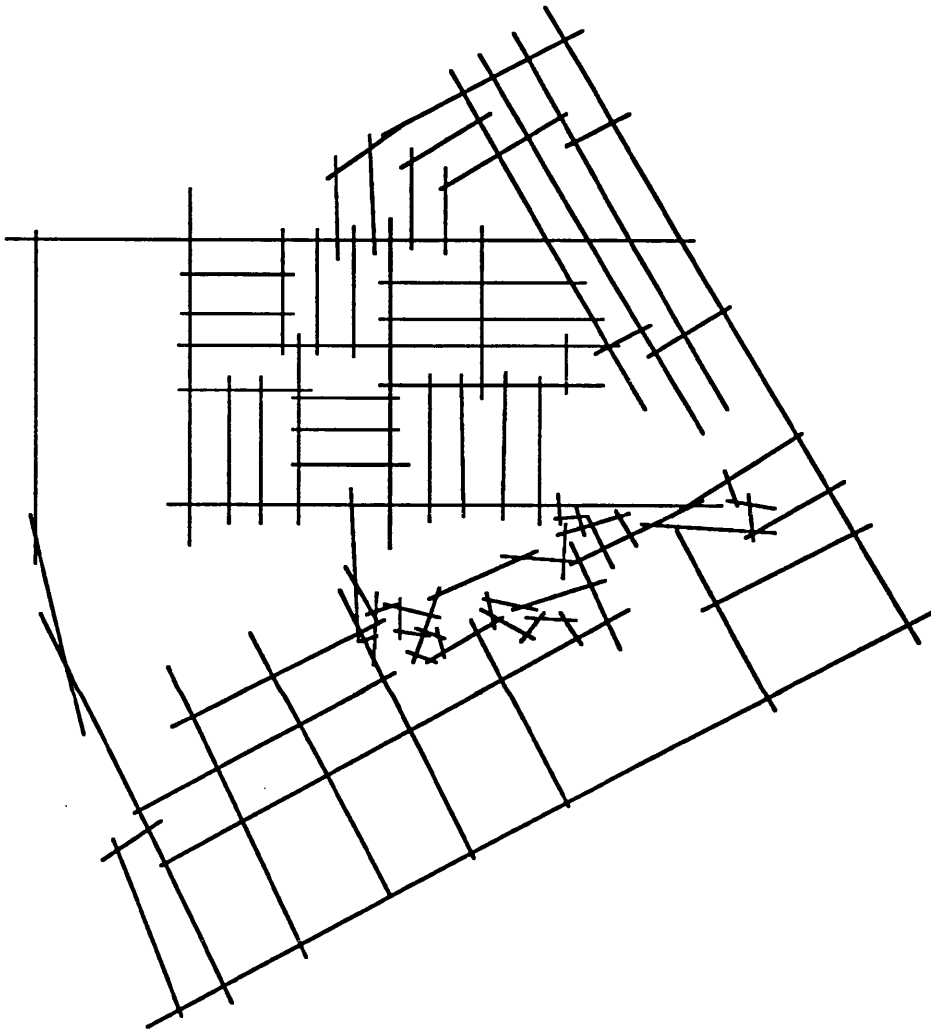
Understanding the Syntax of M.Dias

This section will focus on the analysis of M.Dias on its own with a view to understanding the configurational properties of the settlement grid isolated (system suffixed 1). The next section will then look at the settlement configuration in relation to its immediate surroundings (systems suffixed 2 and 3).

The first spatial property to look at will be axial depth. Depth, as explained previously, reveals how accessible a space in the system is. Looking at the depth map of M.Dias (**figures 3.112** and **113**) some points are worth noting. First, the southern part of the settlement, bellow R. Dom Eugenio Salles, is deeper than the northern part. Second, boundary lines, as well as almost all internal lines off R.Dom Eugenio Salles[77], are relatively shallow from the carrier which is Av. Brasil. This suggests that strangers are encouraged to pass through the settlement's geometric centre, yet some internal areas still remain more secluded.

Comparing the maps of **figures 3.114** and **115** an interesting property is displayed. That is the separation between depth from the outside and depth from inside, making some parts of the settlement differentially accessible to visitors and inhabitants.

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[77] In the map this is the street which traverses the settlement through the middle in its northeast-southwest direction.

Fig. 3.112. Axial depth map
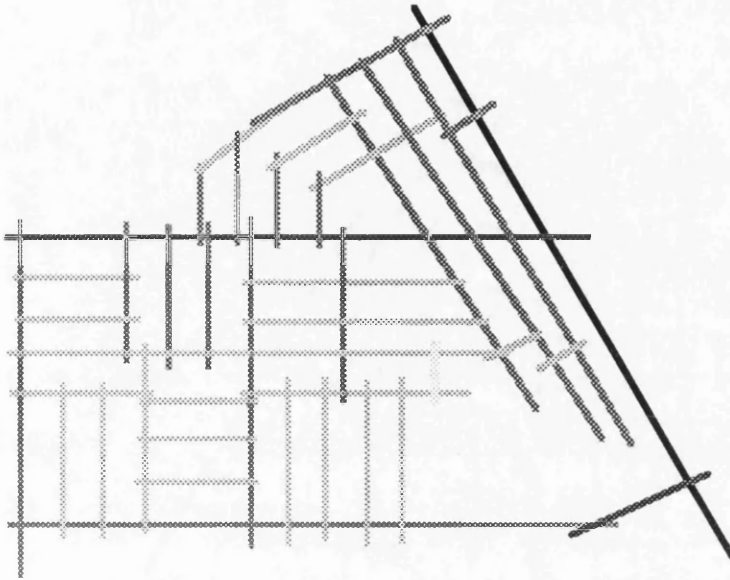
Fig. 3.113. Number of axial steps for each axial line
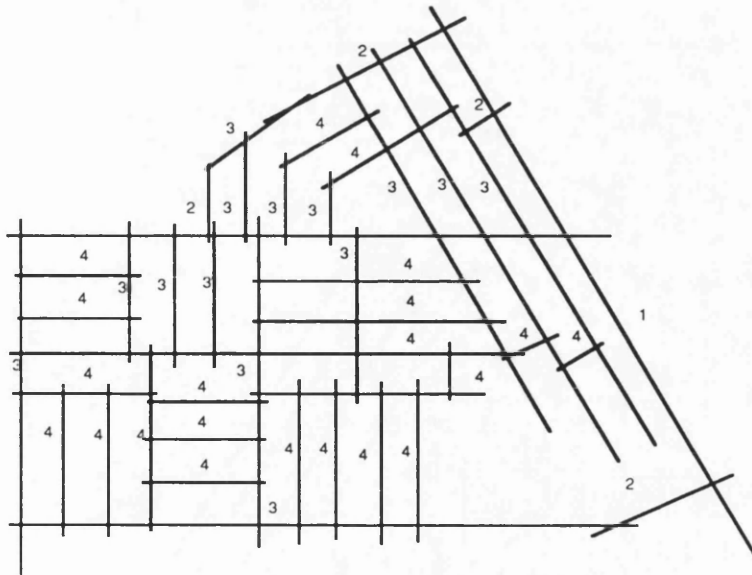
Fig. 3.114.Three axial steps from the internal best
integrated road - Av. D. Eugenio Salles.
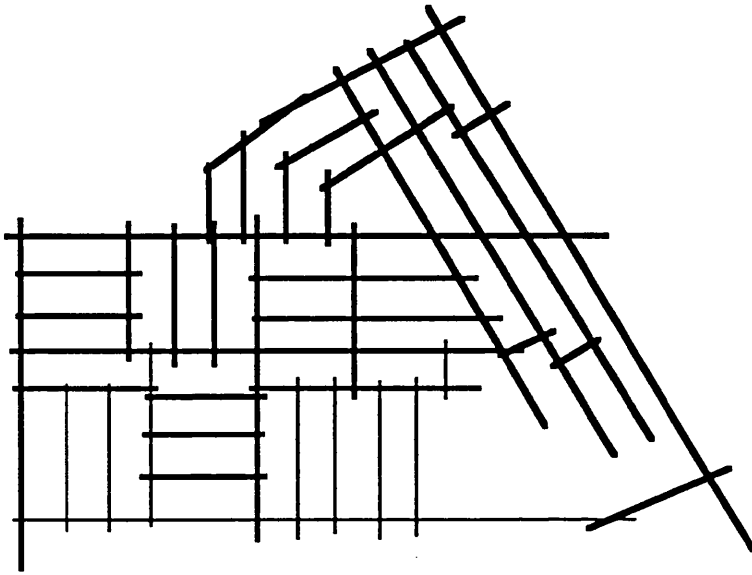
Fig. 3.115. Three axial steps from the carrier - Av. Brasil.
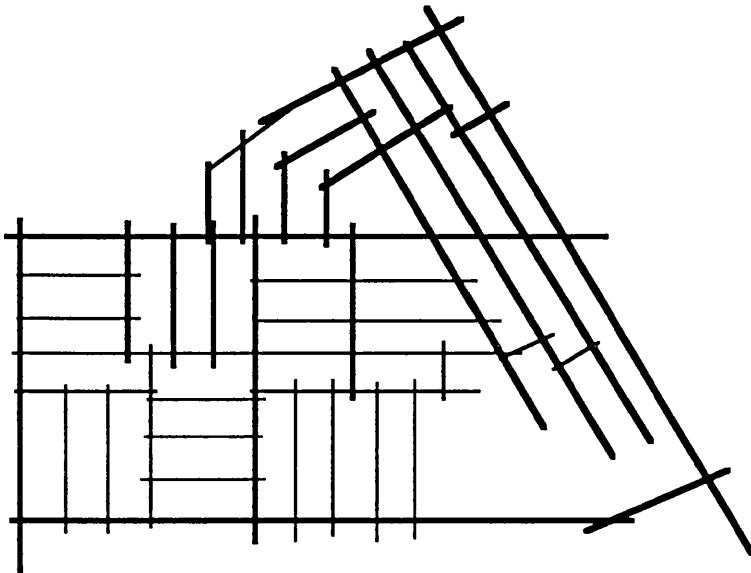
The three axial steps map from the best integrated internal streets, which is the main access route to the settlement, shows that with only two turnings very much of the system is accessed (see **figure 3.114**). In addition to that, the depth map illustrates, by the different shades of dark grey, the extent of the system that is made easily penetrable from outside (the carrier - Av. Brasil) to visitors, and the parts that remain more difficult to reach (see **figure 3.112**). These spaces, which are more shallow from outside (the carrier - Av. Brasil), are more clearly picked up by the three axial steps map from the carrier (see **figure 3.115**). Both maps evince that three axial steps from the major route take an individual over much of the system with exception to the southwest part which remains relatively inaccessible.

In the southwest part of the system, below the main road which traverses the system, depth from outside is offset for the most part by relative shallowness to the inside. The area is much more oriented to being a destination for within-settlement journeys than to be accessible to strangers. The top part from the same main road, otherwise, is shallow to both the outside and the inside, making this part of the settlement relatively easy to reach either as a visitor or as an inhabitant, yet its area of coverage is much smaller.

This is interesting in so far as this area house's mainly fishermen and it is also where the fish market is located, being thus by nature more open to visit from strangers than the rest of the settlement. Configuration has picked up in this case a functional property of the system.

Figure 3.116 represents the 15% longest lines in bold. The numbers along the lines show their rank order of length. Comparing the depth to the length map it can be observed that the most of the longer lines are the shallower ones in the system. This suggests that there is a relationship in M.Dias, as there was in Timbau, between the depth and the length of the space.

Fig. 3.116. 15% Longest lines of Marcilio Dias
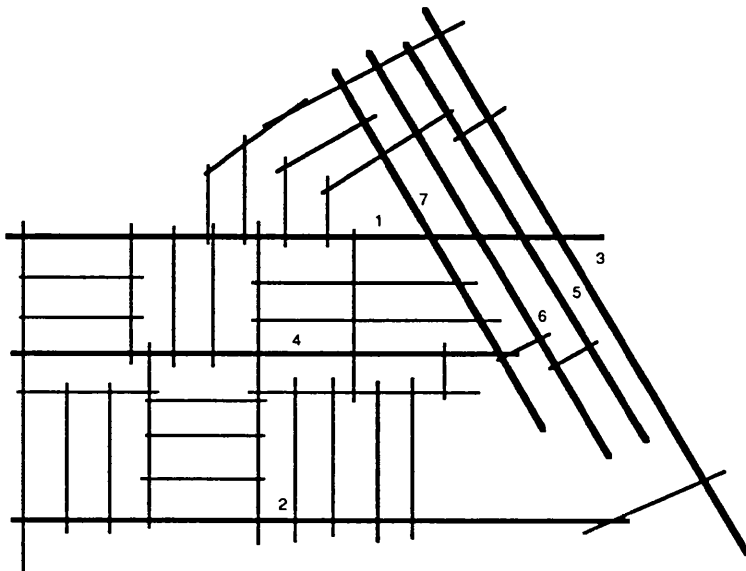
The values of the length of the values at depth 1 to 5 tabulated in **figure 3.117** highlights the relationship between the two properties, showing that length steadily decreases with depth. The lines at depth two, however, are almost 100% shorter than in depth one. Then in each lower level of depth the average length is reduced by around 25% of its value. In other words, at depth three, the average length is 25% less than at depth 2 and so on.

Fig. 3.117. Comparison of length and depth.

Depth	1	2	3	4	5
Ax.length	150	78.33	58.93	37.48	10

The spatial pattern identified so far indicates that the grid is structured so as to easily allow strangers access the settlement. It seems, nevertheless, that visitors are encouraged to pass through the centre of the settlement while some quarters remain relatively apart from the natural movement pattern.

Figures 118, 119 and **120** show respectively, the connectivity map, the control value map and the integration map of Marcilio Dias with the 15% higher value represented by bold black lines.

Comparing length with integration, connectivity and control, some points can be pointed out. First, all lines which feature in these three cores (i.e. integration, connectivity and control) are also included in the map of the 15% longest lines. Therefore, the longest lines are also the best connected, integrated and controlled lines. These lines are, by definition, at once locally and globally strong spaces. Second, the three more connected lines and more controlled lines traverse the system, crossing the settlement in its longer dimension. This is similar to Timbau, with the patterns of natural movement through the settlement channelled by specific streets which are under strong surveillance by the local inhabitants.

It is remarkable, however, that the integration core remain almost the same as the system gets larger (for all the three systems - **figs. 3.129** to **3.131** in pp.273-275). The core is also discontinuous and the lines which form it correspond to the streets that were part of the industrial grid existing prior to the construction of the settlement. This suggests that this super-grid industrial structure, which is part of a global network and it was there before the estate was built, exists over and above the settlement and the juxtaposition of the M.Dias' grid has made little to change its original characteristics. The settlement's

grid thus became structured at two levels, at the global level organized by the super-grid and at a local level.

As in Timbau, M.Dias' urban grid constructs a double axial spatial code; namely, it renders few long more or less parallel lines which traverse the system more accessible and integrate, while some interiors quarters of the settlement are clustered away and confined in between these lines. Consequently, there are parts of the settlement which are made relatively segregated and more difficult to reach. These areas are mainly structured by more segregated lines, relatively short and pedestrian streets and they are connected to each other through longest lines which are traffic roads.

There does seem, however to be a difference between the urban systems of Timbau and M.Dias which results from the way which pedestrian and main streets relate to each other. In Timbau the segregated areas (pedestrian streets) are large and internally continuous while in M.Dias the segregated streets (pedestrian streets) are confined between more integrated streets (main and local streets). This can be easily seen by comparing **figures 3.10** and **3.11** back in page 100 (The typology of roads map), **figures 3.55** in page 156 and **3.120** below (the integration map).

Figure 3.120 shows that the distribution of integration in M.Dias is linear and made of a few linearly connected lines forming major routes, but without lateral development linking these routes to the internal grid of pedestrian streets.

Fig. 3.118. Connectivity map of Marcilio Dias
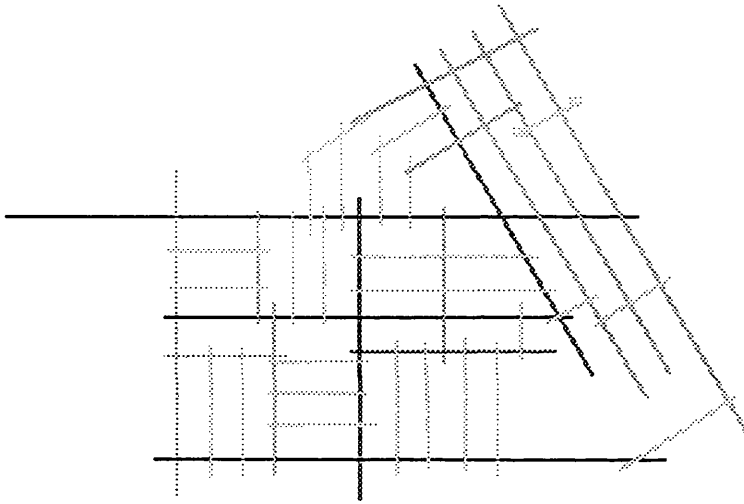
Fig. 3.119. Control map of Marcilio Dias
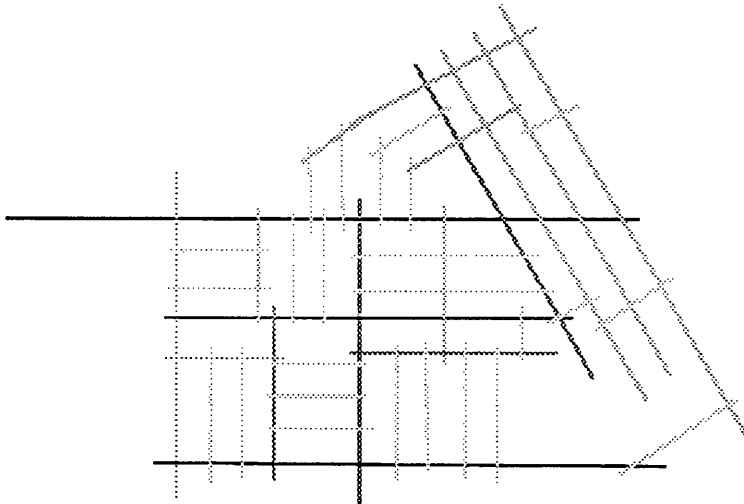
Fig. 3.120. Integration map of Marcilio Dias
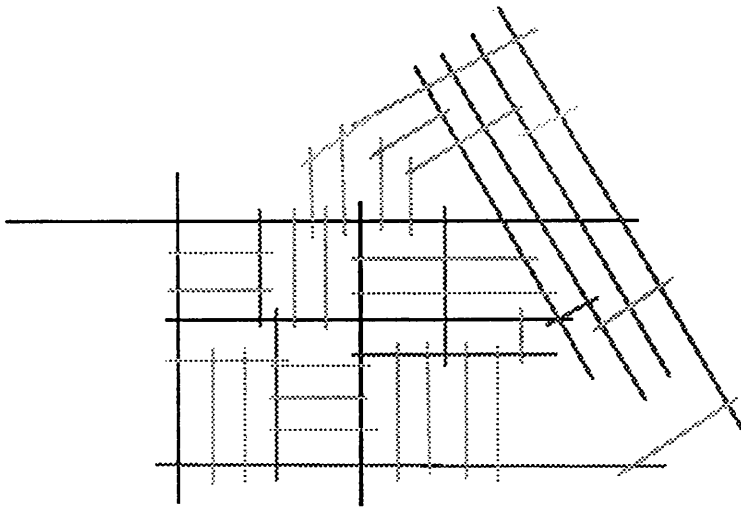
Fig. 3.121. Radius three integration of M.Dias
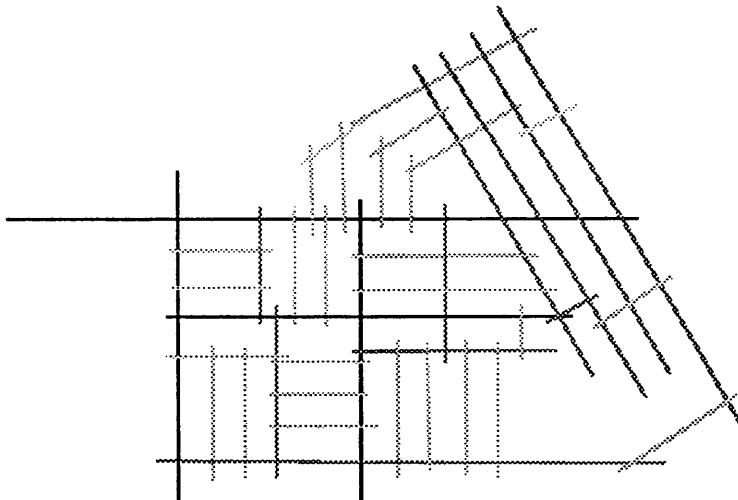
The expectation of a radius three analysis is that the higher value spaces will correspond to those lines which draw together local concentrations of streets through a more or less continuous system of streets (a local grid). In the case of M.Dias radius three analysis

(see **figure 3.121**) like integration seems to capture a more clear structure continuous to the space structure of the surrounding area, with relatively well defined sub-areas. This system is structured by main integrated streets which are easy to reach since they are constituted by spaces which are accessible in three steps from any point in the settlement and from the outside.

This confirms that the major typological differences are between an integrated system of main long roads shallow from inside and from the outside, and the rest of the streets which are relatively short, more or less deep from the outside, but relatively shallow from inside. Thus, the first group of main integrated and easily accessible lines from both inside and outside is juxtaposed to a secondary system of shorter lines which covers an area that is more difficult to penetrate as a stranger but not as an inhabitant.

A comparison between the map which shows the typology of streets in the settlement in **figure 3.11** and the integration map (**figure 3.120**) reveals that there seems to be a certain typological-functional and configurational relationship identified by the spatial property called integration. This relation is translated by a system which is structured by three basic types of

spaces. A first one of few <u>more integrated and longer</u> net of lines which form a kind of super-grid that includes only the <u>main streets</u> which were preexisting as originally part of the industrial grid. A second system of spaces, articulated with the first one but not continuous of <u>relatively long, well integrated and local streets</u> which connects the major system to a third one of very localised, relatively inaccessible (i.e. <u>segregated</u>) and <u>short pedestrian streets</u>. In addition, the integration map in **figure 3.120** suggests that the first system of spaces (i.e. the main streets) defines five subareas which are clustered within it. Four of these subareas are than split into smaller areas by the local streets network.

This first analysis of the syntax of M.Dias thus reveals a pattern which, despite of its similarities to Timbau's one, is much more based in hierarchy to structure itself. A hierarchy which defines clearly three main spatial units: first, three major blocks which are within the system of main streets, second sub areas of in average six urban blocks confined within the main and the local

system of streets and third the urban block unit itself[78]
(see **figure 3.11 - Typology of roads in M.Dias**).
The table below summarises the main configurational
quantitative differences between the types of streets.

Fig. 3.122.

	Main	Local	Pedestrian
D.Shops	7.6	4.22	5.4
Length	105	72	37
Depth	2.33	3.5	3.6
RA1	2.5	1.9	1.62
CV	2.4	1.55	.70
Con	7.7	5.5	3.0
RA3	2.723	1.893	1.804

The table highlights some important configurational
differences for each type of street. Main streets
perform better in all measures[79] as it should be
expected from streets which are more globally oriented.
But, their high control values reveal that spaces which
are more accessible to strangers in the system are also
spaces highly controlling locally.

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[78] This suggests that the settlement's plan was organized following
order concepts such as hierarchy, geometry and repetition which as
suggested by Hanson in a paper enltiles **Order and Structure in
Urban design** (Ekistics, Jan-Feb and March-April 1989, p. 22-
42)does not necessarily means that a place is well-structured and
intelligible as she explains in the following paragraph: " *Hence, an
apparently disorderly layout may turn out to be well-structured and
intellegible to its users, whereas a highly ordered architectural
composition may in fact be unstructured when we experience it as a
built form*".

[79] The higher the value the better the performance. This means that
the more integrated the spece the higher the value.

By contrast, pedestrian streets tend to be relatively deep[80] and, thus, comparatively more difficult to reach from globally oriented parts of the scheme. They are also of limited length, very locally oriented and constitute discrete and local territories. Thus strangers are possibly discouraged by the spatial structure to visit these areas.

Local and pedestrian streets also have more or less the same mean depth. But it is surprising, nevertheless, that this is not followed by the density of shops which is higher in the pedestrian than in the local streets (see **figure 3.122**). A possible inference is that in M. Dias like Timbau shops are locally rather than globally oriented and thus more related to inhabitants than to strangers. Finally, the table also shows that length drops steadily from internal to pedestrian streets with the first being almost four times longer than the last.

In addition to that, examining the mean syntatic values for each of the different types of streets, some additional points are note worthy. First, internal roads are well above the mean integration value for the whole M.Dias of 1.758. This is a clear indicative of the global rather than local nature of these spaces. Despite that, these streets are also highly controlling with a mean

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[80] Pedestrian streets, however, are not the deepest streets in M.Dias, since as the table 3.122 shows, local streets have the higher mean depth.

control value of 2.831. Connectivity also drops as much as four times from the internal streets to the pedestrian ones. These findings suggest first that indeed there are clear typological differences between these three groups of streets, and second that there seems to be a correspondence between the spatial and physical characteristics of each type of streets and their syntatic and configurational properties.

Finally, a comparison between between the street system of M.Dias coloured by type of street (see **figure 3.11**) and the integration map (see **figure 3.120**), like in Timbau, unmasks a striking similarity. There seems to be a relative correspondence between main roads[81] and the more integrated lines (respectively coloured in red and in black or shades of dark grey), the local roads and the medium integrated lines (respectively coloured in blue and medium grey) and the pedestrian streets and the more segregated spaces (respectively coloured in yellow and shades of pale grey). In other words, integration as a morphological property of configuration, seems to pick up the different typological categories of streets. It is interesting,

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[81] This includes the roads which are at the edge/periphery of the settlement as well as the main integrated lines inside of the system. However, looking at **fig. 3.10** it can be noted that the west part of Timbau is relatively bounded and not linked into the global or the main system so that though some roads are at the periphery geometrically they are part of the internal integrated system in a syntatic sense.

though, that these typological differences are established through design by varying the width, for instance, and functionally by allowing or prohibiting the traffic from using them.

The next section will be focused on the analysis of the settlement embedded in its local urban context, and will compare it with the structure identified here in this section for M.Dias isolated. It is expected that its analysis will offer a better understanding of the settlement in terms of the way it structures itself as part of a larger spatial system.

The syntax of the several systems

The analysis of the three axial systems will be developed from the description of the local syntatic properties[82] (i.e. control value and connectivity) and then will compare that to the integration and radius three pattern. The idea is to give first a more localized picture of the settlement and then deal with the global characteristics. To describe the syntax of M.Dias a series of core maps, in analogy to the ones used for Timbau, will be presented.

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[82] Or first order measures. That are said to be local measures because they only take into consideration the relation between a space and its immediate neighbours.

A comparison between the cores of systems 1, 2 and 3 for the local measures of control[83] and connectivity shows that most of the lines which are highly controlled are also well connected. It is worth noting that the one of the two more important access lines leading to the settlement from the outside are, like Timbau, highly controlling lines. This, as with Timbau, might be a strategy to keep the settlement relatively locally controlled and self-contained, thus avoiding that it becomes too integrated, globalized and easily accessible. It is remarkable, however, that the cores for these two measures remain almost the same as the system gets larger (for all the three systems) with both cores discontinuous.[84]

Fig. 3.123. Control Value map for system 1

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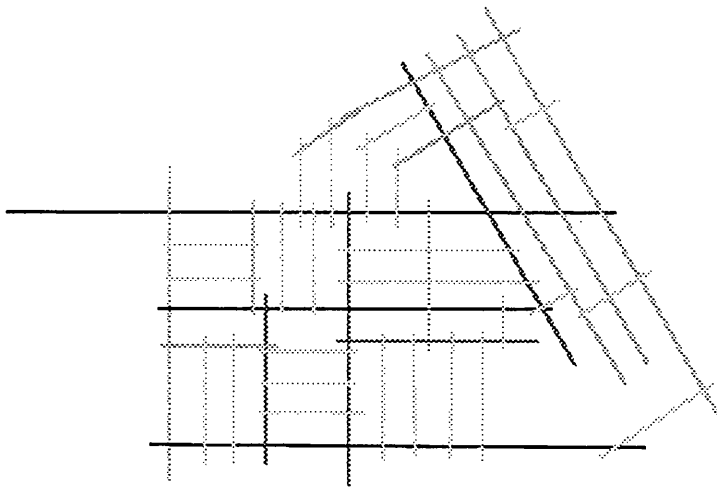
[83] This should be expected since local measures normally form discontinuous cores.

[84] The number maximum of steps of depth to cross the system is five.

Fig. 3.124. Control Value map for System 2
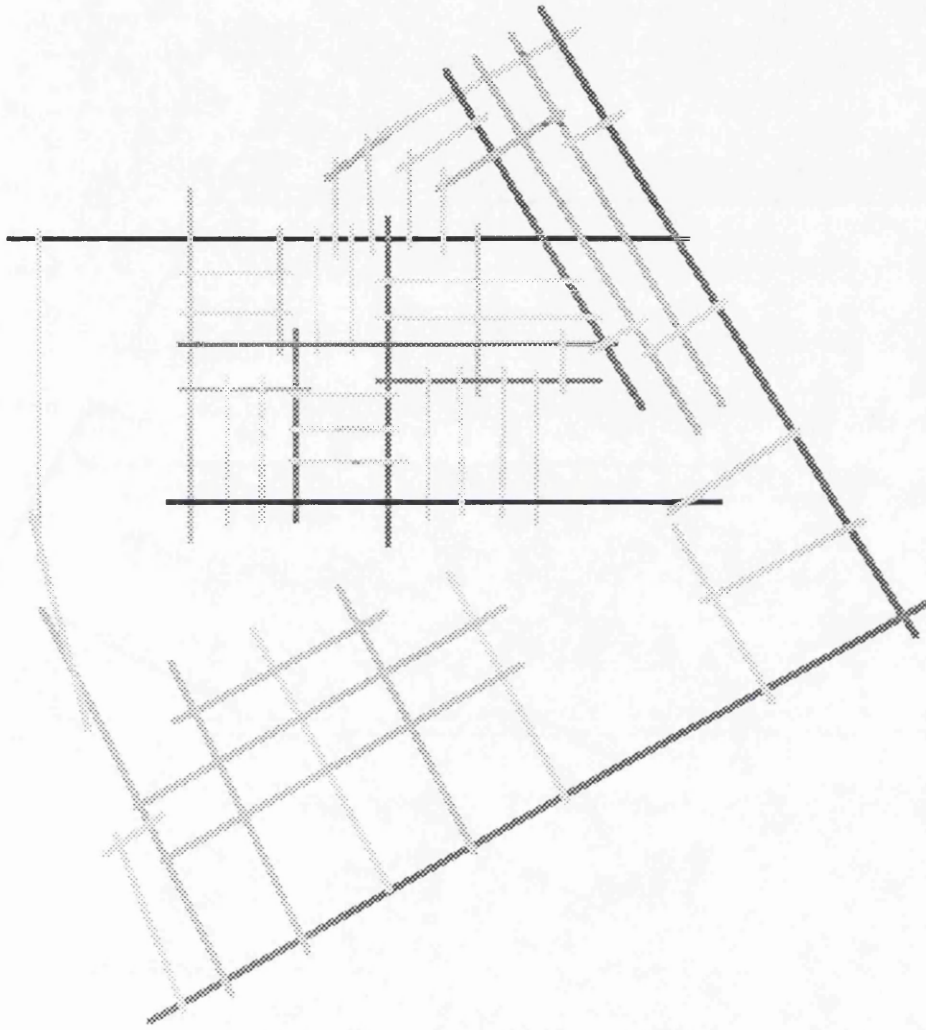
Fig. 3.125. Control Value map for System 3

Fig. 3.126. Connectivity map for System 1
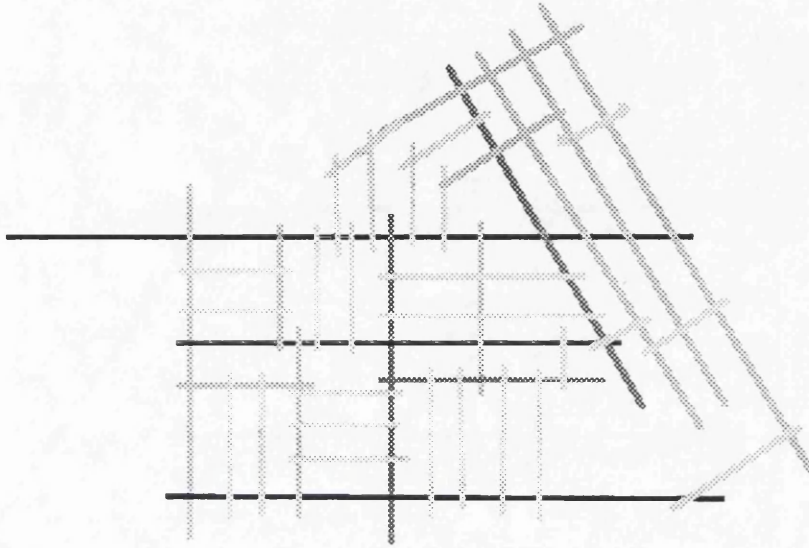
Fig. 3.127. Connectivity map for System 2
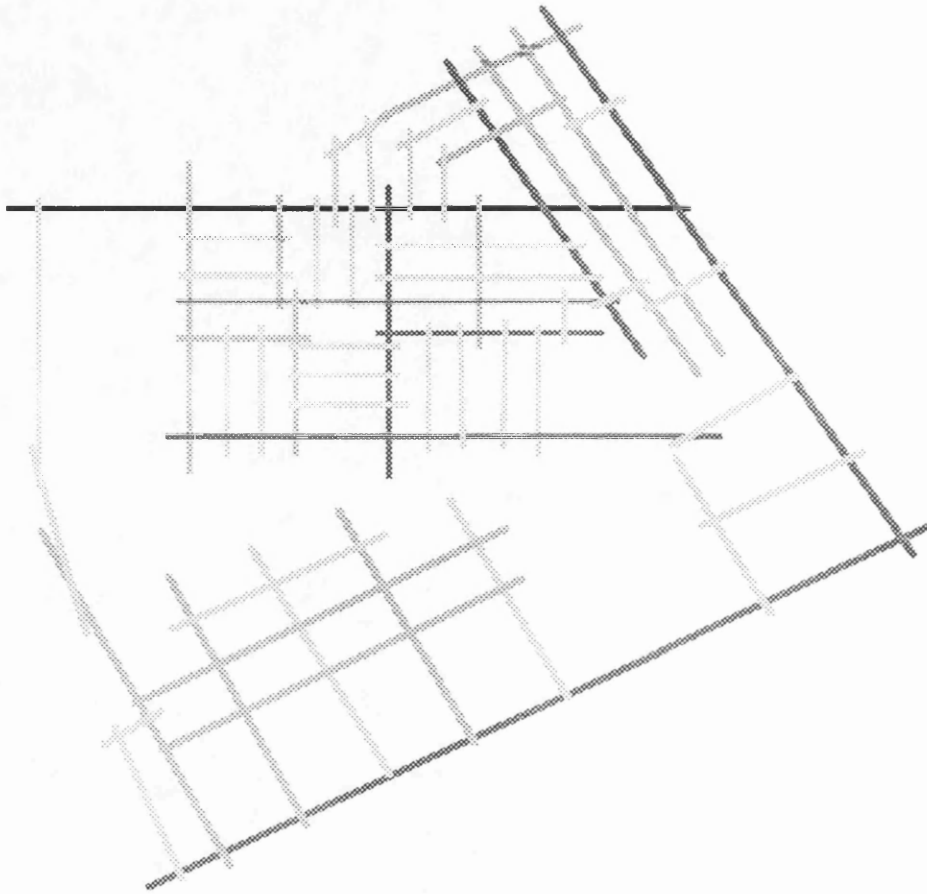
Fig. 3.128. Connectivity map for System 3
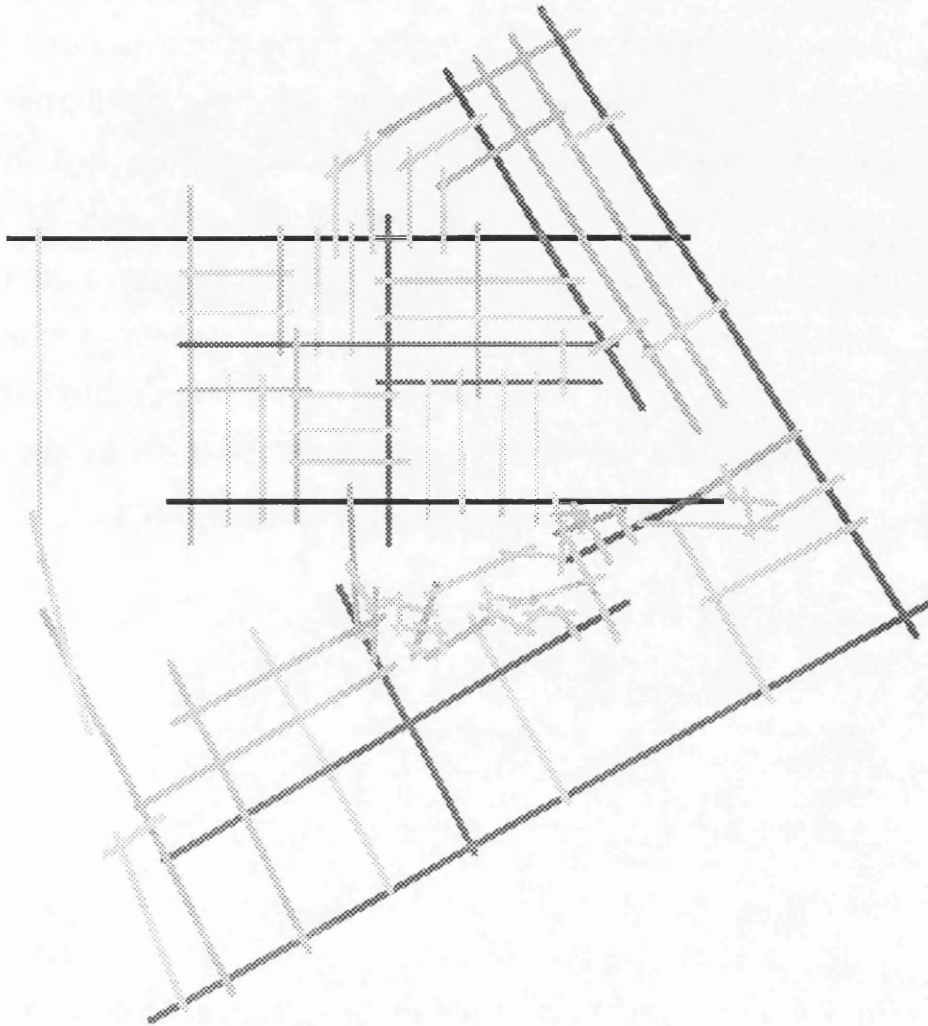
Figures 3.129, 130 e **131** show the integration map for systems 1, 2 and 3. Looking at these maps it can be seen that only lines which are internal to the settlement constituted the integration core in the settlement isolated (system suffixed 1) while important peripheral lines such as Av. Lobo Junior are

included in the core in the system embedded in its urban context. The inclusion of the neighbour squatter settlement (system suffixed 3) brings additional lines to the core, making it to extend over the neighbouring areas. The inclusion of these lines, which are main access lines to the squatter settlement, and of the peripheral lines, brings more global structure to this whole fabric, connecting everything together and making the settlement more continuous to its immediate urban context. Even so, the mean integration drops as the system gets larger [85] as the table below shows.

Main syntatic measures for all systems

SYSTEM	1	2	3
Integration	1.76	1.47	1.32
Control	1	1	1
Connectivity	3.86	3.79	3.53
Radius 3 Int.	1.92	1.86	1.76

It is note worthy that M.Dias fits into its urban context in a conspicuously dissimilar form from that of Timbau. Timbau construct integration in such a way as to keep the strangers - inhabitants interface almost peripheral to the settlement (at the edges), whereas in M.Dias the integration core cut across the system bringing strangers right through the settlement. In both settlements, nevertheless, the integration core covers

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[85] This is in opposition to the pattern found by syntax analysis of many western european urban areas.

just a reduced area of their urban fabric. In that sense, both Timbau and M.Dias are about keeping the strangers - inhabitants interface restricted to a small part of the total street network, and just making accessible and visible to strangers a reduced part of the total local system (see **figures 3.129** to **131**).

So the analysis of the integration pattern allows some conclusions. First, the settlement is relatively segregated with segregation increasing as it is embedded in its larger urban context. Second, the integration core is sparse and form a kind of minimal grid if the settlement is analysed on its own which if analysed into a larger area is extended to cover the neighbouring zones. This grid structure should be helping to create route continuity with the pattern of integration of its surroundings, guaranteeing that a more effective link exists between the settlement and its urban context, so that movement might penetrate the estate. But, paradoxically, people moving through the settlement appears to be channelled to the few longest lines which are part of the integration core, so that the natural movement produced by the global network of streets which results from the embedding of the area in its surroundings does not seem to contribute towards an increase of integration, as the figures of mean integration revealed.

Fig. 3.129. Integration for System 1
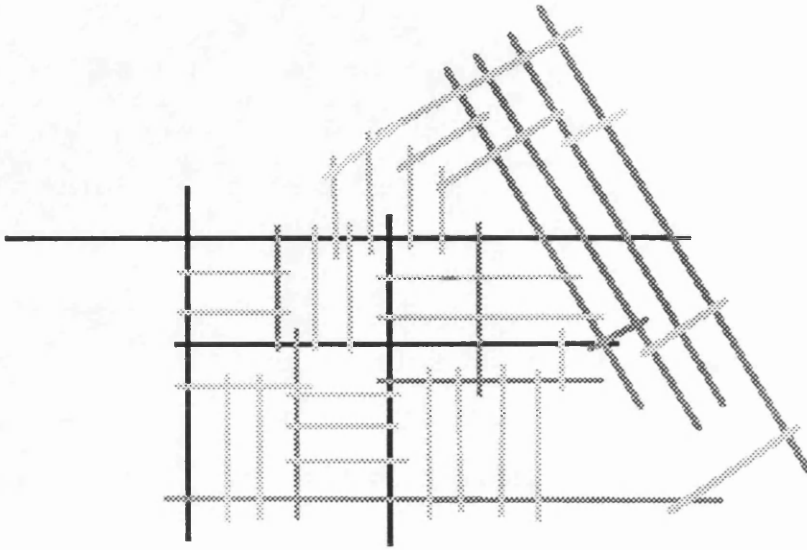
Fig. 3.129.1. The order of Integration in the core map
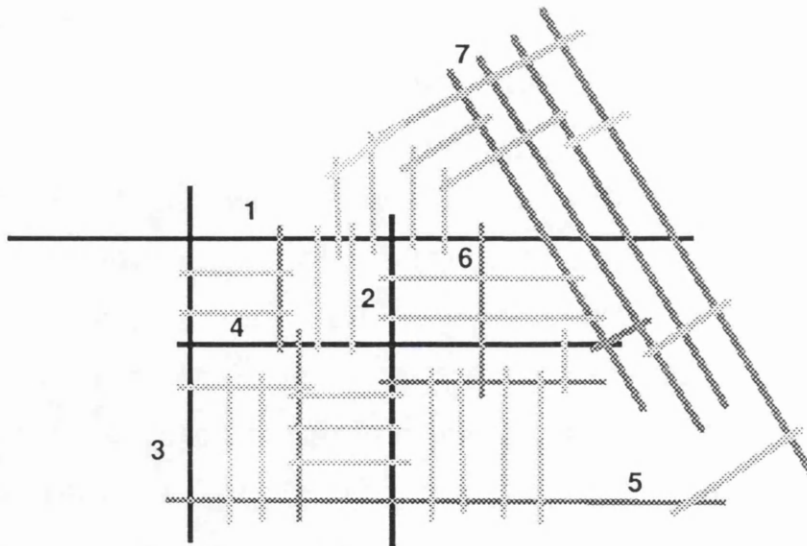
Fig. 3.130.Integration for System 2
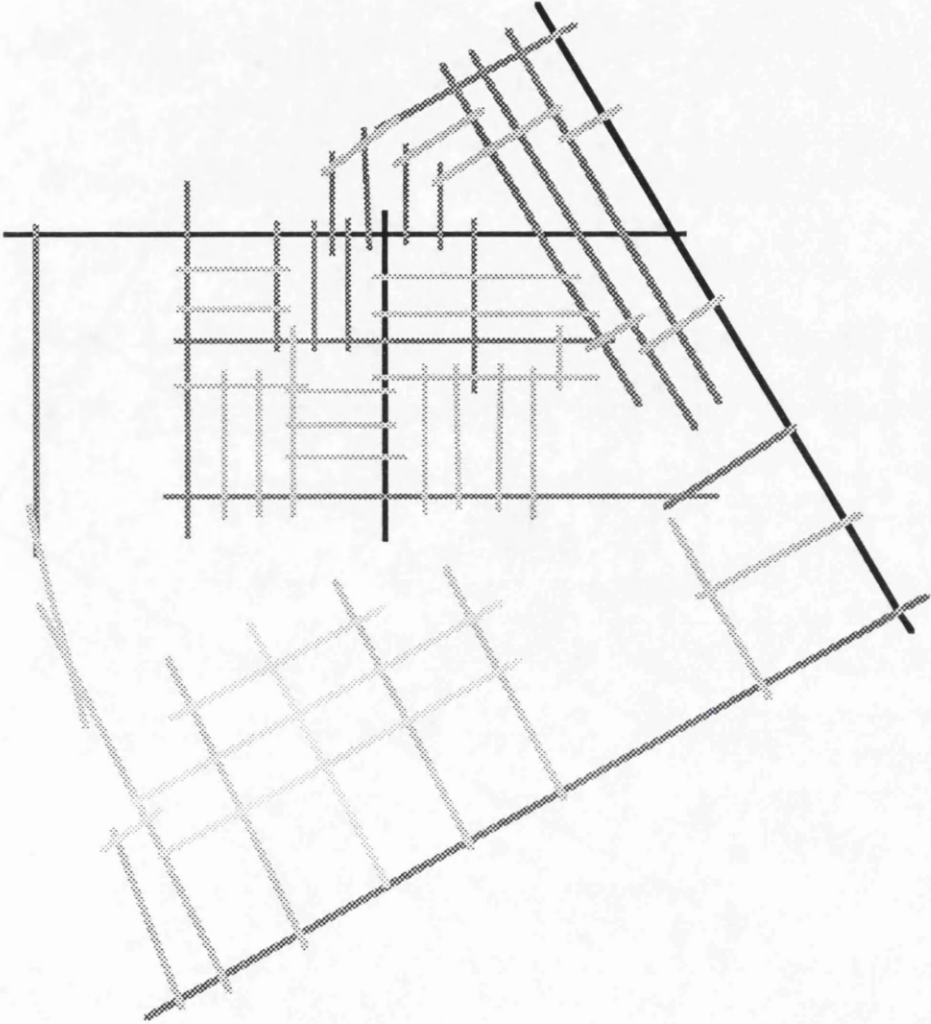
Fig. 3.131. Integration for System 3

The integration core renders almost the whole system shallow from outside, but its linearity together with the small length of lines which develop laterally to the core, make lines of sight towards the internal parts of the settlement reduced and access restricted and, thus, making difficult the movement of strangers in these areas.

Radius three analysis, unlike Timbau, produces a more or less similar pattern to that of integration, with the exception that the last had a linear core while radius three analysis in M.Dias produces a grid-like core. This becomes clearer when the system is embedded in its larger urban context showing that the northwest and southwest of the settlement have longer and relatively more well connected and integrated lines, while the northeast and southeast portions have more or less well-integrated lines which are short and not particularly well-connected.

Fig. 3.132. Radius three for System 1
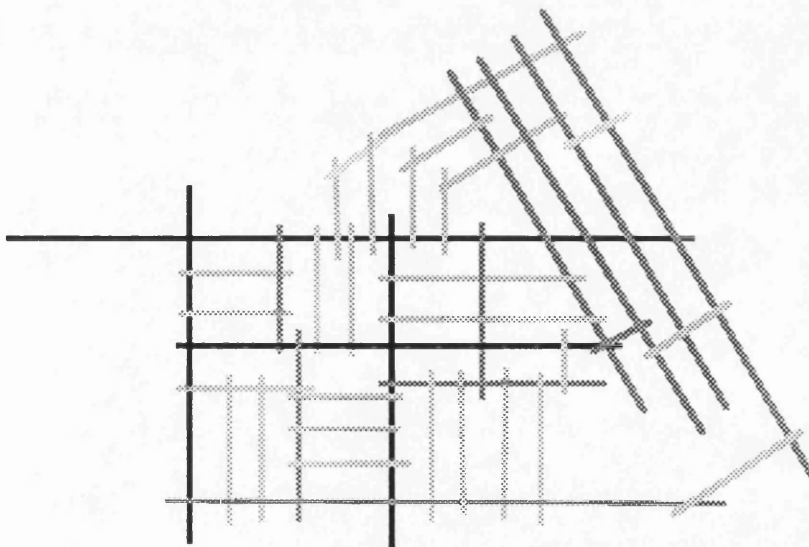
Fig. 3.133. Radius three for System 2
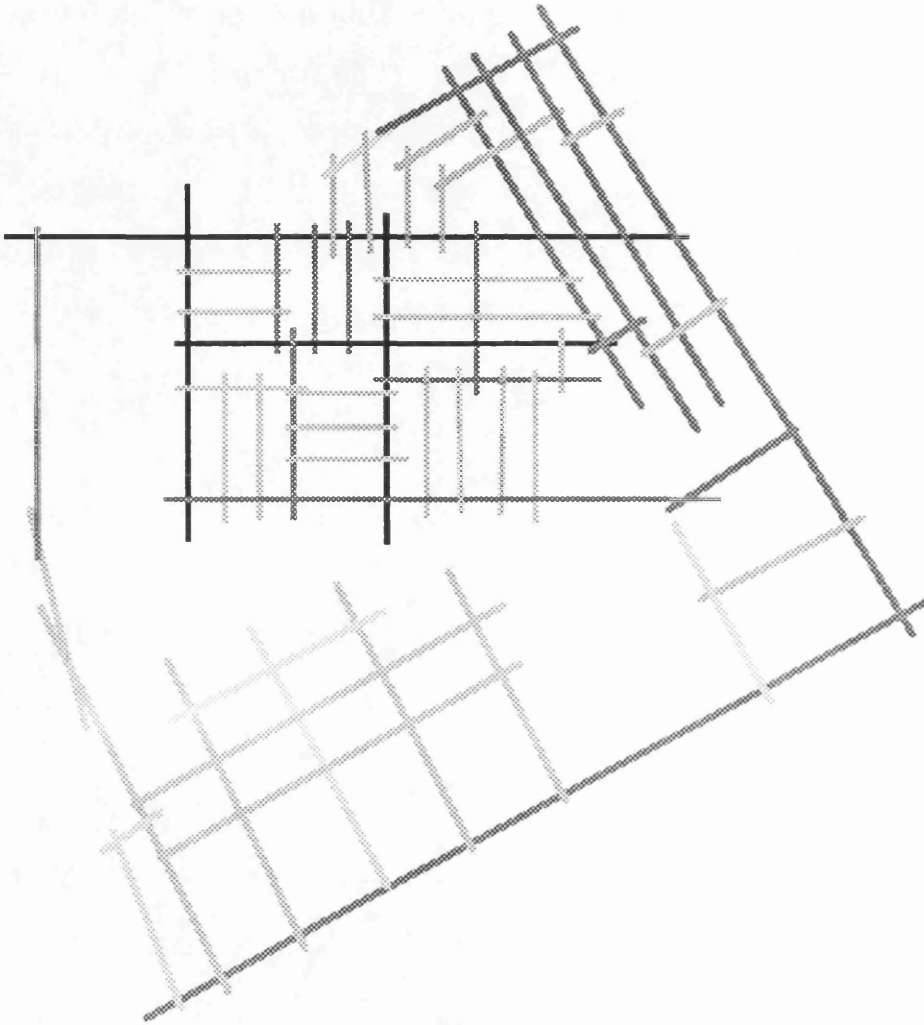
Fig. 3.134. Radius three for System 3
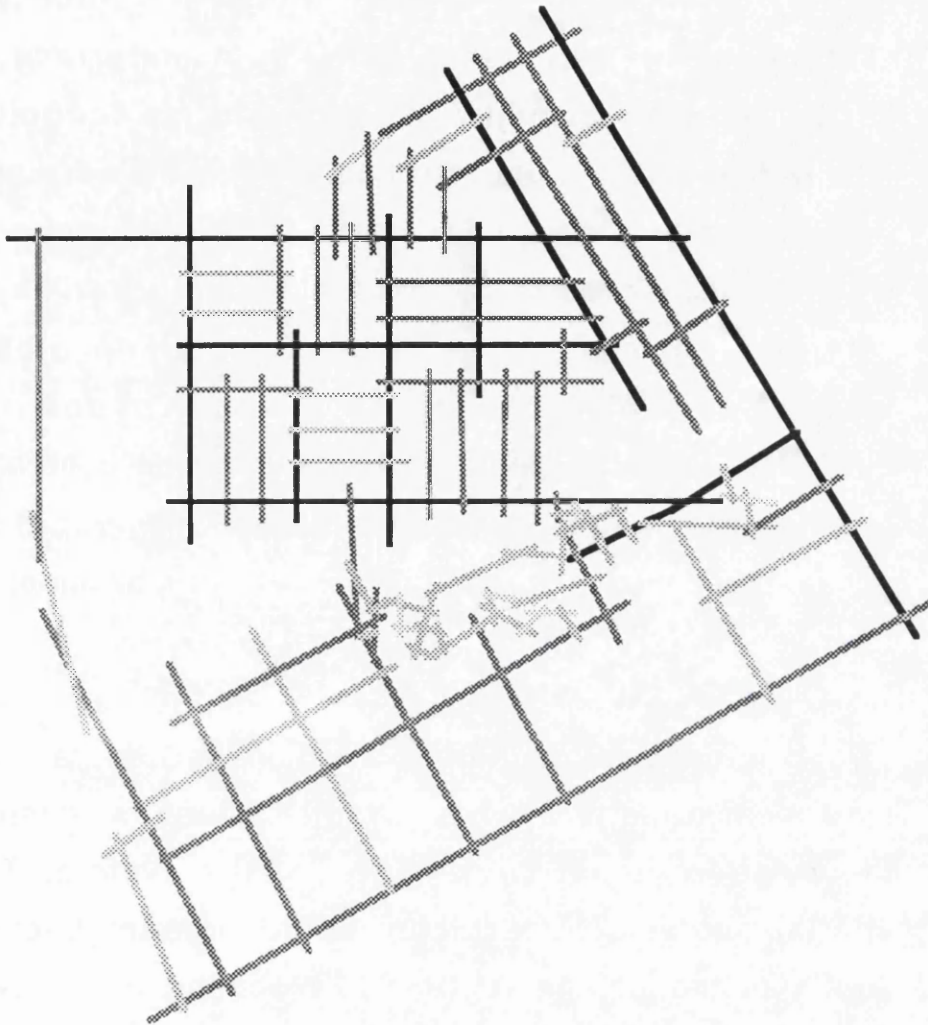
In fact, the radius three core picks up the system of traffic roads, which forms a local grid, dividing the settlement into quarters of pedestrian blocks relatively segregated and poorly connected which are not tied globally. The only global links to long, well-connected streets in the urban context are provided by this network of traffic roads. It creates a grid within the

main grid defined by the integration core. In turn the grid of M.Dias maximizes the global interface yet restricting the strangers - inhabitants interface to certain strategic locations which are highly controlled locally. The fact that the more controlling lines are also very important access lines to the settlement and very well connected does in itself unveil the pervasive relationship that seems to exist between global movement and local control. Overall, pedestrian movement, although very dense, seems to be generated locally rather than globally while movement from outside becomes a marginal component of movement as a whole.

The Urban space is highly used in M.Dias, as the movement rates in the next chapter will show, despite the relative global segregation of the system. The spatial analysis undertaken in the present section suggests though that M.Dias like Timbau has a very localized grid structure, with a street grid which does not seem to transcend settlement boundaries. This appears to point at the settlement as local centres with integration as a global property of perimeter zones in the case of Timbau and of global lines which are part of a preexisting urban grid in M.Dias. The question therefore arises as to whether or not both settlements exist independent spatially of the global structure of

the city. Both settlements have shown themselves to be relatively autonomous and self-referential grids, even though the movement results displayed for Timbau and will confirm for m.Dias that there is an intense pedestrian movement and social field of interaction, as well as unequivocally a relation between the patterns of integration and of movement. The key of the problem seems to be the understanding of how this local structure is constructing global relatedness (socially and spatially).

To summarize, what seems to emerge from the syntatic analysis presented so far is that there exists in M.Dias a sort of grid within a super grid around which different parts or sub-areas of the settlement are organized, linked together by a main through-route which traverses the settlement and it is part of this super grid. The analysis, nevertheless, has not shown any clear morphological and physical differences which could suggest the existence of these discrete spatial sub-areas.

A comparison of syntatic measures

A visual comparison between the four core maps of M.Dias shown in **figure 3.123** to **3.134** (i.e. Connectivity, Control Value, Integration and Radius

three for system 1) shows that only one line features in all maps. This is the line which traverses the system and corresponds to Dom E. Salles Street, which is a major local through-route. This space connects the two edges of the settlement and continues through the neighbouring industrial block.

A more precise way of comparing the syntatic properties of each space is to look at their relations through scattergrams (see **figure 3.136** to **141**). **Figures 3.135** to **138** are statistical correlations showing the relation between the syntatic measures. The scatters, overall, suggest that local/global syntatic variables relate well together in M.Dias.

The first group of scatters (**figure 3.135**) looks at <u>intelligibility</u>, which is the correlation between reciprocal of integration (RRA1) and connectivity, for the different systems. Intelligibility expresses the extent to which a moving observer is able to understand the global structure of the system from the local one. More simply, it measures how intelligible the global system is from the local. By analysing these correlations it was found a strong positive correlation between connectivity and RRA, suggesting, as it should be expected, that the more connected a system the more integrated.

Fig. 3.135. Intelligibility (Integration x Connectivity)

System 1

y = 5.239x - 5.352, R-squared: .758

System 2

y = 4.703x - 3.103, R-squared: .427

System 3

y = 5.587x - 3.857, R-squared: .402
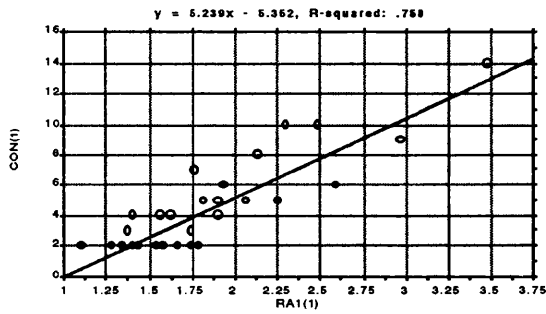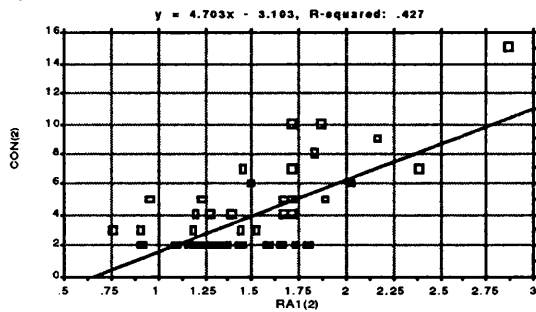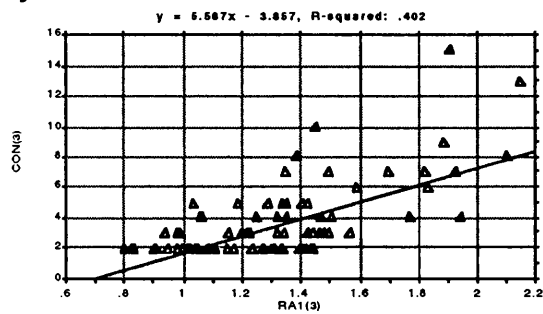
In the case of M.Dias the system is highly intelligible, but intelligibility is reduced drastically as it gets larger (r2 = .427 and .402 respectively for systems 2

and 3). Although it varies with size, setting these values against the average value for typical urban areas of 0.45 for intelligible systems and 0.2 for unintelligible systems[86], reveals that the system performs well above the average on this measure.

Intelligibility, as observed above, drops with the embedding of M.Dias into its urban context showing that also in terms of intelligibility the area treated in isolation produces better results. This suggests that the system is much more intelligible locally than globally. Moreover, comparing M. Dias's intelligibility values with Timbau's values, it is note worthy that despite of M.Dias's geometric regularity and repetition which brings a relative spatial monotony[87], its intelligibility is as much as twice Timbau's intelligibility.

Hence the layout of M.Dias appears to give more information of the local from the global system than the layout of Timbau. This might happen in Timbau as a result of the predominance in the layout of a fragmented

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[86] These results were presented, for example, in the UAS "75 towns study", and are mentioned in Hanson, J., 1989, **Order and structure in urban space: a morphological history of the City of London**; PhD Thesis University of London, pp.320.

[87] This monotony has consequences on the ground since when moving about in M.Dias the absence of a resonable amount of local differences creates difficulties in the understanding of the global pattern of the settlement as a whole. By contratst, in Timbau, the abundance of local differences is constantly giving clues about its global structure.

and over-localized scale. But, if in one hand, this facilitates the understanding of the global structure of the settlement from its local patterns, on the other hand it creates obstacles to the understanding of the global from the local system. In M.Dias, however, the situation seems to be quite the opposite. That is a global pattern which facilitates the understanding of the local system with a local system not differentiated enough to give clues about the global system as a whole.

The second group of diagrams (**figure 3.136**) examines the relation between two local variables, connectivity and control value. Looking at the scatters it can be pointed out that for all three systems the correlation is highly significant with a correlation coefficient of .964, .966 and .937, if it is read from the smaller to the larger system. Further analysis of the scatters also show that the relation is more intense for the lowest values. This reveals that local syntatic variables also relate well in the settlement.

In addition to that, **figure 3.137** reveals that there is also a strong relationship between radius three integration and integration, specially when M.Dias is analysed on its own[88]. This shows that the depth distribution of all spaces in the system from each other

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[88] The correlation coefficients are respectively .954 for local streets, .933 for pedestrian streets and .932 for internal streets.

space follows a relative similar pattern than that followed by the distribution of depth among spaces up to three steps away. It follows, as mentioned earlier, from the relative homogeneity in depths from different points at around three and four steps.

Fig. 3.136. Correlations of Connectivity x Control Value

System 1

y = 2.635x + 1.222, R-squared: .833

System 2

y = 2.66x + 1.13, R-squared: .93

System 3

y = 2.689x + .838, R-squared: .878
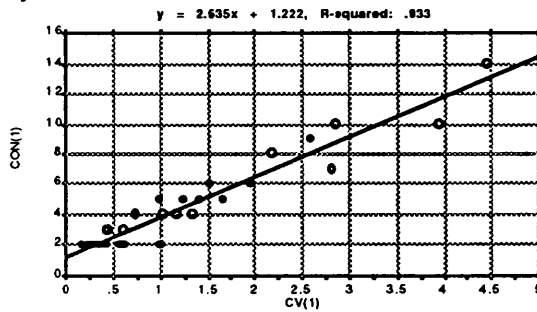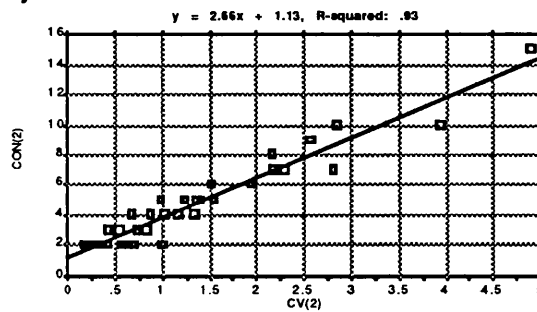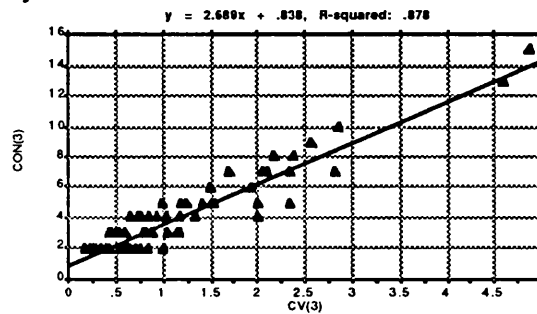
Fig. 3.137. Correlations of Radius three Integration x Integration

System 1

y = 1.019x - .204, R-squared: .952

System 2

y = .767x + .04, R-squared: .771

System 3

y = .542x + .367, R-squared: .754
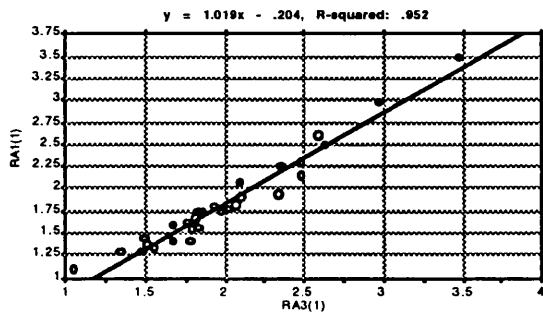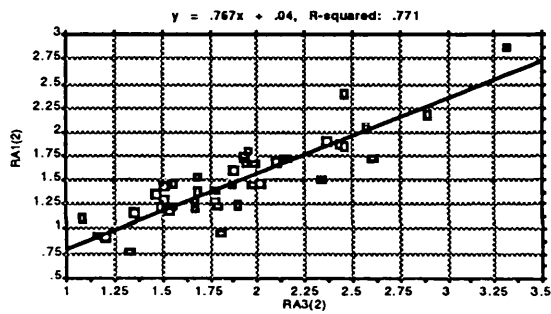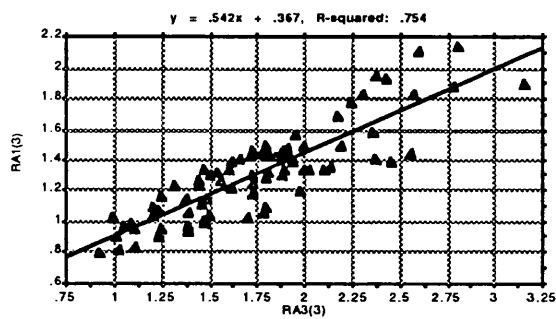
Fig. 3.138. Correlations of Depth x Integration

System 1

y = -.768x + 4.799, R-squared: .214

System 2

y = -1.691x + 6.097, R-squared: .581

System 3

y = -1.752x + 5.932, R-squared: .346
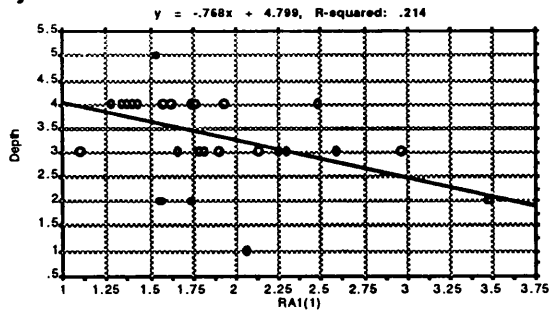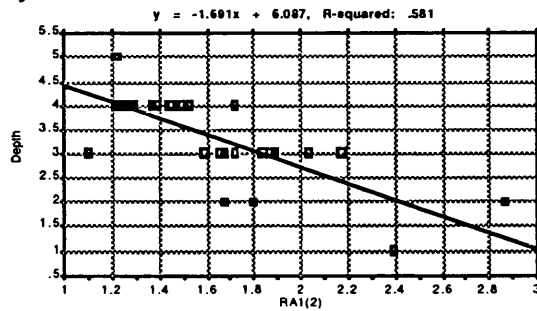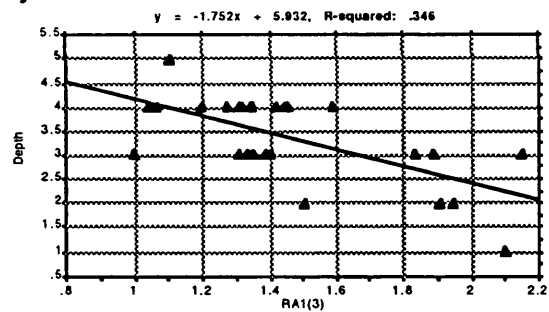
The last set of correlations (see **figure 3.138**) expresses the degree of relation between depth from the carrier and generalized depth (integration). Since depth is a prime variable influencing the way the grid structures movement, the correlation coefficients for

systems 1, 2 and 3 [89] may be used as evidence to show the form natural movement is differentially organized in each system. The relative low correlation value for M.Dias isolated (system suffixed 1) denotes that there is not an agreement between depth from the carrier and generalized depth or integration.

The findings of this section reinforces the argument that, like Timbau, locally generated movement is an important component of movement in the settlement. This, in other words, means that both places do not seem very easily accessible to strangers.

The syntatic analysis of M. Dias urban grid morphology undertaken so far has shown the predictive power of spatial parameters in describing patterns of movement. It is the following sections' aim to characterize the patterns of human co-presence and encounter taking place in M.Dias and to describe the specific characteristics of the interface defined by that group of settlers. The intention is to give a statistical picture of the settlement's spatial movement patterns to be able to understand its social interaction structure.

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[89] The correlation coefficients of depth from the carrier against generalized depth (integration) respectively for systems 1, 2 and 3 are .463, .762 and .346.

Observing Movement in M.Dias

The procedure used is similar to the one applied to Timbau, with a movement and space use analysis following the previous section which was focused on the syntatic analysis of the settlement.

As in Timbau, patterns of space use and movement were observed thirty times at different times of the day in a continuous route for the categories of moving people (men, women and children) and static people (playing, working and talking). The route covered a total of 30 street sections corresponding to around 70% of the spaces in the system (see **figure 3.139**). The numbers were expressed as densities per 100 metres/minute and standardized per length of line observed. The results of the observations are shown in a series of movement and dot maps (**figures 3.140 and 141**). These maps transcribe the results of all rounds onto a single plan which shows the total average number of people per hundred metre/minute along the observed line. Movement maps were produced for each of the six categories observed with two summary maps containing all the moving people and all the static people (**figure 3.142**). Dot maps show only the four major categories of moving adult and moving children, moving and static people (**figure 3.143**). The raw movement data, is presented in the table enclosed.

Spatial configuration and Movement in M.Dias

The approach adopted in the subsequent sections dedicated to explore patterns of movement in M.Dias, like the one used for Timbau, starts from a more intuitive description of movement through the settlement and progressively moves towards a more precise account of it. The aim of the section is to offer a picture of how actually movement, and the social interface among inhabitants and between inhabitants and strangers takes place in the urban grid of M.Dias.

The order of presentation of maps and data follows the one used for Timbau which was as follows: firstly, observation maps with an initial description of the patterns of movement which can be grasped from the visual inspection of those maps; secondly, a numerical and statistical analysis of the overall encounter rates for each category observed with a study of the street and the typological differences in the spatial location of those categories (i.e. in terms of main, local and pedestrian streets); and lastly, a detailed statistical examination through scattegrams and correlations of the effects of the spatial configuration of the grid (identified by the measure of Integration) in the distribution of movement as well as of the probabilistic patterns of co-presence and interface among the categories observed.

Fig. 3.140. Observation route map of M.Dias
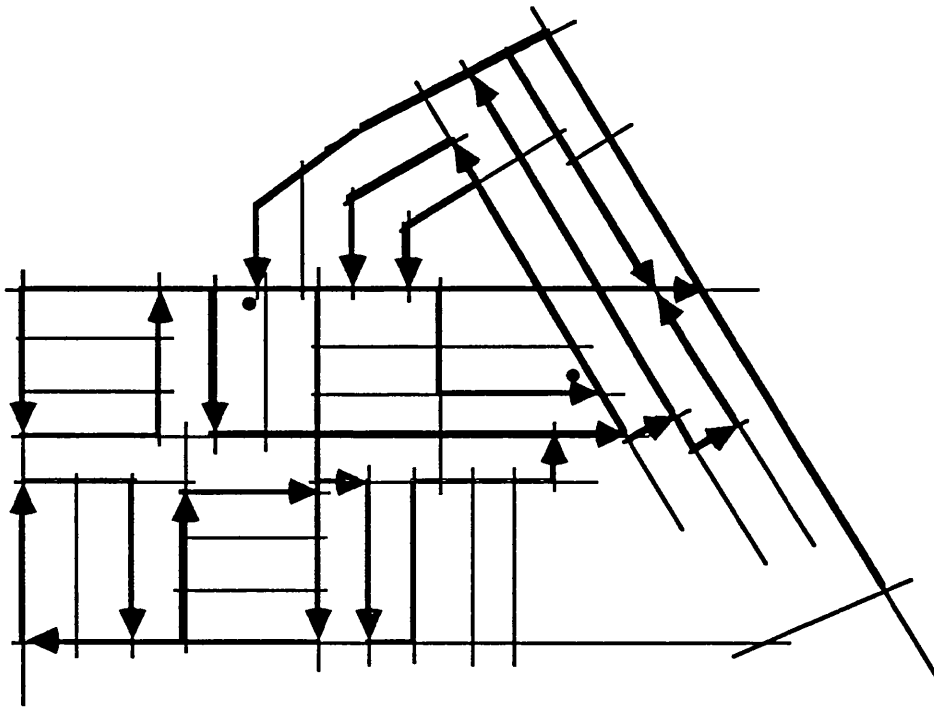
Fig. 3.141. Observations maps of M.Dias

Moving People

Moving Men

Moving Women
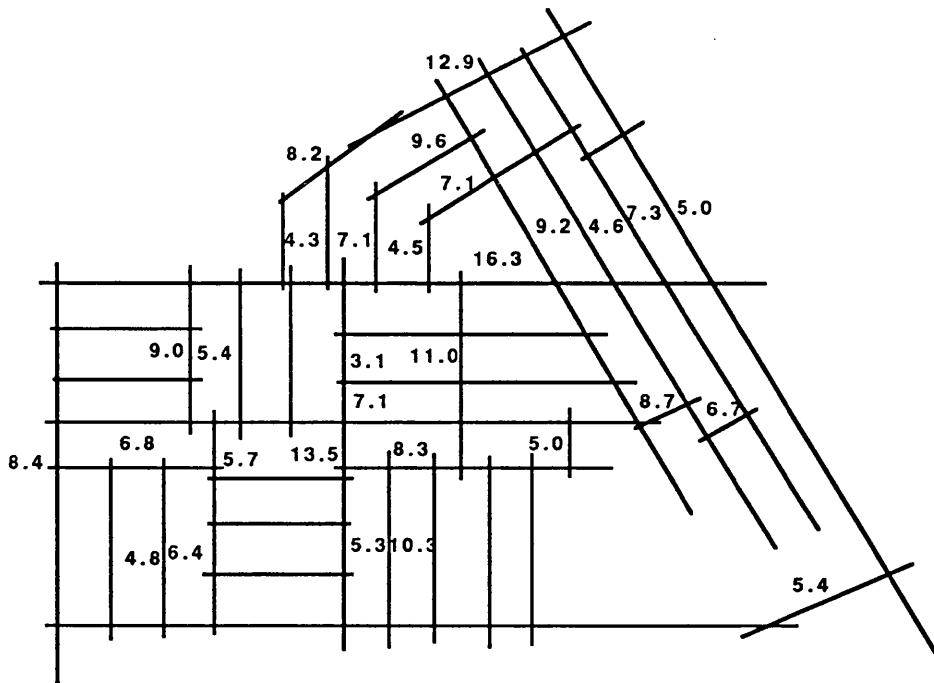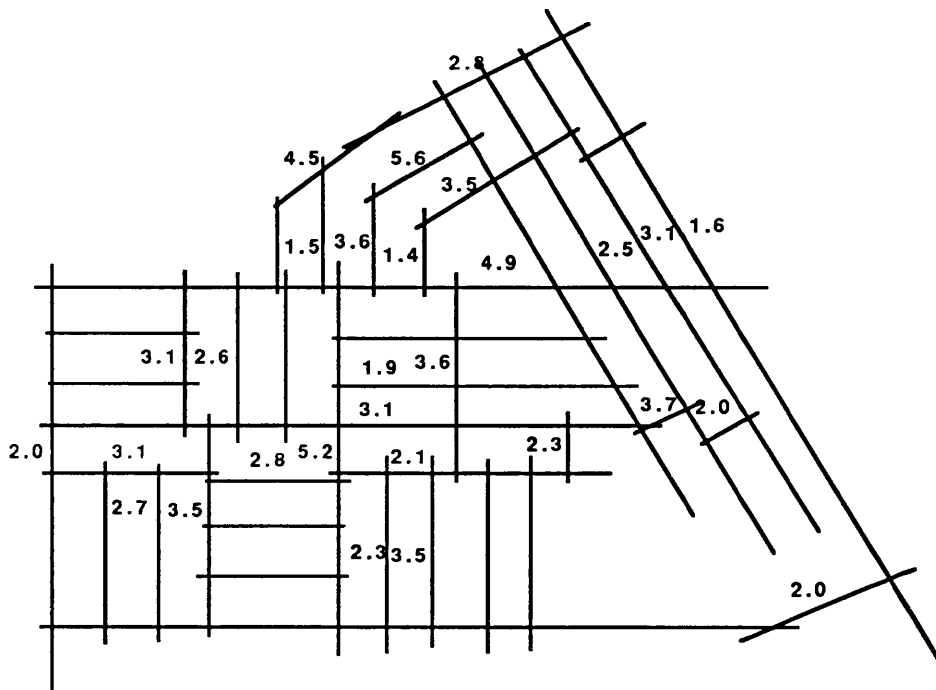
Moving Children

Play
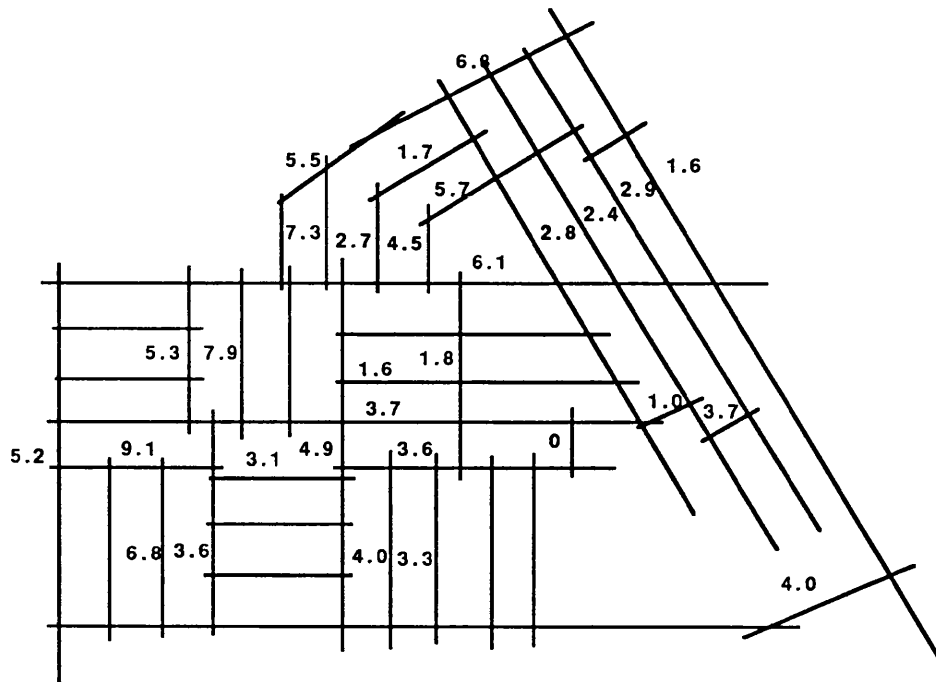
Work
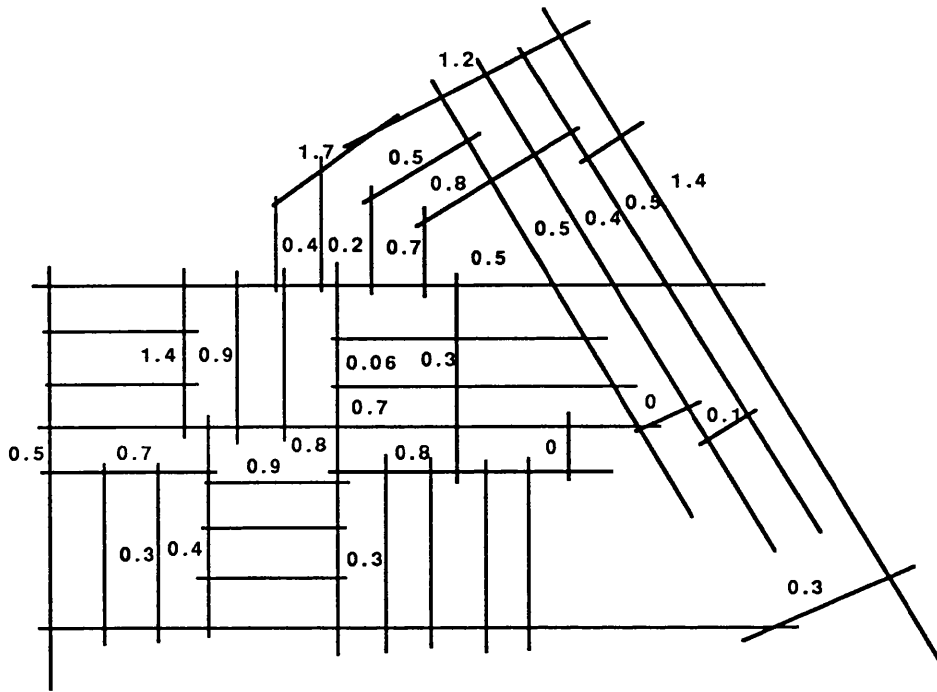
Talk
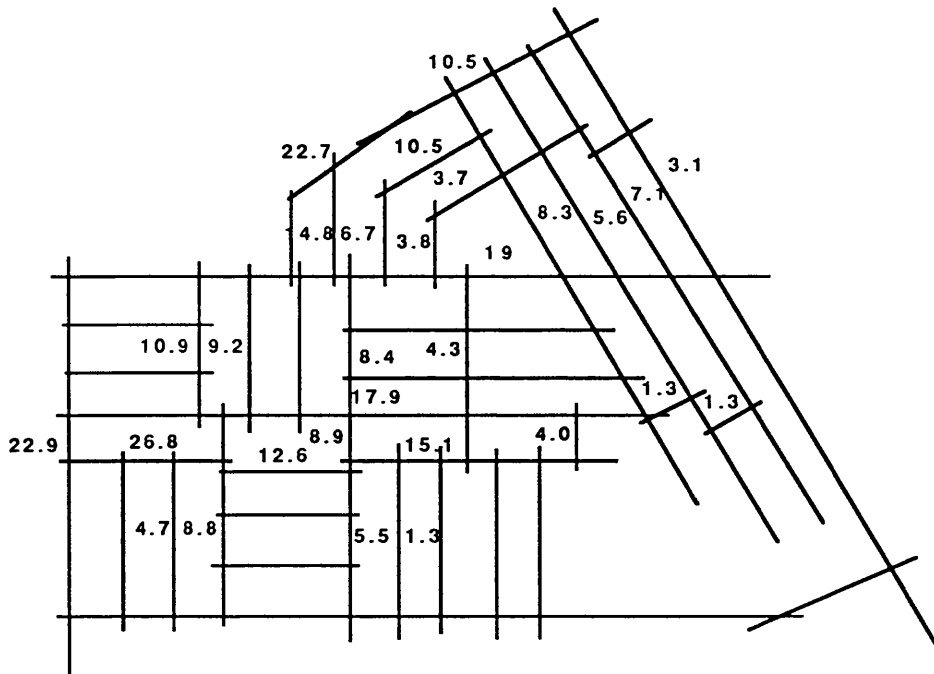
Moving Adults
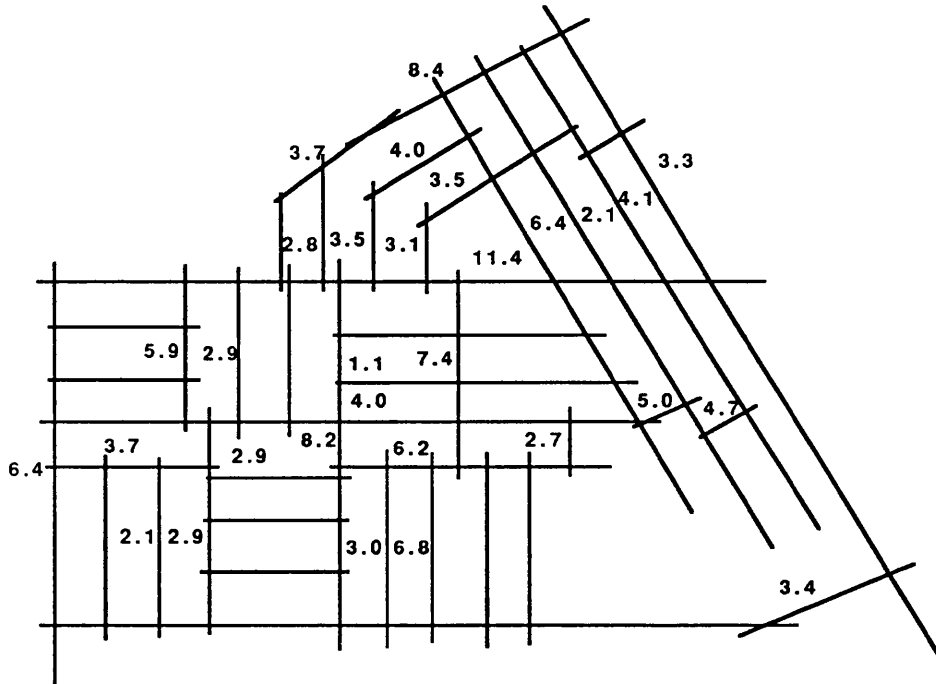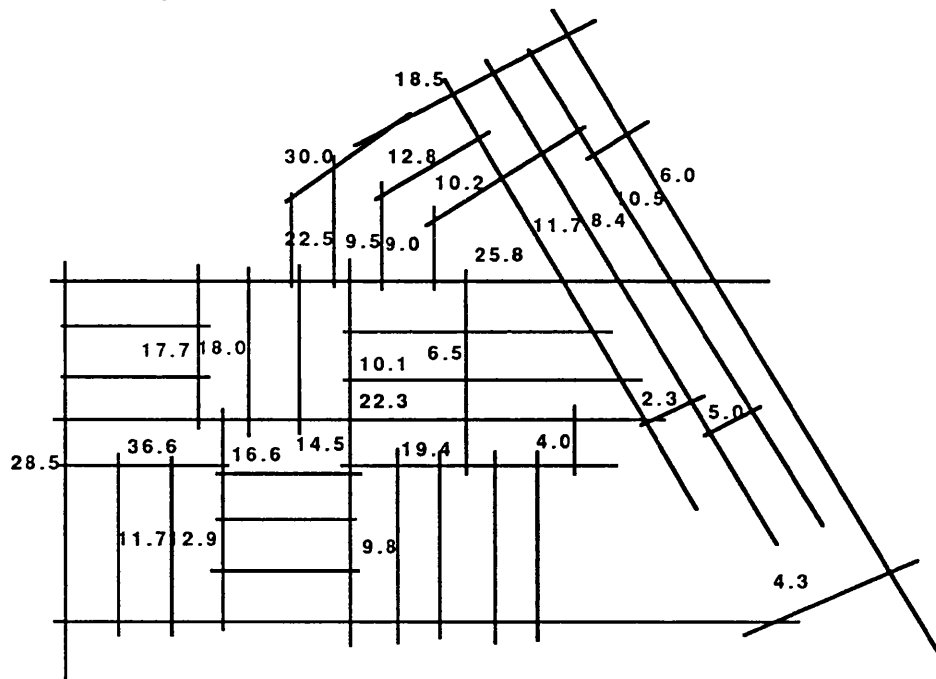
Static People

Fig. 143. Dot maps of M.Dias

Moving people
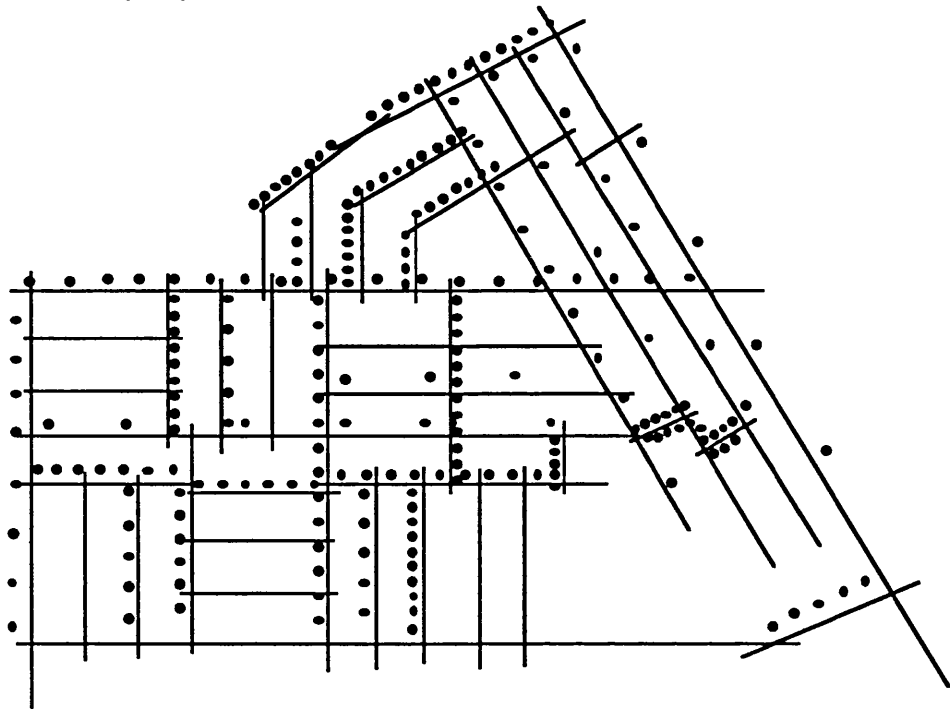
Static People
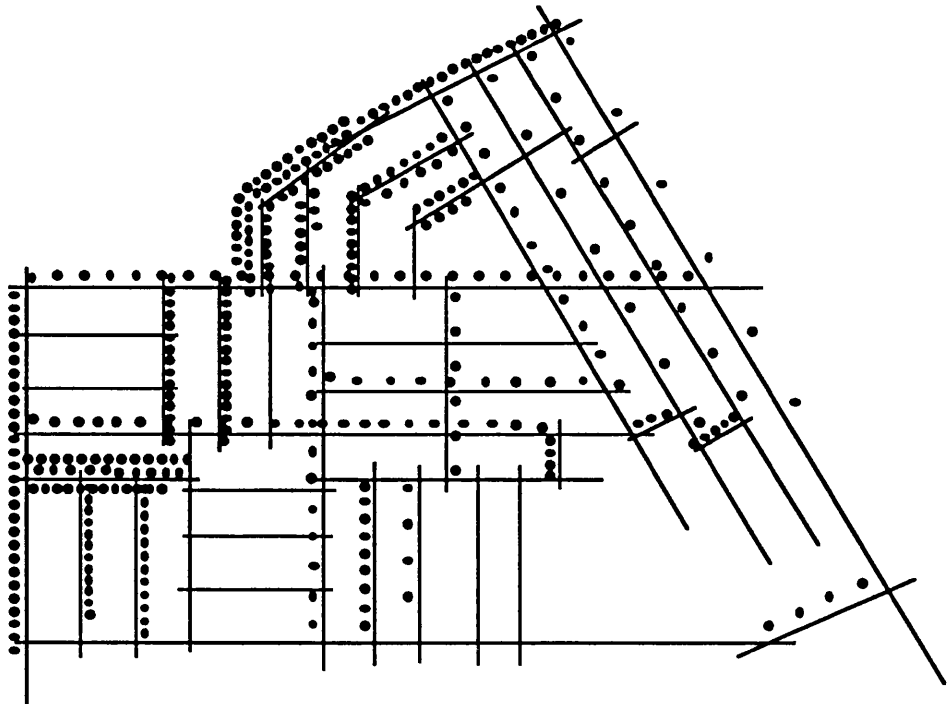
Moving Adults
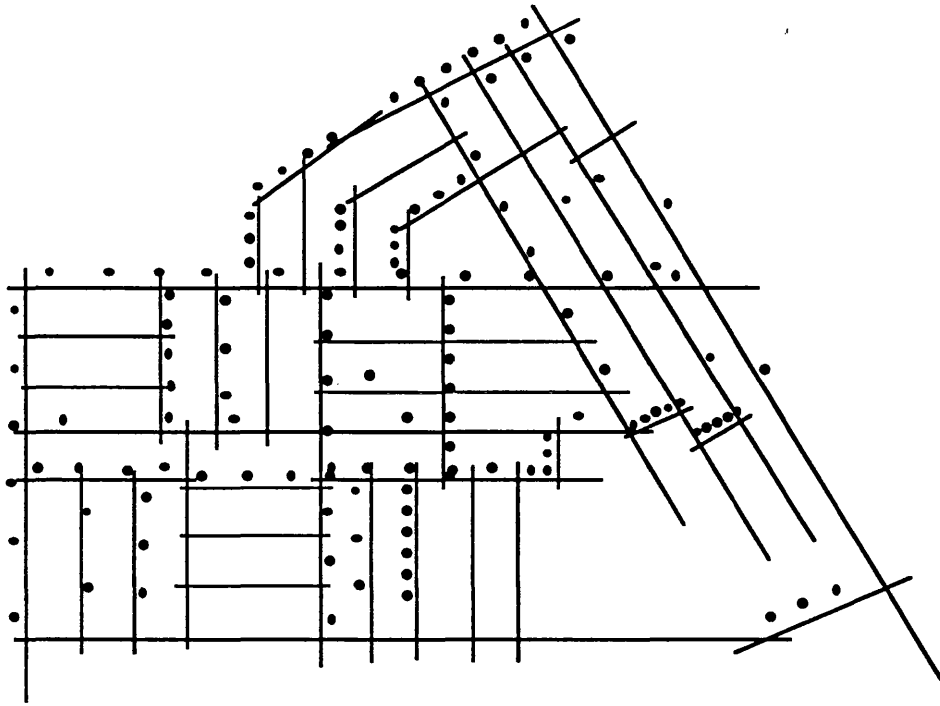
Moving Children
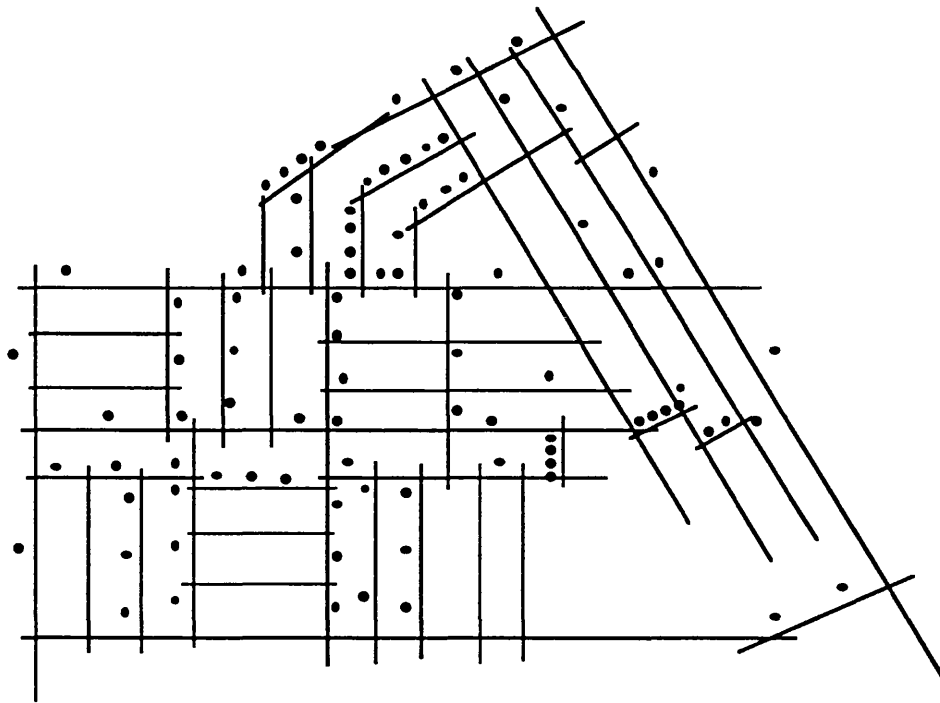
The observation maps of **figure 3.140** picks some of the characteristics of the movement and co-presence patterns of M.Dias.

Secondly, there are many more static than moving people. Yet, though, static behaviour seems to be spread throughout the settlement regardless of the type of street, there is a concentration on certain main streets of both static and moving people. This might suggest that in M.Dias, unlike Timbau, static behaviour is more globally oriented and as such it is of key importance for the construction of the strangers x inhabitants interface. [90] Static and Moving people co-habit most of the time the same spaces in the settlement[91].

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[90] Bars as social gathering places hold a direct relation with high concentrations of static people in the streets. Since most of the bars are also shops, their location can be seen in the land use map on page 131. The interviewed descriptions of that places, as it will be shown latter, are full of references about that. Therefore, if static behaviour is of key importance for the construction of the strangers x inhabitants interface so they are bars.

[91] In Timbau this was not the case thus suggesting that static behaviour was merely to do with the interface of inhabitans x inhabitants and with the interaction of locals.

Thirdly, it is possible to identify two main routes of movement which appear to have, nevertheless, both their origin and destination inside the settlement linking the south with the north and the east to the west of M.Dias[92]. Thus, by contrast to Timbau, in M.Dias the pattern of movement through the settlement seems to be channelled and structured by relatively well defined routes which however do not appear to work as routes to somewhere else outside the settlement. This in fact may reduce the chance of the streets of the settlement being populated by passers-by. Thus outsiders will thus very likely to be people visiting the settlement rather than mere strangers.

Finally, like Timbau, moving children and moving adults co-habit the same public spaces in the settlement. The existence of a much higher density of adults, nevertheless, guarantees that children are under surveillance.

In general the maps show that the streets in the settlement despite the settlement's overall spatial segregation are well used, thus suggesting that they are spaces under surveillance most of the day as this makes them safe and lively spaces.

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[92] This nevertheless is an issue which will be examined in detail in the last section of this chapter on the basis of the origin and destination pilot study underatken in the sttlement.

Distribution of movement density and social interfaces

The study of Timbau has confirmed, as suggested by many syntatic studies, that movement potentially creates the opportunities for encounters and avoidances between gender groups and between inhabitants and strangers. The present chapter aims at analysing the distribution of movement density in M. Dias in order to describe the socio-spatial patterns of interaction present in the settlement. A summary movement data table is shown below.

Movement Data table of M.Dias

The first type of data which will be looked at is the distribution of mean rates. **Figure 3.143** below suggests some interesting points. Firstly, the mean movement rate (7.558 phm/m) in M.Dias is, like Timbau, well above the average rate of 2.7 phm/m for urban residential streets. One of the reasons for that might be economic - people may use less cars and walk more either because they do not have cars or because the culture predisposed them to walk[93]. This high rate of moving people, however, brings support to the idea put forward that despite its relative global segregation, the settlement is able to take advantage from natural movement in the area. Its relative self-enclosure and isolation do not seem to stop its streets to be populated with people passing through. The second point is that

discussion chapter.

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[93] As mentioned previously in the begining of this chpater 25% of Timbau's population goes on foot to work. It might be possible that western european streets would have been busier too at even 50 years ago. This nevertheless is a subject which will be dealt further in the discussion chapter.

Timbau. This may be due to the fact that, as suggested before, static behaviour in Timbau seems to be restricted to the inhabitants x inhabitants interface whereas in M.Dias it appears to have a pervasive role in socializing strangers and inhabitants. The number of men moving in the settlement is just above the number of women, whereas the number of children is much smaller than the number of adults[94].

Fig. 3.143. Mean activity rates for M.Dias

RMM (relativised moving men)		2.523
RMW (relativised moving women)		1.808
RMCh (relativised moving children)		1.808
Play (relativised people playing)		4.082
Work (relativised people working)		.786
Talk (relativised people talking)		10.824
Movingad (relativised moving adults)		4.331
Moving (relativised moving people)		6.139
Static (relativised static people)		15.692

All figures in people per hundred metres/minute

On average the numbers of men, women and children are different. **Figure 3.143** shows that there are about 25% more moving men than women and almost three times more moving adults than children with more than twice as many static as moving people. In other words, the social interface taking place in the settlement is between a rather unequal number of people per group.

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[94] The number of adults is respectively 4.331 phm/m whereas the number of children is 1.1808 phm/m. This, similar to Timbau, gives a rate of about 1 children to 3 adults.

The table shows that local interaction in the settlement is very strong. There seem to be three important reasons which are based on the type of job occupation for explaining the outstanding high number of people which are able to be talking in the streets. The first is that jobs tend either to be odd jobs, which do not necessarily take place regularly and during normal working ours, or to be local jobs. The second reason is the relatively high number of unemployed people or people with regular jobs. The third is that women tend to be have occupations which do not take them completely away from home and allow them to rear their children and take care of their homes. Many of these occupations are either performed at home or in the neighbourhood.

To sum up, it could be said that in M.Dias there is a dense field of encounter between men, women and children, even though densities vary between sexes, between children and adults and between static and moving behaviour.

The data above gave an idea of the overall densities of movement and static behaviour. This distribution may be better understood by analysing its variations through the day. **Figure 3.144** shows that patterns of movement and static behaviour change throughout the

day. The peaks of moving and static people are at 16 pm and 17:30 pm. This seems to confirm data from the questionnaire[95] where the interviewees have said that people in both settlements sit outside to talk in the afternoon.

Fig. 3.144. The distribution of activities throughout the day

	8:30	11:00	14:00	16:00	17:30	TOTAL
RMM	1.90	3.12	2.34	3.21	2.53	13.10
RMW	1.70	1.79	1.62	2.20	2.00	9.31
RMCh	2.31	3.15	2.26	4.74	3.95	16.41
Play	2.22	3.68	4.26	6.27	5.54	21.97
Work	0.97	0.54	1.09	0.34	0.64	3.58
Talk	5.83	9.17	8.95	13.64	17.20	54.79
Movad	3.6	4.91	3.96	5.41	4.53	22.14
Moving	5.91	8.06	6.22	10.15	8.48	38.85
Static	9.02	13.36	14.3	20.25	23.38	80.31

All figures in people per hundred metres/minute

The two figures presented so far in this section offered a picture of the densities of movement through the settlement. To explore the spatial distribution of movement and static behaviour this section will first look at the variation of rates by types of streets (i.e. main local and pedestrian streets) and then by steps of depth.

The three types of streets, whose average movement and static rates are given in the table below, were analysed to detect any trend and to help to identify if there is any typological characteristic in terms of movement and static behaviour differentiating them.

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[95] see an earlier section in this chapter and Chapter V.

Fig. 3.145. Activity densities by typology of streets.

	Internal	Local	Pedestrian
RMM	4.10	3.076	2.232
RMW	3.067	1.703	1.625
RMCh	3.44	3.933	2.818
Play	4.43	3.543	4.264
Work	1.106	0.72	0 .779
Talk	12.40	10.34	10.552
Movingad	7.167	4.779	3.857
Moving	10.607	8.712	6.675
Static	17.936	14.603	15.595
Depth	2.4	3.4	3.6
D.Shops	7.8	5.4	5.4
Ax.length	112.5	69	39.3

All activity rates are in people per hundred m/m

Looking at this data for each of the streets type, presented in the table (see **figure 3.145**), and setting them against the average figures for M.Dias as a whole (see **figure 3.143**) some conclusions can be drawn. Main streets perform well above the average for most rates. Most rates drop steadily from main to pedestrian streets, with exception to moving children which is higher in the local streets.

A comparison between the mean depth shows that main streets are shallower, while local and pedestrian streets have more or less the same mean depth. This is also followed by the density of shops which is higher in the main streets and similar in the pedestrian and local streets. Finally, the table also shows that length drops steadily from internal to pedestrian streets with the first being almost four times longer than the last.

These findings suggest, in turn, that indeed there are clear typological differences in terms of movement and static behaviour between these three groups of streets. This indicates that there seems to be a correspondence between the spatial and physical characteristics of each type of streets, and their syntatic configurational properties of length and depth, as well as the patterns of movement and activity they sustain.

To explore further the distribution of movement patterns through the spatial urban structure of M.Dias **figure 3.146** shows the variation of movement density rates according to depth. Looking at the table it can be seen that movement and activity rates are substantially higher at depth 2. It is striking that also the number of shops are relatively high at depth 2, 3 and 4 but not at the shallower lines, yet these are the longer lines and the major thoroughfare routes. Static behaviour also seems to favour by far lines at depth 2, 3 and 4 whereas lines at depth 1 and 5 have a more or less similar rate of static people.

Above all, the pattern presented in this table is very different from the one presented for Timbau (see **figure 3.89** early in this chapter) where there was a relationship between depth and movement rates with rates decreasing gradually from the edge lines to the

deep ones and with shops and static rates at depth 5. Length also varies greatly between M.Dias and Timbau, with much longer lines for the first.

Fig. 3.146. Variation of activity rates by depth

	Depth 1	2	3	4	5
RMM	1.71	5.62	2.59	2.08	2.0
RMW	1.20	3.62	1.86	1.54	1.67
RMCh	1.64	4.74	2.91	3.06	2.33
Play	1.60	6.46	4.41	3.90	0
Work	1.67	1.23	0.89	0.59	0
Talk	3.16	13.12	12.01	10.46	4.0
Movad	2.91	9.24	4.45	3.62	3.67
Moving	4.55	13.98	7.36	6.68	5.0
Static	6.43	20.81	17.31	14.95	4.0
D.shops	1.33	8.30	5.40	5.96	0
Ax.length	150	78.33	58.93	37.48	10

(actual axial length)

The fact that shops and static behaviour have their higher values at depth 2 and the lowest values at depth 5 may be an evidence that, as suggested previously, unlike Timbau they have to do with the local to the global interaction patterns. More simply, shops and static behaviour in M.Dias might constitute important forms of mixing socially strangers and inhabitants and relating the local to the global social network. On the other hand the shops distribution in the settlement does not seem to hold any obvious relation to movement[96]. **Figure 3.147** is a comparison

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[96] The correlation coefficients of shops density moving people which is .301 suggests there seems to be no relation at all between the two variables.

between movement rates in shop and non-shop streets. This table illustrates some interesting points. First, movement rates for streets with presence of shops remain close to the mean average movement rates. This shows that there does not appear to be a measure of concentration of shops in particular locations regarding movement Static rates, however are 100% lower for non shop streets, suggesting thus that the presence of shops may could have an influence on the distribution on static behaviour.

In Timbau, by contrast, the non shop streets were the ones that performed similar to the mean rates. In both cases, however, the presence of attractors such as shops does not seem able to explain the distribution of pedestrian movement and the presence of people in the urban space.

The mean length of lines in Marcilio Dias is 49.429 m which is 50 % longer than in Timbau. Streets with a number of shops above the average of 5.533 (more than the double of the mean density of shops in Timbau)[97] are marginally longer, having 55.265m, than the mean length, while non-shop streets are well bellow the mean length with only 24.625 m. This suggests therefore that, unlike Timbau, the length of the lines in Marcilio Dias

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[97] This is expressed in 100m and relativised for the length of the line.

does not seem to hold any relation with the distribution of shops. Shops appear to be, otherwise, randomly distributed concerning length. To sum up, it could be said that attractors such as shops in M.Dias are not clustered around specific locations but, instead, they are evenly distributed throughout the settlement without any clear regard for the configurational logic of the urban system.

Fig. 3.147. Activity rates for shop and non-shop streets.

	Mean	Shop streets	Non shop
RMM	2.523	2.638	1.944
RMW	1.808	1.933	1.183
RMCh	3.037	2.962	3.415
Play	4.082	4.499	1.995
Work	.786	.87	.261
Talk	10.824	11.527	6.605
Movingad	4.331	4.571	3.127
Moving	7.77	7.533	6.542
Static	15.692	16.896	8.861

All figures in people per hundred metres/minute

Movement rates in Marcilio Dias decrease around 20-30% from shop to non-shop streets. This suggests that, despite the gender differences, movement is evenly distributed throughout the settlement regarding the presence of shops. Play, work and talk, like Timbau, are activities which are more concentrated around shop streets.

This argument may be developed in more detail by looking at **figure 3.148** below which displays the variation of movement rates with integration for the 15% higher integration value lines which correspond to the integration core, above and below mean.

Fig. 3.148. Mean activity rates in relation to Integration.

30% higher values*		Above mean	Below mean
RMM	5.078	2.968	2.130
RMW	4.911	2.368	1.674
RMCh	5.089	3.008	3.062
Play	5.489	3.991	4.161
Work	1.111	.836	.740
Talk	12.867	10.507	11.099
Movingad	9.989	5.158	3.607
Moving	15.078	8.166	6.669
Static	19.467	15.334	16.000

All figures in people per hundred metres/minute

* The category 30% higher values has to be used instead of the 15% used for Timbau because there was no observed line in the 15% integration higher value.

Comparing the values above some conclusions can be drawn. First, although rates do not vary greatly between lines above and below mean integration, they increase substantially in the 30% higher integration value with rates more than twice the mean for moving men and moving women. Moving people in the 30% higher value spaces are also almost twice the mean movement rate. Static rates are around 50% above the mean in the 30% higher integration value spaces.

The analysis of the distribution of movement rates according to integration (per four bounds - up to 40% higher values, 40% to 65%, 65% to 90% and the 10% lower values), illustrated in **figure 3.149**, reveals how movement rates are spread through the grid.

Fig.3.149. Activity density in bands of Integration.

	up to 40%	40-65%	65-90%	>90%
RMM	2.3	2.7	2.2	2.1
RMW	1.6	1.8	1.6	1.1
RMCh	2.9	2.6	2.8	5.0
Play	3.9	2.8	4.2	3.6
Work	0.7	0.8	0.7	1.4
Talk	10.3	8.5	10	16.3
Movad	3.9	4.5	3.8	3.2
Moving	6.8	7.1	6.6	8.2
Static	15	12.1	14.9	21.3

All figures in people per hundred metres/minute

The previous study of Timbau has shown that moving men and women are more or less evenly distributed throughout all bands of integration (see **figure 3.92** on page 215). In M.Dias, moving adults behave in a similar form with movement remaining without major changes through all bounds of integration. The higher value of moving adults is, however, between the 40-65%; and the lower value is in the 10% lower integration lines. Moving children, on the contrary of Timbau seem to favour the lower integration lines since their higher movement rate is in the 90% higher integrated value lines. This same pattern is followed by static

activities, with the higher rate at the 10% more segregated value spaces. In fact, the proportion of moving children in relation to moving adults changes drastically between the more integrated and the more segregated ones: respectively 3.9 phm/m moving adults against 2.9 phm/h moving children and 3.2 phm/m moving adults against 5.0 phm/m moving children.

If playing is considered an activity which is dominated by children and sitting a major form of local interaction among women, as it will be shown later in the next chapter through the analysis of the questionnaire data, the argument put forward that both activities take place in more internal areas of the settlement gains weight with the pattern of static and moving behaviour shown by integration where talking (which obviously is an activity related to sitting as a form of social interaction) is very high in the more segregated spaces.

Finally, it could be said that both moving men and women favour the more integrated spaces (i.e. the more globally oriented spaces) whereas children follows a different spatial pattern by choosing the more segregated spaces[98]. This, nevertheless, does not mean that adults and children populate different spaces.

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[98] The table show that the rates are about 50% higher in the 15% more integrated lines for all categories of moving people.

The data presented so far, seems to indicate' that the normal relation between the pattern of integration and natural movement in an urban area, which many syntatic studies have already identified, is found strongly in the case of Marcilio Dias and Timbau, despite their clear morphological and urban differences. This in turn confirms the idea that the configuration of the grid is pervasive in structuring pedestrian movement. The results have also suggested that the pattern of movement can not be explained by the location of shops and other non-residential type of buildings.

In this section an attempt was made to study the movement patterns existing in the settlement as a mean to know how people understand the layout in practice and how, on the basis of the observation data, patterns of movement and co-presence were spatially organized in the settlement.

The next section will pursue the analysis more deeply and will try to understand more specifically how movement, through the measure of integration, is actually organized through the grid. In this sense the strength of the relation between configuration and the distribution of pedestrian movement will be measured through the use of scattegrams and the analysis of correlation coefficients.

Scatters to investigate movement

This section deals with the last stage of the study of space-use and movements in M.Dias. The data presented here aims first to look at the degree to which the grid configuration influences natural movement in M.Dias. This will be done by examining the relation between integration (in fact the reciprocal of integration) and movement. The second part of this section will attempt to describe more precisely and systematically the field of encounters and avoidances within and between sexes and social groups which exists in M.Dias. In order to do that a series of scatters of the same type as were used in Timbau, plotting the different categories of people, were produced (see **figures 3.157** to **162**). **Figures** from **3.151** to **156** show a series of scatergrams of the reciprocal of integration of systems 1, 2 and 3 against movement rates for each of the six categories observed for all 70 observed spaces.

Three points are particularly worth noting about these scattegrams and correlation coefficients: first, movement patterns are best post dicted by integration with the system isolated; second, the grid configuration seems to have little effect on static behaviour; and third, in general the correlation of movement and integration is statistically significant with exception

of moving children. A possible explanation for this difference in terms of adults' and children's relation to configuration is that adults might <u>use</u> space whereas children may <u>explore</u> space.

In M.Dias the scatters and correlation coefficients suggest that the movement of children is not strongly influenced by the grid configuration. This might explain the reason the best correlation results for the settlement on its own to be moving adults against integration as the figure below shows (see **figure 3.150**).

Fig. 3.150. Correlation of Integration x Moving adults

y = .137x + 1.254, R-squared: .371
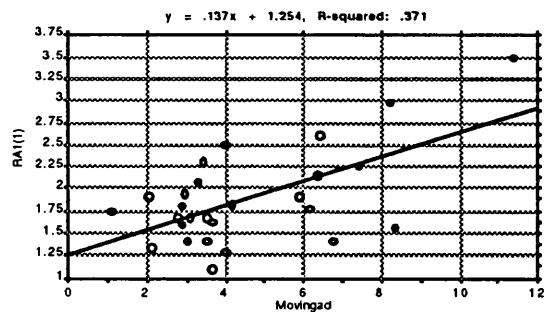
Fig. 151. Correlations of Integration x Moving Men

System 1   -   p=.0021

y = .205x + 1.331, R-squared: .292

System 2   -   p=.0023

y = .149x + 1.245, R-squared: .287

System 3   -   p=.0797

y = 1.563x + .285, R-squared: .106
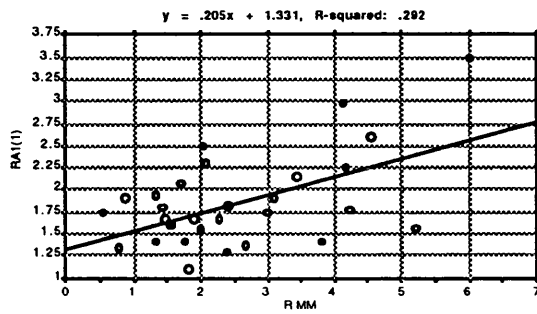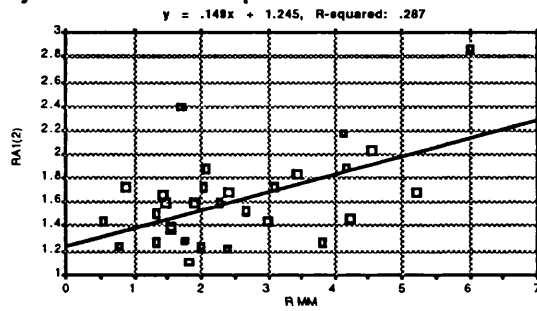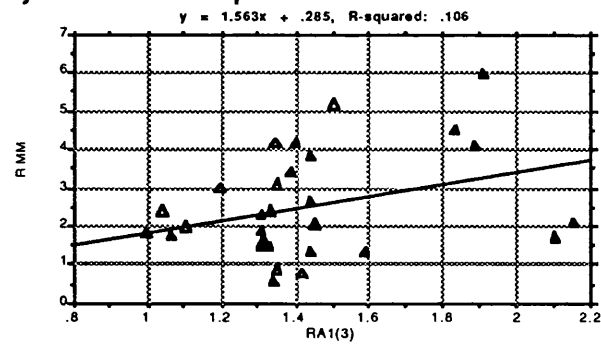
Fig. 3.152. Correlations of Integration x Moving Women

System 1   -   p=.0001

y = .333x + 1.246, R-squared: .423

System 2   -   p=.0008

y = .218x + 1.227, R-squared: .337

System 3   -   p=.0423

y = .105x + 1.243, R-squared: .139
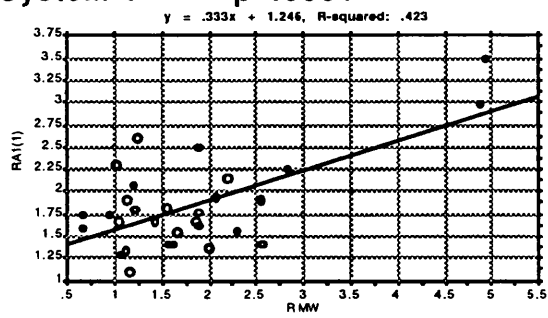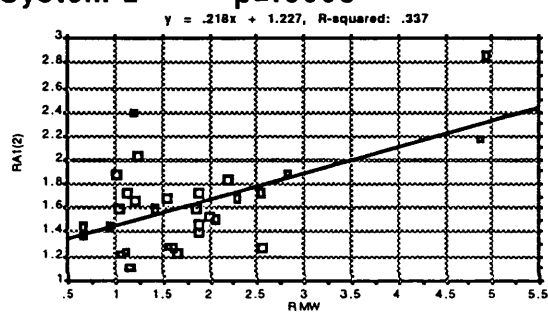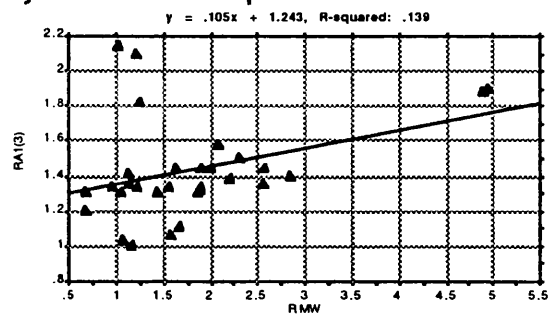
Fig. 3.153. Correlations of Integration x Moving Children

System 1 - p=.3956

y = .075x + 1.619, R-squared: .026

System 2 - p=.7098

y = .024x + 1.548, R-squared: .005

System 3 - p=.4873

y = -.034x + 1.535, R-squared: .017
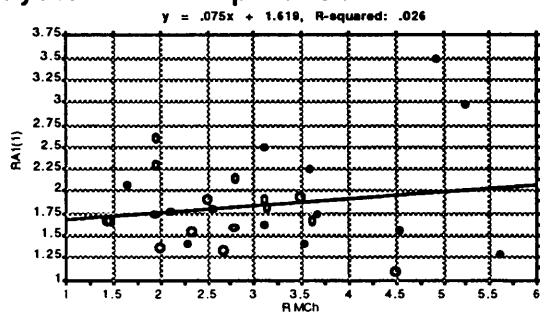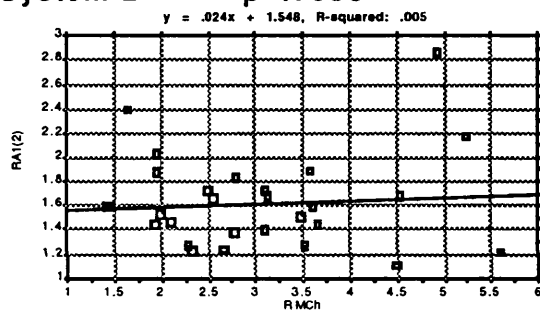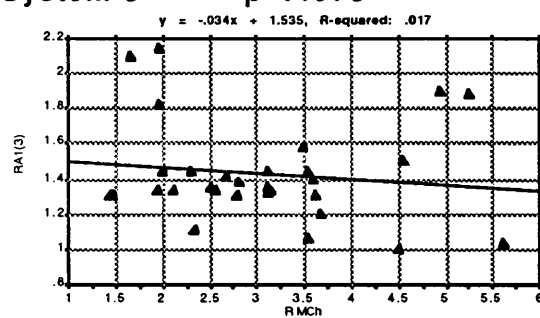
Fig. 3.154. Correlations of Integration x Play

System 1   -   p=.8254

$y = .01x + 1.807$, R-squared: .002

System 2   -   p=.7301

$y = .012x + 1.575$, R-squared: .004

System 3   -   p=.695

$y = .01x + 1.392$, R-squared: .006
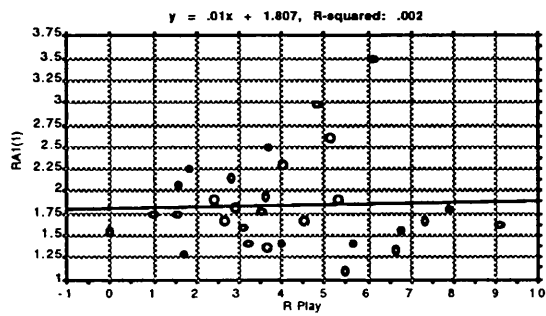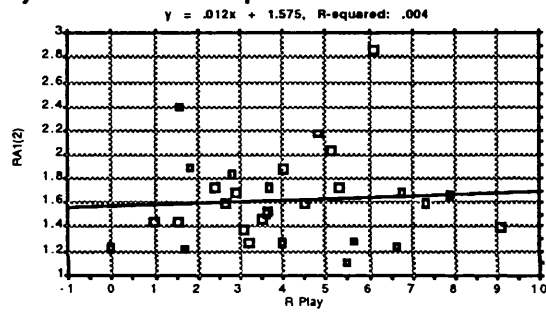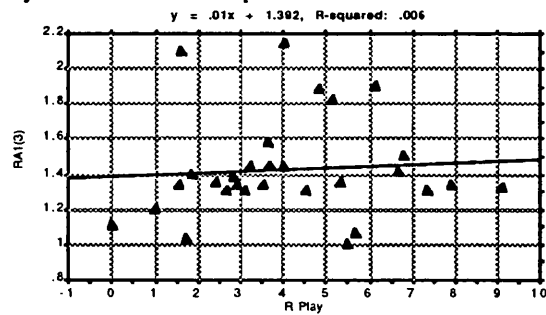
Fig. 3.155. Correlations of Integration x Work

System 1 - p=.8841

y = .026x + 1.832, R-squared: .001

System 2 - p=.4301

y = .102x + 1.547, R-squared: .023

System 3 - p=.7448

y = .031x + 1.415, R-squared: .004
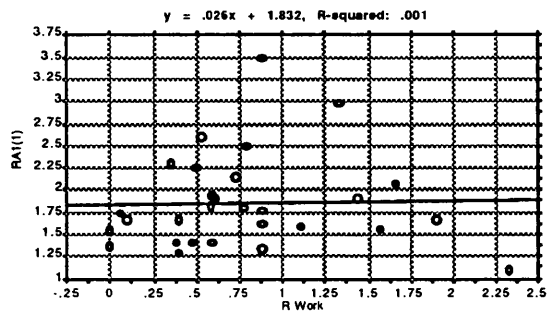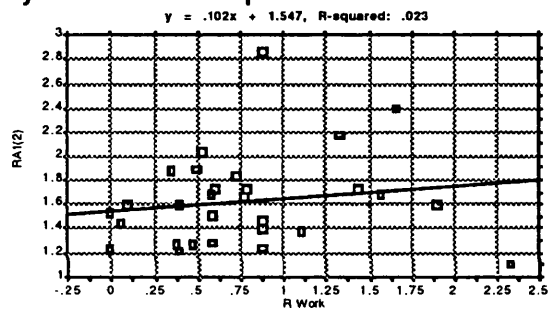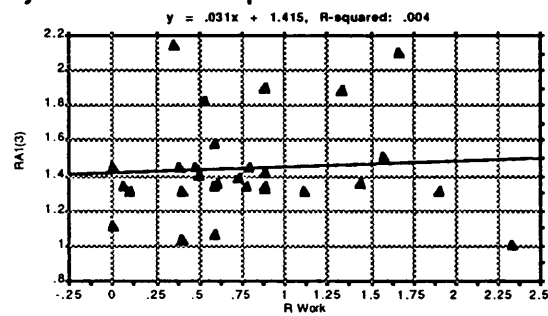
Fig. 3.156. Correlations of Integration x Talk

System 1 - p=.4282

y = .013x + 1.7, R-squared: .024

System 2 - p=.8818

y = .002x + 1.6, R-squared: .001

System 3 - p=.7877

y = -.002x + 1.437, R-squared: .003
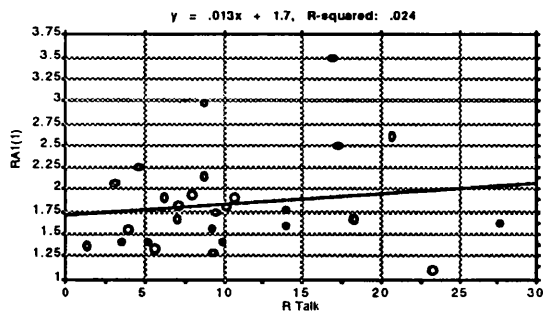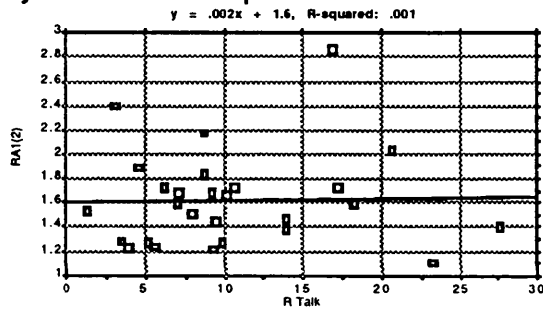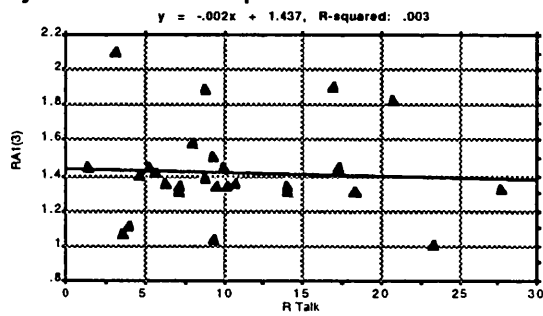
The five most movement-oriented spaces are Rua Dom Eugenio Salles (D. Eugenio Salles street), Rua 21 de Abril (21 de Abril street), Rua Barão do Rio Branco (Barão do R.Branco street) and Travessa Nova Esperança (Nova Esperança lane). In both men's and women's scatters, however, the space which is most extreme or distant from the regression line corresponds to Rua Dom Eugenio Salles.

The inclusion of the neighbouring squatter settlement in the analysed area which is represented by system 3, nevertheless, makes the relation between integration and movement very weak. This might be due to the fact that the squatter settlement and M.Dias lack good spatial connections linking both areas.

The pattern found in M.Dias, alike Timbau contradicts the one currently found in syntatic studies of urban movement, that movement is best post-dicted by integration against logged-movement rates. Comparing **figures 3.151** and **158** it can be seen that in fact logging movement weakens the relation between integration and moving adults - squared corr. coefficient is .413 for unlogged moving adults and .296 for logged moving adults.

Fig. 3.157. Correlation of Integration x logged moving adults

p= .0019

y = .153x + 1.186, R-squared: .413
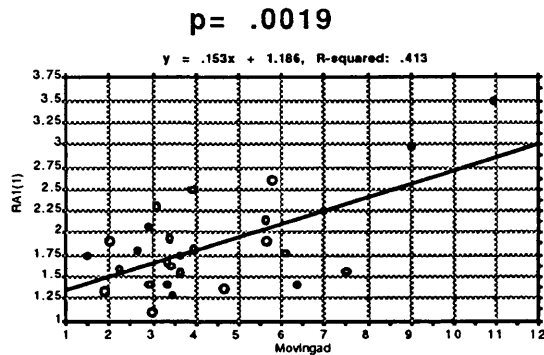
Observing the correlations a coefficient of .642 (r2=.413 and p=.0001) in the system suffixed 1 was found between the spatial measure of integration for each line and the observed adult movement along the line. The results for the other two catchment areas (suffixed 2 and 3) have respectively decreased to a correlation coefficient r of .607 (r2=.368 and p=.0004) and .378 r2=.143 and p=.0396). The best results were found for the settlement analysed separately.

Previous syntatic studies have consistently demonstrated that areas movement patterns are globally, not locally determined and that post-diction is only possible by setting the area into a reasonably large urban area (**Natural Movement**, Hillier et al., unit for Architectural studies, pp. 11 e 15). Thus, the correlation between the density of moving people and the degree of integration tends to improve as the prime area of

interest is embedded into their wider urban context. The converse is the case for M.Dias, as the data above has shown. This indicate that M.Dias constitutes a locally oriented area and that movement patterns are locally rather than globally determined.

Referring back to **figures 3.151** to **156** a number of significant points are worth noting. First, the best correlations are for moving adults (given above) followed by moving women (with a correlation coefficient respectively for system 1, 2 and 3 of .651/p=.0001, .581/p=.0008 and .373/p=.0423) and by moving men (respectively .54/p=.0021, .536/p=.0023 and .325/p=.0797) and last by moving people (respectively .548/p=.0018, .484/p=.0067 and .234/p=.2134). This drop from the rates for moving adult to moving people is given by the very low correlations between moving children and integration - respectively for system 1, 2 and 3, r = .161/p=.3956, r= .071/p=.7098 and r = .132/p=.4873. Second, static behaviour which includes the activities of play, work and talk correlates very badly with integration, corresponding respectively for system 1 , 2 and 3 to a squared correlation coefficient of .138/p=.4844, .048/p=.8094 and .02/p-.9207. These differences seem to correspond to the way movement is organized locally, or within the settlement, and globally, or in the

settlement's urban context. In terms of the pattern of natural movement within the settlement, the figures suggest that it follows closely the distribution of spatial integration, with the correlation measure of the importance of this relationship falling off rapidly from women to men and children.

Figures 3.158 to 163 show a series of scattegrams between the several categories of people observed (i.e. men, women and children) and between different space-uses (i.e. playing, working and talking). These scatters are used here to bring more structure to the description developed in the previous section of the types of interaction patterns existing in M.Dias and how they are constructed by the spatial configuration of the grid. Looking at these scatters it can be seen that the correlation coefficients are respectable in the moving adults against moving children (r=.665) and in the moving men against moving women scattergrams. This suggests that there is a good *probabilistic interface* between men, women and children. The extremely weak correlation between static and moving people shows that in M.Dias, like Timbau, static activities (i.e. work, talk and play) tend to prioritise other spaces than those used by moving people.

Fig. 3.158. Correlation for moving men x moving children
p=.0139

y = .359x + 2.13, R-squared: .197
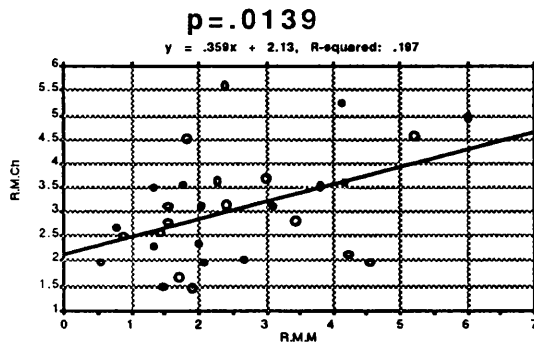
Fig. 3.159. Correlation of moving women x moving children
p=.0087

y = .513x + 2.108, R-squared: .221
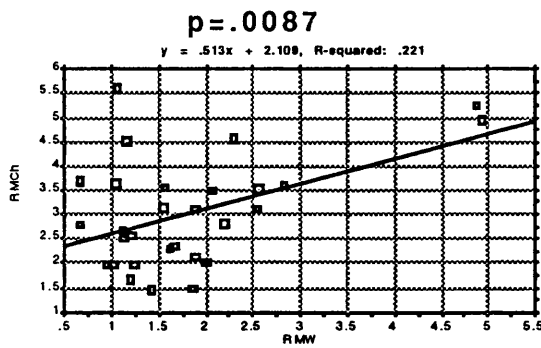
Fig. 3.160. Correlation of moving adults x moving children
p=.0051

y = .253x + 1.941, R-squared: .248
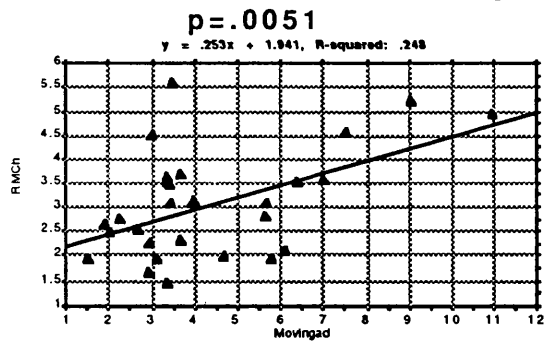
Fig. 3.161. Correlation of moving men x moving women.
p=.001

y = .897x + .9, R-squared: .442
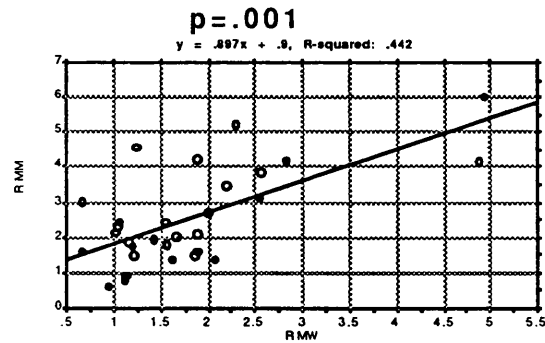
Fig. 3.162. Correlation of moving people x static people.
p=.5765
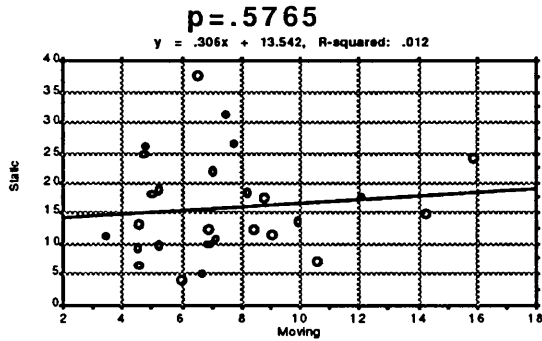
The last section of this chapter will present the results of a pilot origin and destinations study of a sample of journeys within the settlement. This aims at providing a more precise picture of the journeys taking by individuals passing through particular streets which could complete the overall picture of the movement patterns in the area and give an idea of their nature.

The origin and destinations study -
M.Dias and Timbau

The methodology of analysis of this study was developed further to the collection of the data on site as a way to complete the picture of the settlement's movement pattern, and to give an idea of the type of journeys in them. The data which gives the proportion of strangers and inhabitants is incomplete since according to previous syntatic methodology of origin and destination study it was not necessary to be collected.

Any imprecision on the analysis results from' the fact that this is a model created in this thesis, and therefore does not have yet any standardized techniques and procedures.

The origin and destination study took a sample of twelve streets in each settlement selected to cover busy and quiet areas and to include main, local and pedestrian streets. **Figure 3.163** shows the streets observed. The information was recorded by a static observer who asked to thirty people passing in the street the origin and destination of their journeys. A series of twelve maps was produced with a different representation to each one of the thirty people journey and with an arrow showing its direction. A few of these maps are shown here to give an idea of the types of journeys found (see **fig.3.164** to **3.167**).

Fig. 3.163. Spaces observed

Timbau
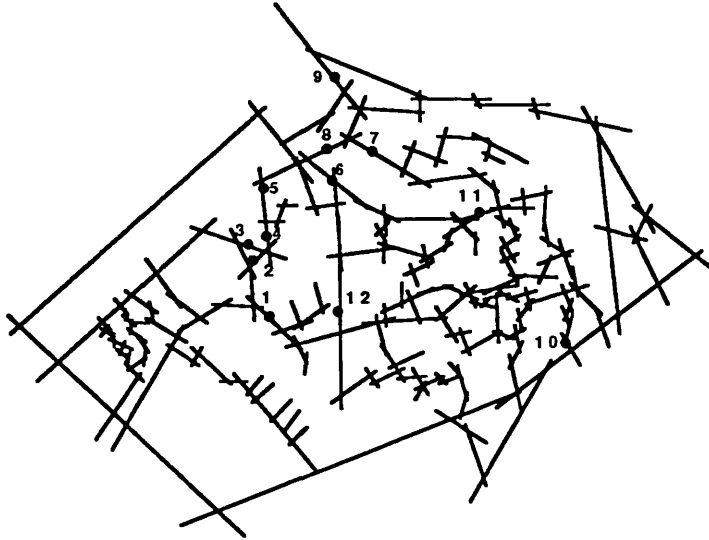
M.Dias
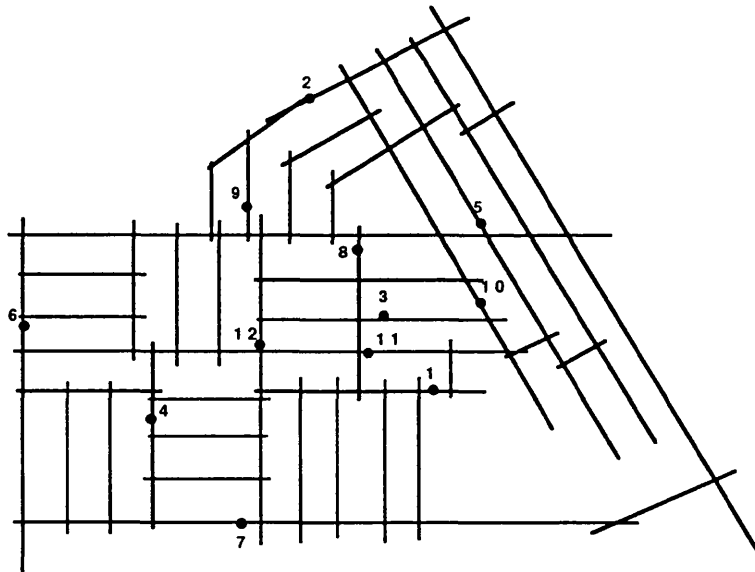
PONTO 3
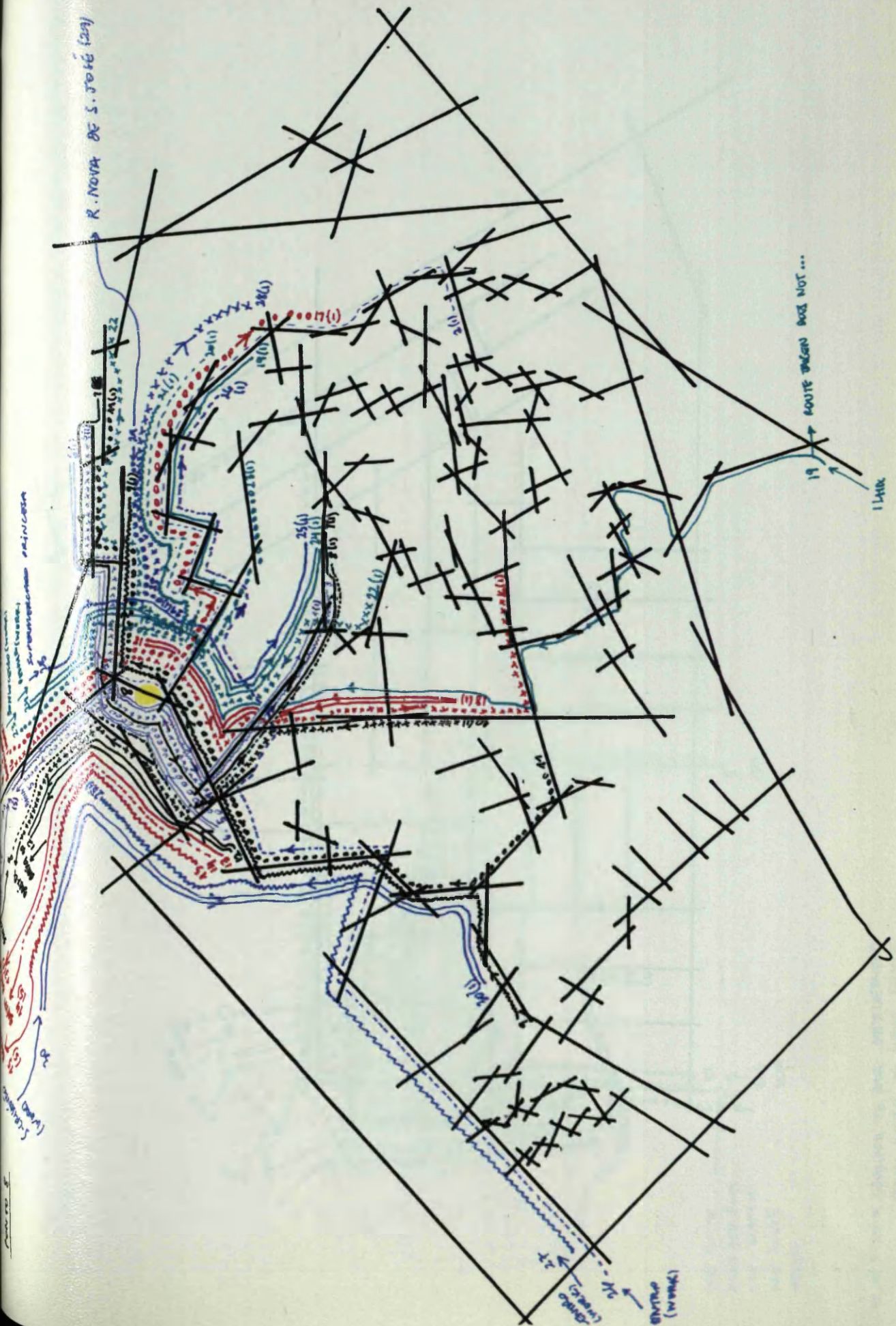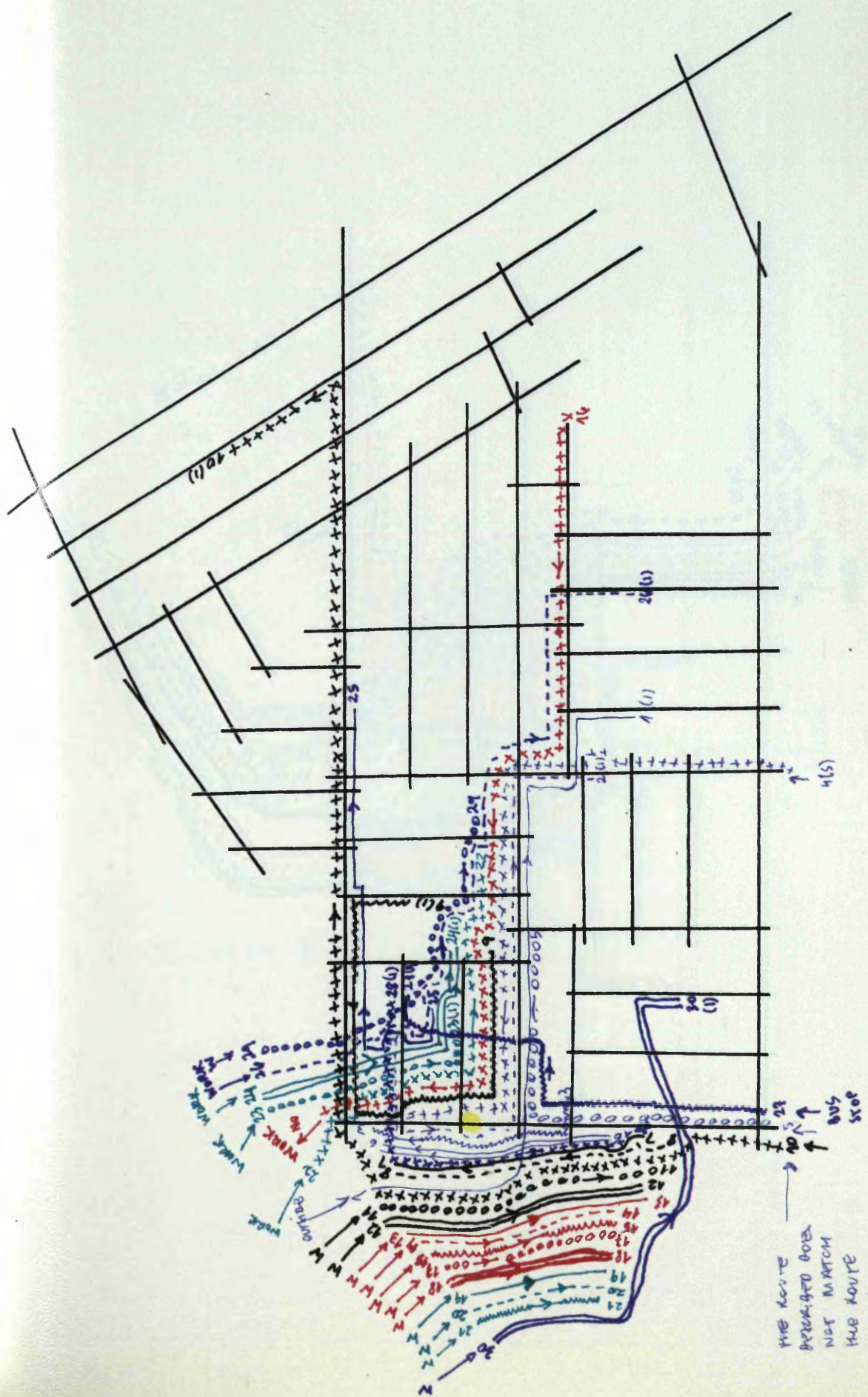
N.W.W.W = COMING TO THE SETTLEMENT
FROM WORK TO HAVE LUNCH.

Fig. 3.67. Journey map of M.Dias - Type C journey

According to the methodology proposed in this thesis the journeys are classified first in relation to their origin and destination (i.e. both outside the settlement = o/o, one inside and the other outside the settlement = o/i, and both inside the settlement = i/i) and second according to their type. The types are classified according to the following criteria: (A) converge to the point; (B) diverge from the point; (C) converge to the point and diverge from the point; and (D) linear. This typology is summarised in the diagrams of **figure 3.168**. In addition the proportion of strangers and inhabitants on those journeys (S/I) was recorded, as well as the integration of the space and the street's type (i.e.main, local or pedestrian streets).

Fig. 3.168. Typology of journeys

A. Converge

C. Converge and Diverge

B. Diverge

D. Linear
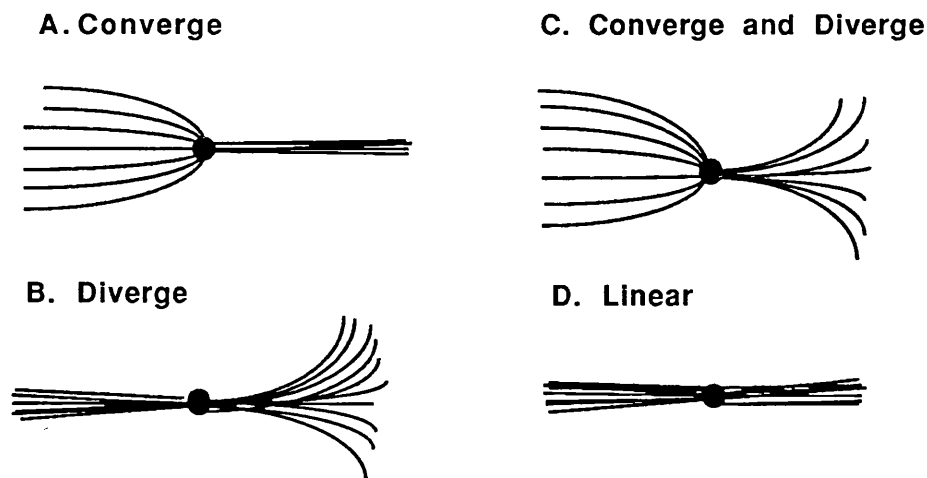
The information found for all the twelve spaces was then translated into a profile for each observed street containing all the journeys passing through the space and summarised in a table (see **figure 3.169**).

Fig. 3.169. Tabulated values

TIMBAU

Point	RRA	Street	Depth	o/o	O/D o/i	i/i	Journey (A,B,C,D)	S/I
1	.918	Main	5	0	5	25	B	30 i
2	.924	Main	5	0	6	24	D	30 i
3	.989	Main	3	2	13	15	B	4s/26 i
4	.975	Main	4	0	9	21	B	30 i
5	.975	Main	4	0	13	17	C	1s/29 i
6	.913	Main	5	0	10	20	C	3s/27 i
7	.866	Local	3	0	16	14	B	1s/29 i
8	1.004	Main	3	0	17	13	B	4s/26 i
9	.761	Main	1	0	22	8	B	3s/27 i
10	.742	Pedes.	2	0	24	6	B	11s/19 i
11	.701	Local	7	0	9	21	A	2s/28 i
12	.879	Main	6	3	7	20	D	13s/17 i
Total				5	151	204		42s/318 i
Percentage				15%	42%	56.5%		12%s/88%

M.DIAS

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| Point | RRA | Street | Depth | O/D | | | Journey | S/I |
				o/o	o/i	i/i	(A,B,C,D)	
1	2.48	Local	4	0	11	19	C	no answer
2	1.56	Pedes.	2	0	2	28	D	4s/26 i
3	1.74	Pedes.	4	0	7	23	A	6s/24 i
4	1.93	Pedes.	4	0	6	24	C	3s/27 i
5	2.59	Pedes.	3	0	10	20	D	1s/29 i
6	2.30	Main	3	0	21	9	A	14s/10 i
7	2.25	Main	3	0	4	26	B	1s/29 i
8	1.67	Pedes.	3	0	13	17	C	5s/25 i
9	2.14	Pedes.	3	0	5	25	D	no answer
1 0	1.67	Local	3	0	16	14	C	7s/23 i
1 1	1.40	Local	4	0	14	16	C	3s/27 i
1 2	2.97	Main	3	0	6	24	B	4s/26 i

Total				0	115	245		48s/252 i
Percentual				0	32%	68%		13%s/71%i
								16%no answer

The tables above allow some important conclusions about journeys within the settlements. The first is that, unlike for instance the City of London[99], most of people using the streets in both settlements are locals on short journeys[100]. The proportion of locals in relation

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[99] Hanson, J., **The History of the City of London**, Phd Thesis of University college of London, 1987, p.400, found that between 2/3 and 3/4 of all the people using the streets of the City were strangers passing through who have either the origin and/or the destination of their journeys outside the city.

[100] More than 80% of the people were locals.

to strangers is high even for streets which are more integrated within the global urban fabric.

To-movement[101], that is journeys with origins and destinations within the settlement, correspond to 56.5% and 68% of all journeys respectively in Timbau and M.Dias. Yet, as much as 42% and 32% of people, respectively in Timbau and M.Dias, the majority locals, which have either the origin or their destination outside the settlements is significant[102]. These numbers give an idea of how localised, but not particularly self-referential, journeys are.

The total values on the tables also show that only 15% and none of all journeys, respectively in Timbau and M.Dias, have origin and destinations outside the settlement (i.e. through movement). Thus 85% in Timbau and 100% in M.Dais of all journeys are with origin and/or destinations inside the settlement. A careful analysis on the table reveals, that even in spaces which have a higher proportion of strangers (i.e. points 10 and 12 for Timbau and point 6), journeys are with origin or/and destinations within the settlements.

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[101] Instead of through-movement.
[102] See footnote 100.

Movement in western cities normally takes the form of a star[103], that is, with people coming and going to every direction. In this sense, the density of movement in a given streets rests largely on its degree of integration. M.Dias present a similar star pattern, with type C corresponding to 42% of all journeys[104]. By contrast, in Timbau, type B accounts for as much as 58% of all journeys[105]. This shows that movement in the settlement is very channelled through a predictable trajectory formed by a few instrumental streets which are very densely populated in terms of movement. This reveals two different strategies of maximizing the possibility of knowing people and interacting locally. In M.Dias this seems to happen by maximizing movement randomly within the settlement such as to increase locally the number of routes and, thus, places of interaction. In Timbau the pattern is different, with movement channelled through few routes and dense interaction concentrated around these spaces. This shows that in Timbau space is clearly used to construct patterns of co-presence and interaction by making people constantly aware of each other. The small proportion of <u>through movement</u>, on one hand, shows that space is not structured so as to bring strangers to

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[103] According to the typology of journeys presented in fig.3.168 it will correspond to type C.

[104] Type A and B accounts for 16.5% each and type D for 25%.

[105] Type C and D accounts for 17% each and type A for 8%.

the settlement, yet the small number of strangers in the settlement reveal that locals themselves don't have enough visits to populate the streets with strangers. The fact that most of the journeys have either their origin or their destination inside the settlement suggests that most of the strangers are visiting the settlement[106] rather than passing through.

The tables of **figure 3.170** and **3.171** were produced in order to identify more easily whether there is any relation between the type of the street, and their syntatic properties of depth and integration with the type of journey and the proportion of strangers inhabitants. In these tables the values of origin and destinations (i.e. o/o, o/i and i/i) and of strangers and inhabitants (s/i) **figure 3.169** were divided by thirty (i.e. the total number of journeys per point) so as to arrive at a comparable figure between all the variables.

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[106] Either visiting relatives or friends living in the settlement or using the local commerce (i.e. bars, shops and so on).

Fig. 3.170. Ratio tabulated values

TIMBAU

Point	RRA	Street	Depth	O/D o/o	O/D o/i	i/i	Journey (A,B,C,D)	S	I
1	.918	Main	5	0	.165	.825	B	0	1
2	.924	Main	5	0	.198	.792	D	0	1
3	.989	Main	3	.066	.429	.505	B	.132	.868
4	.975	Main	4	0	.297	.693	B	0	1
5	.975	Main	4	0	.429	.571	C	.033	.967
6	.913	Main	5	0	.333	.667	C	.099	.901
7	.866	Local	3	0	.528	.472	B	.033	.967
8	1.004	Main	3	0	.571	.429	B	.132	.868
9	.761	Main	1	0	.726	.274	B	.099	.961
10	.742	Pedes.	2	0	.792	.208	B	.363	.637
11	.701	Local	7	0	.297	.693	A	.066	.934
12	.879	Main	6	.099	.231	.660	D	.429	.571

M.DIAS

Point	RRA	Street	Depth	O/D o/o	O/D o/i	i/i	Journey (A,B,C,D)	S	I
1	2.48	Local	4	0	.363	.637	C	no answer	
2	1.56	Pedes.	2	0	.666	.934	D	.132	.868
3	1.74	Pedes.	4	0	.231	.769	A	.198	.792
4	1.93	Pedes.	4	0	.198	.792	C	.099	.901
5	2.59	Pedes.	3	0	.333	.667	D	.033	.967
6	2.30	Main	3	0	.693	.297	A	.330	.770
7	2.25	Main	3	0	.132	.868	B	.033	.967
8	1.67	Pedes.	3	0	.429	.505	C	.165	.825
9	2.14	Pedes.	3	0	.165	.825	D	no answer	
10	1.67	Local	3	0	.528	.472	C	.231	.769
11	1.40	Local	4	0	.472	.528	C	.099	.901
12	2.97	Main	3	0	.198	.792	B	.132	.868

Fig. 3. 171. Rates by type of journey and by type of street.

TIMBAU

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Journey	DEPTH	RRA	O/O	O/I	I/I	S	I
Type A	7	.701	0	.297	.693	.066	.934
Type B	3	.893	.009	.501	.487	.108	.892
Type C	4.5	.944	0	.381	.619	.066	.934
Type D	5.5	.902	.049	.214	.726	.215	.785

M.DIAS

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Journey	DEPTH	RRA	O/O	O/I	I/I	S	I
Type A	3.5	2.165	0	.462	.533	.264	.781
Type B	3	2.635	0	.165	.83	.082	.981
Type C	3.7	2.04	0	.398	.587	.149	.849
Type D	3	1.71	0	.388	.809	.082	.918

TIMBAU

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Street	DEPTH	RRA	O/O	O/I	I/I	S	I
Main	4	.926	.018	.375	.602	.103	.904
Local	5	.783	0	.412	.582	.05	.950
Pedest.	2	.742	0	.792	.208	.363	.637
MEAN	4	.887	.014	.416	.566	.115	.89

M.DIAS

●●

Street	DEPTH	RRA	O/O	O/I	I/I	S	I
Main	3.17	2.62	0	.341	.652	.165	.835
Local	3.67	2.007	0	.454	.546	.165	.835
Pedest.	3	1.842	0	.337	.749	.125	.871
MEAN	3.43	2.077	0	.367	.674	.145	.863

The tables in **fig. 3.171** show some interesting points. First, a comparison between the rates for each journey type and the mean rates for all observed points indicates that linear journeys (type A) in Timbau have the higher proportion of strangers (above three times the mean - .049 against .014), as well as through movement (i/i destinations) which is more than 20% higher than the mean (.726 against .566). This seems to confirm the idea presented in this section that movement of strangers is channelled into few routes of the settlement.

In M.Dias, the higher values on the table for origins outside the settlement or <u>to-movement from outside</u> (i.e. o/i) and of strangers (respectively .462 and .264) are for type A journey (i.e. converge to the point). This suggests that people (inhabitants and strangers) tend to come from outside in many directions and then movement is also channelled into a single route. Movement inside of the settlement (i.e. i/i), which is in more than 90% of the cases by inhabitants, though, follows a different pattern. In these cases, type B journey is the most popular[107], showing that inhabitants are channelled into the settlement though a single route and than diverge in many directions.

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[107] Fig. 3.171 shows that 83% of all journeys of Type B journeys is movement within the settlement (i/i).

In addition, the analysis of the tables which show the rates variation for each type of streets is clarifying. Surprisingly, the type of street with higher number of strangers and of people coming from outside the settlement (o/i) is a pedestrian space. This space, though, is one of the main access to the settlement from its south edge, featuring in both maps of **fig. 3.165** and **3.166**, which is part of the channelled route followed by strangers accessing or passing through the settlement. Pedestrian streets in M.Dias, otherwise, feature as the less used by strangers and movement with origin or destinations outside the settlement (to-movement from outside), but as the favoured one by people moving inside of the settlement. To-movement (o/i) is higher in local streets than in main streets.

To complete the origin/destination analysis a last set of tables of the rates variation with depth and integration is shown below (see **fig.3.172**) in order to study more precisely the strangers/inhabitants ratio in relation to syntatic measures.

Fig. 3.172. Variation of rates with Depth and Integration

TIMBAU

Depth	1/2	3	4	5	6/7
Strangers	.231	.099	.016	.033	.248
Inhabitants	.799	.901	.983	.967	.752
o/o	0	.022	0	0	.049
o/i	.759	.509	.363	.232	.264
i/i	.241	.429	.632	.761	.676

M.DIAS

Depth	2	3	4
Strangers	.132	.154	.132
Inhabitants	.868	.861	.865
o/o	0	0	0
o/i	.666	.354	.316
i/i	.934	.632	.681

TIMBAU

Integration*	20% higher	40%	80%	80-100%
Strangers	.074	.033	.231	.176
Inhabitants	.926	.967	.769	.844
o/o	.016	0	.049	0
o/i	.431	.232	.379	.605
i/i	.550	.761	.566	.392

*The data was divided like this because there were not enough elements to do it in equal percent bounds.

M.DIAS

Integration	20%higher	40%	60%	80%	80-100%
Strangers	.132	.330	.143	.110	.099
Inhabitants	.868	.770	.854	.887	.901
o/o	0	.022	0	0	0
o/i	.198	.528	.363	.254	.472
i/i	.792	.467	.615	.743	.528

Looking at the tables in **fig.3.172** some interesting conclusions can be drawn. First, streets with higher number of strangers in Timbau are relatively deep and segregated. In fact, if the whole settlement is considered the both streets are above mean average which is .686, yet they are still deep. However, examining the table on **fig. 3.169** and the map of spaces observed in **fig.3.164** reveals that these correspond to two spaces very important spaces inside of the settlement, respectively: a main street (point 12) and a pedestrian street leading to one of the settlement's square (point 11). This suggests that passers by and visitors are likely to stop and interact with locals, populating the same spaces. In this sense, strangers work as an important asset for the settlement's social field of interaction.

Second, Timbau table shows movement of inhabitants is higher in the best integrated spaces. This is confirmed by Timbau's depth table which reveals that people with origin or destinations outside of the settlement (o/i), that is to-movement from outside, is higher in the shallower spaces. Movement inside of Timbau (i/i), otherwise, is more intense in the deeper areas.

M. Dias' pattern differs from the one described above for Timbau. Firstly, the movement of strangers and

inhabitants is evenly distributed through all steps of depth. The integration table reveals, however, that, the proportion of strangers is higher in the integrated spaces (at the 20-40% higher value integration spaces). Secondly, to-movement from outside (o/i) as well as movement inside the settlement (i/i) is also higher at shallower spaces. Lastly, the integration table also shows that through movement from outside is lower in the 20% higher integration value spaces while movement inside of the settlement is higher, whereas the opposite happens in the 20-40% higher integrated value spaces. This suggest that people with origin or destination outside the settlement might give preference to different routes from those followed by people moving within the settlement.

To conclude it could be said that the origin and destination study has confirmed the pattern found by the movement analysis that the settlements are structured spatially so as to construct a very strong interface among inhabitants. Yet, as the syntax analysis has shown[108], this is done in a logical form so as to take into account the movement pattern of the whole global system and the spatial continuity. This reveals the importance of the maintenance of global journeys within the settlement.

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[108] This was shown in Timbau by the fact that overall integration of the system improves embedding it into its immediate surroundings.

Conclusions

The spatial analysis of both settlements have suggested that despite the settlements' localised structure they are not particularly self-referential or self-enclosed. The settlements' connections with the global grid and the settlements' form of embedding in the city have clearly shown that they are nothing like a neighbourhood unit in the sense of a social and spatial bounded area. Quite the opposite, the settlements seem to structure themselves as to take advantage of the global urban spatial system and to use the movement of strangers as an important component for its social field. In this sense, the origin and destination analysis has shown the existence of a spatial structure which places emphasis at the same time both on <u>to-movement from outside</u> and the global interface generated through it, and on movement inside of the settlement as a main form of local interface and social cohesion.

The analysis has also suggested that the spatial correlates of neighbourhood does not finds any suitable and actual expression in both settlements. Even in the relatively ordered space of M.Dias where the design seems to have aimed to create a hierarchy of neighbourhoods through the spatial structure, as suggested in this chapter, the spatial and the movement

analysis have indicated that social patterns are build locally as well as globally.

Finally, the findings suggests that streets in both settlements are well equipped to handle strangers and inhabitants at once creating a potential field of encounter and interaction among them. This in turn seems to be one of the fundamental properties which guarantees the urbanity, vitality and liveliness of the settlements.

The next chapter be structured around the idea of auto-construction. It will examine the social and political structure of the settlement on the basis of the analysis of the questionnaire network data in order to see how these patterns of co-presence in space so far described here are actually reflected in people's social networks, as well as to discuss the importance and the means by which global links are maintained through these tangible networks. Last, it look at the development of settlers leadership and political pattern in connection with the actual physical and spatial development of the settlement.

CHAPTER IV - <u>Auto-construction.</u>

Abstract

This chapter sets out to discuss the general theoretical issue of <u>community participation</u> and <u>leadership</u> in the light of the empirical evidences of the case studies. It examines the social and political leadership structure of the settlement on the basis of the questionnaire network data. In the previous chapter it was seen that, despite their visual dissimilarities and that they work spatially very unlike many western European towns studied by syntax, the settlements had many points in common in terms of both the patterns of movement and of social interaction, and in the way the configuration of the urban grid is structuring those patterns. In brief that similarities can be expressed in the peculiar way both settlements structure themselves such as to be <u>localized</u> but not <u>self-referential</u>. This is to say that they are not socially and spatially cut off, yet they are strong locally controlled. As a consequence strangers are not excluded from both settlements[1], but rather, they are policed by locals.

Two specific questions are examined on the present chapter. The first main question is about the <u>peculiar form</u> and <u>functioning</u> of the settlements, and the part that concepts like participation and political leadership might mean in respect of both the form and functioning in relation to the space and the social group. The second question is about the foundations of the defined <u>similarities</u>. How these similarities came to be? Are they fortuitous? Is there any reasonable explanation for that? In order to answer these questions the chapter will first look at the <u>social, political and spatial history</u> of the two settlements and their process of growth. The term <u>auto-construction</u> is thus applied to explain this process of growth which

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[1] The origin and destinations study in the previous section has shown that there are very few journeys by people passing through though. Yet at around 1/3 of the journeys are by people coming into and out of the settlements.

seems to be at once political, social and spatial. In this sense the chapter will aim to provide a picture of the settlements' history, which is simultaneously social, spatial and political, with a view to offer a precise description of the context in which the settlements have been generated and have evolved.

Introduction

This is the second of three linked chapters which sets out to explore the socio-spatial and political structure of Timbau and M.Dias. The previous chapter started from the spatial configuration of the settlements in order to understand the interaction patterns taking place and the global inter-linkage of the settlements. It has shown that, in general people, regardless of gender differences, seem to populate the same spaces.

This chapter aims mainly at studying the structure, composition and content of the social network[2] of both settlements, relating it back to the spatial and syntatic patterns identified in the previous chapters, as a form to understand more precisely the functioning of the settlement and the patterns of social co-presence and interaction.

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[2] The view taken here is that of a social group as a network of ties rather than as a neighbourhood (Tilly,1974; Wellman and Leighton, 1979).

In this chapter, the sociological idea of low income communities as cohesive self-sufficient solidary groups of people which have peculiar social mechanisms of organization will be discussed. The spatial analysis carried out in the previous chapter has revealed that both settlements are relatively spatially clustered so far as the global scale is concerned. The aim now is to see whether or not that spatial clustering (and spatial segregation) is also accompanied by a local clustering of social relations (and social segregation) with strangers being seen with suspicion by locals as the architecture literature on urban neighbourhoods suggests.

The findings of the network part of the socio - spatial questionnaire applied in both settlements[3] will provide the opportunity to examine a number of critical issues concerning the social behaviour of their inhabitants. The questionnaire network and the strangers/inhabitants data is summarized on a table on page 349. Some of the tables and pie charts here come from the interview questionnaire data presented in p.150 applied to 30 and 26 people respectively for Timbau and M.Dias. The chapter looks at the extent which the form of social grouping in those settlements resemble the ideal of harmony and

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[3] A lengthy questionnaire was applied to 44 and 42 residents resspectively for Timbau and M.Dias randomly selected in both settlements as part of the field work undertaken from December to February 1990. The second part of this questionnaire dealt with the strangers x inhabitants interface and the network patterns.

mutual support, which is implicit in the view of those groups as solidary local communities[4]? How de people relate to each other within the settlement and what is the physical extension of their social networks (within and beyond the settlement) ? Which kind of ties do settlers use to deal with both everyday and stressful situations? How actually people participate in their communities? How capable of collective action are those communities? What kind of collective action is there in those settlements? What is the role performed by local leaders in relation to such actions? How do they relate to the group as a whole and how are they seen by them? Do they become leaders as a means of developing their own interests or to advance socio-politically and economically the settlement? To what extent does the leadership structure successfully represent the interests of the group? Do locals interact with strangers? How do they see them? Finally, how have the existing social networks affected the quality of life of the settlers and have they contributed towards advancing one's personal economic and social gain?

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[4] This view of the group as a social bounded entity brings the idea that viable communities are solidary bodies in which community members share attitudes and are organized through a Durkheimian organic type of solidarity.

An examination of these issues in the case study is intended to contribute to a discussion of the hypothesis concerning the extent to which the experience of auto-construction of the settlement might be contributing towards developing and transforming relationships within the community group and outside, and which in turn will reflect in the form in which they fit into society as a whole[5].

To the extent that space and society are seen as part of a single phenomenon, the analysis of the historical development of the settlement both in terms of its spatial structure and physical up-grading and of its socio-political patterns is expected to inform about the socio-spatial reality of the settlement as it is today. In what follows, the second part of this chapter will firstly describe how the settlements have evolved and changed socially, politically and physically through time; and secondly how have the morphology and the configuration of the urban grid evolved over time in relation to that.

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[5] This will have consequences, for instance, as it is hoped to show later in this section, in the form in which those networks are embedded into the larger institutional and political contexts and in the degree of spatial complexity and level of services of the habitat of these social groups.

Fig. 4.1. The network questionnaire data table.

TIMBAU

M.DIAS

frequency of contact and supportive trends (see data table on previous page and the questionnaire in the appendix from question 32 for the respective questions).

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TIMBAU

The networks in Timbau and M.Dias

M.DIAS

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The data suggests that most ties are strong locally with only 2% of the respondents for Timbau and 5% for M.Dias stretching beyond the settlement. 94% of people in Timbau and 88% in M.Dias have said to know few or none people living in the local borough, whereas 32 % of respondents in Timbau and 53% in M.Dias know almost everyone in the settlement. This is striking specially having in mind that the population in about 1000 families with an average of four people per family in each settlement.

Fig. 4.1. The network questionnaire data table.

TIMBAU

M.DIAS

The networks in Timbau and M.Dias

The general strategy adopted in this section is to describe the type of ties existing in people's networks - kin or friends, local (neighbours) or long-distance, egalitarian or patron-client - in terms of their nature, their frequency (and strength) and the type of support they provide. For that, 44 and 42 people respectively for Timbau and M.Dias were asked about their formal and informal relationships with persons from the community and outside it. Information was also gathered about respondents' accounts of the nature of the relationship between themselves and their ties: formal and informal role, frequency of contact and supportive trends (see data table on previous page and the questionnaire in the appendix from question 32 for the respective questions).

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Neighbouring remains the most important and intense relationship. Only 2% and 5% respectively of Timbau's and M.Dias's residents have answered to hardly know someone in the settlement. In addition to that 43% of Timbau and 36% of M.Dias respondents have said to greet almost everyone in the settlement.In addition to that, there seems to be an inverse relationship between the strength and extension of the social network and spatial distance. It is interesting, however, that the respondents have replied that they interact more with people in their street than with their next door neighbours (see **figure 4.2**). This might suggest that there is an optimum scale for interaction in which it is necessary to create some social distance where there is too much spatial proximity. A possible inference is that this may be the scale of the street.

The large number of people that have not answered questions involving the spatial concept of neighbourhood may suggest that, the idea of an intermediate spatial territory beyond the street realm but still within the settlement boundary, is uncomprehensible for most interviewees[6].

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[6]Jane Jacobs cites a study about Manhattan's West Side by Dr.Dan W.Dodson which have found the same conclusion, or as he puts it: " ...*Many of those interviewed have no conception of the neighbourhood other than the street which they resided*" , **The Death and Life of Great American Cities**, 1984, p.130.

Some of Jacobs most significant insights which are that of the importance of street neighbourhoods and of strangers for city life, provide a plausible explanation for the findings above. She speaks of streets neighbourhoods with no definite street boundaries and thus as part of a continuous network, for street life and adequate self-management and government, and follows by identifying three main kinds of useful neighbourhoods which supplement each other: the city as a whole, street neighbourhoods and large districts[7]. Cities, she says, are populated by strangers and even neighbours who live near each other are strangers[8].

Fig. 4.2. Proportion of residents who interacts with almost everyone

	TIMBAU	M.DIAS
Door neighbour	63%	42%
Street	55%	31%
Settlement	7%	24%
Borough	2%	5%

The data from the settlements studied here which is summarised in a data table presented on page 122 of this thesis indicates that this urban characteristic of neighbours to be strangers does not fully hold in the two places, nor does the idea proposed by Jacobs of a predominance of strangers rather than

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[7] Ibid, p.127.
[8] Ibid, p. 40.

acquaintances. This may be because she is basing her descriptions on American cities (in the First World). There is no reason nevertheless to assume that all urbanism should produce the same socio-spatial phenomena. It would be a mistake in Western European and American authors to draw universal conclusions from their own experience, yet it has been frequently made.

As it was mentioned, neighbourliness[9] is one of the more expressive forms of friendships in the areas, so acquaintances seems to be strongly dependent on spatial proximity. In addition to that, the data from the origin and destination studies of the previous chapter has shown that in both settlements streets seems to be largely populated by inhabitants. This relative locally oriented nature could actually be, as suggested previously, identified as one of the strongest peculiarities of both areas. Furthermore, it was found that the availability of assistance in both everyday and emergency situations depends to a great extent whether the person lives or not in spatial proximity rather than if he/she is a member of a specified social category (such as kin)[10].

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[9] Neighbourliness is here understood as the relation between neighbours.

[10] 68% of M.Dias respondents and 84% have said they would ask their door neighbour if they needed help.

Respondents were asked about the specific support they received for different types of problems or situations, namely: in personal problems, in the construction and up-grading of their houses and in the improvement of the settlement. It was also asked if they remember, in general, situations in which they needed to ask for help[11]. This aimed to show the principles under which respondents mobilise available ties and their ability to manoeuvre for appropriate help among their multiple social circles (local friends, neighbours, relatives in and outside the settlement, work-mates, influential people and local leaders). The results show that people mobilize different types of help according to the situation. Thus for personal problems they would look for support from relatives, either from inside or outside the settlement[12]. It is surprising, however, that a large number of residents (60%) in M.Dias wouldn't involve their neighbours in such problems and ask them for support yet they seem to be involved in a friendship - relationship. By contrast, in Timbau

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[11] Conspicuously, 43% and 51% of the respondents respectively in Timbau and M.Dias have not answered this question. This suggests that supportive ties are, to a certain extent, seen with suspicion by the settlers and might be a reason for them to feel ashamed of. This, does not mean, however, that people do not use them, but rather than they are not open to talk about them.

[12] In M.Dias around 80% and in Timbau about 95% of the respondents have said they would ask kinship relations for help in personal problems. In the first case, nevertheless, 45% were kin living in the settlement and 35% living outside it. While in the second case, 69% were kin living in the settlement and 26% living outside it.

60% of the respondents have said that they use, or are willing to use, their neighbours support on personal problems[13]. Therefore, it could be said that supportive ties seem to have a predominantly spatial nature in Timbau while in M.Dias this is not so pronounced.

Jane Jacobs[14] has identified similar phenomena in some planned and unplanned American housing where people build up some form of self-protection against their neighbours as a mean to preserve their privacy. She remarks, nevertheless, that this behaviour of neighbours to avoid close relationships with others is found more extensively in planned housing, yet it is also found to a much lesser degree in unplanned slum housing. This pattern, thus seems to coincide with the cases presented here respectively for Timbau (i.e. unplanned squatter settlement) and M.Dias (i.e.planned housing scheme).

Complementary data from the questionnaire (see questionnaire data table on page 122) as shows that the construction and up-grading of the houses is heavily based on the use of paid labour. Empirical research has shown (Caetano,1990), on the other

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[13] In relation to that Wellman (1979) suggests: "the closer the intimate relationship, the more perceived availability of help becomes a salient defining component of that tie. Closeness is apparently the single most important defining characteristic of helpful intimate relationships..."

[14] Jacobs, J., The Death and Life of Great American Cities, Penguin Books, 1984, p.77.

hand, that auto-construction[15] involves reciprocity networks (of kin, friends and neighbours). The data here revealed the opposite[16], that there is a certain predominance of capitalist relations rather than reciprocity and exchange relations in that process. In other words, there is an expressive, though non-exclusive, use of paid labour in the construction and up-grading of the house. Further aspects of the type of tie involved in the construction of the houses can be explored through the analysis of the questionnaire data. One would expect of Marcílio Dias as self-built project that most houses would be built by the settlers themselves. It seems that in the majority of the cases the home owner had indeed participated in the construction of the house (26 cases in Timbau and 15 in M.Dias). Yet, often paid labour was used for more specialized works such as plastering the walls or tiling the floor (14 cases in Timbau and 13 in M.Dias). There are, nevertheless, extreme cases where the respondent has said that the house was fully built by paid labour (none in Timbau and one in M.Dias). Hence, labour normally is hired locally.

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[15] The term auto-construction here is used to name not only the extended process where people built their houses and up-grade the settlement in a very long period of time, but also all the political and social processes involved on that. This covers, for example, the changing patterns of leadership structure and the evolution of network patterns within the community.

[16] The use of paid labour accounts for 71% of Timbau's respondents and 50% of the cases in M.Dias.

Fig. 4.3. Source of help for the dweller construction in Timbau

Q.10.Source of change

Bar:	Element:	Count:	Percent:	
1	Owner+Paid lab+Fr. slab.	6	21.429	- Mode
2	Relatives	1	3.571	
3	Friends	1	3.571	
4	Owner+Paid labour	1	3.571	
5	Owner+Friends	2	7.143	
6	Owner+Friends+Paid labour	1	3.571	
7	Owner+Rel+Fr+Paid labour	3	10.714	
8	Owner+P.lab+Loc.Ass+F.slab	1	3.571	
9	Owner+Rel+Paid lab+Rel.slab	3	10.714	
10	Owner+Fr+Paid lab+F.slab	1	3.571	
11	Owner+Fr+Fr.slab	1	3.571	
12	Owner+Rel+Friends	2	7.143	
13	Owner+Fr+P.lab+Rel.slab	1	3.571	
14	Owner+Fr+P.lab+F.slab+Rel	1	3.571	
15	Owner+Rel+Fr+P.lab+Fr.slab	1	3.571	
16	Owner+P.lab+Fr.slab+Rel.sl	1	3.571	
17	Owner+Fr.slab	1	3.571	
Total		28	100	

Q.10.Source of change in the dwelling
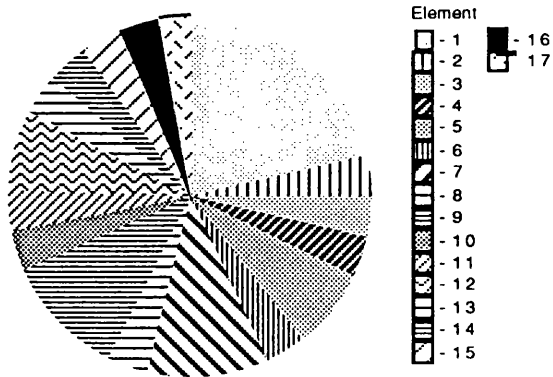
Fig. 4.4. Source of help for the dweller construction in M.Dias

Bar:	Element:	Count:	Percent:	
1	Owner	1	4.167	
2	Relatives	0	0	
3	Friends	1	4.167	
4	Paid labour	1	4.167	
5	Local Ass. or RA	0	0	
6	Friends for slab	0	0	
7	Relatives for slab	1	4.167	
8	Owner+P.labour+Rel.	2	8.333	
9	Rel+Paid lab+Fr.slab	1	4.167	
10	Owner+Rel+Fr+Rel slab	1	4.167	
11	Owner+Friends	4	16.667	- Mode
12	Owner+Paid labour	3	12.5	
13	Owner+Fr.+Paid labour	2	8.333	
14	Rel+Fr.+P.lab+Rel.slab	1	4.167	
15	Owner+Rel+Friends	1	4.167	
16	Paid lab+Rel.slab	1	4.167	
17	Owner+Rel+Fr+P.lab.	1	4.167	
18	Owner+Rel+Rel.slab	2	8.333	
19	Owner+Rel+P.lab+R.slab	1	4.167	
Total		23	100	

Q.10.Source of Change
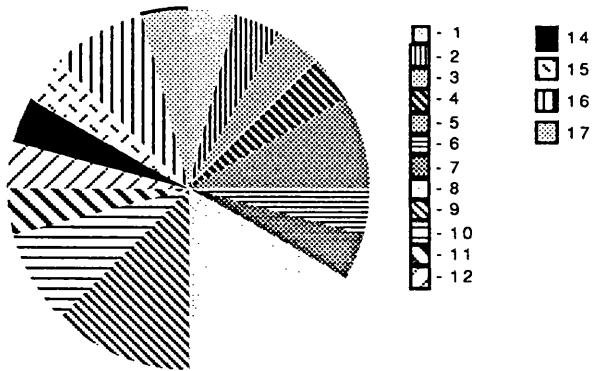
In some cases the help of relatives and acquaintances is also mentioned. The help of friends from the settlement seems to be restricted to very specific and short term tasks such as investing the labour to put up the slab, which takes only a day. The exception to this in Marcílio Dias is the case of settlers who work inside the settlement and receive help from work-mates and the group of fishermen. The government also appears as a source of help but mainly as a supplier of construction material and technical advice (see **figures 4.3** and 4.4).

A careful analysis of the data shows that the owner seems to a great extent to have directly participated with labour in the dwelling's changes, accounting for 93% of the answers in Timbau and 78 % of the answers in M.Dias. The most common source of help in Timbau is that, however, of local friends (75%) followed closely by the help of paid labour (71%) and finally of relatives (46%). Additionally, out of the twenty one cases which have mentioned the help of friends, nine have only participated in the construction of the slab, yet all them have participated in such a task. Similarly, out of the thirteen relatives that have helped, five have participated in the construction of the slab with two only participating in that. The help of the Residents Association (RA) and/or any other local association was mentioned just by one respondent.

The pattern in M.Dias does not differ greatly from that of Timbau. The help of relatives and of friends accounts for 52% of the cases, followed close by the use of paid labour (50%). Out of the twelve cases of help from relatives, seven have participated in the construction of the slab with two only helping in that task, while out of the twelve cases of friends' help, only one had been involved in the construction of the slab. Out of the twelve cases of help from relatives, seven have participated in the construction of the slab with two only helping in that, while out of the twelve cases of friends' help, only one has been involved in the construction of the slab. The participation of the RA or any other local association was said to be none. This data is, nonetheless, surprising for M.Dias, given that the project was designed as a self-built project where the use of paid labour was to be kept to a minimum through the maximization of the use of the residents as labour. This may suggest that there is a discrepancy between how the distribution of the type of help in the process of construction of the dwelling in such settlements actually is, and, how the official self-built projects are designed and conceived of.

Actually, the data seems to indicate that in both settlements paid labour was essential to the dwelling changes, and that the relatives are not used as the primary source of assistance in such a

task. Additionally, the RA and/or any other local association appears to have played no significant role at all in terms of a direct involvement in the construction process itself.

From the data above two main conclusions can be drawn. Firstly, it is surprising that the number of respondents in M.Dias that have worked in the construction of the houses is smaller than those of Timbau. In fact, since M.Dias is a self-built housing project one would expect the opposite to happen. Secondly, the proportion of settlers that have hired labour is also high, but friends are used in a similar proportion. The construction of the slab is, for example, one task where friends' help is widely used. This may be used to confirm what was suggested previously that the construction of the slab is mainly a social event. The help of relatives is, in many cases, in fact restricted to specific short term tasks such as this.

In general the data suggests that actually the help of relatives seems to be limited (12 out of 28 cases in Timbau against 12 out of 23 in M.Dias). Thus, the main agents participating in the construction of the dwellers appear to be the owner, friends from the settlement for specific tasks and, to a great extent, paid labour.

One interesting case which exemplifies the kind of solidarity mechanisms that may arise during this process was illustrated by respondents who said: *"The neighbours have helped us with the slab and lent us a room to stay while it was drying"* or *"The neighbours have helped to build the slab and after we commemorated the event with a feijoada"* .[17]

The influence and role of Timbau's RA in controlling these changes is also made clear by the respondents[18] : *"If I had money I would ask the RA to authorize me to build a wall"*. Some respondents have said that people with some sort of power have posed obstacles to the construction of their homes (4 in Timbau and 6 in M.Dias). These people were the government in all the M.Dias' cases. In Timbau, nevertheless, the conflicts have arisen around two authorities: the RA and the Army (2 cases). The kind of problem posed by the RA is highlighted by an interviewee as follows: *"We wanted to build a veranda towards the street but the RA didn't let us"* or *" In 1982 I had money to do the changes in the house but the RA didn't let me to do them because they wanted to enlarge the street so they wanted to move my house to Vila Pinheiro"*.

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[17] Feijoada is a typical Brazilian dish and it represents in the case a symbolic exchange practice realised through a feast organized when the roof is finished.

[18] This will be discussed in more length in a later section of this chapter which deals with the RA's relation to changes in the settlements through time.

According to the survey 60% and 70% of the respondents, respectively in Timbau and M.Dias, didn't have any problems with people when they were extending / or changing their houses. In addition to that, however, 30% of Timbau's respondents have said that they have had problems with neighbours whereas only one resident from M.Dias has mentioned that. The Army accounts for 10% of the problems with residents in Timbau, and the authorities, for 25% in M.Dias. The RA was mentioned as the least agent to be the source of problems, corresponding to only two respondents in Timbau and none in M.Dias.

It is surprising that, despite the RA being a major agent controlling the settlement's process of growth and houses' refurbishment, very few settlers have had problems with it. This may be an indication that the RA is an agent of paramount importance in solving problems between neighbours during the refurbishment's process. In fact, the RA may only get involved and take action in such matters related to the private realm of the dwellings when it is called upon by an interested party.

An additional recurrent problem between neighbours is that related to conflicts of land ownership (this corresponds to eight cases in Timbau and only one in M.Dias). This is notably the situation in Timbau where

plots are very irregular, often with ' badly defined boundaries, and where access to houses is sometimes shared. Again in these cases the RA seems to have a key role as one respondent explains: *"The neighbour complained when I was building the first floor of my house because it would obstruct his view. We then went to the RA and explained the problem and they've solved it"*.

The type of household formation and the nature of the process of change of the dwellings also seem to have similarities between the two settlements. In both settlements almost all households contain a single nuclear family, yet extended families living in different houses or in the same household on a common plot are not rare [19]. In fact, the residence pattern seems to be structured by kinship related families living in spatial proximity. This is much stronger in the case of Timbau although in M.Dias, which is a planned settlement where each nuclear family was assigned a plot, the same pattern is already starting to take place within the limits of the plot.

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[19] In Timbau eight families have said to share the household, yet living in different floors, and five live in the same plot in a different household. In M.Dias, however, only four families were found sharing the same plot and none sharing the same household.

In Timbau kinship-related families sometimes even share a court or an access[20]. The growth of Timbau appears, to a certain extent, to obey underlying social structures, particularly kinship. The household seems, however, to be a well defined physical and social entity. In other words, for each nuclear family there is an independent spatial unit, to the extent that in the case of two kin-related families that may live under the same roof each will invariably have an independent entrance.

Groups of kin-related households are spatially organized sometimes facing a common yard or as part of a single row facing an alley. Families born in the settlement tend mostly to occupy dwellings adjoining those of their parents, and these clusters of kinship related settlers that are from various parts of the country seem to constitute centres of attraction for new migrants from the same geographical areas[21].

The findings suggest that it is the RA which is the main source of help in matters related to the settlement[22] but not to the home. This shows that

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[20] At least in one case, where a group of four kin-related families shared a common public yard, this was obvious.

[21] A significant number of residents, as it will be shown in the next chapter, came to the settlements through the help of kinship relations.

[22] As much as 50% of answers in Timbau and almost 70% in M.Dias state that the RA was the main responsible for affording improvements for the settlement.

there is a clear <u>distinction</u> in the type and nature of the tie involved in <u>public and private matters</u> (i.e. related to the settlement and to the house)[23].

The important power the <u>RA</u> has as a <u>local regulator</u>, could make it, in some sense, so significant as to be considered as a locally autonomous and independent self-government body. This, however, does not mean that the relationship between the RA and the residents is one of reciprocity, harmony and equality. That is the subject of the next section, which will be dedicated mainly to the description and characterisation of the types of networks existing at residential level mobilization.

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[23] Da Matta, **Carnavais, Malandros e Herois,** Zahar Editores, Rio de Janeiro, 1983, p.70, suggests that this division is characteristic of Brazilian Society whereby the urban milieu is structured in two categories: one which is private and corresponds to the realm of the family or kinship groups; and another which is public and therefore related to the collectivity or social group. Santos, C. et al, **Morro do Timbau,** Ibam, Rio de Janeiro, 1983, p.49, observes that this dual character is explicit in Timbau with the construction of one own house treated as a personal matter and as such depending solely on the individuals involved, while anything outside the home (i.e. streets, sewage network and so on) is treated as a collective matter and thus having to do with the community.

Networks at the residential ,level mobilization

Research into community mobilisation has assumed that communities are solidary groups composed only of supportive ties[24]. This goes against the empirical evidence and creates the paradoxical expectation that those systems are more desirable. Furthermore, by ignoring conflicts of interest between community members, this fails to take account of supportive aids which are not symmetrically reciprocated.[25]

These research findings have shown, for instance, that despite the residents' belief that the RA is the main body responsible for the improvements within the settlements[26], only 14% of the cases in Timbau and 22% in M.Dias residents often speak about problems in the settlement with the RA[27]. People, in fact, seem rather to do it with other residents in spatial proximity[28] than with local leaders. This suggests that the relationship between the residents and the RA is not one characterized by mutually

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[24] For example Lomntiz, L., 1977; Leeds, A. et all, 1977; Perlman, J.,1975; Turner, J, 1972.

[25] A comprehensive discussion on the subject can be found in Wellman, 1981.

[26] The analysis of the data shows that as much as 50% and almost 70% of the respondents respectively in Timbau and in M.Dias believe to be the RA the main responsible for getting the settlements improved and up-graded.

[27] In addition to that 37% and 58% respectively of Timbau's and M.Dias' respondents have said to never speak with the RA.

[28] Only 16% of the cases in Timbau and 20% in M.Dias have said not to talk at all with their neighbours about matters related to the settlement.

supportive ties or of friendship as it is commonly assumed in the literature. Quite to the contrary, statistical data from the questionnaire which is shown in the data table on page 122 revealed that the majority of people (about 90% in both settlements) do not get involved at all with matters in which the RA struggles for the benefit of the community.

On the other hand, as many as 46% of cases in Timbau and 33% in M.Dias have said that they talk with outsiders about what is happening in the settlement. A plausible inference is that despite its relative local nature the settlements are not self-referential not only spatially speaking, as it was shown in the previous chapter, but also socially and politically speaking.

People were also asked about how they saw their relationship with the RA. The majority of the respondents regarded their relationship as a formal rather than a friendship or a supportive relationship[29]. This suggests that there is a certain social distance involved in the relationship between the RA and the residents. Yet the frequency

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[29] Respondents were asked to choose between one of the following categories to characterise their relationship with RA's members: god-fatherhood, friendship, formality, protection and patron relation. In Timbau 63% have chosen formal, 29% of friendship and 8% of protection. Similarly in M.Dias 60% have answered formal, 30% of friendship and 10% of protection. In both cases, no one have mentioned god-fatherhood.

of meetings between the RA and the residents' seems to be quite high.[30]

More simply, the findings suggest that in the cases study, the collective association of residents within the settlement is characterized by formal ties with a relatively large number of internal rules to govern their relationship which in turn is formally established and represented by an institutionalized body - the residents association[31]. This in turn could suggests that there is a certain inequality between community-level-decision-making people and the community as a whole[32].

To a certain extent, this might be a sign that the existing leadership patterns are mainly hierarchical rather than simply of a community-representational type[33]. The analysis of the questionnaires suggests that community participation seems to be in fact locally centred in the RA as a main form of local power. Furthermore, the control of the RA itself is confined to the hands of few people within the settlement (see **figure**

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[30] This corresponds to 12.5% and 17.5% of the cases respectively in Timbau and M.Dias.

[31] According to P. Ward and S.Chant this is one of the characteristics of community representational type of leadership structures.

[32] 90% and 95% respectively of Timbau's and M.Dias' respondents have said to be non participating on the RA.

[33] P.Wards and S.Chant (1987) identified four main types of leadership which may overlap, namely: authoritarian, positional, traditional and community-representational.

4.5). The whole social and political community organization seems thus characterized by a strong hierarchy.

Fig. 4.5. Proportion of residents' participation in the RA Timbau

Q.26. RA Participant

	Element:	Count:	Percent:	
1	Yes	3	10.714	
2	No	25	89.286	Mode
Total		28	100	

Q.26. RA Participant

- Yes
- No
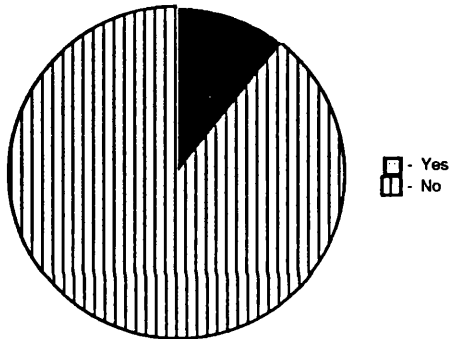
M.Dias

O.26. RA Participant

Bar:	Element:	Count:	Percent:	
1	Yes	1	4.348	
2	No	22	95.652	Mode
Total		23	100	

Q.26. RA Participant

- Yes
- No
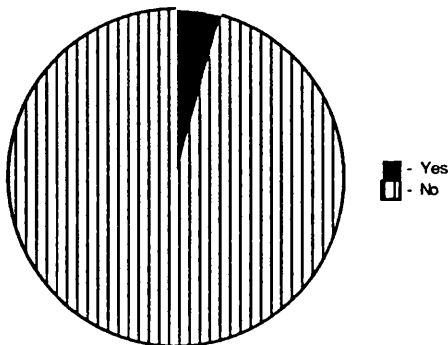
Leaders in both settlements were freely-elected and would correspond to what Ward and Chant have denominated a community representational leader[34]. The authors suggest that support to these leaders depends on their ability to promote improvements[35] and that they normally use residential level mobilization to press for improvements. This seems to be the case in Timbau and M.Dias, yet data from the open questionnaire shows that, although leaders in both settlements make extensive use of <u>petitions</u> signed by residents to <u>bargain for community improvements</u>, <u>active participation of residents is low</u> and it is these representatives who <u>handle community affairs alone</u>. This may characterize according to the proposed typology on the table below by P.Ward and S.Chant[36] an overlapping of authoritarian and community representational leadership (see **figure 4.6**).

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[34] The authors call the attention to the fact that "the term freely-elected does not mean that the whole community has participated in elections, nor does it imply that the leadership is representative of all groups within the community" (1987, p.85).

[35] By contrast, traditional leadership patterns are determined by who they are in terms of their position in local society (such as age, status, prestige and kinship) and not to what they are able to do (Ibid, p.77).

[36] Ibid, p.84

Fig. 4.6. Leadership typology after Ward and Chant.

TABLE 1. Leadership legitimacy

Type of leader	Legitimacy	Degree to which leader seeks to mobilize action and support for community level improvements
Authoritarian	self-imposition 'pseudo'-elections (if at all) some 'derivative' support acquired through contacts	moderate/low
Positional	placed or nominated by supra-local organization 'derivative' support insofar as community perceives link with organization as useful	varies, but usually low
Traditional	ascriptive affective	variable, but often low
Community Representational	elected (usually democratically)	high/moderate

The contingency data presented in **figures 4.7** and **4.8**, which indicates the strength of the relationship between the involvement of people in getting improvements to the settlements and their likelihood of being a RA's member, is also another indication of how strongly polarized on the RA seems to be the task of acquiring improvements.

Fig. 4.7. Contingency tables - Timbau

Coded Chi-Square X_1: O.26.You RA Participant Y_1: O.16.Involved

Summary Statistics

DF:	1	
Total Chi-Square:	1.797	p=.1801
G Statistic:	1.31	
Contingency Coefficient:	.246	
Phi:	.253	
Chi-Square with continuity correction:	.124	p=.7243

Observed Frequency Table

	Yes	No	Totals:
Yes	1	2	3
No	2	23	25
Totals:	3	25	28

Paired t-Test X_1: O.26.You RA Participant Y_1: O.16.Involved

DF:	Mean X - Y:	Paired t value:	Prob. (2-tail):
27	0	0	.

Note: 2 cases deleted with missing values.

Percents of Column Totals

	Yes	No	Totals:
Yes	100%	9.09%	13.04%
No	0%	90.91%	86.96%
Totals:	100%	100%	100%

Percents of Row Totals

	Yes	No	Totals:
Yes	33.33%	66.67%	100%
No	8%	92%	100%
Totals:	10.71%	89.29%	100%

Expected Values

	Yes	No	Totals:
Yes	.32	2.68	3
No	2.68	22.32	25
Totals:	3	25	28

Fig. 4.8. Contingency tables -Marcilio Dias

Coded Chi-Square X_1: O.26You RA Particip. Y_1: O.16.Involved

Summary Statistics

DF:	1	
Total Chi-Square:	6.97	p=.0083
G Statistic:	•	
Contingency Coefficient:	.482	
Phi:	.55	
Chi-Square with continuity correction:	1.259	p=.2619

Observed Frequency Table

	Yes	No	Totals:
Yes	1	2	3
No	0	20	20
Totals:	1	22	23

Percents of Column Totals

	Yes	No	Totals:
Yes	33.33%	8%	10.71%
No	66.67%	92%	89.29%
Totals:	100%	100%	100%

Percents of Row Totals

	Yes	No	Totals:
Yes	33.33%	66.67%	100%
No	8%	92%	100%
Totals:	10.71%	89.29%	100%

Expected Values

	Yes	No	Totals:
Yes	.13	2.87	3
No	.87	19.13	20
Totals:	1	22	23

There was only one person in Timbau that has reported participating in getting the resources and was also a member of the RA. But, two respondents despite being involved in getting resources, were not RA members, and two that were RA members haven't been involved in that. For M.Dias the pattern is not very different from that of Timbau. Only one respondent has answered affirmatively both questions and two have reported being RA members

but haven't been involved in getting resources. The majority of the respondents have, nevertheless, answered negatively both questions (roughly 82% in Timbau and 87% in M.Dias).

It is interesting that in both settlements residents and the RA seem to have the same priority, that is the provision of basic services and infrastructure for Timbau and community services for M.Dias. Quite a large number of respondents have said, however, that they do not know the RA priorities, because :" *they have no connections with the RA"* or because" *they have ceased to struggle for improvements"* (roughly 65% in in M.Dias and 55% in Timbau were able to suggest the RA's priority). This suggests that, although residents do not seem to engage actively in the struggles promoted by the RA, they are well represented in terms of their interests and priorities by the RA. The answers regarding what the respondents would see as important to the settlements covered a wide range of issues such as nursery, health centre, leisure areas, school, a mini-supermarket or a factory to give local jobs.

Yet, people do not seem to have participated actively in any struggle carried out by the RA, and sometimes they do not even seem to be at all aware of how these improvements have taken place (only 5 in Timbau and four in M.Dias were aware). Thirty

percent of the settlers in M.Dias have stressed the fact that " *they have never been there (to the RA) for a meeting"* and in Timbau thirty five percent of the respondents have said that they *"have never or only few times been in the RA's meetings"* but, rather, *"they just help with money because they depend on them to receive assistance"* or" *if they wouldn't have paid the RA they would be an enemy of the battalion".* [37] In addition to that, ten percent in Timbau and sixteen percent in M.Dias, said that *"they help the RA but they don't want to be a part of that".*

Only one of those interviewed in M.Dias and three in Timbau have in any form been directly involved with the RA in any kind of struggles for improvements. There are two cases, as well, of people that have been involved, but, rather have given up, after having reached the aim they had set up, as a settler illustrates: *"I was a RA member, it took us 6 years to get the plot, so when we got it, I've given up the RA".*

This <u>residents' non-participatory</u> behaviour seems in a way to be complemented in Timbau by the <u>authoritarianism of the RA president</u>, as an interviewee pinpointed:" *Agamenon is behind everything, controlling everything, he likes to get*

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[37] This was due to the fact that in several stages the RA has operated hand by hand with the Army and its battalion to get the settlement organized as it will be mentioned later in this chapter in several descriptions of Timbau's development.

always involved. But people here are very quiet, they don't like to complain, to get involved". The whole relation between residents and RA is considerably complex as the above paragraphs suggest, and it is made even more problematic by the mistrust that exists from the settlers. This mistrust is expressed by a settler as follows: *"I would never like to be a RA member because even if you want to help, people still think that you want to steal from them".* [38]

The settlers seem to believe that since they pay the RA, its role is to promote such improvements. The RA's presidents are often seen as the promoters and the residents as the ones which have contributed with money and sometimes labour: *"The RA used to estimate the material needed and the residents have paid for it".* To pay the RA actually appears to be a form of getting privileges that this membership may offer (e.g. : food aids) without any form of collective commitment around improvements for the settlement.

Only two residents in both settlements hold the notion that it is their role to press for improvements. In such a complex system, priorities and resources (financial and human) are allocated by agreement of both parties to reach the target, which

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[38] The residents association collects contributions from the residents and uses the money in improvements and in the up-grading of the settlement. This role in fact generates doubts adequate and honest employment of the resources.

despite possible differences, appear to succeed in their societal purposes of allowing the group to overcome their underprivileged position and to fulfil their real needs (self-established and self-managed/self-controlled). This is a process based on the self-determination of people, the users, over their lives and places, which does not necessarily depart from a harmonic practice of communal cooperation as so widely suggested in the housing literature. This may happen, instead, through an unequal local distribution of power (i.e. hierarchical) within the community which, nevertheless, allows it to have the real power needed to affect the outcome (the socio-spatial and political relations produced in the settlements and the creation of the built form itself[39]).

It seems clear that leadership in both cases is experiencing significant changes. A Timbau respondent has suggested that since the Banco Nacional da Habitação (BNH)[40] has started to promote improvements in the area, he has stopped contributing to the RA. This could indicate a change in the local balance of power with people withdrawing support from the RA. The same thing

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[39] The relationship between local political leadership structures and the production of the built form will be discussed in detail in this chapter in the sections dealing with the historical development of the settlements.

[40] The National Housing Bank.

seems to be happening in M. Dias, which might have
lead an interviewee to say that he would wish "*a
stronger RA, looking for the things the settlement
needs and with a headquarters*".

By now it is apparent that leadership is a complex
phenomenon which may even comprise multiple and
overlapping leadership types. Leadership also seem to
change over time thus it can not be considered a
static phenomenon. In a later section of this chapter
the changes in leadership structure in both
settlements throughout their history will be
discussed with a view of identifying also the factors
(external and internal) which might have determined
these changes.

Leaders are often accused of taking advantage of
leadership for personal benefit and of corruption or
misuse of nominal contributions received from the
community.[41] Leaders may also possess different
networks from those currently held by the community
members. For example, leaders in Timbau and M.
Dias have engaged in reciprocal relationships with
notables in governmental or non-governmental bodies
whereby the leader secures certain promises and

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[41] Ward and Chant (1987, p.100) observe that" *even in those
cases where we have found evidence of hardworking, honest and
efficient leaders they have often been denounced publicly*". In
addition to that Moser (1984) points out that residents may come to
envy the successful leader and gradually distance themselves leaving
the leader isolated.

benefits to the settlement. In the case of Timbau it is suggestive that the local leader held at the RA a diary with a list of names and contacts of key figures such as politicians and influential government officials for their use in emergency situations[42]. It is important, however, to stress that in the case of Timbau and M.Dias the leaders resisted being formally associated with any political party[43], yet they have used political bargaining as a mean to secure improvements to the settlement. In that sense, it could be said that in both settlements, internal factors, such as individual attributes and the settlement's characteristics, were of paramount importance for the emergence and maintenance of local leaders[44].

In this section it was seen that leaders in both settlements appear to have intrinsic qualities which include a more global network, over and above their personal qualities such as a charismatic personality or persuasive power. Thus, it could be said that leaders both often relate to the community in different ways than the residents do among

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[42] Such as to help solving problems within the settlement or to acquire specific community benefits.

[43] Jacobi (1982) and Valladares (1983)have observed that this seems to be a characteristic of urban social movements in Rio.

[44] Ward and Chant (1987,p.93), on the contrary, suggest that the "primary determinants of leadership appear to be derived externally: from the regional culture, from the party-political structure; from national and local government; and from actions of non-governmental organisations (NGOs)".

themselves, and also hold links with outside 'bodies which the community members they represent do not. Leaders backed-up by the support given by the residents are politically powerful enough to get public facilities that can be supplied only from the city as a whole as well as to provide the ones which depend on the proper self-administration of existing local resources. In this sense leaders are individuals able to operate simultaneously at settlement scale and at city scale. As a consequence, despite the fact that they demonstrate the useful function of self-government, this works in an integrated[45]way to a larger political network which is that of the city's political system.

Further analysis of the characteristics of leaders in the two settlements and the changes the leadership patterns undergone in the different stages of development of the settlements are beyond the scope of this section and will be the subject of later sections which will describe the evolution and growth of the settlements.

Although, as so far argued here, communities can not be taken as homogeneous cohesive solidary groups, there are situations where, for instance, residents perceive a threat from outside, that their 'in-group' solidarity will predominate (Ward et all, 1987;

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[45] but not co-opted.

Cornelius, 1975). A social unit at a certain level, which nevertheless should not be confused with mutual support, is required for effective community political action. The two next sections will attempt to thoroughly investigate that issue by studying how the inhabitants of both settlements relate to the society as a whole and how is that configured spatially and through their network patterns.

The Nature of Ties

Authors have observed that, because of the bad living conditions in many Latin American squatter settlements, residents develop very different forms of solidarity and complex networks for mutual aid and support (Lomnitz,1977; Moser, 1987).

Neighbourliness and god-parenthood are forms by which those relations may be formalized. It was seen in the previous section that in the case studies spatial proximity seems to be an important factor influencing the nature and strength of the tie developed.

Residents from both settlements were asked in the network part of the questionnaire (see questionnaire in the appendix and the data table on page 150) to identify and describe the character of their ties[46].

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[46] The question was formulated by asking the respondents to identify the people with whom they would regard as having a friendship, formal, and supportive relationship.

The findings suggest some interesting points. First, they confirmed the hypothesis proposed in the previous section that spatial proximity has to be relatively counter balanced by social distance.

Second, they show that the respondents see their relationship with the RA as formal, thus as it was argued before, involving social distance. This corresponds to 12.5% and 17.5% of the cases respectively in Timbau and M.Dias. By contrast, only in very few cases, a relationship with a relative living in the settlement was seen as formal (80% and 87.5% of the cases respectively for Timbau and M.Dias), while in the case of relatives living outside formality increases (approximately 50% of the answers in both settlements). This suggests that spatial distance, over and above specific social ties (such as kin) is a major factor influencing the strength and nature of the tie. Relations with influential people, regardless their being community members or outsiders, is seen for about 50% of the cases as formal. Work-mates, as well as friends, are not considered for most of the respondents as formal relationships.

In addition, people were asked to say where they met most of their friends and whom they would use as a supportive tie. The answers to these questions reveal some key findings. The first finding is that most

people see their next door neighbour as a' friend (approximately 70% of the answers in both settlements). The second finding is that only about 30% of the cases have met their friends outside the settlement or in a local or outside association. These findings suggest that neighbourliness is the major form of social interaction, whilst involving a relative amount of social distance in a reciprocal proportion to physical proximity. So neighbours are more likely to be friends ("strong ties") than only acquaintances ("weak ties").

It is interesting that data from the questionnaire indicates that, contrary to what is currently assumed in the literature, ties between those who have migrated from other places outside Rio and their remote kin tend to become weaker as time goes by. The questions were formulated aim of obtaining precise information about the nature of these ties between the city and the place of migration, how they are maintained, and their strength.

Some interesting points have arisen from the answers which can be summarized as follows. The high number of people that have not responded the question if they have any "contacts" outside Rio could indicate that this concept is not very clear   for

the interviewed[47]. Contacts appear to be in fact understood as strong ties of the type of friendship or kinship[48]. According to the statistical results around 70% of the respondents in both settlements have kinship relations outside Rio. In Timbau nineteen settlers have relations outside Rio and this number coincides with the number of respondents that have prior residence outside Rio, whereas in M.Dias this amounts to seventeen.

The contact with relations outside Rio is maintained through correspondence, and word-of-mouth news transmitted through visitors. This contact also varies in terms of its frequency (see **figure 4.9**), from more frequent to more seldom, and there are even extreme cases of loss of address or no contact at all (2 out of 19 in Timbau 6 out of 17 in M.Dias have no contact). It seems to be clear, thus, that the relation with remote kin is not one of economic exchange and/or dependency on mutual assistance. An effective tie among kin seems to be conditioned by spatial proximity and closeness of kinship, although this condition may not suffice. Moreover, though these ties may exist independent of spatial proximity since there is a kin relationship among the people

[47] In Timbau 84% of the respondents have said to have no contacts at all, while in M.Dias 59% of the respondents have not answered this question and 38% have said to have none.

[48] In both settlements around 70% of the respondents have said to have kinship relations outside Rio. In Timbau also 26% of the respondents have said to have distant friends while in M.Dias no one have said to have distant friends.

involved in the relation, these ties do not appear to be strong.

According to **figure 4.9**, at least 40% of the respondents keep in touch frequently with their distant relations. Eight additional cases in Timbau and only one in M. Dias just have contact once a year. It is significant that, as many as 20% of the respondents in Timbau and almost 40% in M.Dias have contact which is restricted only to important occasions. Mail is the most common form of communication for Timbau, accounting for 50% of the answers, yet in M. Dias it corresponds just to 7.7% of the answers. It is firstly, by means of words of mouth corresponding to more than 45% of the answers and, secondly, through visits represented by almost 40% of the answers that M.Dias' residents maintain their contacts with distant relations.

Neighbourliness is not only a major form of interaction but constitutes also a major supportive tie. In 84% of the cases of Timbau and 68% in M.Dias, people said that they would ask their neighbours for help. By contrast, only a small group of Timbau's residents have answered they would ask for support from people they met at work or outside the settlement[49].

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[49] This corresponds to 25% of the answers for work and 18% for outsider.

Fig. 4.9. Frequency of Communication with relation outside Rio Timbau

Q.4.c.Frequency of communication

Bar:	Element:	Count:	Percent:	
1	Every Month	6	25	
2	Every 2 months	3	12.5	
3	Imp.occasions	5	20.833	
4	Once a year	8	33.333	- Mode
5	Seldom	2	8.333	
Total		24	100	

Q.4.c.Frequency of communication

- Every month
- Every two months
- Important Occasions
- Once a year
- Occasionally
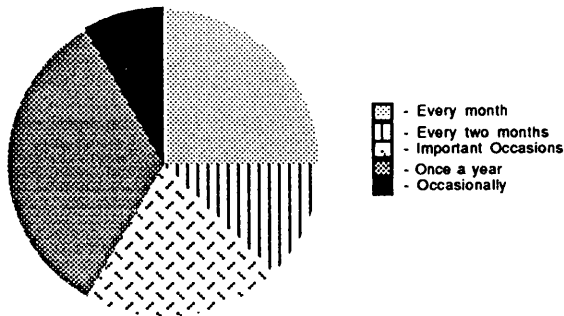
M.Dias

Q.4.c.Frequencyof Communication

Bar:	Element:	Count:	Percent:	
1	Every month	6	46.154	- Mode
2	Every 2 months	0	0	
3	Imp.Occasions	5	38.462	
4	Once a year	1	7.692	
5	Seldom	0	0	
6	Every month+Imp.Occ.	1	7.692	
Total		13	100	

Q.4.c.Frequency of communication

- Every month
- Important Occasions
- Once a year
- Every two months
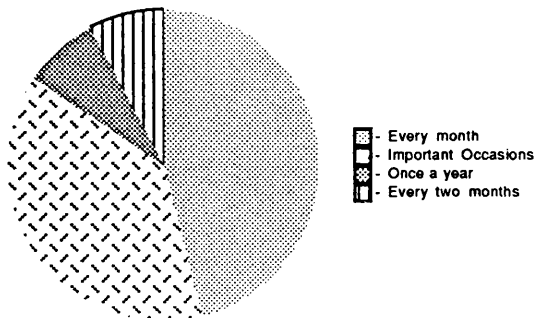
Fig. 4.10. Type of communication with relations outside Rio
Timbau

Bar:	Element:	Count:	Percent:	
1	Visit	3	12.5	
2	Telephone	5	20.833	
3	Mail	9	37.5	- Mode
4	Words of Mouth	2	8.333	
5	Visit+Telephone	2	8.333	
6	Telephone+Mail	3	12.5	
Total		24	100	

Q.4.d.Type of communication
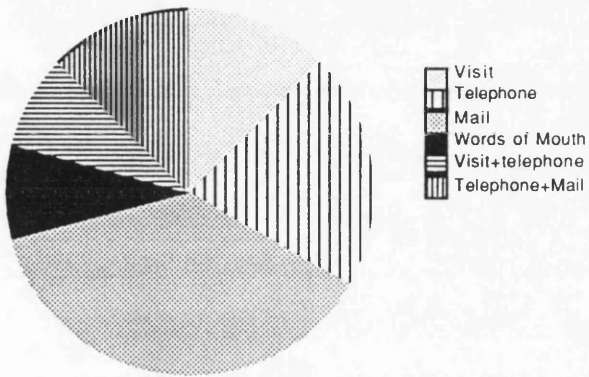
M.Dias

Q.4.d.Type of communication

Bar:	Element:	Count:	Percent:	
1	Visit	5	38.462	
2	Telephone	1	7.692	
3	Mail	1	7.692	
4	Words of Mouth	6	46.154	- Mode
Tota		13	100	

Q.4.d.Type of communication
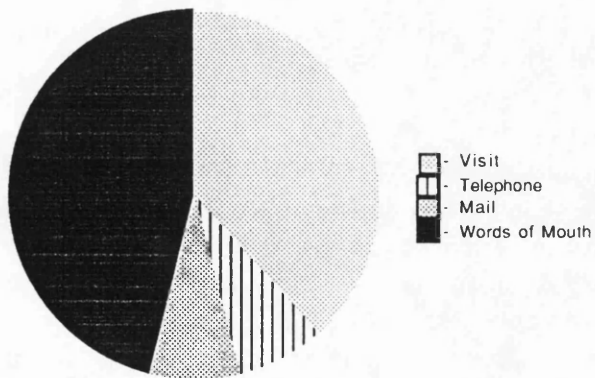
Otherwise, in M.Dias almost 50% of the respondents have said they would ask an outsider for help and as many as 60% would ask a work-mate for support[50]. These results show that although neighbourliness is a primary form of solidarity, strong ties in Timbau are more locally oriented than in M.Dias[51], with long-distance ("global") social networks weaker for the first settlement ("weak distant ties") than for the second[52]. Moreover, in M.Dias weak ties have more significance that in Timbau. The most likely interpretation of this finding is that, community members of M.Dias are more likely to be connected to social circles different from their own[53]. Yet despite the fact that friends and acquaintances are commonly local ties, residents from both settlements also have effective connections outside it.

Finally it could be said that while not all ties are supportive, most community members believe neighbours are normally ready to help them. Local strong ties seem to be the basis of the community

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[50] Both cases can be considered acquaintances ("weak ties").

[51] A question which might arise, yet beyond the scope of this section, is does the form on which this areas fit spatially within the city make any difference in terms of the way in which the communities members are connected to the larger world?

[52] This is in opposition of what Wellman (1979) found for a Toronto community where most ties were not local.

[53] In other words, it could be said that community members of M.Dias are more likely to be transpatially connected than people from Timbau.

network of both settlements[54]. Yet it is clear from early findings in this section that community ties vary markedly according to the kinds of resources flowing through them with the kind of support differing greatly. Furthermore, there are many reasons why it is <u>misleading to describe</u> these <u>communities as 'solidary clusters of mutual supporters'</u> (Wellman,1988). There are many conflicts of interest between community members and its representatives, as well as imbalance in terms of exchange of support, that communities actually are far from that image of harmony and solidarity.

Having dealt in this section with the inhabitants-inhabitants relationship and with the existing local patterns of interaction, the next section will focus on the description of the strangers-inhabitants interface.

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[54] Granovetter (1979) makes a distinction between macro and micro integration; noting that if macro-integration is based on weak ties it permits episodic transmissions of information among groups, while if micro-integration is based on a cohesive set of strong ties it permits regular transmissions within groups. He further observes that in many networks both type of ties, the weak and the strong ties, are instrumentally important. In the specific case of Timbau and M.Dias these two types of integration seems to be related respectively to the way the group organizes itself locally (spatially, socially and politically) and to the way it connects itself globally (spatially, socially and politically).

Strangers and inhabitants   ,

It has already been suggested by the syntactic analysis carried on in Chapter III that strangers are not very welcomed to the internal areas of the settlements. Visitors are kept rather at the periphery and in more globally oriented spaces. Furthermore, the form of embedding of the settlements in their urban context has shown that integration to the rest of the city was relatively marginal. The analysis of the grid has suggested that strangers, as a consequence of the spatial structure, whilst not excluded from the settlements are kept under the surveillance of locals.

This section looks at the questionnaire's data (see p. 350) in order to show how global relatedness and the relation with strangers is constructed by locals. In this sense people were asked in the third section of the questionnaire to talk about their interface with strangers (see the questionnaire in the appendix).

The analysis of the questionnaire data aims to complete the picture given by the 'origin and destination study' in terms of offering an idea of the proportion and spatial pattern of visitors within the settlements. One significant finding of the questionnaire was that as many as 75% and 70% respectively of Timbau's and M.Dias' answers identified the presence of strangers using the

streets within the settlement. This lends crédence to the argument that these neighbourhoods, conversely of what is accepted by the architectural literature on the subject[55], are not areas belonging almost exclusively to the people who live there. This poses the question of whether neighbourhoods, as proposed originally, actually exist even in situations of relative social homogeneity and spatial self-containment such as Timbau and M.Dias.

The spatial analysis of the grid configuration of the two settlements have shown that, despite their relative segregation, both places use space rationally to construct a global interface[56].

Empirical evidence from the network questionnaire indicates that even relatively segregated spaces such as Timbau and M.Dias are configured so as to

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[55] The concept of neighbourhood was defined by Clarence Perry (1929,1939) as a semi-self-sufficient unit with an optimal size, contained by definite boundaries, and designed to encourage a return to face-to-face contact on a local basis and a high-level of mutual help followed by political cohesion. It is a combination of social idealism and physical planning, which can be traced back to Ebenezer Howard (1898) and his garden city concept. Since the 1930s the idea of planning by neighbourhoods (this used as a basic cell) has been widely applied to new areas such as the British New Towns among others. In physical terms the idea was to change the basic unit of planning from the city block or the street, to a new urban pattern of neighbourhoods with a internal civic nucleus and an outer boundary.

[56] A sign of that is given by the fact that the performance of the grid in terms of structuring patterns of movement in Timbau improves with the system embedded in its context (system 3). On the other hand, in M.Dias this is revealed by the form in which the integration core brings strangers straight through the settlement.

maximise the visitors-inhabitants interface 'rather than to exclude strangers from the neighbourhood. In Timbau, 90% of the respondents have replied that they receive visitors, while in M.Dias this amounts to 60% of the answers. The greater proportion of these visits include kinship relations living outside Rio, as well as street vendors. This corresponds, respectively in Timbau and M.Dias, to about 90% for the first category; and to 84% and 95% for the second category.

The number of visits from outside friends and, to a less extent work-mates, is also considerable. About 70% of respondents in both settlements have said to receive visits from outsider friends. In addition to that 43% and 30% respectively for Timbau and M.Dias have mentioned the visit of workmates. In approximately 90% of the cases the receive the workmates' visit at least once a month. Therefore, this data reveals that the presence of <u>visitors</u> within the settlements is significant in terms of <u>social interaction</u>.

The frequency of these visits reveals also some interesting features. First, visits of outside friends are quite frequent. The amount of people who receive the visit of outsider friends at least once a week corresponds to 70% of the cases in Timbau and about 60% in M.Dias. Second, visits of kin living outside Rio

are sparse whereas the reverse is the case for kin living in Rio confirming thus that the strength of kinship relations also depend on relative spatial proximity. 87% and 94% of the cases respectively in Timbau and M.Dias receive the visit of kin living outside Rio not more than once a year, while as much as 70% of respondents are visited at least once a week for kin living in Rio. The frequency of street vendors is also significant with approximately 70% of the respondents stating that at least once a week they receive a visit.

This data obviously reflects a situation of intense interaction of visitors and inhabitants, challenging the assumption that a sense of urbanity and community depend on the absence of strangers. The answers to the questions have shown that in general locals do not feel menaced by strangers. This may suggest that their <u>relative spatial segregation</u> is nothing more than <u>an elaborate group mechanism to protect and preserve inner dignity</u> in the face of so many outside pressures and impingements[57]. An instrumental mechanism which regulates the local-global interaction is thus generated so as to guarantee that control remains with locals[58].

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[57] Jacobs, J., **The Death and Life of Great American Cities**, Penguin Books,1984 p.78, notes a similar mechanism operating, however, inside the communities to regulate the relationship among neighbours.

[58] This could have been, for instance, a major strategy developed to avoid undesired global inferences in local matters or even a form of protection against for example threatens of eviction.

Residents were also asked to say how they saw the presence of strangers in the settlement. In most cases, inhabitants have said that it is natural for them to be strangers present within the settlement (54% and 65% for Timbau and M.Dias). Yet as many as 26% of the respondents in Timbau have said that they believe that the presence of strangers brings problems to the settlement. The most plausible interpretation of this fact is that Timbau may be socially and spatially more closed than M.Dias. Another expression of that relative closeness might be that only approximately 6% of the people in both settlements see these visits as useful[59]. The foundations of that might be in the fact that Timbau once was an illegal settlement and as such it has been at several periods of its development under imminent removal. Its self-containment thus might have been a strategy developed in the face of such risk.

Asked how the residents felt about the problems in the settlements, fifteen out of the twenty seven had said to have no worry in Timbau and sixteen out of thirty in M.Dias. The other twelve in Timbau were mainly concerned with crime, and eight out of these twelve have associated new-comers/strangers with

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[59] Even though almost 50% of people in M.Dias and 25% in Timbau have said that visitors are an important springboard to supportive ties outside the settlement.

bad people. This could also be interpreted also as a sign of the Timbau's relative self-containment and local nature.

Finally a set of questions was designed in the questionnaire to identify whether inhabitants used their visitors interface as a springboard for new friends or acquaintances inside and outside the settlement, and as supportive ties. The results allow for some conclusions.

The first is that in most cases (approximately 90%) residents have introduced visitors to their next door neighbours. This nevertheless decreases with physical distance[60]. In any case, however, very few people were able to identify socially[61] a distinct part of their settlement to which they would belong and that they would name as their neighbourhood. Rather, the findings suggest that inhabitants are more likely to distinguish part of their streets, their whole street and the whole settlement than any well defined social and physical sub-area within the settlement[62].

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[60] Authors in the field suggest that residents appear to perceive small groupings, often no more than a few contiguous houses, as neighbourhoods of proximity-based interaction. The argument supported here, nevertheless, is that spatial proximity in many cases is balanced by social distance, and thus there is a relation between social interaction patterns and spatial distance.

[61] and spatially as discussed previously in this chapter.

[62] Only 5% of the a respondents of Timbau were able to answer questions involving the concept of neighbourhood.

Second, very few people[63] out of the 30 and 26 interviewed respectively for Timbau and M.Dias have shown that they could make sense of the concept of a discrete well defined sub-area within both settlements which could constitute 'their part of the settlement': " *there is no sub-areas, there is no way to separate, everything is Timbau"* or" *the estate is a whole"*. In fact in the few cases where people have mentioned a sub-area (6 in Timbau and 11 in M.Dias) they seem to refer mainly to a spatially discrete domain with peculiar geographical features such as the lower part of the Inhauma beach opposed to the upper part of the quarry or a very well defined enclosed row of houses, often with no correspondence to a discrete social grouping.

In fact the <u>concept of neighbourhood</u> was defined by one respondent in M.Dias and another two in Timbau as the "*people we know best* ", which actually, <u>does not corresponds to a well defined, closed social group within a discrete physical area</u>. In the case of Marcílio Dias, where there are no obvious geographical differences, where the grid and the

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[63] In Timbau no one was able to make sense of the concept without using as a reference a geographical feature (3 cases) or the legality of the land ownership (1 case) or the street or of height manifested as follows: "*I live in the lower-medium part of Timbau"* (2 cases). In M.Dias, though, five respondents have mentioned the fishermen area when required to define their neighbourhood and they were able to define precisely the boundaries of this area. In addition to that, six other interviewees have also made allusion to landmarks in relation to cardinal points such as *"to the south of the shop"* or to the distance they are from the boundaries.

architecture are more uniform, there seems not to be any identifiable sub-area at all. The distinction people tend to make, instead, is with reference to the distance they are from the boundaries of the settlement which give rise to expressions such as "*in the middle* ","*outside* " and "*inside* ", and are more broadly topological concepts. This shows that the only two spatial domains people are more or less able to identify are the streets or the whole settlement. In addition, only 20% of the visitors in Timbau were introduced to another outsider whereas in M.Dias this amounts to almost 40%. This reveals that networks in Timbau might be more localized than the ones in M.Dias. Over and above that, ties developed through visitors are likely to be involved in and offer help only to community related matters such as up-grading but not in personal matters.

It was seen above that strangers are an important component of the residents network, yet not part of their supportive ties. Furthermore, individual community members ties appear to cover the whole city, rather than a small segment known as a neighbourhood. The next two sections will aim to identify if networks are differentially developed by men and women; and by politically active community members and the community members as a whole.

Gender differences in network patterns '

Looking at the network questionnaire data on page 150 and comparing the answer given by men and women some points are worth noting. In many respects men and women seem to behave differently. **Figures 4.11** and **4.12** respectively for Timbau and M.Dias show graphs of percentile comparisons for men and women answers to several questions aimed at describing the nature and spread of their networks. These graphs reveal some interesting points. Firstly, that men have more dense and spread network of contacts and of known people than women. In terms of both local and distant ties. Only about 3% of women in both settlements have said to know everybody in the settlement whereas for men this amounts to 10%. Despite of that men and women know in average many people in the settlement. On the other hand, none woman against 10% of men have said to speak with almost everybody in the borough.

This, nevertheless, is not followed by a denser field of interaction for men than for women. Both men and women said in average to greet many people in the settlement. Outside the settlement though man seem to have a relatively denser field of interaction than women. Thus it could be said that men has a spatial-transpatial network while women has a predominantly spatial network.

Secondly, interaction for both men and women drops significantly with spatial distance when it stretches beyond the boundary of the settlement. Locally, however, interaction also varies with spatial distance, yet differently between Timbau and M. Dias and for men and women. In Timbau the denser field of interaction corresponds for both men and women to people living in the same street. While in M.Dias it corresponds to the door neighbours for men and to the street for women. In both settlements nevertheless average interaction with people living outside the settlement but within the same borough is weak.

It is surprising, nevertheless, that although most residents know their next door neighbours better by name, interaction is more intense in most of the cases with people living in the same street. This confirms the hypothesis proposed in a previous section that spatial proximity is counter balanced by social distance to establish an optimum scale for interaction.

Figure 4.12 shows that in both settlements men interact with the RA unlike women. The percentile comparison graph reveals that men meet the RA members more frequently than women. As a Timbau woman interviewed explained:" *Women don't care about the community association matters, men do more".* In fact in both settlements their committees

are male dominated with no woman being member of the Timbau's board and with only three female members out of thirteen in M.Dias. This coincides with the pattern observed for several authors (Cornelius,1975; Hollnsteiner, 1982) where the great majority of contemporary leaders are male, and it might explain why there is two times more men ready to talk to the RA about settlements' problems than women.

In addition to that, 55% of men in Timbau regarded their relationship with the RA members as a friendship while this only amounts to 22% of women's answers. In M.Dias, however, the numbers are alike for men and women corresponding to 33% of the answers. However, as observed previously, in both settlements the large majority of respondents have regarded their relationship with the RA as formal.

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Fig. 4.11. Timbau

Amount of people known for men and women
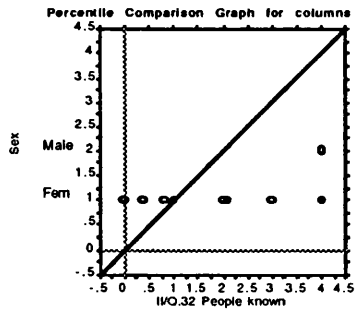
Percentile Comparison Graph for columns

IVO.32 People known

Amount of people greet for men and women

Percentile Comparison Graph for columns

II.O.34. Greet

Amount of people men and women speak in the borough

Percentile Comparison Graph for columns
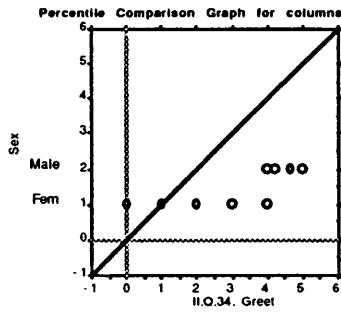
36.e/II.borouh

M.Dias

Amount of people known for men and women
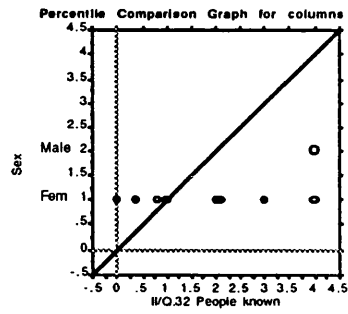
Percentile Comparison Graph for columns

IVO.32 People known

Amount of people greet for men and women

Percentile Comparison Graph for columns

II.O.34. Greet

Amount of people men and women speak in the borough

Percentile Comparison Graph for columns
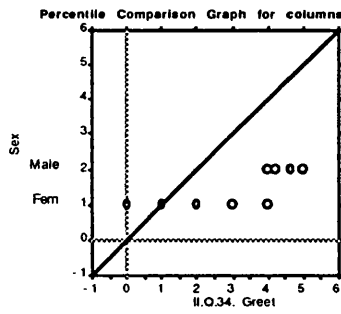
36.e/II.borouh
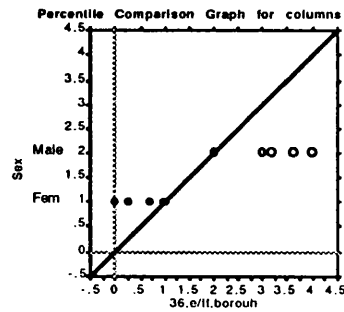
Fig. 4.12. Interaction with RA - Timbau and M.Dias

Percentile Comparison Graph for columns
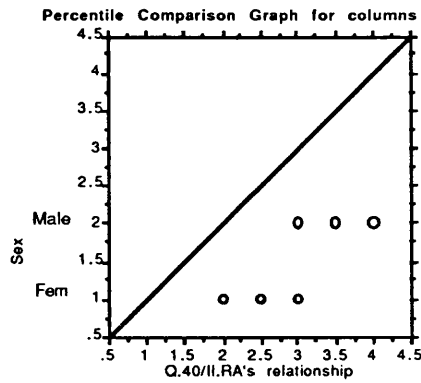
In terms of supportive ties men and women seem to behave alike[64], yet women seem to be slightly more ready to ask for support in cases of need[65]. Similar numbers correspond to support from neighbours and kinship relations.

Men, nevertheless, seem to talk more with outsiders about problems in the settlement than women. The graphs shown in **figure 4.13** are an illustration of that with women's rates plotted against men's rates[66]. Yet this is more intense in Timbau than in M.Dias.

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[64] The large number of no answers (around 50%) to the question of whether people have asked for help suggests, though, that this is a problematic issue which involves complex aspects such as social status.

[65] 84% of women and 62,5% of men in M.Dias wouldn't hesitate to involve a friend in personal problems, while in Timbau this corresponds to 66% and 75% respectively for women and men.

[66] In the vertical axis women are represented by the number 1 and men by number 2. Horizontally the numbers correspond to the frequency in which they talk with outsiders about problems in the settlement. The horizontal scale varies between 0 and 2, with 0 corresponding to the option seldom, 1 to sometimes, and 2 to often. A comparison between the mean value for Timbau and M.Dias respectively for men and women help to establish a proportion: .667, .529, .583 and .379.

Fig. 4.13. Talk with outsiders - Timbau and M.Dias

Percentile Comparison Graph for columns

Q.44/II.talk prob.outsider
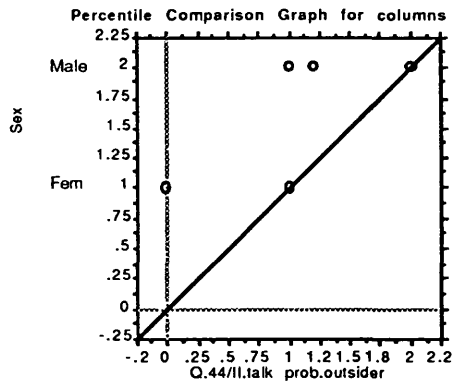
The table below shows the frequency ratio of interaction[67] for men and women regarding settlement problems between: neighbours, residents and the RA, and residents and outsiders. The table reveals that neighbourliness is the channel through which comments about problems in the settlement flow, rather than through the residents association or through the use of external networks.

Fig. 4.14. Frequency ratio of interaction

	TIMBAU	M.DIAS
MEN		
neighbours	1.111	1.0
residents / RA	.889	.833
residents / outsiders	.667	.583
WOMEN		
neighbours	1.118	0.75
residents / RA	0.735	0.536
residents / outsiders	0.529	0.379

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[67] This also varies between 0 and 2, with the lowest value for none interaction, 1 for non frequent interaction and 2 for frequent interaction.

Weak ties are also different for men and women. Men, for instance, often talk with work-mates about things taking place in the settlement[68]. Men, however, seem to have as many formal ties with people outside the settlement, including influential people, as women.

By contrast, women and men seem to behave alike in relation to their strong ties. In both settlements the number of respondents which have replied that they receive visits from family living away from Rio in other regions of the country is very similar and amounts to more or less 90% of the answers.

On the other hand, about 50% of the residents have said to receive visit from kin living in Rio. The frequency of the meetings on the average is approximately every month for kin living in Rio and once a year for kin living outside Rio. The proportion of visits from friends living outside Rio is also half of the ones from friends living in the same city, yet slightly more for men than for women. The average frequency varies between once a year for for the first group and once a month for the second one.

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[68] The average values of the table are calculated on the basis of the the three options: 0. 1 and 2.

Finally, it seems to be a common female attitude to introduce visitors to their neighbours and interact with them mainly nearby their home. Men, otherwise, meet visitors also at the local bars[69].

According to the respondents women either receive the visits of other women at home (or on the flat roof which is cooler) or they sit outside at the door talking (70% of the cases in Timbau and 60% in M.Dias), and occasionally, watching the children play. The settlers have said that this habit is a way to cope with the high temperatures during summer: *"inside the houses is too warm"*, but, this also seems to be a way, as explained by a resident, *"to keep well informed"*. Some settlers have, nevertheless, stressed that nowadays because of crime it is not longer safe to stay outside talking. In addition to that, it is believed that bars are not the kind of places woman should go. There are however exceptions, or in other words, bars or dance places *"where families can go"*.

Men, although they seldom participates in these outside gathering conversations, have indicated that they prefer to go to local bars or dance places (22 out of 24 in Timbau and all respondents in M.Dias). Respondents have pinpointed that bars over the

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[69] As male interviewed reports: *"Plenty of visitors come to the bars on Fridays and on the weekends. It is good to know that we are not isolated"* or*"Visitants are introduced to other residents at the bars"*.

weekends are crowded, with people drinking, playing cards, snooker and dancing. In M.Dias also the football field was mentioned by roughly 20% of the respondents as a place where men go, specially during the weekends when there are games.

In this section it was seen that men and women have different networks, with men being relatively more connected globally than women, yet they follow similar solidarity patterns and use the same type of supportive ties. The next section will look at the patterns adopted by RA members and compare then with the ones of residents in general to see if any special feature of leaders can be identified.

Do leaders have different networks?

The literature on the subject suggests that leaders in contemporary societies may derive their support from having either specific skills[70] or by having a network which is widely spread and includes key contacts with governmental officials or influential people Ross, 1973; P. Ward and S. Chant, 1987). Long

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[70] Epstein (1958) gives the example of tribal groups in Africa in which the elders who traditionally presided over the local urban administration were gradually replaced by better-educated leaders more effective in dealing with the so-called 'modern' urban institutions.

duration of residence is also another characteristic identified in leaders (P. Ward and S. Chant, 1987; Ross, 1973).

The empirical evidence for both case studies reveals some important findings in connection to the above. First, although leaders in both settlements are long term-residents, their average time of residence does not differ significantly from the other residents[71]. Leaders, nevertheless, do seem to make use of different local and transpatial networks from these used by residents in general. Internally, leaders and RA members possess an extended and strong network.

Figure 4.15 shows that in both settlements the pattern is the same with leaders and RA members knowing and greeting more people within the community than a normal resident[72].

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[71]Moreover, an interviewed has referred to the local leader in M.Dias as someone better educated and more skilled than most of members of her community.

[72] In M.Dias a normal resident in average greets few people in the settlement whereas an RA member or leader greets in average many people. While in Timbau they both greet in average quite a lot of people.

Fig. 4.15. People known in several spatial circles

	TIMBAU	M.DIAS
RESIDENT		
Next door neighbour	2.857	2.075
Street	3.463	2.425
Settlement	2.286	2.25
Borough	1.31	0.95
RA MEMBER		
Next door neighbour	4.0	4.0
Street	4.0	4.0
Settlement	1.5	4.0
Borough	1.0	2.5

The table above[73] also suggests, however, that this varies with the spatial area covered by the network. The awareness of contact decrease with spatial distance, yet leaders tend to have a more intense and wider network. It is surprising nevertheless, that the pattern of leaders is very similar in both settlements. This may be an indication of an overall characteristic of leadership which is a spread and dense local network of contacts above the average of that belonging to a normal resident.

Residents and RA members often interact, meeting each other on average at least once a week. It is indicative, though, that the frequency of interaction among RA members is similar to this. Such frequent interaction does not seem to

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[73] The average values on the table show the number of people they know enough to talk with on the 4 areas and they are calculated on the basis of the four options given, namely: 0 for none, 1 for a few, 2 for quite a lot, 3 for many, and 4 for almost everybody.

correspond to a wide basis of local support with residents linked to the RA by a network of strong ties[74]. Quite to the contrary, as observed before, only a small percentage of the respondents have said that they hold a friendship or supportive tie with the RA. Relations between the RA and the residents, instead, seem to be based on instrumental and practical reasons. The residents give political support to the local leader in exchange for improvements in the settlements[75] or by canvassing external support[76]. Pedro Justino, an ex-RA board's member made a suggestive remark in relation to that:" *People are not ready to help, even the ones which are RA participants*[77]. *You have to pay them if you want*

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[74] The very low frequency in which people talk with the RA about problems in the settlement, corresponding on average to 0.5 with 0 for never and 2 for frequently, reveals that this interaction of casual rather than regular.

[75] This is clearly the case of both settlements, yet in M. Dias contact with outsiders seems to be more important than the management of internal resources. The mean frequency of RA contacts with outsiders to talk about problems in the settlement highlights that. While Timbau nowadays has few contacts, M. Dias has frequent contacts.

[76] Leaders often are more able to negotiate with government officials and other institutions since they generally have a wider network of contacts outside the group (weak transpatial ties) with high-status individual than most of the residents. In that sense, leaders may be considered to be persons who are more likely to be 'cosmopolitans' than the rest of the local group. On the other hand, authors also note that leaders have relatively higher status occupation than most of the residents. Francisco in his own words explains this as follows: *"I have time for my leadership duties because I'm better-off than the majority of the residents...I'm retired and I work for the centre for human rights, at least I'm able to feed my family"*.

[77] This are the ones who give regular monetary contributions to the RA.

something". In fact financial contributions may be one of the most common forms of supports of residents to the RA.

Francisco, the M.Dias RA president makes an interesting remark about community participation and organization: *"People from the favela are not very active, but I understand them because you can not ask people, who are more concerned about whether their family is going to eat tomorrow, to go to an RA meeting ... The whole system does not work ... people expect us to do something ... they expect the politicians, the government to change things ... it is a very paternalistic system... but we would like to see, instead, people meeting and discussing for a fair salary, people to get organized in unions ...to participate"*.

Neighbourliness is weaker for RA members that it is for most locals. While neighbours interact to share their problems in the settlement, RA members do that with their neighbours with less frequency.In M.Dias the proportion between residents speaking with outsiders about problems in the settlement and RA members doing that is 83% against 100%. Such proportion for Timbau is reduced to 26.29% and 50%. Leaders also have more frequent contacts with outsiders to talk about the problems in the

settlement than residents in average do[78]. Ward and Chant (1989, p.88) observe that perhaps this role of acting as intermediary between the local residents and transpatial entities such as the government and other supra-local agencies is the most important feature of leadership. Such feature is apparent in both settlements as it can be seen in the tables of **figure 4.16**.

Fig. 4.16. Proportion of relations with outsiders

	Residents	RA
TIMBAU		
relation with notables	14.29%	50%
relation with outsiders	16.67%	50%

	Residents	RA
M.DIAS		
relation with notables	16.67%	50%
relation with outsiders	66.67%	29.17%

On the other hand the presence of strangers in the settlement, which could be interpreted as a local spatial manifestation of these transpatial ties, is regarded as fundamental by RA members[79]. This is seen by them as useful, yet they distinguish between

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[78] From a frequency varying between 0 and 2, with none for 0, 1 for sometimes and 2 for often, in both settlements the average was 2 for RA members and 0.5 for residents.

[79] The percentage of RA members who talk with strangers is higher than residents in general. This corresponds to 50% against 32% in Timbau and 66.67% against 29.17% in M.Dias. In addition to that, the percentage of RA members who receive visits of politicians or other notables is also considerably higher than residents in general. This corresponds to 66.7% against 12.2% in Timbau and 66.7% against 42.5% in M.Dias.

normal visitors and criminals. As Agamenon explains: "*Normally I stop strangers and ask what they are doing here, but if I think they are criminals I wouldn't do it. In fact we have to distinguish between two types of strangers - ones which aren't useful and another type which comes to visit us and to see how the settlement is like a place*" [80]. In addition to that he observes: "*I think it is very important to introduce visitors to residents, it gives me status*". Or as Chico, the M.Dias RA presidents says:" *It is very important to have visitors, they enlarge our network of known people and our knowledge*".

In terms of supportive ties RA members seem to be more ready to ask for favours to weak ties than the residents in general[81] as the tables in **figure 4.17** show. Though, it is important to make clear that RA members separate their community identity from their personal identity. In other words, if they are acting in the role of their community identity[82] they will tend behave differently than a average local resident looking for support, and they will rather

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[80] Its a common feature of the favelas in Rio to have a close link with crime activities such as drugs and burglary. In many cases, the person who controls the activity becomes a local reformer.

[81] Agamenon gives a reason for that as follows: " *As an RA president you can be ashamed of asking for support, you have to do it to everybody*".

[82] Or in other words, the local leader is the one who stands for the group.

make use of weak ties[83] than to strong ones. By contrast, in case of personal problems they will behave similarly to any normal average resident and they will make mainly use of the support of strong ties. This may also be related to a difference in status between normal residents and the leaders with a lower position held by the first. Such behaviour, as number of studies indicate (Lomnitz,1977; Stack, 1974), might be connected to the fact that the use of strong networks appears to be linked to poverty and economic insecurity.

Fig. 4.17. Characteristics of supportive ties

USE OF SUPPORTIVE TIES

	Timbau	M.Dias
RA members	100%	100%
Residents	75.68%	78.95%

Timbau	SOURCE OF SUPPORT	
	Other assoc*.	imp.person
RA members	50%	66.67%
residents	14.29%	20%

M.Dias	SOURCE OF SUPPORT	
	Other assoc.*	imp.person
RA members	33.33%	50%
residents	16.67%	17.14%

*This includes not only other residents association but also religious associations and any other form of affiliation by membership.

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[83] One of Timbau ex-members of the RA board gives a clear explanation of this mechanism as follows: " *I only have asked strangers for help if it was in the community's name, otherwise, in case of my personal problems my family would help me*".

The tables above also show that the contact with other associations is instrumental for the local leaders, as an RA member explains in the following sentence: *"People from other residents associations have introduced us to many important people. We have been several times at the Maré RA meetings and they have introduced us to several politicians and authorities"*. These contacts then, as RA members report, become paramount for enabling them to create contacts with statutory authorities which are mobilized in cases of problems in the settlements.[84]

RA members also differ from normal residents in relation to neighbourliness. It was suggested previously in this chapter that this is one of the main forms of social interaction and solidarity among the residents within the settlements. All RA members, though, have reported having a formal relationship with their neighbours yet they would ask them help. Formal here meaning a relationship which is more rule governed than the norm.

To conclude it could be said that local leaders seem to be the ones who, in the community's name, will invest in the maintenance of the transpatial links

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[84] or in the words of Agamenon: *"I remember many situations when I was introduced to someone who later was going to be important for me. Most of the people I have asked for support in matters related to the community were people introduced or recommended to me by somebody else"*.

(across space[85]). The fact that leaders relate differently with outsiders and with locals is the very basis of their leadership condition. Paradoxically, to be a leader implies being a community member and behaving like any other resident[86]. Therefore, leaders wish to play this double role of being equal to other community members whilst at the same time their leadership condition implies that they have to behave unlike them. In fact, though, it becomes very difficult for leaders to conciliate these two roles. Consequently the condition of similarity to other community members, which was the very basis of local legitimacy, is affected. This might gradually distance the leaders from the community and end-up by isolating them. In an extreme situation this may even threaten his/her leadership condition.

This will be the subject of the next section which will concentrate on examining the extent to which changes in the dynamics of the settlements' development and other internal factors, as well as, changes in the external political condition throughout their history may cause changes in leadership structures.

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[85] This can also be understood as long-distance ties.

[86] In order to represent the community, leaders have to belong to that community in the sense of being able to personify the community and to act according to shared group rules. In other words, a non-hierarchical egalitarian relationship has to exist. Paradoxically, the exercise of leadership forces the leaders to relate down towards those whom they represent, differentiating himself/herself from the community.

Changing Leadership structures

This section will attempt to summarize briefly the history of the leadership in each of the settlements from the formal establishment of a community association to the role it plays today within the community.

Attention will also be given to analyse the reasons by which these associations have emerged in each of the settlements and why they have changed internally and in the way they relate to society at large, and also to external bodies. As Ward and Chant (1989, p.88) remark leadership should be seen as a dynamic phenomenon, therefore, it changes as perceived needs shift, as socio-political structures alter, and as competitors emerge.

The emergence of leadership structures in both settlements, sprang up around the issues of legalization and land tenure.[87] The main reason, nevertheless, was to struggle against the threat of removal as the descriptions which follow will show.

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[87] C.Santos (p.108, 1983) notes that all the investments controlled or obtained by the community through the residents association in Timbau have to do with the sphere of collective use. On the other hand, he argues, that the construction and improvement of homes was a private matter.

The case of Timbau

This section deals with the changes in leadership structure in Timbau and their relation with the settlement up-grading. The descriptions used here are mainly from the interviews with key people, which is however complemented with secondary information mainly from Santos' work (Ibam, 1987).

Leadership action in Timbau is clearly connected to the improvement and implementation of infrastructure in the settlement. Each different stage in the political life of the community[88] seems to be linked to a an event with this nature, namely: water supply, sewage network, retaining walls, paving the streets and the construction of the residents association headquarters[89] .

The community action history of Timbau goes back to the late 40's when, for the first time[90], the community had to tie themselves together to face the risk of eviction. The residents association formally only came into existence in 1954. By then, its president was Octacílio, and the main aim was to

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[88] This in fact corresponds to each mandate of the RA board of directors and of the leader in power of the RA (or the RA president).

[89] Swartz (1968,p.1) referring to political events as: " the events which are involved in the determination of public goals and/or the differential distribution and use of power within the group or groups concerned with the goals being considered", offers a good concept to understand those processes.

[90] That is beyond the realm of friendship, kinship and family ties and where solidarity is mainly based on individual relations rather than group relations.

get running water. But given the incipient conditions
of the association with many internal conflicts,
where the members *"seemed to have had tie-ins
with politicians and trade unions with different
attitudes"*[91], and having not a permanent place to
meet, the movement ended-up by being at standstill
up to 1960[92]. This period was characterised by a
<u>strong control of the community by the army.</u>

As Santos describes, the second RA president elected
in 1962 was a Portuguese called Rodrigues. His aim
was to get piped water up to the top of the hill which
at that time was already occupied. It was in his
administration that, in reply to a petition with a long
list of signatures addressed to the Ministry of
Defence, an agreement was made with the army and
house improvements were allowed. In 1964 he
resigned and Borges, a member of the RA directors
board was elected. By that time the RA still did not
have a headquarters and the meetings were regularly
held in a large living room in the RA secretary's
place.

It was in Borges administration (64-67) that finally
the favela managed to get water supply. The RA

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[91] Santos,1983, p.67

[92] Santos observes that a great deal of activity went on during this
period despite of the many conflicts. As Santos describes:
"Committees were set up to tray to carry on a dialogue with the
military, and a kind of collective conscience shaped up. The
inhabitants found they were faced with the same problems, and
acquired a feeling of identity and self-confidence"(Ibid,p.67).

president, through a resident, who had a contact in the Water Supply and Sanitation Company (CEDAE), arranged an appointment with the head of the company. The head of the company visited the settlement and promised to donate the pipes; then with the pipes, and following the instructions of the company's engineers, five water points were installed in the settlement by the residents.

The success of the enterprise of getting water seems to have been the result of a combination of factors. First, the use of friendship ties which made possible the contact between the RA and the CEDAE. Second, the existence of a formal collective representation of the group embodied in the RA president which has created the basis for an institutional compromise between the two bodies (i.e. the CEDAE and the RA). Last, the settlement as a material and spatial entity which has worked as a key material and instrumental stage for the whole interaction ritual between the RA president and the head of CEDAE. The whole process however affected the relationship between the army and the community. The battalion commanding officer was not happy at all with the success of residents in getting water. By that time the army wanted to halt the process of consolidation of the settlement. The community leader, however, managed to get contacts with key governmental officials and the army was neutralized.

The water pressure gradually decreased and the spouts on the higher parts dried up. In 1967, Pedro Rufino as the RA president and Agamenon[93] as the RA secretary were elected. Agamenon, would, in fact, one year later become the president and remain in power until 1983. It was in his administration that the streets were paved and a whole complex of a water network, tanks and pumps was built, as well as, the sewage system. All these improvements were undertaken by the RA without any statutory intervention or support.

The whole work of construction of the water system was administered by the RA. It collected the community contributions, got the assistance of the university engineers to make the plans and contracted a construction company to promote the work. Pedro Rufino has himself worked in the construction of the nearby university, so he knew engineers and contractors. These contacts were thus very useful. The contractors used in Timbau, a company named SAGA, that was known of Rufino and for that reason they quoted a reasonable price for the works (i.e. the pumps and the tanks). The other contractors invited to tender looked with suspicion at the work and gave very high prices.

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[93] Agamenon was political activist student who had taken an advanced accounting course and got married to a resident of Timbau, moving to it in the late sixties. Six months after being living there he was elected as a member of the RA board of directors.

The plans were approved by CEDAE. The condition for this approval was that the works were done without onus to the company.

The residents themselves participated in the construction of the network. The pipes were bought by the RA with money from the residents' contributions and they were built street by street by the residents of each street. The whole process was organized and supervised by the RA. The contractor's weekly payment was paid regularly thanks to Agamenon's financial competence and to his ability in getting people to pay their contributions. The construction of the entire system was successfully finalized and the water connected by the CEDAE at completion. The system has been working since then.

The RA estimated the water system for a population of 1000 families, yet at the time it was built there were only 500 families. During Agamenon's mandate he had, however, controlled the growth, stopping people building too many floors, as a means to guarantee that the system remained working properly. Recently, nevertheless, as himself notes, the number of floors amounts to three and four and the number of houses has also increased over those limits, consequently the systems is already presenting signs of failure.

The sewage system was also built in the same period. It started in 1967 and it was implemented during Agamenon's mandate. Like the water network, each group of people residing in a street was responsible for installing the street's network under the supervision and assistance of the RA. Most of the pipes and the material[94] needed for the construction of the system were bought by the RA but financed by the residents. The engineers from the university helped the RA to prepare bills of quantity and cost estimates. Thus, with the material mostly bought by the residents through the RA, the labour supplied by the squatters and with the process guided by the RA, the settlement had its sewage system built.

During Agamenon's mandate three other main improvements took place in the settlement. The first was the construction of three retaining walls in areas which were crucial to create access and to allow later the paving of the streets. One of these walls gave origin to what nowadays is known as Bangu Square.

The history of Bangu Square can be described as follows: after the construction of the retaining wall, the area was land-filled and it became a square. The labour was hired and the material was

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[94] A small numbers of pipes was donated by the Regional Administration (this is a territorial subdivision for administrative purposes of the Rio de Janeiro Municipality which roughly corresponds to the Local Authority in Britain.

paid for with funds collected by the RA. In this case, however, the leadership role was beyond the mere management and supervision of the works. The RA had actually acted energetically, asking people to set back houses[95], cutting down fences and so on. At that time the army was not intervening in the area any more. As Agamenon explains, the army started to cooperate with the RA and then the control of the matters related to the growth and improvement of the settlement was left solely to the RA.

Fig. 4.18. The retaining walls after Santos

The second improvement was the construction of the RA's headquarters. The building was purchased from an RA member in Rufino administration (66/68) with the entire funds the RA had available at that time.

[95] Santos notes that the internal power of the RA at that time was strongly related to its alliance with a sergeant who lived in the settlement and whose role was to control its growth.

During the late sixties, early seventies and early eighties respectively the ground, first and second floors were built in brick. The first floor was funded by the residents. The second was built with resources from the American Foundation/Community Action Programme [96] and the third floor was built with money from BNH.

The last improvement was paving the streets. As Santos puts it[97]: " the street paving was achieved as a result of an ingenious manoeuvre". The material for paving the main streets was supplied by some truck drivers who hauled concrete for the city's underground's works and which lived in the neighbouring squatter settlement and knew Agamenon. The material, supposedly rejected because of its unsatisfactory quality was delivered at Timbau[98]. The whole community, under the supervision of the RA, got involved in spreading the concrete. Each street organized itself in volunteer teams of people residing in the streets to carry out the work in their street. Secondary streets were, nevertheless, paved with material bought on credit from nearby wholesale stores. The RA not only organized the work, but had to intervene directly to

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[96] This was inspired in the ideals of the US AID and started to operate in squatter settlement in Rio in the late sixties. The centre for professional training which exists in Timbau was also funded by them.

[97] Ibid, p.93.

[98] The drivers got the order to dump it on waste ground on the shores of the Guanabara Bay.

partially demolish some houses and to´ make residents move fences back in order to align and widen up some streets.

The descriptions above have shown that leadership was directly responsible for the improvement and up-grading of the settlement. Spatial decisions about the configuration and alignments of the streets also seem to have been largely influenced by the local leader. Further aspects of the relation between the infrastructure improvements in the settlement and its spatial structure will nevertheless be explored in the last sections of this chapter.

To conclude this section it could be said that the situations described previously regarding the access to different resources of a public nature revealed the existence of a complex network of contacts. Transpatial networks include for instance several types of strategies which can be summarized as follows: first, the use of hierarchical supportive ties (i.e. politicians, high governmental officials, army people and so on); the development of formal representations at community level (RA) and third, the development of institutional ties (i.e. RA/CEDAE, RA/BNH) and last, the development of useful instrumental professional and management ties (professionals, building contractors, material suppliers and so on). Within local networks, personal

ties (i.e. egalitarian) were used side by side to impersonal ones (i.e. formal or hierarchical)[99].

It seems, however, that it is precisely this double code (hierarchical/egalitarian), which if on the one hand creates an universe of cliques and helps to perpetuate the relative self-enclosure of the group and the strength of its local network (and its segregation), on the other hand it generates the possibilities of social mobility through the manipulation of the personal net of relations. This in turns creates situations which make possible to connect two social and political segments which otherwise would be unconnected and thus integrate them.

It is this mechanism which offers to resourceless individuals or even groups a field of social manoeuvre and mobility as the case of getting water in Timbau clearly illustrates: the group, which was struggling to get water for the settlement, managed to get in touch with the State Governor through the water company (CEDAE); as a consequence they not only got the water but also neutralized any potential action of the military people to prevent the improvement from taking place.

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[99] As suggested in the previous chapter in connection to the leadership structures, this hierarchical character, which seems to dominate for instance the relationship between the RA and the residents, should be interpreted as an instrumental characteristic of the system and not as a sign of bad functioning.

This section has shown how residents mobilization in Timbau has always been connected to improving it physically. The next section will look at how leadership patterns have changed in M.Dias and how are they related to improvements in the settlement. It will also aim to characterize the type of ties and networks mobilized in those situations and compare them to the ones found for Timbau.

The case of M.Dias

In the case of M.Dias, residents' mobilization goes back to the 1960's. During the 60's the residents' threat of removal increased and in several squatter settlements people were forced to move to purpose-built housing estates[100]. Many neighbouring favelas, along the Bay shores, were removed during this period. M. Dias itself was officially included in the list of the 63 favelas to be removed by the "II Programa de Desfavelamento do Grande Rio" ("II programme of Rio's slum clearance") launched by CISHAN-BNH.

Although the community was by that time already organized, the threat of removal corresponded to the first situation in which neighbourhood representation was needed. This actually had inaugurated a new

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[100] This account is taken from a IBAM report to BNH (1987) which also notes that with the removal of many favelas, many families have moved to M.Dias either coming from their original settlements or from housing estates.

period in terms of local leadership structures. The first years of community mobilization were only related to the organization and representation of the original fishermen's group[101], without formally constituting a representational structure[102].

The second period, which starts with the foundation of the RA in 1963 and goes up to 1982, is when the residents association gets consolidated as a neighbourhood organization and becomes formally represented by a leader. During this period five leaders have been in charge of the RA with one of them[103] staying in power for over ten years.

This period is marked by a leadership which was directed towards improving the squatter settlement conditions by providing services such as <u>water</u>, <u>sewage</u> and <u>light</u>. It can be said that this formal establishment of the RA was more an expression of the local residents' needs than one which resulted from any initiative from outside[104]. Yet an external factor, in the case of the threaten of

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[101] As the IBAM report remarks: " *The main recreation centre of the favela was the fish market and the main local political leaders were the fishermen who were the managers of the fishermen business.*"

[102] That is comprising relatively loose arrangements with few internal rules to govern the activity.

[103] Sr. Sebastião.

[104] This is in contrast to Ward and Chant (1987, p.95) argument that " *... the emergence of local structures is primarily an outcome of political and governmental needs* (in global terms)*rather than a result of the particular attributes of leaders or settlement*".

removal, has worked as the catalyst for community action. Residents have a memory of the RA in this period as an active organization headed by an efficient leader relatively well-supported by the community [105].

The third and last period has its origins in events that happened in the 70's. The development of the area where M. Dias is located has raised housing prices and has made the area more attractive to investments. In 1978 a shipyard company, owner of the site where the squatter settlement was, wanted to develop the area thus bringing back the threat of removal. This revived the local neighbourhood organization and opened the path for new leaders, since the existing one was not motivated and able to canvas the support needed to face that problem[106]. So it is at that critical moment that the new leadership, which will later guide all the negotiation to get the housing project implemented in the area, will establish itself. This also marks a third phase of the RA which is characterized by an association with the Catholic Church through

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[105] IBAM,1987

[106] As Francisco, the present RA president, explains: *"Sebastião had been 12 years in the association, he was old and tired. The RA was inactive already for some years so the community was without any real representation".*

the "Comissão Jurídica da Pastoral de fávelas" (Legal committee of Pastoral de favelas[107]).

Francisco, the current RA president was already working with the Pastoral since 1979 in matters related to the squatter settlement, such as the provision of garbage collection and other similar services. Such action, nevertheless, only became formalized in 1985 when Francisco was elected the RA president. As Francisco reports, many of these services were made to happen with contacts made in the statutory bodies through the Pastoral de favelas[108].

It was also through this close cooperation between the Pastoral de Favelas and the local leadership structure that the community managed to have access to the archbishop and through him to have contact with the National Housing Bank president. Such contact resulted in the BNH's purchase from

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[107] This is a entity part of the Catholic Church which develops community work with favelas. In the case of M.Dias it got involved to help them to struggle against

[108] Francisco managed to get light to the squatter settlement with the help of the Electricity Company President. He met the president in a meeting of the Catholic Church at the archbishop's house and asked him a donation of 1800m of cables. In 1982 the residents then received the cables and with the supervision of Francisco's group installed the whole electrical network in the settlement

Emaq[109] of the site, where the favela was located, and later, the construction of the housing estate[110].

The local leader's special ability to take full advantage of the outreach of weak ties is explained in the following sentence by an RA member of the board in an interview: *"Francisco is a very skilled man. He has the ability to make contact with the right persons at the right time. The link with the Catholic church was though of key importance to enable him to reach very important people such as the Governor. If something doesn't work properly, for instance, we (the RA) prepare a letter and the archbishop arranges for that to reach the right channels. In my view, these links were in fact the reason why we managed to get this housing estate built here".*

This data shows the <u>efficacy of weak ties</u> to <u>connect the community, via the local leader</u> , with wide and important <u>segments of society</u>. The role of the leadership during this phase was clearly that of an intermediary acting in name of the community

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[109] Emaq was a shipyard company installed in the area that was the owner of the plot.

[110] This was not without attempts of co-option of the local leader from Emaq, involving offers of money and improvements to be treated by votes or silence. Francisco reacted to that with the following sentence: *"We have to talk seriously with them and to show that heading the movement there wasn't a naive person who was going to be trapped for this kind of political co-option with no official character of negotiation. We (the leaders) never mix community work with political work, otherwise we end-up having to trade things forever and we loose our freedom".*

to bargain for improvements[111]. Such action took place with the assistance of the RA board and the support of the residents. The residents materialized their support by signing petitions for goods and services, which were then brought to important governmental officials by the RA[112].

After the project's implementation, the RA role changed and another phase started. That is a new phase in which the leadership structure and role has changed, as well, as the community motivation to participate[113]. The role of the RA for instance is redefined. If in the illegality of the squatter

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[111] Any improvement in the favela resulted from a specific community struggle. residents mobilization takes place always aiming at tangible, concrete goals to be achieved in a short term. This is the only mean by which the poor of Rio have so far managed to get access to public urban services and facilities.

[112] As it was pointed out previously in this chapter, leaders' weak ties and transpatial links are paramount in facilitating such contacts. Eliane, a lawyer of the "Commissão Juridica da Pastoral" (Pastoral Legal Comission), in her interview has suggested that the visits are used to to make authorities and notables aware of the 'life in the favela" and to show that the idea that they have of these places is normally mistaken in face of the reality. The visits are used, as she puts it, to "show the favela to the outside world". She also observes that the community's ability to solve the problems depends on their organization and on having the right personal contacts, yet she notes, it is this dependency on the leader's personal network of relations which prevents the actual formation of community pressure groups.

[113] Francisco observes that nowadays the level of participation of the people who still live in the squatter settlement is bigger than people living in the newly built housing estate. He then follows by arguing that this difference is originated by the fact that people in the favela are more in need than the others, so for him community motivation is in direct relation to the degree of need. A political active male interviewed also notes that: "In the housing estate people are non-motivated because they now own their houses so they think that they don't need to struggle anymore".

settlement it was a kind of <u>local power</u>' with responsibility over, for example, the provision and the management of public services, in this <u>new phase of legality</u>, in the housing estate, though, that becomes a duty of the statutory authorities.[114] Even the power to control and regulate the physical growth of the area, which in the favela was performed by the RA, is lost[115].

This happens as a consequence of the existence of a set of guide rules originating from the planning of the area and from the housing project. On the other hand, people turn their attention to the construction and improvement of their homes and collective matters have lost importance. In this sense, the initial phase of the squatter settlement - the invasion - is very similar to this where the <u>house is</u>

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[114] Francisco made an interesting remark about these two situations: "We (the residents) believe that the only form to be serviced is if you pay for it, so for instance places where people have no money to pay for services, such as the favela, have no garbage collection for example. The housing estate should have such services but we still don't pay taxes therefore we don't get these services.

[115] As an interviewed noted:*"The links with the RA have been fragmented with the change to the housing estate...there isn't a strong feeling of group, of neighbourhood ...In the favela everybody knew everybody else because people lived very close to each other, but the estate is too big, the only possible way to cover the whole area is either by car or bicycle...and now everybody has their own plot and their own house so they are individually working to get their places improved...the community is fragmented...improvements now have to do with the municipality (i.e. to get a bus running through the estate, to get schools in the area) ...there is no need any more for the RA to intermediate the relations between the residents and the state...every resident own their homes and they are legally entitled to have proper public services as tax payers".*

the focus of attention and there is no need for strong group solidarity, thus individuals will not be strongly articulated at the group level. Individual efforts are concentrated in accumulating resources to improve the dwelling.

The existence of competing authorities represented by the BNH, Ibam and the RA have heavily contributed to make unclear the role of the last. One example of that situation is reported by Ibam as follows: *"There wasn't a political or institutional power which was able to offer legitimacy to actions related to the control of the growth in the favela. Despite a previous agreement between the BNH and the RA giving the last the power to control it, the RA couldn't bear the social costs of such action. This was going to affect networks of support which the RA was not ready to lose. The result was that, despite the RA's resistance to perform this role, it started to be pressed by the residents to do so".*

As a consequence of all these situations the local leader in M. Dias ended-up questioning the role he is assigned to play, as he shows in the following paragraph: *"Leaders should not be called presidents (RA), this name is wrong, it gives us status and a power which we don't have. I think we rather ought to be community entertainers".* On the other hand, as members of the Pastoral de Favelas, working to help

other communities in Rio, many of the RA members in M.Dias started to be short of time to dedicate themselves fully to the community. The non-existence of an RA headquarters and a place where they could promote meetings with the residents in the housing estate, like there was in the favela, is another factor contributing to demobilize the RA. All this evidence indicates that the RA in M.Dias is experiencing a sort of crisis, and is trying to find new forms of action. But as a resident suggests, there are still many improvements to struggle for in the housing estate. There are no schools locally, neither a creche nor a community centre.

Therefore, the demobilization of the RA is not a consequence of the non-existence of improvements and goods to struggle for, but rather it is a consequence of a loss of strength. This is not to say, though, that individual motivation has not changed as well. The fact that most people live now in a legal place with at least the basic urban services gives them the conditions to concentrate on the improvement of their homes. Thus changes in the leader's role have to be understood through these two contexts, namely: changes at the individual level and changes at the group level or at the residents association level.

Finally, the analysis has shown that it is a characteristic of local leaders to remain in power over long periods of time. The result seems to be that towards the end of this period the RA becomes inactive and is not able to face new problems. This then opens the path for new competitors to emerge, struggling for these new problems to be solved. Such processes might then create the conditions for one of these competitors to become a new leader. This, thus charaterizes the complex and dynamic phenomenon of community political leadership, which, as seen so far in this chapter, involves many conflicting interests and networks.

Viewing the leadership history of both communities shows, as many authors have supported (Leeds & Leeds,1977; C.Santos, 1984; H.Edgerly, 1974; G.Blank,1977) that their need for having a formal representative organization is a key element to make the group able to bargain for improvements, to resist against eviction and to be able to coordinate self-managed projects of a public (or communal) nature.

To conclude it could be said that these findings suggest that the <u>community internal circumstances</u> are the ones which create the actual conditions for changing the nature of leadership, over and above external changes in the political and governmental scene. These, might nevertheless, have a direct

The spatial growth

As mentioned elsewhere in this chapter, it is necessary to distinguish between changes experienced by the settlement, which seem to be in a direct relation to the improvements afforded, and the changes happening in the dwellings. The two processes seem to be, however, unquestionably inter-related.

The first expression of this is that the more the public spaces get serviced and up-graded the more people appears to feel encouraged to make improvements in their homes. In Timbau, for example, from 1970 onwards when the settlement had already a quite good level of infrastructure (i.e. sewage networks, paved streets, piped water and so on) the houses were consolidated and improved at a fast pace. Houses were converted into brick constructions, floors were added, and the number of rooms increased[117]. A similar process has also happened in M.Dias whereby people, once they moved to the housing estate, have gradually up-graded and improved their dwellings.

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[117] As noted by several authors this is a phenomena quite frequently found in squatter settlements, where the investment in the house increases significantly after the area has been up-graded and serviced enough to the extent of turning the possibility of eviction remote. So, residents who before have invested primarily in house goods such as TV and refrigerators, which in case of eviction are removable and not lost, will turn their investments into housing.

influence on them[116]. If <u>residents' associations</u> can be seen as <u>local bodies</u> which <u>obtain and manage resources</u> in order <u>to improve the physical conditions of their settlements</u>, clearly the way these resources are obtained depend largely on the political moment of the country. In democratic situations support is largely based on external ties, while at a more authoritarian moment the group would prefer to remain outside external politics and advance themselves as far as possible, whatever the politics of those in power might be. It is clear, nevertheless, that despite the global circumstances, local leaders and the RA are important agents regulating not only the political, but also the spatial working of those places. The next section will therefore be dedicated to show how the improvements afforded by those local leaders have influenced the evolution of the settlements' spatial growth as well as the direct role such leaders have played in this process.

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[116] Ward and Chant (1987,p.93) argue the contrary, supporting that *"the primary determinants of leadership appear to be derived externally: from the regional culture; from the party-political structure; from national and local government; and from actions of nongovernmental organisations (NGOs)"*. Jacobi (1982) and Valladares (1983), otherwise, note that in Rio many local leaders resisted being formally associated with any political party.

This process is what this thesis has named <u>auto-construction</u>. That is, a process of up-grading the settlement, at the same time that the dwellings are improved which in turn involves a socio-political process. It is through that complex mechanism that the settlement gets constructed not only spatially, but also socially and politically as will be next described in detail for each of the two settlements studied here[118].

Before moving to the next section it is necessary, however, to remind the reader that despite the similarities so far found between Timbau and M.Dias, their histories are very dissimilar. As explained previously, Timbau was formed through a piecemeal organic process of illegal invasion of a hilly site and it is the result of approximately 50 years of gradual occupation of the area with the houses built and the street system defined without following any kind of planning regulations. M.Dias, on the contrary, was part of a planned self-built project launched by the Federal Government built on a flat plot within a period of five years.

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[118] As community leader of a favela in Rio puts it: "*The auto-construction (self-help) not only works to build something, but it works simultaneously to build ourselves. That is, the idea of self-help is not only the actual work. As a consequence of that association of people, with everybody working together, we develop ourselves, we become conscious, we improve ourselves through the actual work*".

In the first case, the settlement has a very irregular plot subdivision and a highly deformed grid. M.Dias by contrast, has a regular plot subdivision and a regular orthogonal grid with houses initially built according to official plans. For the sake of clarity the case of Timbau will be used as the paradigm case and will head the analysis to be carried on in the next sections.

The auto-construction of Timbau and M.Dias

To describe the processes of change undergone by the two settlements and the main people who have participated in these changes, this section will mainly use the descriptions given by the settlers in the questionnaires. These descriptions were given at two interdependent levels, namely: individual changes in the dwellings and main changes and improvements at urban level.

The process of initial occupation of Timbau, as opposed to the one at M.Dias, was solely controlled by the residents themselves and was strongly articulated to the process of family (nuclear and extended family[119]) growth. Seventeen out of the

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[119] The term nuclear family is used here to define the family constituted by the head of the family, wife and unmarried kin. On the other hand, the extended family is comprised by any other kin not member of the nuclear family, which may or may not live in the same household.

thirty respondents have described the area as being initially sparsely occupied by wood shacks. Gradually the empty plots between houses were filled up by new-comers and relatives of the existing residents and some of the roads were gradually narrowed down. There seems to be a common agreement that the settlement's street system has been preserved almost intact and that it just has become denser and with the only area which remained free - the quarry - being occupied around the 70's.

The cases of M.Dias and Timbau, as it was said elsewhere in this report have, nevertheless, undergone quite different processes of formation. Timbau has grown organically through a process of in-filling and, as said before, the system of streets seems to have been kept more or less intact during this process yet the property boundaries have been changed systematically alongside this growth. M.Dias, on the other hand, had its regular road layout, plot subdivision and house layout defined by the Government.

In M.Dias the government built the foundations with the sanitary installations in-built in it and has left the construction of the houses to the settlers. Six of these interviewed remarked that the foundations which remained empty for a significant period of time were later bought by outsiders. The new-comers

managed to get a place in the settlement by means of several strategies: by getting shacks in the nearby squatter settlement, by buying empty foundations or even by buying houses in the estate, and through relatives which already lived in the settlement. There are cases, however, where people, as the residents explain, *"have sold their house and have gone back to the favela".* There seems to be, though, a general consensus among the residents that the *"population in the estate has increased a lot with many outsiders also buying a house there"* or *"even building on the top of somebody else's house".*

Despite the fact that the houses had to follow the set of plans established by the government, they have been thoroughly changed by the settlers. The process is described clearly by the settlers as follows: *" The houses were all the same but gradually people have changed them, putting in slabs, demolishing and extending rooms to accommodate the family. Some people have occupied the whole plot leaving just a narrow passage, others have built another floor"* and elsewhere *"A few people have divided their plots. In my block just one has built on the rear for a son, a neighbour has changed the ground floor into a shop and has built a first floor to live, and there are others that rent the extensions".* The respondents observed that in most plots, nevertheless, there is

still just a single family living on the plot.[120] The decisions about the plan, as the settlers put it, were "top-down". Even the street names were assigned without people participating in that. [121]

In Timbau the process of growth seems nowadays to be more settled. It is generally acknowledged that it has happened through a piecemeal process where houses have became larger and constructed in more solid material, or as a settler explains: *"Old houses were replaced by new ones which occupied the whole plot"*, and more consolidated and free areas gradually have been in-filled with new houses (23 cases). The data from the interviews suggests, nevertheless, that most houses have been changed from wood to brick at least 15 years ago, but from 10 years ago onwards the settlement growth has been speeding up[122] .

The data indicates that this consolidation process continued in Timbau between the 70's and 80's by virtue of vertical growth with houses having the number of storeys increased. The street system, as it was suggested elsewhere in this study, seems to have suffered just minor alterations with the streets

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[120] A more precise proportion of the number of plots occupied by only one nuclear family has been given elsewhere in this chapter.

[121] This may explain why people in M.Dias generally don't know the street names.

[122] Thirteen houses have been changed into brick before 1975, in addition to that other five were changed less than 10 years ago. In ten cases, however, it is much in evidence that the growth has been speeding up.

in the quarry being the last ones to be defined and some alleys and lanes being narrowed. One respondent gives a clue that may explain why the quarry was occupied so late: *"The quarry was controlled by the military, but then later local politics (local interests) came in and they have allowed people to build there"* or *"the quarry was private so it was reserved and no one could occupy it"*. One of these interviewed also noted that, in the lower area of the settlement, where there is a beach, there used to be a favela which was removed 15 years ago. The process of formation of the alleys is described by a settler as follows:" *People were creating new alleys by building a house and leaving an access-way to it, later, then, new houses were built along this way"*.

The initial place of occupation seem to have been the beach called Praia de Inhauma, where there was a fishing village, and then the settlement has spread up towards the hill, or in the words of a resident:" *the upper parts were much less occupied than the lower ones..."*.

Caetes Square was described by the residents as" *just a steep bank which was gradually land-filled by the RA"*. A sergeant who was interviewed has made the following remarks in relation to Caetes :" *In the 70's there were just few houses in the area, so we*

asked the people that were building houses to keep the alignment and the RA has then paved it. But, if the RA's administration wasn't so good as it was, the area wouldn't be so organized. It is a pity that the favelados just want to build without caring for planning anything".

Bangu Square was formed in the following form, as another settler explained: " *the residents have made a petition asking to remove a shop that has invaded the area and was blocking the street so the RA managed to get a house in Vila do João and removed the person. But, originally it was a steep bank which the RA, with the help of a local resident called Bangu, has enlarged, has built a retaining wall and created a space for cars to turn".*

The plots were defined with the help of the RA and with the participation of the Army as the following remarks suggest:" *Initially, with the military people, the plots were delimited just by means of a ribbon* " or " *People use to come to sergeants Manhães and Alves saying to them that they were homeless and then they would give them a plot...".*

The population has grown naturally without any great influx of strangers or new inhabitants, as a settler suggests: " *The population of Timbau has grown mostly with people from inside the settlement getting married or with families that became*

larger, thus they have built new homes or extended the existing ones".

In the case of Timbau one respondent has suggested that its shape and its *"disorder"* might be related to the topographic feature of the hill. The squares were left free according to thirteen settlers because it was necessary *" to allow for cars to return"* or *" spaces for children to play"*, and the streets because *"people knew that it was needed to leave space to walk and to have access to the houses"* and *" for "the gas delivery and garbage collection".* Though, five people seem to believe that *" people didn't built on the street because they were not allowed to do so"* and*" because the community wouldn't allow them".* In fact, no one seems to know precisely how to describe the form in which the process took place.

According to the questionnaire data, the more common acknowledged pattern of settlement growth is through the increase of density, corresponding to almost 60% of the respondents in Timbau and roughly 65% in M.Dias. The increase of density, appears to assume, nevertheless, social rather than spatial connotations. It seems to be identified more, by the settlers, as a process of increase in population than as a spatial process of limiting/reducing the availability of space. Spatial processes that might directly result from an increase in density, such as

plot subdivision or vertical growth, were not mentioned by the respondents in the same proportion as the density increase, as a form to unfold spatially the population growth.

Yet, a significant number of people have cited the process of plot subdivision, respectively 34% and 45% for Timbau and M.Dias. This indicates, nonetheless, that although the growth of the settlement is not primarily understood as a spatial process in itself, as one might expect, spatial processes such as plot subdivision or high rising, are seen by the respondents as fundamental components of such growth.

In as many as seventeen of the answers of the Timbau sample the military people appear as an important agent regulating the process of growth of the settlement as the following paragraph suggests: " *The houses were in big plots but then an order from the battalion determined that people with big plots should share them with the homeless".* The view of a Timbau military resident also suggests another source of help: *"I've got some help with material from the battalion because it was better to help us to get improved then to attempt to remove us".*

In M.Dias, as a state-regulated process, the occupation of the area has different characteristics. Twelve out of the twenty six Marcílio Dias' respondents have described the process as follows: " *the RA's president selected a representative for each block and then the representative has invited relations and friends to be part of the group and the plots were assigned to each one through a draw during an assembly organized by the RA.*"

Some interesting mechanisms of exclusion and selection arose out of this process as some of the respondents' answers show:" *Our intention was not to allow trouble makers to get in*" and "*in some blocks the draw was organized by the BNH* (National Housing Bank) *rather than by the residents*" or" *we tried to keep the same group living in this block that used to be our neighbours of the same street in the favela*".

There were only two exceptions to that form of house assignment. The first exception was the block allocated to the fishermen's group which, according to some of the respondents, was chosen by the BNH. The second exception were three cases where the respondents have said that "Francisco" (the RA's president) was the one who had assigned the house to them.

In both settlements almost all the houses are made of brick (all of the sample in M.Dias and all but one in Timbau). Most of the dwellings in Timbau have changed[123] from a more transient to a more permanent aspect, mainly from wood to brick (22 cases).[124] The number of rooms and the complexity of the spatial arrangement seem to have increased and changed, as well, from more simple forms to more complex. The households seem to have developed from a single space with no sanitation and cooking facilities, sometimes occupied by an extended family, to functionally specialized multiple rooms designated to a single nuclear family. Some respondents from both settlements have included a verandah (either at the rear or at the front) as a newly built room (4 out of the 21 cases in Timbau and all the seven cases in M.Dias).

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[123] Twenty six out of thirty in Timbau and twenty one out of twenty four in M.Dias have changed their houses (see figs. 59 to 62). The type of change varies for each settlement. In Timbau as much as twenty two out of twenty four have changed from wood to brick, whereas no one in M.Dias has done such a change. This is explained by the fact that in planned housing estates normally the authorities do not allow constructions in wood because of the temporary character they may hold. Fifty percent of the respondents in Timbau and thirty percent in M.Dias have changed the roof from pitched to flat. It is nevertheless, surprising that while in M.Dias as much as seventy percent of the respondents have changed the finishings in Timbau no one has done that.

[124] To construct a more solid house seems to be an important part of the strategy undertaken by the settlers to reduce the risks of expulsion, as respondents suggested: *"I've decided to change the house because at that time my house was the only one which still was a wood shack in the area , the favela was ahead and I was afraid to be removed"* or *"In 1967 I've decided to change my house into brick so they wouldn't remove it"*.

Some dwellings are already at another stage of development, thus the changes are concentrated in the finishings such as to put ceramic tiles on the floor, to change the roof tile for slab or to change the type of windows (50% of the cases in Timbau and 100% of the cases in M.Dias). This seems to be the case for most of Marcílio Dias dwellings (see **figures 4.19** and **4.20**).

Another frequent change is the addition of another floor or the construction of an extension to accommodate a son (or daughter) getting married, or even for renting or to establish a shop (see **figure 4.20**). In M.Dias one respondent has even suggested that " *I've changed the pitched roof for a flat roof hoping one day to be able to build another floor for my sons on the top of the slab".* Changes in the original plan of the houses are also common (5 out of 13). In one case, however, the respondent admitted to have changed the whole house and converted two houses into a two store one.

Fig. 4.19.Type of material change in the dwelling

Timbau

Bar:	Element:	Count:	Percent:	
1	Wood to Brick	13	52	- Mode
2	Finishings	0	0	
3	Pitched to Flat roof	2	8	
4	Finishings+Flat Roof	1	4	
5	Brick+Flat Roof	9	36	
Total		24	100	

Q.9.a.Type of Material change

- Wood to Brick
- Pitched to Flat roof
- Finishings
- Brick+Flat Roof
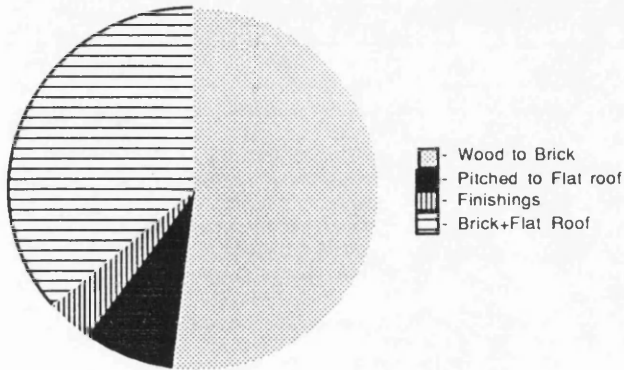
M.Dias

Bar:	Element:	Count:	Percent:	
1	Finishings	14	70	- Mode
2	Pitched to flat roof	4	20	
3	Roof+Finishings	2	10	
Total		20	100	

Q.9.a.Type of Material change

- Finishings
- Pitched to Flat roof
- Roof+Finishings
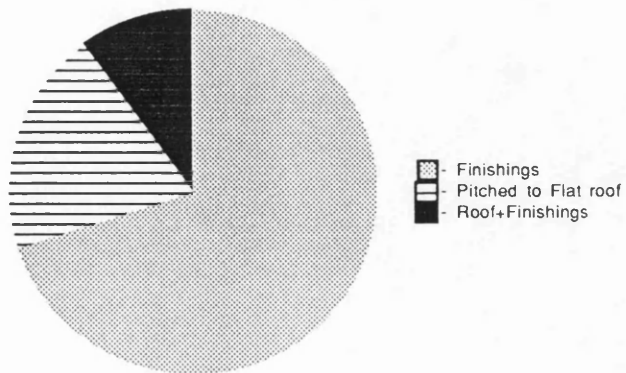
Fig. 4.20.Type of expansion of the dwelling

Timbau

Bar:	Element:	Count:	Percent:	
1	No of rooms	13	52	- Mode
2	No of floors	0	0	
3	The Plan	2	8	
4	No of floors+Plan	1	4	
5	No rooms+No floors	9	36	
6	No change	0	0	
Total		25	100	

Q.9.b.Type of expansion

- No of rooms
- The Plan
- No of floors
- No rooms+No of floors
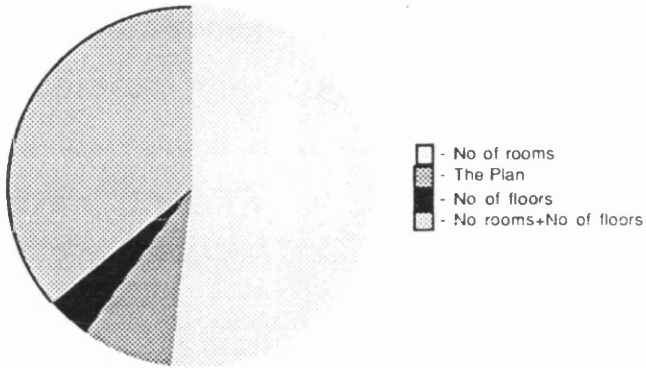
M.Dias

Bar:	Element:	Count:	Percent:	
1	No.of rooms	7	53.846	- Mode
2	No.of floors	1	7.692	
3	The plan	5	38.462	
Total		13	100	

Q.9.b.Type of expansion

- No.of rooms
- No.of floors
- The plan
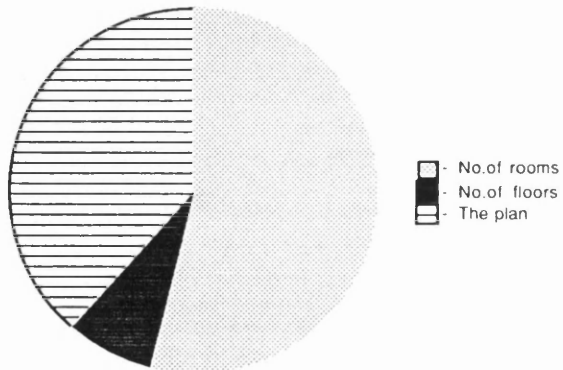
An additional change mentioned by Timbau's respondents was the construction of a bathroom inside the house (6 cases). By contrast, the Marcílio Dias respondents have demonstrated the wish to move it to outside the house if they were allowed by the BNH, and in some cases they have effectively done it[125]: " *I've moved the toilet to the rear because I don't like the smell of toilets, it is bad to have them inside the house*" or" *I've changed the access door of the bedroom moving it in a way so as not to face the toilet*".

The **figures 4.19** and **20** show that in both settlements the most common type of expansion of the houses was to increase the number of rooms, accounting for roughly 90% of the total number of expansions in Timbau and 50% in M.Dias. Forty percent of the residents of Timbau that have built expansions have extended the number of floors while in M.Dias it amounts only to 7.7%. Yet, the number of people that have changed the plan of the houses is significantly higher in M.Dias than in Timbau,[126] corresponding respectively to roughly 40% against 12% of the cases.

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[125] The total number of cases that have either actually changed the position of the toilet or have demonstrated a wish to do so amounts to 5 in M.Dias.

[126] This may be due to the fact that although people have build their houses in M.Dias, the plans were chosen by them within a pre-established set of plans. The fact that a significant number of people have already changed it suggests that there might have been some systematic mismatch between the plans' conception and design and people's priorities and lifestyles.

Another relevant factor concerning the dwelling's changes is the very low number of those interviewed that have answered the question whether the facade has changed in Timbau, represented by 9 out of 30, against 100% of answers in M.Dias. This may be an indication that in a piecemeal growth, such as the one of the squatter settlement, the facade is not perceived as something detached from the house's growth itself. This is a subject, however, that needs to be investigated thoroughly, yet it falls beyond the scope of this thesis.

Also a significant number of those interviewed in both settlements, roughly 50% in Timbau and 75% in M.Dias have changed the access to their residences. These changes might include changes in the position of the entrance or the addition of new entrances for relatives living in the same plot.

The most common reason given for these changes was social. In Timbau as many as 65% have said that they have changed the houses because of family needs, which in turn corresponded to changes in the family (13 out of 20 in Timbau and 6 out of 9 in M.Dias) such as growth and marriage as it is suggested by some of those interviewed: *"I wanted to give more independence to my son and daughter"* , *"I've built a second floor for my son because I didn't want him to be mixed up with his sisters"* , *"I've decided to build another floor because my mother came to live*

with me", I've built another floor for my married son" or *"I'm extending the house because every year my father-in-law visits us".* There are even cases where this is presented in the form of an expectation:" *We live with my father-in-law so if I could I would build a room on the rear of his plot for us".*

In M.Dias, nonetheless, only nine out of twenty four have stated a reason for the change, with 50% of the answers corresponding also to family needs. The term family needs can be understood, for example, as some respondents have suggested, by the growth of the nuclear family or by the addition of members of the extended family and new-comers.

The analysis of the data above allows for some conclusions. Firstly, in M.Dias the higher number of people that have modified their house plan in comparison to Timbau, could suggest that in Timbau people were in fuller control of the decisions involving the houses design. Secondly, that in settlements such as Timbau, the houses are initially built in wood and then changed to brick as an intrinsic part of the settlement growth, whereas in planned settlements timber wooden houses are not accepted. Thirdly, that in M.Dias, unlike Timbau, only a few houses have their second floors already built. This, though, similarly to the process which

has already occurred in Timbau, might happen as time goes by.

Finally, it seems that M.Dias respondents are more familiar with the facade as an identifiable part/component of the houses, whereas in Timbau people perceive the house more as a whole entity and this may explain the strikingly low number of people that was able in Timbau to answer the question regarding the changes in the facade. One of the possible explanations for this may be found in the different nature of the process of growth and construction of the space in each settlement. The fact that M.Dias is a planned settlement, also, possibly, has contributed to familiarize the residents with relatively abstract concepts such as the facade, the plan, the block and so on.

The form in which these changes have taken place and the groups who have directly participated differs between each settlement and within them.

In Marcílio Dias, in contrast to Timbau, to build a boundary wall or even to increase the height of the existing wall seems to have been a priority for the residents (17 out of 24). The reasons given by the respondents for that are several but safety seems to be the most common one: *"We made the wall taller because of the shootings, so with a*

taller wall it becomes more difficult for bullets to reach us".

In both settlements, though, no mention was made of changes in the facade, either in terms of changes which have already been made or in changes that people would like to make.

Only few people have suggested the existence of obstacles that prevented them from making changes in their dwelling (12 out of 29 in Timbau and 7 out of 24 in M.Dias). Two of M.Dias' and Timbau's respondents have made clear that these obstacles were of a financial nature, or in other words, the settlers were short of money to promote the changes they would like to do in their houses.

Nevertheless, in some other instances the obstacles were posed by people in some sort of power (4 in Timbau and 6 in M.Dias). These people were the government in all the M. Dias' cases. These conflicts are best illustrated by the respondent as follows : *"BNH didn't allow us to put the slab...they didn't allow us to make the house in our own way...we had to chose one of the available type of plans"* or *"The engineer hasn't allowed us to build a slab arguing that the structure wasn't strong enough to*

support it" or "People from the BNH tried to convince me to follow a plan, they didn't like me to build the toilet outside".

The changes in the settlement pinpointed by the residents as the most significant were mainly related to the means of access, to services and/or their improvement (i.e. water supply, sewage, public light, garbage collection and so on), corresponding to 100% and 95% of the answers respectively for Timbau and Marcilio Dias, followed by the categories community services (i.e. schools, health centres, and so on) and general improvements (i.e. paving the streets) which account, respectively for Timbau and M.Dias, for 20% against 60% for the first category and 24% against 52% for the second category (see **figure 4.21**).

The analysis of the data suggests that as many as 50% of the answers in Timbau and almost 70% of the answers in M.Dias state that the RA was the main agent responsible for affording these improvements, followed closely by the community which was mentioned in ten cases in Timbau and in eleven cases in M.Dias. The state or the government was mentioned only in three cases in Timbau against eight cases in M.Dias as responsible for the works. The data finally suggests that the involvement of politicians and NGOs was also seen by the settlers as unimportant,

amounting to four cases against one, and to three against none respectively for Timbau and M.Dias in the first category and second categories (see **figure 4.22**).

Fig. 4.21. Settlements's changes

Timbau

Bar:	Element:	Count:	Percent:	
1	Services	14	46.667	- Mode
2	Comm.Services	0	0	
3	Title	0	0	
4	More Strangers	0	0	
5	Houses Imp.	1	3.333	
6	Serv.+H.Improv.	4	13.333	
7	Serv+Comm.Serv	9	30	
8	Serv+Comm.Serv+Stran	1	3.333	
9	Serv.+Strangers	1	3.333	
Total		30	100	

M.Dias

Q.14.Settlament Changes

Bar:	Element:	Count:	Percent:	
1	Services	0	0	
2	Comm.Serv.	6	27.273	
3	Title	0	0	
4	More Strangers	0	0	
5	No answer	0	0	
6	Serv+Comm.Serv.	14	63.636	- Mode
7	Serv+Comm.Serv+Title	1	4.545	
8	Comm.Serv.+Strangers	1	4.545	
Total		22	100	

Fig. 4. 22. Source of Resources

Timbau

- RA
- State
- Community
- Politician
- Non Governamental Organization
- RA+Governament
- RA+Community
- RA+Community+Politician...
- RA+Community+NGOs
- Pol+NGOs.

M.Dias
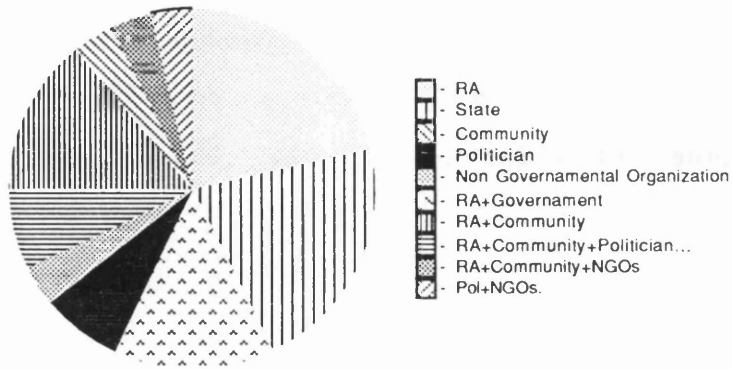
- RA
- Governament
- Community
- Politicians
- RA+Governament
- RA+Community
- Governament+ NGOs
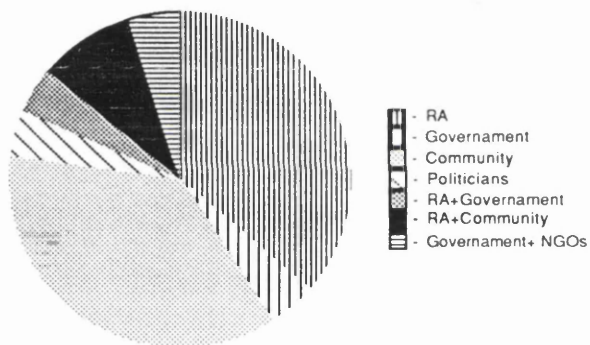
The establishment of more commerce in the area and the improvement of the houses was also perceived as an important change. And in Timbau also ownership of the land has emerged as a key issue. The presence of new people, which were regarded as strangers by the residents, was seen in both settlements as a negative change.

The fact that the government in M.Dias is no 'longer controlling changes in the houses was seen as an asset by the settlers for the improvements of the dwellings: *"The houses have improved a great deal after BNH has stopped controlling the plans. So everyone has built in their own way, in their own style, people have put slabs, sometimes even built a new house on the top of the existing one".*

The RA was seen in Timbau as the main agent responsible promoting these changes (50% in Timbau and 68% in M.Dias). The settlers seem to believe that since they pay the RA, its role is to promote such improvements. Three residents in Timbau have also mentioned the aid of non-governmental organizations (NGOs) such as international organizations or the technical staff from the nearby University.

In M.Dias only sixteen out of the twenty four interviewed were able to answer the question of who was involved in procuring those improvements. In addition to that, almost 90% of these interviewed in both settlements have claimed not to have had any involvement in the process of getting the resources for these improvements. This may give an indication of how strongly centred in the local political power represented by the RA those processes might be.

Also, according to the data, only fourteen óut of twenty nine in Timbau and ten out of twenty four in M.Dias were able to recognize the presence of external help in procuring those improvements. The technicians, the politicians, and the government, represent respectively two, seven and five cases where the supra-local/external agents are identified in Timbau. In M.Dias, nevertheless, the pattern was slightly different, with the Church standing for six of the answers, the politicians for three and the Government for four.

In addition, Timbau's respondents have mentioned the use of politicians by the RA's president: *"Agamenon tried to make politicians help to get the asphalt"* . And there seems to be an agreement that as one respondent puts, it *"If any politician has helped it happened through the RA"* o r elsewhere *"It was Agamenon that always contacted them"*.

Nevertheless, only six people in Timbau and three in M.Dias remember any politician effectively helping in those improvements: *"The RA asked politicians to help but the only one who has done something has built a wall nearby, his intention was just to catch votes"*. Some settler, though, have mentioned the visit of politicians or authorities to the settlement, it seems to be generally acknowledged that" *Politicians look for favelados just at election*

times, but they don't do anything" or *"Politicians just promise things to win votes but when they get to power they don't do anything"*. No one in both settlements has referred positively to politicians. A change in this pattern is, nevertheless, identified by eight Timbau settlers with the government being seen as the agent responsible for recent improvements instead of the RA: *"Now the resources come from the government (BNH). Before however, it was Josias and Agamenon"* (two presidents of the RA). Or in other two cases the government itself is believed to be the only source: *"The only place where the resources may have come from is the government ... it wasn't from our own pockets"*.

In Marcílio Dias residents also seem to agree that the main agent responsible for getting improvement was the RA through its president called Francisco. Yet some respondents have mentioned other names, for instance from old RA's presidents, which shows in turn that some people are not aware of how these improvements are achieved or even who is in charge of the RA. The only agent from outside the settlement which most of the residents regard as having helped them was the Church, through the archbishop Dom Eugenio Salles.

M. Dias residents seem to share the same view with Timbau residents about politicians as this sentence makes clear : " *Politicians don't help*

anybody, they just want to win votes". Despite that, three residents still believe that the RA gets improvements through politicians as one interviewed explains: *"I think Francisco got these improvements through a politician"*.

It is striking, nevertheless, that in both settlements very few people have claimed to have been directly involved in the process of obtaining the resources (only three in both settlements). It seems that to a great extent this is left to the RA. Yet there seems to be a consensus about the more important improvements and how they were achieved. In the case of M.Dias they are, among others: to get buses running in the settlement, street lighting, a public telephone, and the construction of the estate itself. The main agents were the RA through the President and the RA's board of directors, the Archbishop and other authorities and notables.

In Timbau, the main improvements were identified by the respondents as: the water supply, the sewage system, the paving of the streets, street lighting, the retaining walls, and the title of the land. The main agents involved are the RA, the residents themselves and public authorities. As a Timbau settler suggests:

"Things have improved because people managed to get united".

In both settlements community services and infrastructure are the two most common type of improvements in the settlements identified by the residents. These correspond respectively to fourteen and fifteen answers out of twenty eight in Timbau and only one answer against seventeen out of twenty four in Timbau. In other words, community services have been identified by the settlers as the main improvement in Timbau while in M.Dias it was infrastructure. This may be explained by the fact that Timbau as a squatter settlement still lacks proper services (i.e. garbage collection, public light, and so on) as much as community services (i.e. health centres, schools, and so on), whereas M.Dias as a planned settlement already possesses proper services but lacks community services[127] .

It is surprising that just one M.Dias respondent has said that acquiring a title to his land is a priority and two for the RA given that, despite the settlement's being a government project, the legal situation remains irregular and people do not legally own their houses. The same pattern

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[127] In Brazil when an urban scheme is developed by the government it is the responsibility of the local authority the construction of community facilities. As a result of that, many of the developments implemented by the federal government have to wait for long time until these services are provided.

also happens in Timbau, despite the' legal irregularity of the squatter settlement, with no respondents pointing out the acquisition of a legal title as a priority.

It is generally acknowledged by the settlers that the improvements have taken place equally throughout the settlement[128]. But, while only one respondent in Timbau has said that the main streets were favoured, eight have mentioned that in M.Dias. In both settlements, nevertheless, the changes were recognized as improvements in services (roughly 70% in Timbau and 65% in M.Dias). A significant number of respondents have pointed out the improvement of the houses as a major change, yet they have recognized that this has depended mainly on the will of their owners (roughly 60 % in Timbau and 50% in M.Dias). The construction of houses' boundary walls was also perceived by the M.Dias' respondents as an important change (corresponding to roughly 50% of the answers) whereas for Timbau's respondents this was of almost no significance (accounting for only three out of the twenty nine answers).

The analysis of the data displayed above allows for some conclusions about the form in which improvements are achieved. Firstly, the significant

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[128] This corresponds to roughly 80% of the answers in Timbau and 50% in M.Dias.

number of people in M.Dias that were not able to answer the question may indicate a lower settlers' degree of awareness, in terms of community matters, from those of Timbau. Secondly, it is surprising that in both settlements, and despite of the fact that M.Dias was a governmental project, the burden of improvements was left with the community and with the RA. Finally, that the participation of other external or supra-local agents such as the NGOs and politicians, contrary to what one might expect, was not relevant in both settlements, despite the intrinsic differences existing between Timbau and M.Dias (a squatter settlement against a governmental housing project).

The data also indicates that the RA in conjunction with the military people have controlled the growth of Timbau by, for example, controlling the alignments and not allowing people to push the houses forward by arguing that it was necessary to leave space for ambulances in the case of an emergency (19 cases). A settler has even said that she had helped the RA to control the alignments. The RA, as explained by one of its members, *"managed to push some houses back, in some streets they have even managed to demolish some houses to allow cars access as it was the case in Capivari St. where the houses were pushed back because it was necessary to leave enough space for delivery trucks"*.

This member of the RA explains in detail how they operated hand in hand with the army: *"The military people were the ones who controlled in agreement with the RA, the occupation of the area. We had a deal which worked through a code: to anyone wishing to live in the settlement we had to send a paper asking for the approval of the battalion, if the paper was already signed by us then they would authorize, otherwise they wouldn't."* One of the reasons given by the RA for this control was that *" the RA was worried that the number of residents would overcome the capacity of the water supply in the settlement"*, so they would just allow" *extensions to be built to accommodate a relative".*

It appears that the RA was indeed , in the words of one resident, *"dictating the rules". "Even nowadays",* the interviewed follows saying, *"when people want to open windows and to build walls they would ask permission from Agamenon"* [129].

Fifty percent of Timbau residents believed that people have respected the alignments because they knew it was necessary to do so to allow for cars circulation, even though, as they suggest : *" The*

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[129] Agamenon is an ex-RA's President which still is member of the board of directors and, as apparently suggested by the interviewed:*"Agamenon was always manipulating behind the scenes. His strategy was to suggest the president and keep himself as a vice, so in this way he managed to have continuity in his policies. This was the ideal situation for everybody".*

residents by themselves are the ones who control where people can build or not and prevent others from doing wrong things" or that *"even before the RA had started to regulate about the streets, people use to follow a pattern, people used to control and correct each other, in order to have everything organized".*

The pattern mentioned above is more precisely described by another resident: *"People know they have to leave space between houses for the street, they know that they have to build the houses facing each other, but some have built houses on the back of others without leaving space so that the access to these houses have then become alleys".*

Five people have the opinion, by contrast, that if the RA, supported by the Army, had not taken care of the settlement, people would have built in the wrong places. But in fact, the RA seems to have worked with the help of the settlers themselves. As a respondent explained:" *if someone wants to build over the street I wouldn't allow it, I would go to the RA and complain, I think everyone should go there and ask for advice before building anything".*

To conclude, it could be said that, as suggested by a settler, Timbau has not followed any obvious order or in the words of the interviewee *"there wasn't any order or prior planning".* Instead, what seems to have

taken place was a later process where the RA, supported by the Army and helped by the settlers, attempted to impose some order on the settlement layout by, for instance, by controlling the constructions.

There seem to be indications, nevertheless, that this pattern is changing. One of the reasons for this change might be, as suggested by one resident, the fact that people now are selling off the free space of their plots to strangers. Consequently, people have stopped controlling their neighbours and it has become more difficult for the RA to regulate the growth of the settlement as well.

It seems to be less clear for the residents of M.Dias who is responsible for the control of the settlement's growth. It appears to be, nevertheless, that, similar to Timbau, the residents believe that it is common knowledge that they can not build beyond the walls of their houses because it is the public footpath, as three settlers put it: " *We know that that the front of the plot is 7 metres and everybody has agreed on these limits, so people do not try to build beyond the walls*" or " *We have to respect the alignment to allow for cars to pass in an emergency*" or" *People do not build beyond the alignment because it space has to be left for children to play*".

Additionally, two other respondents have said that in case of someone disrespecting this rule they would complain to the person and they would bring the matter to the RA. The RA in M.Dias, though, is not seen by the residents as the only agent capable of regulating the process of planning. The name of the Municipality , of BNH, and of IBAM was also named[130]. An interviewee has even suggested the following:*"People do not build beyond the wall because they know it is the street and is owned by the municipality. So if people attempt to build there, the municipality may go against them".*

A clear difference in M.Dias, however is established between regulating the space beyond the walls or inside *the walls, as the respondents' sentences reveal: "Everyone builds as pleases him/herself, the RA doesn't interfere. But no one builds beyond the walls otherwise the neighbours would complain and the RA wouldn't allow"* or*" Inside the house we do what we want but beyond the wall we are not allowed to do so".* There are also indications that the interference of the RA, or of its president, in these matters is often done with the approval or in conjunction with the residents themselves, as explained by a settler: *"It is difficult for him alone* (the president)*to struggle for everything".*

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[130] Two people have mentioned the CEF/BNH (the sponsor's project) as the main agent spatially regulating the settlement, two cited IBAM (a NGO institution involved in the execution of the project), two named the Municipality and other ten evoked the RA.

It is striking that with so big a problem of shortage of space to accommodate the growing population[131], which among other things has resulted in the growth of the neighbouring squatter settlement, the football field remains free. In fact the area is not part of the original plan of the settlement and it was created by the settlers themselves. It may remain free because as one respondent explained *"It is the place to play football"!*

No one appears to know how the layout and the spatial pattern of the settlement were decided and arrived at. There seems even to be a doubt about who was the agent responsible, some suggested that was IBAM, others BNH, but all agreed that they have not participated in that and that the streets' names were not chosen by them as well[132]. A settler has even said that : " *I don't know who has decided about the patterns of the streets but I believe that it was the President* (the RA's president) *together with the people from the project".* This in fact shows that the residents have not participated actively in the process of decision making about their built environment, and that decisions took place by means of a top-down process.

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[131] Apart of the natural growth, the population has also increased by means of addition of new members of the extended family.

[132] One person has mentioned the IBAM as the responsible for the elaboration of the Urban plan and the house's plan, six the CEF/BNH and one the RA in conjunction with the CEF/BNH.

The RA is, without doubt, seen by the residents as a key agent participating in the decisions about the spatial character of the settlement. But one interviewee shed light on the problem caused by the fact that the RA headquarters no longer exists (i.e. having a spatial focal existence which can ensure that it has an institutional existence):"*I think they shouldn't have demolished the RA headquarters. Nowadays all the assemblies are held at the BNH office and I don't go any more. I think the RA president should have told the residents that it was going to be demolished. Even to receive visitors I think it is important to have a headquarters, but he is the president so it is he who should know and decide that*".

Finally, it seems that the layout and the plan itself have established an order from which the settlers draw a series of rules[133]. These rules are built and enforced by several means, as highlighted above. This in-built order was explained by one of these interviewed as follows:"*People do not build beyond the walls because they are not allowed. Everything has to be ordered, and as you can see all the houses have the same size of the plot, the limits came already defined in the plans. People can not push the houses forward because the residents will stop them, otherwise it (the settlement) will turn into a*

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[133] One of these rules is for example not to be allowed to build beyond the limits of the plot.

favela". The same worry of the settlement to become a favela is also expressed by another settler: *"People can not extend their houses towards the street because it will narrow the street and it will end up turning it into an alley, it is going to be ugly".* The ordered space of the settlement is thus opposed to the disordered space of the favela, and to the latter it is attached a series of negative values.[134]

To conclude this section it could be said that the squatter settlements and the social segment they represent can not be understood theoretically and empirically unless it is comprehended in terms of the way in which it is actually working. In this sense, it seems obvious that arbitrary assumptions about their shape, structure and functioning such as the ones embodied by the ideas of social segregation and neighbourhood should be avoided.

The section has revealed instead that neighbourhood as defined in the social and physical sense does not appear to exist. On the other hand, the social global segregation with local integration implied by the same idea is also not applicable to the cases studied here. The cases, otherwise, have shown that integration as well as segregation are

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[134] Eliane, a lawyer of Pastoral de Favelas, notes that the distinction between the favela and "asphalt's community", meaning the official city, is frequently used by community leaders as a form to get benefits for their communities.

simultaneously used as an instrumental tool to empower the group. In terms of politics, for example, the analysis illustrates, as many studies have already shown, that the settlements are highly and complexly connected to institutions and politicians which are external to the settlement itself. In this sense the RA with its transpatial representation is extremely important for the construction of the settlement's political power, both locally and globally, and will work as a main instrument for the group's social mobility. It is the RA which transforms local collective resources into the needed improvements as well as to bring the resources of the city down to where they are needed by street neighbourhoods. Finally, the history of the community in both settlements has also shown that the notion of discrete communities as cohesive social groups with no internal hierarchies or social differences and conflicts embodied in <u>the concept of community participation is completely mistaken</u>, yet some kind of idea of a social and spatial unit exists for the residents[135] .

It has also become clear in this section that social and political processes are part of a single

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[135] Jacobs, J.; **The death and Life of Great American Cities**, Penguin Books, 1984, observes that successful neighbourhoods are not self-contained areas with formalistic boundaries but rather places where the users are able to identify it as their domain and to maintain a neighbourhood network yet it is continuous to the city.

phenomenon which is also spatial and physical. This phenomenon was defined here as a process of auto-construction. The history of the settlements has shown so far that changes in the local political scene were accompanied by changes in terms of the level of services and up-grading of the settlements and by variations in the patterns of social interfaces (i.e. locally and globally). The next section will attempt to show how space through the evolution of its grid configuration was operating to support such patterns. To do that the analysis will be centred on the description of Timbau's phases of growth which will be discussed in the light of the processes described in this current section. In this sense the section will be focused on the fine tuning of changes in the configuration of the settlement and the level of service and infrastructure provision.

Changes in the spatial configuration

The descriptions given in the previous section have shown that it is not actually precise to say that Timbau was unplanned, though it was obviously not 'designed' in the same way as, for instance, was M.Dias. Yet, if planning is understood as a process of decision making with space growth being conditioned to the existence of regulatory mechanisms, Timbau is a true example of a planned development.

The analysis of the changes undergone by Timbau's grid configuration through time will be based on the stages of growth defined by Santos[136] (see **figure 4.23**). This is the only work available about Timbau. It describes the occupation of the settlement in the following form: *"The first position taken up was at the foot of the hill, on the slope facing westward, closest to the access road and to water resources It is said that the occupation took place in the neighbourhood of the present Travessa dos Caetes in 1951. Then the favela extended in the direction of rua Capivari and rua Alabama"*. The last area to be occupied was a former quarry which up to 1969 was still operating and as Santos explains : *"...Then a couple of those 'sergeant protectors' started, with the aid of a smart squatter in the locality, to mark off building lots of 7m x 7m and to sell them ... the place ended up turned into a square* (Caetes Square) *which is the most praised part of the favela nowadays, with the best quality houses located there"* [137].

The best sequence of cartographic material which records the different stages of growth of Timbau available is offered by Santos. Statutory maps only show the urban grid of Timbau in a very schematic form and therefore are completely unreliable

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[136] Santos, C. et all, **Morro do Timbau**, Ibam, Rio de Janeiro, 1983.

[137] Ibid, pp. 84 to 86.

sources[138]. Santos identifies four stages of growth, namely: from early 40's to 1949, from 1950 to 1955, from 1956 to 1965, from 1966 to 1980 (see **figure 4.23**), which are represented in a sequence of four maps (i.e. 1949, 1955, 1965 and 1980)[139]. This section will attempt to describe the precise configurational characteristics of the grid at each stage of development[140]. **Figure 4.24** shows the diagram of the areas analysed.

Fig. 4.23. Stages of growth - sequence of maps

1449 - 1950

1951 - 1955

1956 - 1965

lower parts   1966 - 1980

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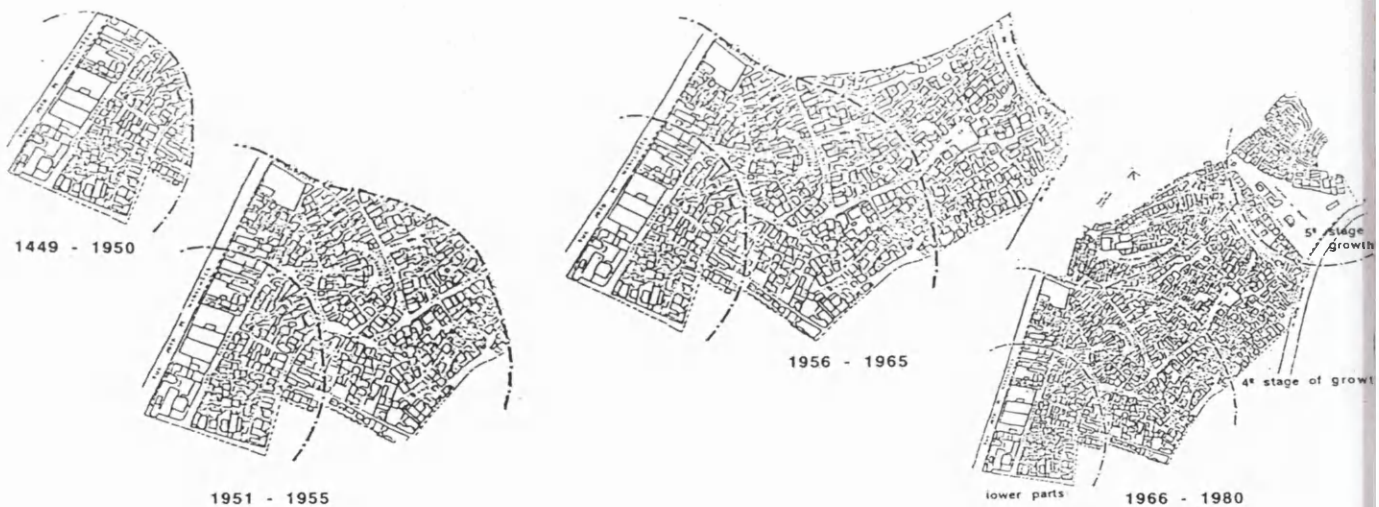
[138] This might be due to the fact that frequently statutory survey does not record areas of the city which are illegal. As a consequence the cartographic material based on those survey offer a complete mistaken picture of areas of the city which have grown illegally and normally they are wiped out of the maps.

[139] The work of Santos does not offer nevertheless any description of the morphological and configurational characteristics of the settlement's stages of development.

[140] Given the unavailability of information about the grid structure of the neighbouring areas the settlement is analysed isolated. Thus the syntatic study developed here investigates solely the settlement evolution and its structure on its own

Fig. 4.24. Diagrams of the analysed areas

1449 - 1950

1951 - 1955

1956 - 1965

1966 - 1980
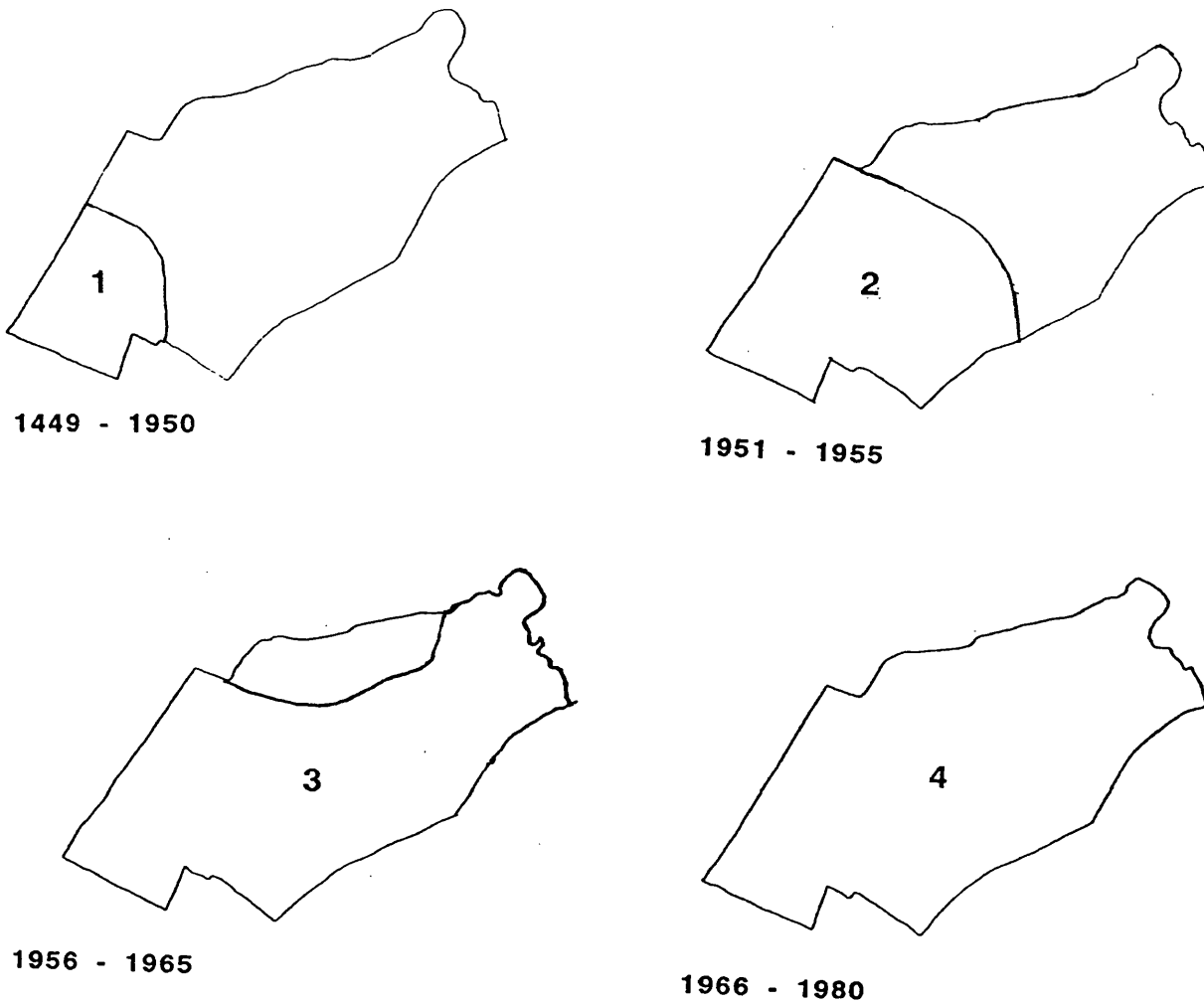
Descriptions given by the respondents in the previous sections have revealed that the settlement has indeed, as suggested by Santos, grown in waves whereby most of the pre-existing urban structure remained without significant alterations from one stage to the other. The settlement seems to have been developed from one stage to the other by means of increasing its area of coverage through the occupation of new pieces of land as well as by the

densification of parts which were already occupied. In other words, the settlement has grown through a densification locally and an expansion globally. The urban grid has developed by the extension of existing roads. In this sense the spatial structure appears to have been developed through the addition of new axial lines to the ones existing in a given stage rather than through the alteration of the same ones (see **figure 4.25**).

Fig.4.25. Timbau axial maps at each stage
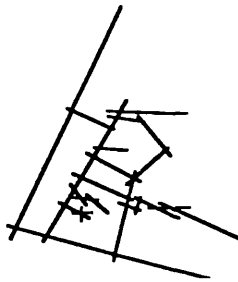
1949   1955
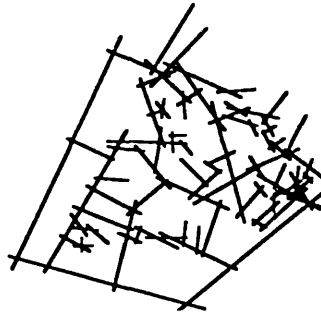
1965   1980

This sequence of maps shows that, as described above, the settlement has developed in waves from southwest to northeast. During the first stage, in 1949, only a reduced area, on the periphery of the super-grid was occupied. In the six subsequent years a considerably large portion of the hill was taken [141], but its northern and eastern parts, beyond rua dos Caetes still remained empty. In the third and fourth stages respectively all the eastern and northern (i.e.the quarry) areas were occupied. During this period the settlement undergoes a set of more radical changes acquiring its definite spatial structure, which will be only marginally changed by the improvements implemented by the government in the late 1980's[142].

The table of **figure 4.26** highlights the importance of the third period for the spatial structuring of the settlement. During this period (i.e. from 1956 to 1965) the settlement increases in 60% its number of axial lines and the same time that it defines the main system of thoroughfares which from then up to the present will remain basically the same.

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[141] The number of axial lines and the number of islands or urban blocks more than triplicates during this period.

[142] The number of islands and axial lines grows steadily from 1955 to 1980 with an increase between 30% and 40% in each of the periods (i.e 1955-1964 and 1965-1980). This suggests that the system has grown retaining its main spatial characteristics yet it has increased in size. More simply, the system seems to have developed without changing the existing scale of the grid configuration.

The first and last periods of development experience a drop in the ratio throughfares/dead-ends which shows that the number of cul-de-sac has decreased in proportion to the number of throughfares. This could be indicating that the early and latest phases of growth of the settlement are structured so as to increase the connections with the global system and that the settlement is becoming more globalized.

Fig.4.26. Growth Stages-Configurational characteristics

● ●

Time period	n⁰ of axial lines	thoroughfare: dead end ratio	n⁰ of islands
1949	23	0.44	4
1955	84	0.25	12
1965	136	0.21	17
1980	159	0.36	22

Looking at **figure 4.27**, which shows the changes undergone by the settlement in terms of the typology of streets[143], some points are worth noting. First the proportion of pedestrian streets remained more or less constant throughout time. Secondly the growth of local streets has increased in inverse proportion to the main streets. This means that although in absolute terms the number of main streets has marginally increased, this increment was significantly lower than the one for local streets.

[143] This refers to the types of streets already identified in the previous chapter.

A possible inference is that the main street system was defined in the early stages of development and remained without major changes so as to structure the and sustain the subsequent growth of the settlement which happened around it. Last, the very high proportion of main streets with no local streets in the first stage suggests that at that time the settlement was still very peripheral and dependent on the existing super-grid without having a distinct spatial structure.

Fig. 4.27. Stages of Growth - Streets' typology

● ●

Time period	Main streets	Local streets	Pedestrian streets
● ●			
1949	7(30%)	0(0%)	16(70%)
1955	14(17%)	4(5%)	66(82.5%)
1965	16(11.8%)	8(6%)	112(87.6%)
1980	16(6.3%)	10(10%)	133(83.7%)

The set of maps presented in **figures 4.28** to **3 1** shows the syntatic structure of the several stages of Timbau's development. **Figures 4.28** to **31** are a set of core maps of the several syntatic measures which show the syntactic evolution of Timbau's grid configuration.

Fig. 4.28. Stages of Growth - Integration maps
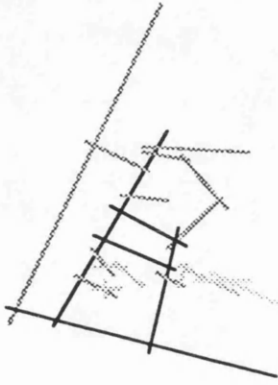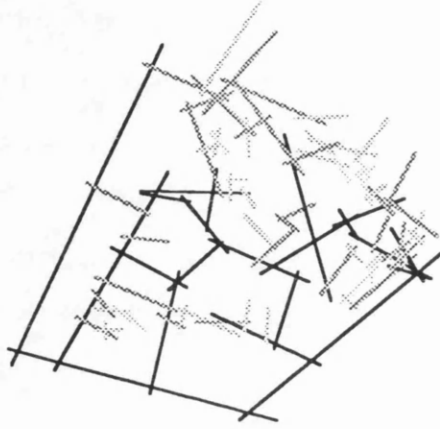
1943

1955

1965

1980

Fig. 4.29. Stages of Growth - Connectivity map

1943
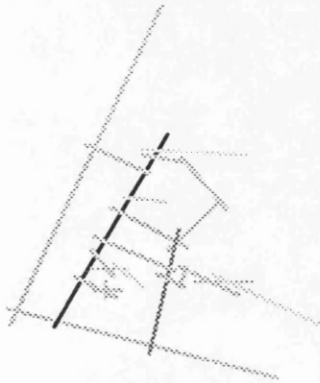
1955
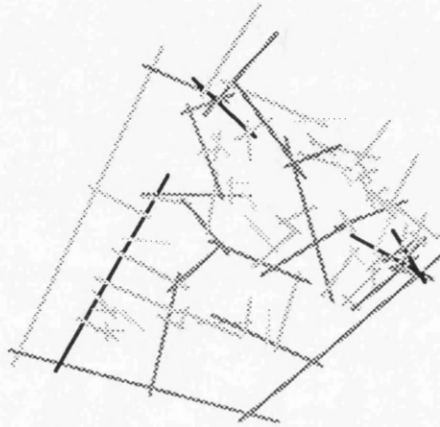
1965

1980
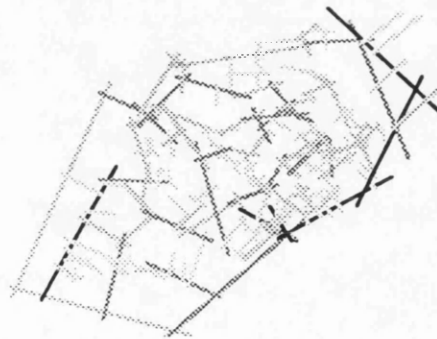
Fig. 4.30. Stages of Growth - Control Value maps

1943
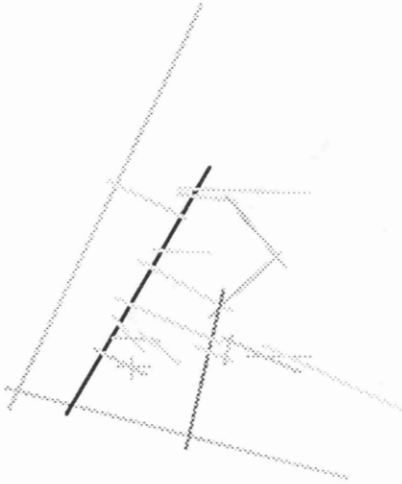
1955

1965
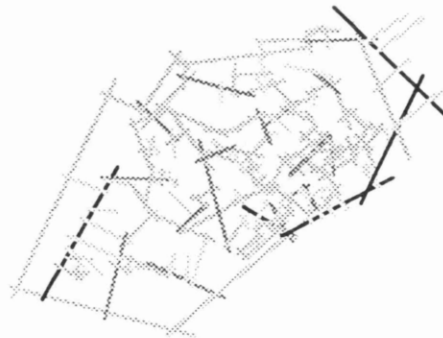
1980

Fig. 4.31. Stages of Growth - Radius three Integration maps
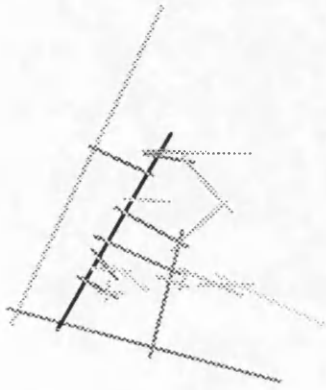
1943   1955
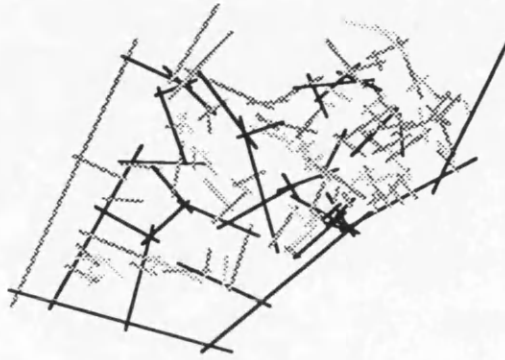
1965   1980

The integration core of Timbau in 1949 is continuous with the super-grid. This confirms that, as suggested above, at that time the settlement did not have a distinct spatial structure and was still very dependent on the existing super-grid [144]. The core maps show the importance given by the settlement to the links with the global structure (i.e. super-grid) in this initial stage of growth. In 1955 the main integrated lines have moved inside the settlement and an internal structure is beginning to be developed. The core is at that time, nevertheless, split in two: one which corresponds to the integration core identified in the 1949 map and the other at east side of the settlement linking the periphery with its heart. The mean RRA value shown in the data table in **figure 4.32** and **4.33** on page 497 and 498 indicates that the system at that stage is still very segregated despite the new connections established with the global system through the peripheral lines. To sum up, it could be said that during the first and second stages of growth (i.e.1949 and 1955) the spatial morphology of the settlement will be a centrifugal one (i.e. directed towards outside) which is expressed in a syntatic core structure concentrated around the boundaries and orientated to the global system.

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[144] This corresponds to the peripheral roads of the settlement.

From the second to the third and fourth (i.e. 1955 /
1965 and 1980) stages of growth the settlement's
structure undergoes a set of more radical changes.
The 1965 map consolidates the integration core
picture of an internal structure linking the periphery
to the settlement's geometric centre and covering
almost every direction (i.e. north, south, east and
west). The core defined in the 1949 map disappears
and the internal structure becomes more clearly-
defined as a system which seems to work in the form
the settlement does today. The core is continuous. It
has a cruciform shape and links the system in both
its north-south and east-west directions. In this
sense the lack of an internal structure found in the
first and second stages will be replaced by the
existence of a strong internal one heavily biased
towards the centre of the settlement. The area at the
east of the settlement of more recent occupation
figures however as the more segregated part. These
particularities of the settlement's structure will
remain throughout its development up to the present.

In the last stage of growth represented by the 1980
map, the internal structure identified previously
remains without change but the peripheral lines
are included within the core creating a global
structure linked and continuous with this internal
one. A possible explanation is that the settlement is
developing a more globally-oriented spatial structure

which is better connected and integrated with its immediate vicinity as well as with the city as a whole. Thus the connections of the settlement with the global system seems to be increased as a means to become itself more globalized. This structure seems nevertheless to encourage strangers to pass around the edge of the settlement but not through the centre as the analysis of the 1990 maps in chapter III has already shown. This in turn appears to be a spatial strategy developed by the group to maximize their control over the movement of strangers within the settlement so as to keep them at the periphery. A plausible explanation is that space, in this case, is not about mixing social categories, but instead it is about keeping them apart. The political role of this separation seems obvious. That is to allow the group to have a social and spatial discrete nature which in turn may offer them the possibility of having a clearly defined political identity[145].

The 1990 map analysed in Chapter III is not included in the sequence of maps presented in this section because the present maps are based only on cartographic material and differ from that of 1990 which was checked on site.

The whole settlement's picture reveals, however, certain spatial discreteness in relation to the city

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[145] which the previous section has shown to be embodied in the RA.

as a whole, which might be quite instrumental in helping to have a clear local spatial identity in relation to the global spatial system. This quality as well as the control of accesses appear to be key factors to define it as a discrete spatial domain within the city corresponding to a specific group of residents.

The system of segregated spaces which started to take shape in 1965 is consolidated in the 1980 map and appears to work as a secondary, more localized network of spaces which gives access to the more secluded areas of the settlement. These more secluded areas actually are the ones last developed in the east of the settlement[146]. It seems that the integration pattern works by reinforcing the local structure at the same time that it connects the system globally through its edges under a quite locally controlled form. This doesn't mean, however, that the system as it has grown was unable to develop global rules and has become relatively unstructured in terms of the overall form, as it might seem at first glance.

It would be misleading to assume that the settlement is a local spatial structure without an effective global structure. On the contrary, it appears to be that the global rules and their transpatial character

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[146] This trend was first identified in the 1965 map and will still be present in the 1990 map.

are rather dependent and created by this strategy of reinforcement of the local system such as to guarantee that the control remains with inhabitants.

Furthermore, it could be said that Timbau structures itself spatially by means of two strategies: first, by reinforcing the segregation and inaccessibility of strangers to areas which are further from the super-grid emphasizing their local character and control; and second, by constructing lines which, despite their strong local control work, as globally-oriented lines. In this sense the syntatic structure based on the 1990 map identified in chapter III with the settlement organized by three systems of streets, namely: the main streets, the local streets and the pedestrian streets, is almost in its final shape in the 1980 map.

It is interesting to observe that the spatial syntatic structure of the system will remain more or less similar throughout the last three stages of development as the settlement becomes larger. It could be suggested that this spatial syntatic arrangement of the system described above with a very clearly defined internal structure which organizes movement locally beside its asymmetric character (significantly high RRA) is fundamental for the political structuring of the group (both locally and globally).

Finally, it could be said that the third and fourth stages of development are decisive in the spatial structuring of the settlement. It is during this period that the integration core is defined and improves relatively its overall integration by spreading itself towards the global areas (i.e. peripheral lines or lines adjoining them). In addition to that, as its was shown in the previous sections, it is during the third and fourth stages of growth that most political struggles have taken place. This, of course, has included differentiating the levels in the system of street through consolidation, removing encroachments and paving the main streets. The spatial structuring during this same period appears to indicate that space had an instrumental role on those processes.

Further analysis of the Control value, Connectivity and Radius three cores highlights some additional points about the configurational development of Timbau. First, the best connected and controlling spaces remain throughout time always those which give access to the settlement, as well as the peripheral ones[147]. Second, the radius three map seems to complement the picture defined by the integration core such as to connect the peripheral structure to the internal structure in almost every area of the settlement with exception of the

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[147] This was also noted in chapter III in relation to the current form of the settlement.

east which remains segregated. The core structure defined by radius three picks up the system of main and local streets which in turn are connected to the pedestrian streets. The two structures (i.e. the main / local streets and the pedestrian streets) nevertheless work independently with the first developing a thoroughfare continuous route, and the second a network of short segregated and fragmented spaces.[148]

The data table which summarizes the syntatic measures for each stage of development is enclosed on next page in **fig. 4.32**. It is interesting to note that the mean integration does not seem to change significantly across time (see **figure 4.33**). According to the t-test[149] applied to the difference of the means for the sequence of periods analysed (that is between 49 and 55, 55 and 65, 65 and 80) the integration value remains constant with 95% of confidence during the second, third and fourth stage (see **figure 4.34** and 3 5). This suggests that the settlement has grown in waves accumulating areas which are similar to each other in terms of mean integration.

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[148] This was again identified in the 1990 map.

[149] The t-value is a statistic measure given by X1 - X2 which allows to test if two examples of size n1 and n2 with standard deviation S1 and S2, have identical mean values, X1 and X2, within a certain chosen confidence interval.

Fig. 4.32. Syntax data table for stages of growth

Fig. 4.33. Stages of Growth - Syntatic characteristics

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Time period	Mean RRA	Mean Con.	Mean Radius 3	Intell.
1980	.88	2.99	1.41	0.62(p=.0001)
1965	.85	2.97	1.4	0.57(p=.0001)
1955	.96	2.9	1.36	0.71(p=.0001)
1949	.95	2.43	1.28	0.69(p=.0003)

In terms of the variation of the different measures throughout time, the analysis of the line charts in **figure 4.34** suggest that, although the integration value (i.e. reciprocal of RRA) does not vary significantly, as the t-test has shown, it decreases with time having its lowest value in the settlements' third stage of growth. Intelligibility also follows a similar pattern to that of integration with a minimum value in 1965.

Connectivity and Radius three present a picture which shows a steady growth of both measures throughout the subsequent stages of development of Timbau. The last picture shows the variation of all measures revealing that the system has in fact undergone only minor changes in terms of the mean syntatic measures as it has developed.

Fig. 4.34. Changes of mean syntatic measures thróughout time
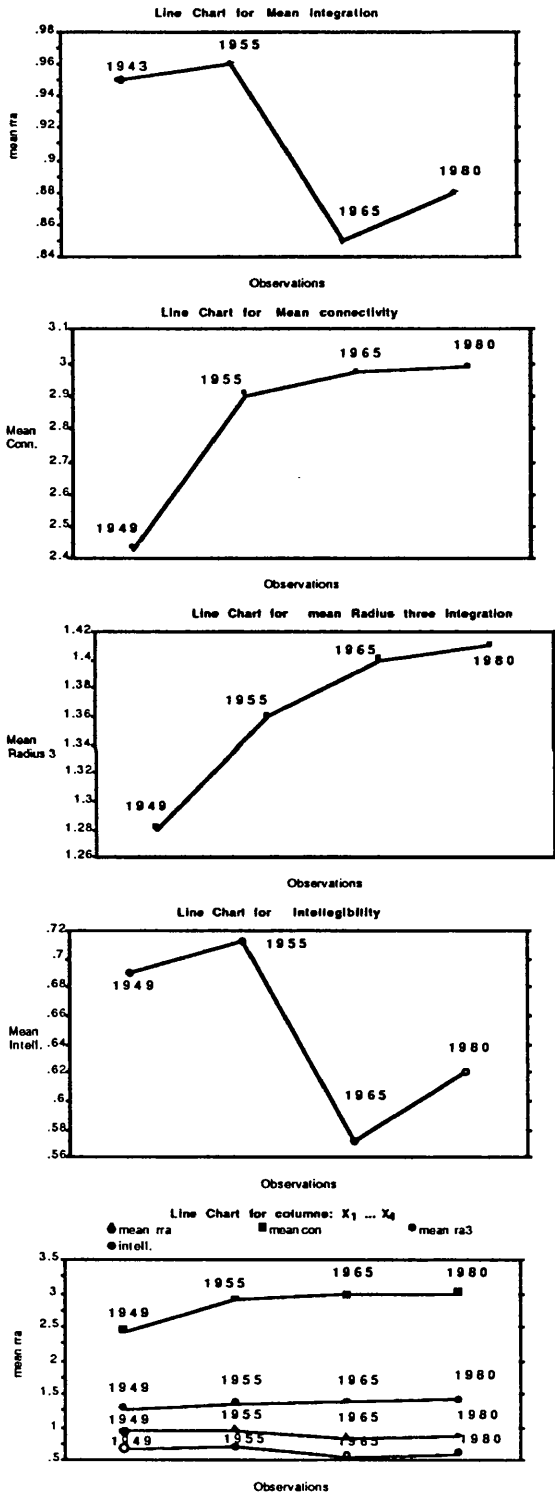
These variations have to be checked against' the t-test which then identifies in which situations they are significant. The t-test has given the following results:

(a) RRA: 1949≠1955=1965=1980

(b) CON: 1949≠1955≠1965≠1980

(c) Radius three: 1949≠1955=1965=1980

These results suggests that, despite the variation identified by the comparison of the absolute mean values in each stage of development, in terms of both integration measures (i.e. integration and radius three integration) the system from 1955 to 1980 remained stable with the same mean. After all, there does seem to be a logic to the evolution of the settlement grid which is structured at two levels: first, one subsumed to the need for global integration which is arranged so as to draw people in from the perimeter and channel them into a core of shallow main thoroughfare well integrated and accessible routes; and another, backland anti-axial system of dead-end, alleys and lanes related to the local interface which has grown gradually and steadily as the settlement evolved so as to keep their proportion in relation to the whole system more or less constant[150].

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[150] **Figure 4.28** shows that this proportion remains around 80% in every of the several stages of development of Timbau.

The globalization of the system of through streets is more or less gradual and uniform through time. This globalization does not take place however through the reduction of the complexity of the axial system, but instead through the gradual extension of the integration core towards the global system over time such as to incorporate peripheral super-grid lines into it. As a consequence, the settlement opens itself gradually to a more global social influence without becoming, however, axially more direct as time passes.

The globalization of the system took place by means of road widening and straightening[151] which consolidated the system of more accessible and shallow through routes oriented to accessing strangers from the outside. That process, nevertheless, is restricted to few spaces with the hinterlands remaining relatively inaccessible as time goes by. The mean integration does not change significantly through time. Thus Timbau viewed through time is embedding itself more firmly spatially within the city, by means of extending its integration core in waves so as to include more and more global lines, yet it does that without losing its spatial discreteness, that is without becoming part of a large conurbation process which forms the city.

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[151] The last section has already stressed the importance of the RA in this process as the main regulator and executor of such improvements. These shows clearly the relation between political action and the spatial working of the settlement.

In this sense the evolution of Timbau's grid can be said to have undergone a global intensification of the main street grid accompanied by an instrumental local intensification of the rest of the grid through an increase and extension of the network of pedestrian short and fragmented streets[152] . Consequently the grid structures movement patterns which are at the same time globalized and localized.

The first feature is produced by the direct action of the RA which, by means of road widening and straightening as well as control of building alignments, has guaranteed the existence of a system particularly firmly integrated within the local as well as the global grid. This is a recognition that the local people do need to globalize themselves. The globalizing effects of such action has not only created a more axially simplified internal structure but has also connected the settlement street grid to its vicinity at the perimeter.

The second was a sub-system of more labyrithine spaces, more segregated both locally and globally, which have remained relatively deep without much

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[152] This resulted in a uniform growth in terms of the system's overall integration. In other words, the mean RRA uniformity through time seems to be the result of that globalization process balanced by a local intensification. It will be misleading, nevertheless, to disregard the globalization of the settlement. The empirical evidences suggest instead that both processes have to be taken into account for describing Timbau's evolution. The key to understand the functioning of the settlement seems to lie exactly on the way the local and the global scales relate to each other and structures the grid configuration through time.

intervention. The tension between the localized and the globalized patterns suggests that, although the settlement is <u>strongly localized, it is not self-referential</u>. It refers to the very large global scale so there is the potential to move from a segregated to an integrated system without eliminating its local structure. The system is working as a whole without separating out local and global movement such as to take advantage of being both localized and globalized.

The rank ordered distribution of RRA through time (see **figure 4.35**) suggests that the growth of the settlement between 1949 and 1965 is followed by a smaller differentiation between the extremes of integration and segregation. In other words, as the settlement gets bigger the more uniform becomes the distribution of integration as expressed through the distribution of integration and the slope of the line/curve. This uniform organization in terms of depth might actually represent a categoric isolation of the group from the rest of the city in terms of gradually becoming more differentiated globally and easily identifiable through a local homogeneity and very strong structure. It is, nevertheless, important to have in mind that, as mentioned before, this does not mean that the settlement does not relate to the global system. This relation is though realized through a strong local structure.

Fig. 4.35. Rank ordered RRA distribution throughout time

Bar Chart for Timbau 1949 - Distribution of Integration

Observations

Bar Chart for Timbau 1955 - Distribution of Integration

Observations

Bar Chart for column: X₁ Tim 65 RA1

Observations

Bar Chart for Timbau 1980 - Distribution of Integration

Observations
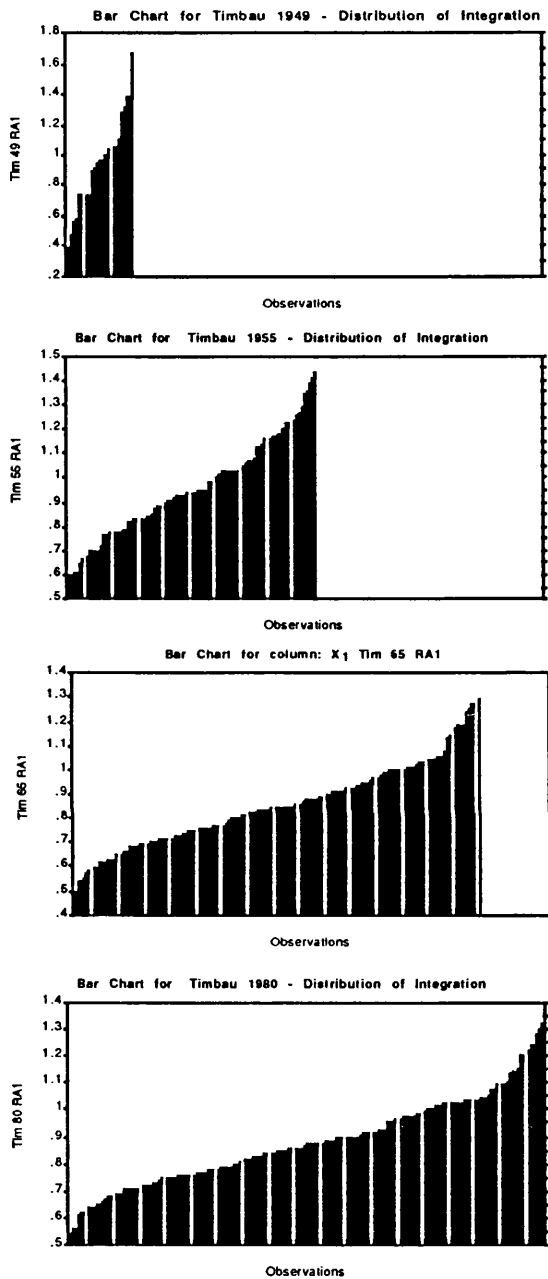
By contrast, comparing last two phases of development (i.e. 1965 and 1980) this shows the opposite trend that is an actual increase in the differentiation between integration and segregation. Consequently the settlement is more strongly structured in its modern shape than in the past. If

anything, the improvement brought by the RA and its action towards globalizing the system has produced a more clear, stronger and more globally integrated urban structure than did those of the initial stages of development of the settlement.

Conclusions

The descriptions given in the later sections of this chapter, of how the settlements has developed its social and political structure through time and how in Timbau this was followed by a spatial development[153] allows for some important conclusions about the phenomenon called here auto-construction.

First, it was seen that in Timbau during the period from 1954, when the group first organized itself politically through the RA, to early seventies, the entire political life of the group seemed to be organized by hierarchical weak ties between both the

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[153] The history of M.Dias spatial development is characterized by two complete different relatively unconnected stages and spatial processes — up to the 1980's in the squatter settlement and after that in the housing estate —which does not allow this analysis to be repeated in the same form. In addition, it was not possible to obtain any accurate map of the original settlement which could be analysed. This research has thus opted to study the settlement in his actual form since the two stages are completely independent in terms of their spatial forms, rather than to speculate on what the original settlement might have undergone in its development.

RA and the residents and the RA and outsiders. This pattern of interaction which seems nevertheless to be present in both Timbau and M.Dias, separates categories and generates unequal relations, and operates not just internally but also between the group and outsiders through the RA authority and external agents. Leaders in this process will work as intermediaries between the the world of the settlement and the outside world. Second, the RA makes feasible the local representation of the community in the face of agents (or groups) with power at the level of the global political system. This nevertheless, as the data has shown, depended on the RA's capacity to have connections all over the city and to have friends and acquaintances outside the settlements to which it is necessary to overcome the relative insularity of the settlements. But to get the area up-graded, the areas needed two pre-requisites: community representation of sufficient people who could be identified as residents, and a physical area which could be identified as the spatial basis for such improvements. Thus, the mechanisms described are at once social (i.e. interaction patterns), political and spatial. Third, looking at the sections which have focused on the changes in the political structures and the changes in the spatial structures it is worth noting that an increase in spatial complexity and in the strength of the spatial

structure was accompanied by an increase in the complexity of the socio-political patterns existing within the groups. This is reflected for instance in the globalisation of Timbau's contemporary shape, as well as M.Dias statutory form, and the simultaneous change in the political nature of the RA towards a more socially acceptable role in terms of the city as a whole[154].

The result of such different social-political process seems however to have had direct influences in the spatial working of the settlements. Timbau, as seen before, has a structure which is at once globalized and localized. In addition to that a property of its local structure is that it can always stop when it gets sufficient globality. Whatever the reasons for it to be working like that, without doubt the fact that the housing project has created a vacuum into which the existing local political and social scene could not easily fit, has to be seen as having had a pervasive influence on it. Finally, changes in the improvements, street patterns and political structures seem to have been part of a single phenomenon which was named auto-construction. This is to say that the group by constructing its spatial system was also constructing their socio-political system and vice-versa. The empirical evidence has demonstrated that

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[154] This means to change its self-government nature for a status less marginal to the city as a whole and more integrated to the official social and administrative structure (i.e. social workers, community entertainers, or local officials).

the spatial and socio-political peculiarities of both settlements have to be seen as instrumental in this process of auto-construction. The general picture presented by the two settlements, suggests however that they follow the logic of the urban society as a whole.

In Timbau, the space nevertheless, seems to have played a major role to the extent of becoming itself a major political strategy to guarantee not just the political representativity of the group but even their very social and political existence. In this sense, the material investment in the public and private space towards a more consolidated pattern (i.e. such as the existence of public infrastructure or the construction of houses in brick) was an important form to avoid eviction. The whole auto-construction process seems thus to be a key strategy to turn the system a viable model to face society at large.

The residents of both settlements, whilst adopting two completely different strategies have succeeded in demonstrating their social, spatial and political viability. They have demonstrated an enormous vitality to succeed, within the the limits they were confined to (i.e. socially, politically, economically and spatially), in bending to their favour the adverse conditions. The idea of squatter settlements as marginal in a geographical, spatial, social and

political[155] sense does not seems to apply. The idea embodied by the Turner's liminality concept, as defined in chapter II, instead of marginality might be used to define the alternative strategies developed by the squatters in those processes described in this chapter.

Furthermore, this process characterizes a type of growth which can not be designated as unplanned. Obviously, the settlement has not been through a planning process as it is formally conceived by the orthodox planning, but it clearly has resulted from a conscious process of decision-making with a strong component of community participation[156], which followed specific rules to define the shape and functioning of their built environments.

This thesis has so far been focused on the analysis of processes at the scale of the group. The next chapter, however, will turn its attention to problems at the scale of the individual. It will analyse the concepts and motivations which have guided individuals members of the group to take spatial, social and political decisions.

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[155]which is translated by a location outside the urban limits and beyond the reaches of normal urban facilities.

[156] Even though this participation, as it was seen in an early section of this chapter, works in a form very different from the one currently accepted in the literature on housing.

The aim of the next chapter is thus to describe how individuals who are perfectly integrated to the society in which they live, try to take the best advantage of the possibilities and opportunities which are offered to them. In this sense the idea that this groups are segregated, marginal and a social malaise within society at large will be discussed in the light of the empirical evidence presented by the individual questionnaires. The chapter will in turn aim at questioning the pathological idea whereby it is assumed that squatters are either segregated from society as a whole or that they hold a relation of total and complete dependency with it. The chapter concludes by suggesting that the alternative models created by the vast number of urban poor in Third World cities are not only viable and perfectly integrated to the society which they are part, but above all that they are becoming the rule rather than the exception in such urban systems.

CHAPTER V - <u>Are squatter settlements and their residents marginal?</u>

Abstract

This chapter is the last of the three linked chapters which were set up to discuss the main research questions in the light of the empirical evidence presented by the case studies. The chapter is mainly based on the answers given by the respondents in the questionnaire to a number of related issues. It focus on the question of <u>marginality</u> which is the third main theoretical problem of this thesis. It starts by examining a set of issues such as <u>mobility</u> and <u>migration patterns</u>, and <u>residence patterns</u> in the two case studies in order to see if any of them could be characterized as marginal'. Then it describes the residents' <u>motivations, aspirations, concepts</u> and <u>ideals</u>[2] in relation to their community, their houses and their settlement to check whether or not they could be regarded as disconnected from or dependent upon the dominant value system of urban life.

Thus the aim of this chapter is to answer questions such as: why do these people go to live in the settlement? how do they decide to live there? what things were regarded as important for them to choose, for instance, the location of their homes? how do they regard people living in spatial proximity to them? what kinds of spatial and social concepts do they use to structure their lives and organize their built environment?

In this sense then the thesis returns to some of the themes of the third chapter, which set out to explore the spatial correlates of the concept of neighbourhood because it does begin to tackle spatial issues with a new level of awareness and evidence.

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[1] where traditional social and political relations inherited from a relatively recent rural life seems to predominate.

[2] In other words socio-psychological factors such as aspirations, attitudes, motivations, values and other less easily quantifiable variables.

The chapter ends by analysing the viability of that styles of urban life in relation to society as a whole and by discussing the extent to which concepts currently used in the literature[3] are adequate to explain and understand such systems[4].

Marginality, Mobility and Migration

The urban poor in Latin America have often been regarded as guided by principles which are not those of the market and of the capitalist cities as a whole. They have commonly been seen at the margins[5] of the dominant system and its economic, social, political and spatial order[6] in a situation of complete instability[7].

This chapter starts by examining first residence patterns by looking at issues such as the time people have been living in the settlement and the pattern of

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[3] The concepts which are of direct relevance to these are summarized in Chapter II.

[4] In political, social and spatial terms.

[5] For example, Perlman, J., **The Myth of Marginality : Urban poverty and Politics in Rio de Janeiro**, University of California Press, Berkeley, 1975; Hardoy, J. E, **The Human Dimensions of the Environments of Poverty**, Institute of Latin American Studies, University of North Carolina at Chapel Hill, 1986; Lomnitz, **Networks and Marginality,** Academic Press Inc., London, 1977; Ferguson and Portes, **Comparative Ideologies of Poverty: Latin America and the United States**, in Comparative Urbanization Studies, School of Architecture and Urban Planning, UCLA.

[6] Lomnitz, L.A, **Networks and Marginality,** Academic Press Inc., London, 1977, remarks that "*anthropologists have adhered to one of two major points of shantytowns: (1) Shantytowns are hotbeds of contagion, crime and social disorganisation; and (2) shantytowns are rural islands of social reconstruction and community life in an aggressive urban milieu*".

[7] social, political, occupational and geographical instability.

intra-urban (within the same city) mobility. Or in other words, where else in the city have the settlers lived prior to their move to the settlements.

The questionnaire data (see data table, in Chapter I on page 150) reveals that the period of residence in both settlements is quite long. Most of those interviewed have lived in the settlements for more than fifteen years (26 out of 30 in Timbau and 13 out of 26 in M.Dias[8]). However, the mean time of residence in Timbau is considerably higher than in M.Dias (this includes also the time of residence in the original squatter settlement), respectively 27.967 and 15.792 years. In addition the fact that a considerable number of these interviewed have not lived elsewhere in the city (14 in Timbau and 9 in M.Dias) suggests a small level of intra-urban mobility.

The places where people have lived previously, however, were in suburbs, in the north zone or in similar kind of squatter settlements. Very few of the residents have lived in the centre or in the south

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[8] It is important to stress that in M.Dias the data time in the area refers to the time of residence in the original nearby squatter settlement where the population was removed from.

zone of Rio (only 3 in Timbau and 1 in M.Dias).[9] According to the data, (see **fig.1** and **2**) only one family had settled in Timbau by 1940, and in M.Dias by 1955. By 1960, approximately 60% of the families had settled in Timbau whereas in M.Dias this took up to 1975 (before reconstruction), yet both settlements have similar population nowadays. Thus, the fact that M.Dias is a transformed space does not seem to make any difference in terms of residence time. This might be because the original population has been transferred from the original squatter settlement to the housing estate.

Fig. 5.1.Timbau

Q.1.a.Time in the area

Bar:	From: (≥)	To: (<)	Count:	Percent:	
1	5	11.5	3	10	
2	11.5	18	4	13.333	
3	18	24.5	5	16.667	
4	24.5	31	7	23.333	- Mode
5	31	37.5	2	6.667	
6	37.5	44	6	20	
7	44	50.5	2	6.667	
8	50.5	57	1	3.333	

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[9] Some authors (V. Arno et all, 1986; M.Abreu,1988) have noted that the Rio city is organized through a segregated spatial pattern, where there is an opposition between the centre and the periphery which also is embodied by an opposition between the poor and the more wealthy sectors of the population. In this sense, the only option left to the poor was to occupy the suburbs of the city and its North zone, or plots in swampy areas or hilly sites of difficult occupation. In addition to that, Arno (1986, pp.154) suggests that this opposition centre x periphery is epitomized geographically by the pairs Centre x Suburbs and South zone x North zone, with the Centre and South zone representing the well serviced and geographically privileged parts of the city.

Fig. 5.2.M.Dias

Q.1.a.Time in the area

Bar:	From: (≥)	To: (<)	Count:	Percent:
1	0	3.9	2	8.333
2	3.9	7.8	4	16.667
3	7.8	11.7	4	16.667
4	11.7	15.6	3	12.5
5	15.6	19.5	3	12.5
6	19.5	23.4	1	4.167
7	23.4	27.3	3	12.5
8	27.3	31.2	1	4.167
9	31.2	35.1	2	8.333
10	35.1	39	1	4.167

This data seems, thus, to indicate relevant points. First, that Timbau was occupied before M.Dias. Second, that the high time mean appears to suggest, contrary to what is assumed for such illegal type of occupation, a very low mobility, with people living in the settlement on a permanent basis for long periods of time. This indicates a situation of social and geographical stability rather than of instability. Twelve families, corresponding to 40% of the cases, had settled in Timbau between 1960 and 1972, with almost 25% concentrated between 1961 and 1966 which also corresponded to the period of most intense occupation. While in M.Dias the most intense period of occupation was between 1978 and 1986, when eight families, representing approximately 34% of the cases, had settled in the settlement.

The analysis of **figs.** 3 and 4 shows, that despite their corresponding to two different squatter settlements, the percentile distribution of cases across time in the area, follows a strikingly similar

profile. This could be an indication of a very similar process of occupation - a continuous piecemeal process, yet spanning different periods of time and with different distributions along these periods. This suggests that despite their different histories of development, Timbau and M.Dias (in its original form) as squatter settlements seem to have grown over time at similar peace.

According to **figures 5.3, 5.5, 5.9** and **5.11** it seems clear that in Timbau residents stay for a long time in the settlement and in the same residence. However, a comparison between **figures 5.7/5.9** and **5.8/5.10**, reveals the differences between the type of occupation of Timbau and M.Dias, respectively, the first showing a gradual process spanning a long period of time, and, the second demonstrating well-defined stages of occupation compressed into a short period of time. It could be said that these differences summarize two different processes of occupation, an organic one (Timbau) and a planned one (M.Dias).

It is significant that in both cases 30% of the respondents had the settlement as the only place of residence. In both Timbau and M.Dias just one respondent has lived in the South Zone of Rio. While in both settlements around 60% of the respondents had lived in the North Zone and suburbs of Rio. Thus,

an analysis of these figures shows that most of the settlers (roughly 65%, **figs. 5.13 & 5.14**) came to the settlement after prior residence elsewhere in the city. This suggests that those populations are mainly urban in origin. Therefore the idea currently accepted of squatter settlements as rural enclaves within the urban context does seem completely mistaken. In this instance the process might be described rather as an <u>urban-urban migration</u>[10] process, in search for better life conditions and opportunities within the urban industrial system. In this sense it should be regarded as a vital sign of integration and articulation to the system, an up-ward movement in the social ladder, rather than a down-ward marginal movement.

Fig.5.3. Time in the area - Timbau

Percentiles Plot for column Q.1.a.Time in the area

Fig.5.4. Time in the area - M.Dias

Percentiles Plot for column: Q.1.a.Time in the area

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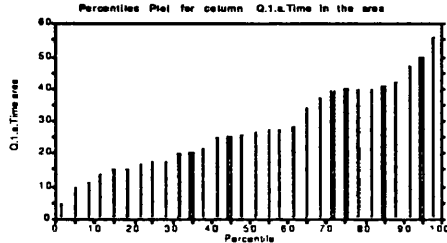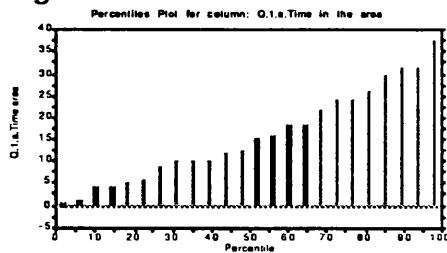
[10] instead of rural-urban migration. Thus, unlike the settlements studies by Turner and Mangin, **The barriada Movement**, Progressive Architecture, May 1968, pp.154-162., which operated as receptions centers for rural migrants coming in directly from the countryside, the migratory movement here has its origins in another urban centre. In this sense residents when coming to live in the settlement were perfectly adapted to urban life and its environment and therefore have not suffered any acculturation process.

Fig.5.5. Time in the dwelling - Timbau

Q.1.b.Time in the dwelling

Bar:	From: (≥)	To: (<)	Count:	Percent:	
1	5	10.75	7	23.333	-Mode
2	10.75	16.5	5	16.667	
3	16.5	22.25	5	16.667	
4	22.25	28	4	13.333	
5	28	33.75	2	6.667	
6	33.75	39.5	2	6.667	
7	39.5	45.25	3	10	
8	45.25	51	2	6.667	

Fig.5.6.Time in the dwelling - M.Dias

Q.1.b.Time in the dwelling

Bar:	From: (≥)	To: (<)	Count:	Percent:	
1	1	1.5	1	4.167	
2	1.5	2	0	0	
3	2	2.5	6	25	
4	2.5	3	0	0	
5	3	3.5	5	20.833	
6	3.5	4	0	0	
7	4	4.5	10	41.667	-Mode
8	4.5	5	0	0	
9	5	5.5	2	8.333	
10	5.5	6	0	0	

Fig.5.7. Time in the dwelling - Timbau

Percentiles Plot for column Q.1.b.Time in the dwelling

Fig.5.8. Time in the dwelling - M.Dias

Percentiles Plot for column: Q.1.b.Time in the dwelling
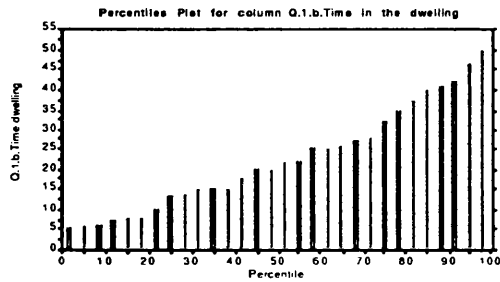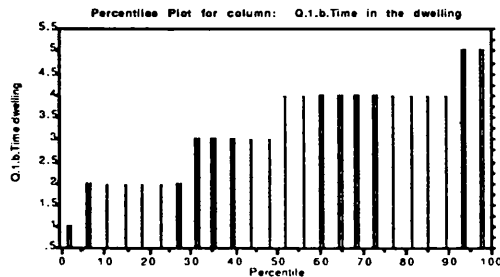
Fig.5.9. Time in the dwelling x time in the area - 'Timbau

Percentile Comparison Line Chart for Columns: Q.1.a & Q.1.b
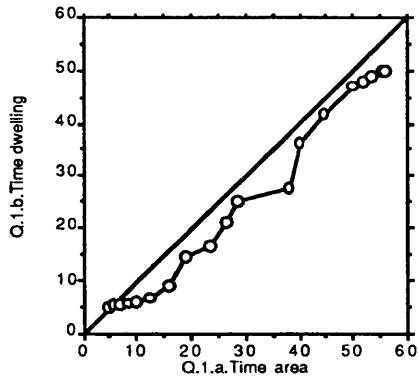
Fig.5.10. Time in the dwelling x time in the area- M.Dias

Percentile Comparison Line Chart for columns: Q.1.a & Q.1.b
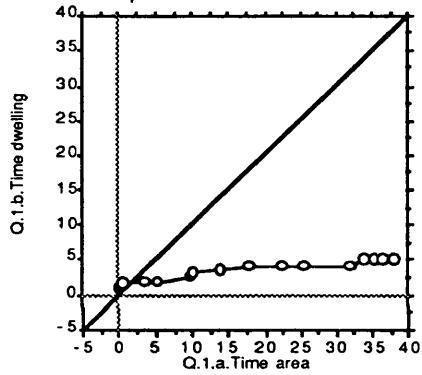
Fig.5.11. Time in the area -Timbau

Line Chart for columns: X₁ ... X₂
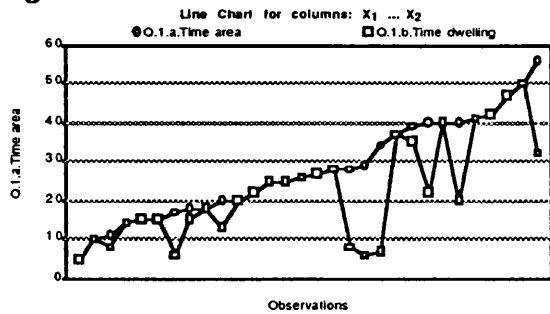
Fig.5.12. Time in the area - M.Dias

Line Chart for columns: X₁ ... X₂
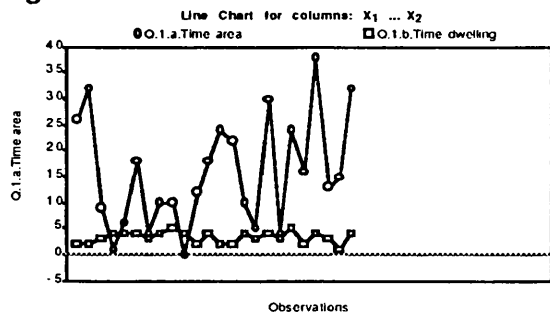
Fig.5.13.Places of prior residence - Timbau

Q.1.c.Places of prior residence

Bar:	Element:	Count:	Percent:	
1	Timbau other plot	8	34.783	
2	South zone+Centre	1	4.348	
3	North Zone+Suburbs	9	39.13	- Mode
4	S/N Zone+Center+Suburb	2	8.696	
5	T.other plot+S/N+C+Sub	1	4.348	
6	T.other plot+N+Suburb	2	8.696	
Total		23	100	

Fig.5.14.Places of prior residence - Timbau

Q.1.c.Places of prior residence

- Timbau other plot
- South Zone+Suburbs
- North Zone+Suburbs
- S/N Zone+Center+Suburbs
- T other plot+N.Zone+Suburbs
- T.plot+S/N Zone+Center+Suburbs
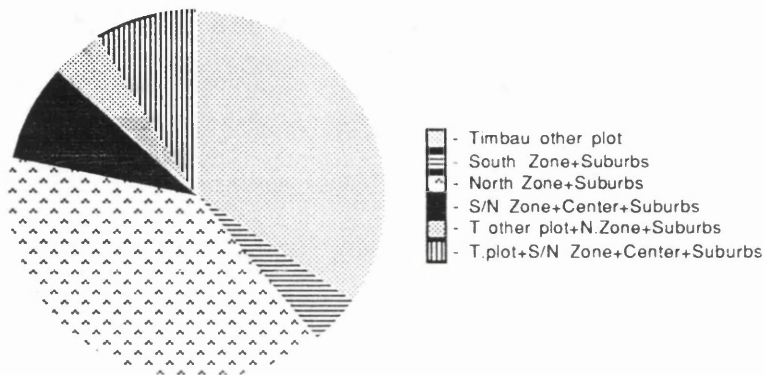
Studies about migration have concentrated on rural-urban migration and the adaptation process of migrants to urban culture[11]. These studies have suggested the existence in large cities of rural enclaves constituting the destination for those migratory movements[12]. Such observations however, are not applicable in the cases studied here for two

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[11] For example, Lewis, O.,**Urbanization without breakdown**, Scientific Monthly, 1975, pp.31-45; Butterworth, D., **Migracion rural-urbana en America Latina**, America Indigena 31, pp.85-106; Mangin, W., **Peasants in cities**, Houghton Mifflin, Boston 1970; Bonilla, F., "Rio's **Favelas: The Rural slum within the city**, in Peasants and cities, edited by Mangin, W.

[12] Little is known, however, about urban-urban migration in Latin American cities.

main reasons: first, as mentioned above in the two cases the migratory movement has mainly another urban centre as the place of origin[13] ; and second that the two settlements, as the socio-spatial analysis has already shown, are nothing like "rural islands"[14] .

The questionnaire has also dealt with the devices used by people to swap houses in the settlements. The data shows, however, that house-swapping was almost absent (3 in both M.Dias and Timbau). This seems to indicate that the level of internal residential mobility (within the settlement) is also very low. In other words, most people stay in their initial place of residence and even on the same plot. This again is a vital sign of the stability of the existing residence patterns which seems to be a direct consequence of the social and economic integration of these groups to the urban industrial system. This integration is what in turn allows them to make a gradual investment in their houses and in their settlements so as to guarantee, in the long run, comfortable housing and to enjoy normal urban facilities. This indicates that not only those populations have to be seen as fundamental components of urban systems in the Third World, but

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[13] In this sense, prior to migrating settlers have not only been in contact with cities through many aspect of their cultures but they have actually experienced urban culture itself.

[14] Leeds and Leeds, **A sociologia do Brasil Urbano**, Zahar Editores, Rio de Janeiro, 1978, pp.177, call the attention to the fact that empirical evidences show that squatter settlement and their residents have essentially an urban nature which is highly political.

above all, they should be realistically accepted as a dominant and normal part of urban growth[15].

Fig.5.15. Local residential mobility -Timbau

Q.2. Local Mobility

Bar:	Element:	Count:	Percent:	
1	Never swop	21	70	- Mode
2	Has swop	9	30	

Fig.5.16. Local residential mobility - M.Dias

Q.2. Local Mobility

Bar:	Element:	Count:	Percent:	
1	Never swop	19	79.167	- Mode
2	Bought a house	2	8.333	
3	Have swop	3	12.5	
Total		24	100	

Fig.5.17. Local residential mobility - Timbau

Q.2. Local mobility

Never swop
Has swop
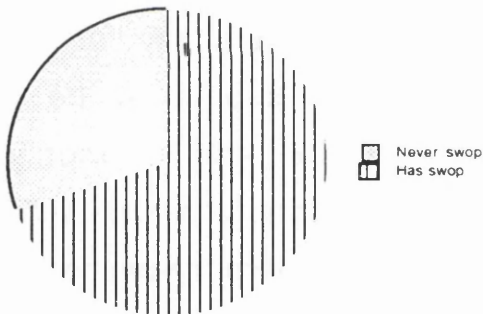
Fig.5.18. Local residential mobility - M.Dias

Q.2.Local Mobility

- Never swop
- Bought
- Has swop

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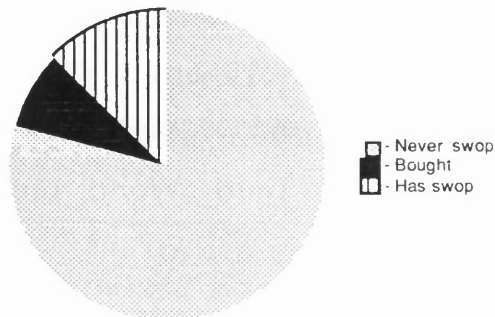
[15] Not only given their numeric significance but also because the viable and functional alternative they represent face the contradictions presented by Latin American urban economies.

The low internal residential mobility of the settlement can be confirmed through **figs. 5.15 to 5.18** which show that a small percentage of people have lived elsewhere in the settlement, respectively, 30% and 20% for Timbau and M.Dias.

It seems that the instability that the illegal situation of property of the land[16] represents to the residents could either be a factor in tune with the low mobility or in conflict with that. Illegality, and the consequent threat of eviction, could have worked as a major factor preventing people from promoting improvements in their homes or any other action tending towards a stable situation. This, however, is not the case of the settlements studied here. But, on the other hand, illegality may have been one of the factors which may has caused such stability, since people might have stayed for a long period of time in the same place to minimize the risks of removal, or alternatively, because they have no formal access to any other form of accommodation.

In any case, nevertheless, the strategy seems to have been one of taking advantage of the possibilities offered by the dominant economic, social, spatial and social system rather than of dependency and

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[16] This is a particular characteristic of any squatter settlement. Lomnitz notes that *"most shantytowns develop under an implied or actual threat of forcible eviction, although the landholdings may eventually become legalized through government action"*, Ibid, p.8.

marginality. More simply, the analysis of the cases suggests that squatter settlement should be understood as a functional part of urban growth in Latin America totally assimilated into the urban society rather than an anomaly. The empirical observation of the cases has shown so far that neither can squatters be seen as divested of real power or participation in the society (i.e. socially, politically, economically and spatially) nor can they be understood according to pre-conceived ideas about their communities and their settlements[17]. Thus even the idea of marginality as a transient stage in capitalist development in Latin America does not make any sense. It appears that squatter settlements have to be seen as stable phenomena with a very permanent look which is characteristic, normal and integrated to urban society in Latin America[18], yet it can not be explained by official and formally approved planning standards[19].

The next couple of questions focus on the migration process, the places of origin of the migrants living in the settlement, and the nature of mechanisms and links which they hold with the people in the place of

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[17] The first of these ideas was already discussed at length, that is the one of community neighbourhood. The second, the idea that these settlements are unplanned and organically developed and that they are residential zones of unregulated origin, was the subject of the previous chapter and it will be returned later in the final discussion chapter.

[18] They don't exist at the _margin_ of it.

[19] Economically, socially, politically and spatially speaking.

origin and of destination. The answers given to these questions seem to indicate the following:

Firstly, most of people interviewed are migrants coming mainly from the same geographical region of the country, namely the Northeast (11 out of 21 migrants in Timbau and 9 out of the 12 migrants in M.Dias)[20]. A few people, however, are already second generation settlers living and being born in the settlement (5 in Timbau and 3 in M.Dias). People seem to have migrated to Rio mainly in three situations: **a.** when they were between fifteen years and twenty years old and needed to live on their own (9 cases in Timbau and 6 cases in M.Dias), **b.** when they got married (6 cases in Timbau and none in M.Dias) and **c.** after having children (3 cases in Timbau and 7 cases in M.Dias). One respondent has mentioned that the head of the family came first, to get a job and find a place to live. It was, however, the presence of relatives and friends in the settlement that emerged as a major factor making migration possible.

Half the population of Timbau and 60% of M.Dias are, nevertheless, migrants from other regions of the country. The numbers seem to show that by far the largest population migrated from the Northeastern region of the country. This amounts to approximately

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[20] The Northeastern region of Brazil is the poorest area in the country. Its population migrates extensively to the Southwestern and South region, which is the industrialized part of the country, in search for jobs and better life conditions.

40% in both settlements (see **figs. 5.19** to ´**5.22**). Despite that it is surprising that, as seen in the previous chapter, ties with remote kin are very weak. Thus the idea that as members of a marginal urban stratum migrants hold a specially strong relationship with their kin living in their place of origin is completely mistaken[21] . In addition to that, the data has also shown that although people make use of kin living locally as well as neighbours, they do not depend on them as social resources for their livelihood. The relations are markedly those of a capitalist and urban nature rather than rural or marginal one. Squatter settlements are thus characterized by relations which are common to the society of which they are part, which is essentially urban rather than based on kinship mutual assistance networks as commonly suggested in the literature[22] .

Fig.5.19. Place of prior residence outside Rio - Timbau
Q.3.Place of prior residence - Outside Rio

Bar:	Element:	Count:	Percent:	
1	North	0	0	
2	Southeast	6	31.579	
3	Northeast	11	57.895	- Mode
4	Abroad	0	0	
5	Northeast+Abroad	1	5.263	
6	Southeast+Northeast	1	5.263	
Total		19	100	

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[21] Lomntiz, L, Ibid, p.38, suggests that the dominant mechanism in shantytowns *"involves an exchange of information and assistance by and through social networks that span the gap between the city and the countryside"*.

[22] Bonilla, F.,**"Rio's Favelas: The Rural slum within the city**, in Peasants and cities, edited by Mangin, W., Lomnitz,L., Ibid.

Fig.5.20. Place of prior residence outside Rio -Timbau
Q.3.Places of prior residence -   Outside Rio

- Southeast
- Northeast
- Northeast& Abroad
- Southeast & Northeast
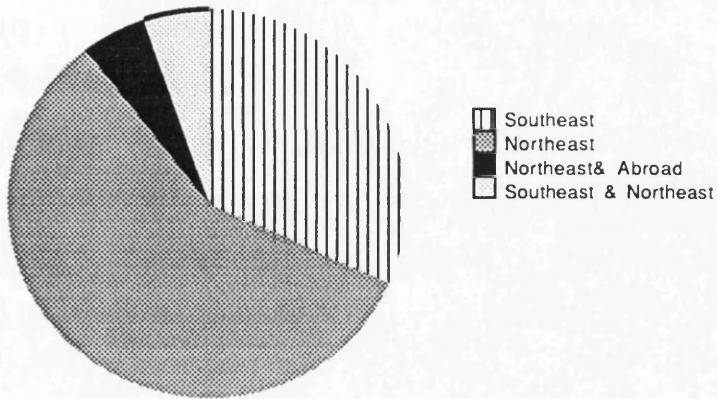
Fig.5.21.Place of prior residence outside Rio - M.Dias
Q.3. Places of prior residence - outside Rio

Bar:	Element:	Count:	Percent:	
1	North	0	0	
2	Southeast	2	8.333	
3	Northeast	10	41.667	
4	Abroad	0	0	
5	No	12	50	- Mode
Total		24	100	

Fig.5.22.Place of prior residence outside Rio - M.Dias
Q.3. Places of prior residence - Outside Rio

- Southeast
- North
- Northeast
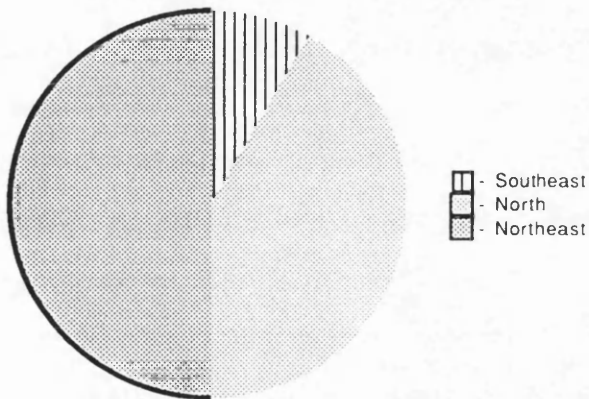
The literature on the subject has[23] stressed the importance of the presence in the city of networks of relatives and friends who are willing to extend assistance to potential migrants. The data confirms

[23] For example Lomnitz,L., Ibid and Butterworth, Ibid.

this finding. Thirteen residents in Timbau (50% of the answers) have pointed to the existence of kinship relations which have given assistance to them to move in as the most important single reason that has brought them to the settlement. In M.Dias this also stands for a significant number of cases (30%), though almost 60% of the respondents (thirteen cases) gave economic reasons for moving to the settlement which could be summarized by the search for better life conditions. In both settlements, nevertheless, roughly 60% of the respondents have claimed to have been informed about the settlement through relatives. Hence, in both settlements a significant small percentage of people have moved to the settlement through acquaintances. In Timbau, nonetheless, almost 35% of the respondents, against none in M.Dias, have received the information through neighbours (see **figs. 5.23** to **5.30**). But to a lesser extent, spatial proximity is also a major factor to allow people to be aware of a chance to move to the settlement. This is the case of many people who have, either by living or by working nearby, become aware that there was a shack or plot available in the settlement (6 cases in M.Dias and 8 in Timbau). [24]

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[24] Six out of the eight cases of people that have either lived or worked nearby the settlement are of people that have lived in the neighbour squatter settlements (e.g.Baixa, Nova Holanda and so on). This may be an indication that either these settlements were occupied earlier than Timbau or that Timbau the occupation of Timbau was more strongly controlled by for instance the Army than the other neighbour settlements.

Another additional reason given by people for moving to the settlement is to get married to a settler (4 cases in M.Dias and 6 in Timbau). Marriage appears to be itself one of the major reasons, if not the single most important factor, for local mobility. In fact, local marriage seems to be recurrent and the pattern appears to be that of unilocal residence with the wife moves to the husband's (or husband's family's) place (either plot or house)[25].

Secondly, there are just a few cases of migration where people have moved to another city first (only 2 out of the 21 cases of migration in Timbau and 1 out of the 12 cases in M.Dias), although in many cases they have lived some where else in Rio (13 out of the 21 cases of migration in Timbau and 7 out of 12 in M.Dias).

Fig.5.23. Reasons given for moving to Timbau

Q.5.Reasons for moving to the settlement

Bar:	Element:	Count:	Percent:	
1	Through Kinship	13	50	-Mode
2	Imp.life condition	6	23.077	
3	Through Acquit.	2	7.692	
4	Through Army/Notab	4	15.385	
5	Imp.life con+Acquit.	1	3.846	
Total		26	100	

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[25] In five cases in Timbau has the wife moved to the husband or husband's family plot against only one case where the husband has moved to the wife's place, yet both were living in the settlement prior to the marriage. Also five M.Dias' interviewed have said to be the wife whom moved to the husband place, yet there is no sufficient data to identify how many of these cases were of local marriage.

Fig.5.24. Reasons given for moving to Timbau
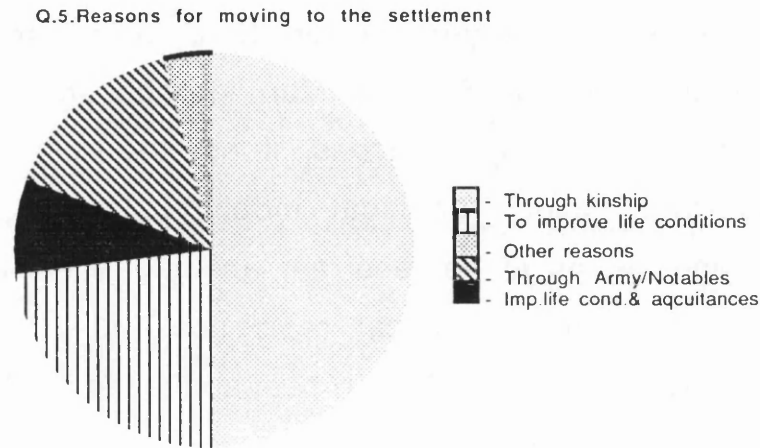
Q.5.Reasons for moving to the settlement

- Through kinship
- To improve life conditions
- Other reasons
- Through Army/Notables
- Imp.life cond.& aqcuitances

Fig.5.24.Reasons given for moving to M.Dias

Q.5.Reasons for moving to the settlement

Bar:	Element:	Count:	Percent:	
1	Through kinship	7	31.818	
2	Better life conditions	13	59.091	- Mode
3	Through acquitances	1	4.545	
4	Through notable	1	4.545	
Total		22	100	

Fig.5.25.Reasons given for moving to M.Dias

Q.5.Reasons for moving to the settlement

- Through Kinship
- To improve life conditions
- Through Notables
- Through Friends
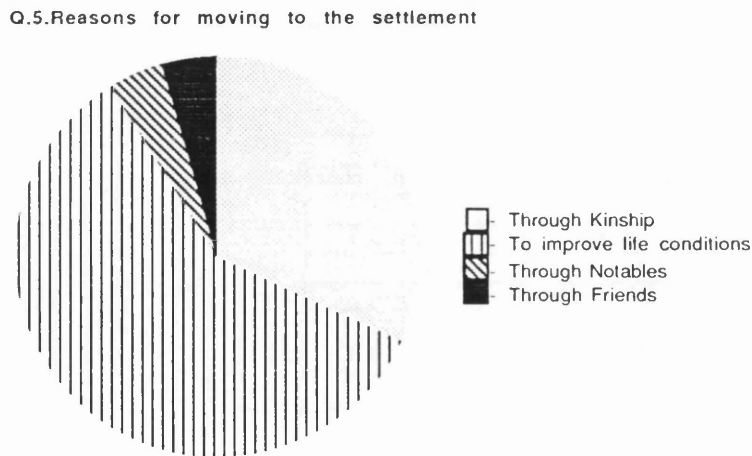
The data above is not presented with the same categories for both settlements because the reasons given in each settlement differ.

Fig.5.27.Person who has informed about Timbau

Q.6.Person who has informed about the settlement

Bar:	Element:	Count:	Percent:	
1	Relative	18	62.069	-Mode
2	Acquitance/Friend	1	3.448	
3	Neighbour	10	34.483	
Total		29	100	

Fig.5.28.Person who has informed about Timbau

Q.6.Person who has told about the settlement

- Relatives
- Aquitances
- Neighbours & Friends
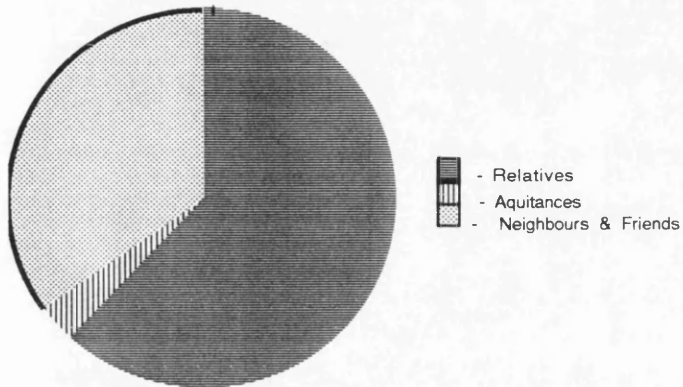
Fig.5.29.Person who has informed about M.Dias

Q.6.Person who has informed about the settlement

Bar:	Element:	Count:	Percent:	
1	Relative	13	56.522	- Mode
2	Acquitance/Friend	3	13.043	
3	Neighbour	0	0	
4	Notable	1	4.348	
5	Other	6	26.087	
Total		23	100	

Fig.5.30.Person who has informed about M.Dias

Q.6.Person who has informed about the settlement

- Relatives
- Acquitances
- Notables
- Other
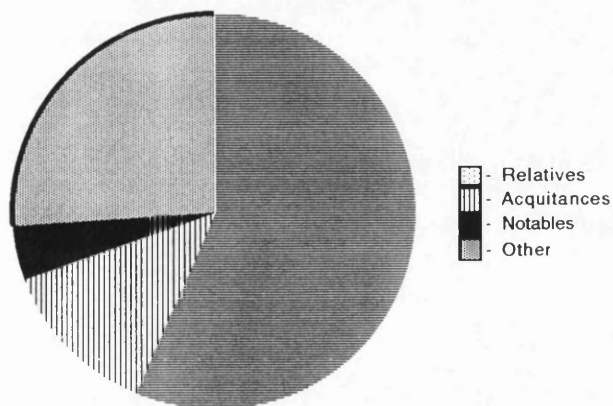
The process of migration could be summarized in three main phases, which also correspond to three main different spatial locations, namely: **1.** Origin - normally urban areas but small or medium size cities, **2.** destination/city of attraction - large cities such as Rio, **3.** residence in the city : a place on the outskirts of the city and suburbs where the migrants may live for long periods of time such as Timbau and M. Dias.

In both, Marcílio Dias and Timbau, however, a significant proportion of people have migrated straight from the place of origin to the settlement (8 cases out of 21 in Timbau against 5 out of 12 in M.Dias). In the case of M.Dias, unlike Timbau, nevertheless, some people have left the settlement and then returned later to it (2 cases against none in Timbau). So, in the scheme proposed below a fourth stage with a fourth location could be added. This may indicate that the M.Dias' population might have a relative higher amount of intra-city mobility than those of Timbau.

The migration process seems to emerge, however, to be motivated frequently by the possibility of economic mobility and of improvement of standards of life (L.Lomnitz, 1977, pp. 6&7; Mangalman & Schwarzweller, 1968; pp. 6 & 7, and others). Two respondents in Timbau and one in M.Dias have,

supplemented this view by pointing out at' " *the illusion"*, or as defined by another interviewed," *the dream"* which the city or the idealized new life in the city represents.

To conclude, it can be said that there seem to be three main groups of people in both settlements : the ones which were born in the settlement or have lived since their childhood there, the ones which have migrated straight to the settlement, and the last group which have lived elsewhere in the city and have moved to the settlement because that represented a better option (or a more appropriate option) in the face of their life conditions .

In the interviews, three main positive reasons were given for moving to the settlement which can be understood as an improvement of life conditions, namely: 1. better living conditions which can be found in expressions such as *"the settlement is healthier and cleaner"*; 2. proximity to the city centre and to centres of employment and finally, 3. the possibility of not having to pay rent. As an interviewee from MD explained: *"I've sold my house in Santa Cruz because my husband worked in the city centre and the bus was too expensive"*.

The last part of this section deals with the devices, mechanisms and type of help people have used to obtain a place in the settlements. In both

settlements, Timbau and Marcílio Dias, it seems that a considerable number of respondents became aware of the availability of a plot or a house in the settlement through social or kin relations (see **figs. 5.27** to **5.30**). Yet, during the later stages (maybe from mid seventies onwards) in Timbau there may have been a kind of commercial market of plots, or as two of the interviewed have put it: *"Everybody knew there were plots available here"* or *" I've asked for a plot from an Italian who used to look after the area".*

References to the use of vertical ties in both settlements, however, are not rare to guarantee or to chose a place in the settlement (10 in Timbau and 7 in M.Dias).[26] Two of Timbau's respondents exemplify in the interviews how these kind of connections are mobilized and show their effectiveness: *"Getulio Vargas [27] gave me this plot. I wrote a letter to him and went to visit him. People used to comment that the area here was of the government so I went to talk with the President. He asked me what I wanted, and I've explained him that I've came from Minas and have found this plot so I asked him permission to stay with my shack there. He said that I could stay" ,*

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[26] The term vertical is used here to define a relationship where the link between the people involved is not of hierarchy but rather of cooperation. In this sense, the reference mentioned above are represented by several authorities from the local one (the RA' president or board of directors) to the extreme of including the Brazilian President.

[27] Getulio Vargas was the Brazilian President from 1930 to 1945 and from 50 to 54.

another respondent says " *I went to talk with the governor because we were threatened with removal and he promised to help us*".

The points analysed above are in a way related to the life histories and to the narrative of individual experiences of the process of moving into the settlement.

The analysis of the data so far presented here allows for some general conclusions. First, it seems that the data confirms the findings of several authors in the field of urban migration (Cornelia, 1975; Cardona and Simmons, 1976; Lomnitz, 1977) that once migrants have established a foothold in the city they promote the migration of other remaining relatives. In general, it is through the help and assistance of a relative already settled in the settlement (and established in the city) that the migrant finds a place of residence for himself/herself and eventually later brings also others relatives. Thus, the data seems to confirm the findings of other migration studies that " the kinship network is rather effective in taking care of the basic needs of the migrants when they arrive" (Balán, Browing, and Jelin, 1973, p.160). And, that it seems extremely unlikely for a migrant just arriving in the city to find a place by himself/herself in the settlement without the benefit of assistance from a relative.

Secondly, although the maintenance of a social network between the city and the place of migration is demonstrated, it is significant that there are a number of cases (at least 40% of the cases) in which, once the migrant is already established in the city, this contact seems to be very weak given its infrequency.

Thirdly, contrary to Ward's findings[28] in the study of three squatter settlements in Mexico City where the settlers had moved, on the average, five times prior to the period of the survey, in the cases analysed here, there is a surprisingly low degree of residential mobility within the settlements (**figs. 5.15** to **5.18**). Added to this, the average time in the settlement is also very high. Both data are quite striking as long as in both squatter settlements residents did not have a regular urban and legal situation. In such conditions one would be bound to think, instead, of these kind of settlements as transitional places.

Finally, the fact that very low percentage of people have, as a prior place of residence, lived in the South Zone of Rio, which is also the richest area of the city, is a clear indication of the segregative spatial pattern which structures the city.

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[28] Ward, P., **The squatter settlement or slum or housing solution: Evidence from Mexico City**, Land Economics, nº 52, pp. 330-345.

The current section has shown that migration and mobility and residence patterns in both settlements can not easily be classified as marginal or rural. The next section will, nevertheless, deal more specifically with the socio-psychological factors of individuals living in the settlement. The section will, therefore, be mainly centred around the description of individual motivations, concepts, aspirations and notions to check whether or not they could be regarded as marginal or peripheral to the dominant urban culture.

Ideals, Aspirations and Conceptions

The first issue to be examined in this section is in relation to the motivations people have for choosing the locations of their dwellings and those places they have regarded as ideal. The reasons stated by the respondents to regard a place as ideal or well situated are several: commerce, transport, no movement, and conversely movement, to have access to cars, to be a street rather than an alley, to be safe for children to play, to be in a good neighbourhood, to be well ventilated, to be outside as opposed to inside or low as opposed to up on the hill.

The preference for streets instead of alleys seem to be predominant (see **figs. 5.31** and **5.32**) and as some of the respondents say: *"If I could, I would*

chose to place my house facing the street, and although my house opens into a lane, the address I use is the one of the main street" or *"Streets are better than alleys or lanes because alleys are too messy, too narrow and the houses are very close from each other..."* or *"alleys are too busy, there are too many children"* or *"you open your door and you are already in someone else's house".* In fact the location of the house on a street is also taken as a factor in increasing its value as another of those interviewed said: *"If the house is located where there is access to cars its value increases".* Despite that, two of Timbau's respondents have said that there is no difference between alleys and streets and another two have mentioned to prefer alleys or lanes.

In Timbau there seems to be a general agreement regarding the quarry as the best place of the settlement. This area is seen by the residents as more organized, more ordered and with better houses. This more ordered character is in part believed by some of the residents to be consequence of a more gradual process of occupation.

In Marcílio Dias people also seem to agree in relation to which is the best place, namely Av. Lobo Junior. This street is also the main access road to the settlement. Sometimes the reasons for this preference can be striking as the answer of one respondent reveals : " *The best place for me is Lobo*

Junior because there aren't neighbours opposite to me and the street is wide."

Fig.5.31. Place regarded as ideal in Timbau

Q.8.a.Ideal place

Bar:	Element:	Count:	Percent:	
1	Their Place	11	37.931	- Mode
2	Capivari	3	10.345	
3	Outside	8	27.586	
4	Street	4	13.793	
5	Praia de Inhauma	2	6.897	
6	N.Jerusalem+Streets	1	3.448	
Total		29	100	

Q.8.a.Ideal place

- Their place
- Capivari
- Outside
- Street
- Pr.Inhauma
- N.Jerusalem
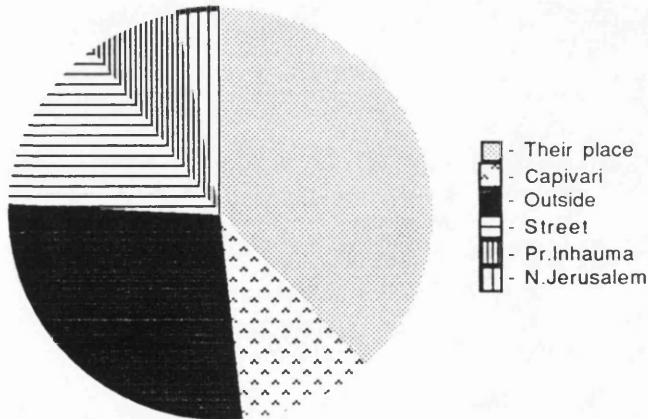
The categories are: Their place
Capivari street
Outside the settlement
Their street
Praia de Inhauma (Inhauma beach)
N. Jerusalem street.

See map with streets named in the back pocket for their location.

Fig.5.32. Place regarded as ideal in M.Dias

Q.8.a.Ideal Place

Bar:	Element:	Count:	Percent:	
1	Their place	10	41.667	- Mode
2	Lobo Jr.	8	33.333	
3	E.Salles	1	4.167	
4	Outside the sett.	2	8.333	
5	D.Oliveira	2	8.333	
6	E.Salles+Lobo.Jr	1	4.167	
Total		24	100	

Q.8.a.Ideal Place

- Their Place
- Lobo Jr.
- E.Salles
- Outside the settlement
- D.Oliveira
- E.Salles
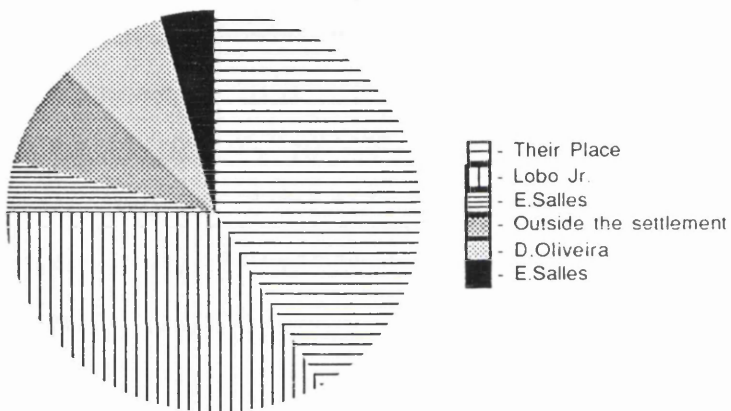
The categories are: Their place
                        Lobo Jr. Av.
                        D. Eugenio Salles street
                        Outside the settlement
                        Dalva de Oliveira street
                        D. Eugenio Salles street and Lobo Jr. Av.

See map with streets named on the back pocket for their location.

According to the results of the survey roughly as many as 40% of the respondents prefer their own place as the best locality in the settlements. A significant number of Timbau's interviewees, corresponding to almost 30%, nonetheless, see the outside of the settlement as the place they would like to live if they could. Since the settlements

integrate at the edge this is indicating an aspiration towards globality and integration.

Generally, however, in both settlements people have favoured the more important streets, rather than alleys or secondary roads, as the best place. In M.Dias, the main road of the settlement alone accounts for around 35% of the answers, and in Timbau, Capivari street stands for 10% of the answers regarding them as the ideal place. The reasons given by the respondents for that are several. The existence of better urban condition was nevertheless pinpointed as the most important single reason for the choice, representing 60% of the answers in Timbau and 33% in M.Dias. It is striking, nevertheless, that in M.Dias as many as 40% of the respondents have said that quietude is the reason for the choice, while in Timbau this accounts just for 18% of the respondents. On the other hand, in Timbau 40% of the respondents have given as reason for the choice the fact that the place is a street rather than an alley, against only roughly 8% of M.Dias respondents (see **figs. 5.33** and **5.34**).

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Fig.5.33. Reasons given to the ideal place's choice

Timbau

Q.8.b.Reasons

Bar:	Element:	Count:	Percent:	
1	Quiet	2	7.407	
2	Busy	0	0	
3	Better Urban Conditions	2	7.407	
4	Others	6	22.222	
5	StreetsXAlleys	1	3.704	
6	Urb.Cond.+StreetsxAlleys	7	25.926	- Mode
7	Urb.Cond.+Others	3	11.111	
8	Quiet+StreetsXAlleys	1	3.704	
9	Busy+Urb.Conditiond	1	3.704	
10	Quiet+Urb.Conditions	1	3.704	
11	Quiet+Urb.Cond+StsxAlls	1	3.704	
12	StreetsxAlleys+Others	1	3.704	
13	Urb.Cond+StsxAlsl+Others	1	3.704	
Total		28	100	

Fig.5.34. reasons given for the ideal place's choice

M.Dias

Bar:	Element:	Count:	Percent:	
1	Quite	4	16.667	
2	Busy	0	0	
3	+Urb.Conditions	5	20.833	
4	Others	3	12.5	
5	St.XAlleys	0	0	
6	Quite+Urb.Conditions	1	4.167	
7	Quite+Others	6	25	- Mode
8	Busy+Urb.Conditions	1	4.167	
9	StxAll+Others	2	8.333	
10	Urb.Cond+Others	1	4.167	
11	Busy+Others	1	4.167	
Total		24	100	

Nevertheless, in contrast to Timbau, alleys or lanes and streets are seen at the same time as both quiet and busy in terms of movement, and this is regarded by the residents either as an advantage or a disadvantage according to the circumstances. In fact, there seems not to be a consensus in terms of which are better, streets or alleys, and movement or

no movement (of cars and pedestrians). A comparison between two interviews for example, illustrates the complexity of the situation: *"The best place is Lobo Junior because there aren't so many people in the street, there isn't so much gossip. There everybody stays at home, here (in the alley) everybody stays outside"* and *" This is the best place (an alley) because it is quiet and the neighbourhood is nice".* In addition to that as many as nine respondents have said that they prefer alleys, as these two sets of answers demonstrate: *"I like the alley because it is hidden away and safer"* or *"It is very quiet and safe, I know all my neighbours, the clothes-line is left outside and there is no problem".*

A few people, however, seem to regard proximity to the outside of the settlements in both cases as an advantage[29] or, in other terms, to see the lower parts and peripheral roads as the best ones, as the following paragraph suggests: *"This is the best place because it is lower, it is not up on the hill, there is easy access to everything, the street doesn't look like a favela and the University is nearby".*

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[29] Six Timbau's settlers have said that they would like to live nearby the boundary of the settlement and three others actually would like to leave the settlement. In M.Dias, nevertheless, four respondents wished to move to the edges of the settlement and four more mentioned that they would like to move from the settlement.

The metaphors used such as *"the asphalt"* speak by themselves, they show a strong externally oriented and globally-oriented behaviour which leads to a valorization of the boundary areas. The same kind of mechanism of selection can be also found in the following respondent's sentence: *"I like this place (Caetes Sq.) because is close to the exit"*, or in one from a Marcílio Dias' respondent: *"The best place is Lobo Junior because it is closer to the exit"*.

These concepts and ideals are clearly impregnated with urban values. They show an obvious aspiration for normal urban services and for better economic conditions. They express a common desire to improve their present situation by raising their living standards. Regarding the aspirations the settlers hold in relation to their dwellings it seems that priority is given to both the extension of the house and the improvement of the finishes. These extensions are either new rooms or new floors to accommodate more comfortably the family and the extended family or for the establishment of a small shop. Changes, however, normally correspond to an improvement of the present conditions rather than a structural change in those conditions which could be represented by, for example, a move out of the settlement or a move to a different dwelling.

The influence and role of the Timbau's RA in controlling these changes is also made clear by the

respondents: *"If I had money I would ask the 'RA to authorize me to build a wall"*. Four of these interviewed in Timbau have said that they wouldn't like to change anything in their houses. In Marcílio Dias, by contrast, twenty two people have said they would like to change their houses, either by the subdivision of existing rooms, by changing the arrangement of the actual plan or by an increase in the number of rooms. The current feeling is, however, to remain in the area but to improve it.

The **figs. 5.35** and **5.36** refer to the residents' specific aspirations in terms of changes in the dwellings, or in other words, the ideal changes. Through the analysis of the data shown in these tables it seems that, in both settlements, most of the respondents wish, above all, to change the material of the house (50% in Timbau and 65% in M.Dias). Yet, though in Timbau, twelve out of twenty eight would like to build another floor, none in M.Dias wished to do so. Also, a significant number of respondents would like to increase the number of rooms (28% in Timbau and 43% in M.Dias). Only one respondent, however, has said he/she would aspire to build a wall. In M.Dias, unlike Timbau where there was only one case, as many as seven out of twenty three wished to change the plan. Finally, no one out of those interviewed has mentioned that he/she would like to change the façade and only in one case has the

respondent has said that he/she had no aspiration to change anything.

Finally, the following points can be concluded from the analysis of the last set of tables in this section. Firstly, a higher number of people in M.Dias if compared with Timbau, wish to extend their houses, either through the construction of additional floors or more rooms. This might be an indication that M.Dias, more than Timbau, is still experiencing an intense process of change and growth.

Secondly, it is striking that most settlers aspire, above all, to change the finishes of their houses. This may be contrary to what one would expect from this type of settlement, but it might be an indication of the degree of consolidation, permanence and urbanity which the settlements possess.

Thirdly, the fact that Timbau's respondents have had more problems with neighbours when refurbishing their houses, may be a result of plot's boundaries not being well defined.

Fig. 5.35. Dwelling's changes aspiration in Timbau

: Q.11.Ideal Change

Bar:	Element:	Count:	Percent:	
1	Material	5	17.857	
2	No of rooms	4	14.286	
3	Plan	1	3.571	
4	Facade	0	0	
5	No change	4	14.286	
6	Build a wall	0	0	
7	No of floors	3	10.714	
8	Mat+No floors	7	25	
9	No rooms+No floors	1	3.571	- Mode
10	Mat+No rooms	2	7.143	
11	No rooms+Wall+No floors	1	3.571	
Total		28	100	

Q.11.Ideal Changes

- Material
- No of rooms
- Plan
- No change
- No of floors
- Material+No of rooms
- No rooms+ No of floors
- Material+No of floors
- No rooms+No of floors+wall
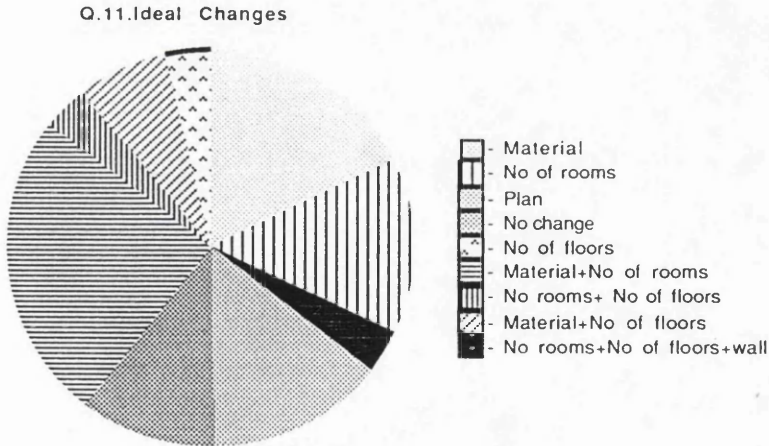
Fig.5.36.Dwelling's changes aspiration in M.Dias

Q.11.Ideal change

Bar:	Element:	Count:	Percent:	
1	Material	6	26.087	- Mode
2	No of rooms	3	13.043	
3	Plan	1	4.348	
4	Facade	0	0	
5	No change	1	4.348	
6	Build a wall	0	0	
7	Mat+no of rooms	5	21.739	
8	Mat+Plan	2	8.696	
9	Mat+walls	1	4.348	
10	Mat+no.rooms+plan	1	4.348	
11	No.rooms+plan	3	13.043	
Total		23	100	

Q.11.Ideal change

- Material
- No of rooms
- Plan
- No change
- Mat+No rooms
- Mat+Plans
- Mat+Walls
- Mat+No Floors
- No.rooms+No Floors
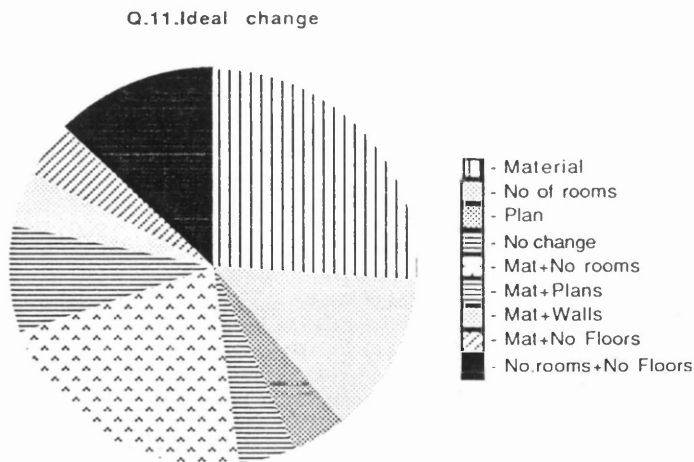
The problem seems to increase in complexity, however, when turning to the level of people's perceptions and conceptions of spatial concepts. The

question dealing with this subject was asked in the questionnaire with the aim of elucidating people's perception and understanding of their house, their next-door neighbours, their street, the local squares, their part of the settlement (if any) and the settlement itself. The respondents were also asked to mark on a map what would they consider to be the limits of these domains.

The answers which emerged from this enquiry seem to indicate some general features. First, not one of the respondents was able to use a map to express the conceptions they have about these domains spatially. Second, as mentioned before in this thesis, very few people[30] were able to make sense of the concept of a discrete well defined sub-area within both settlements which could constitute 'their part of the settlement', or as one respondent has put it: *"there is no sub-areas, there is no way to separate, everything is Timbau"* or *" the estate is a whole"*. In fact in the few cases where people have mentioned a sub-area (6 in Timbau and 11 in M.Dias) they seem to refer mainly to a spatially discrete domain with

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[30] In Timbau no one was able to make sense of the concept without using as a reference a geographical feature (3 cases) or the legality of the land ownership (1 case) or the street or of height manifested as follows: "I live in the lower-medium part of Timbau" (2 cases). In M.Dias, though, five respondents have mentioned the fishermen's area when required to define their neighbourhood and they were able to define precisely the boundaries of this area. In addition to that, six other interviewed have also made allusion to landmarks in relation to cardinal points such as "to the south of the shop" or to the distance they are from the boundaries.

peculiar geographical features such as the lower part of the Inhauma beach opposed to the upper part of the quarry or a very well defined enclosed row of houses often with no correspondence to a discrete social grouping.

In fact the concept of neighbourhood was defined by one respondent in M.Dias and another two in Timbau as *"the people we know best"*, which in turn, does not corresponds to a well defined, closed social group within a discrete physical area[31]. In the case of Marcílio Dias, where there are no obvious geographical differences, where the grid and the architecture are more uniform, there seems not to be any identifiable sub-area at all. The distinction people tend to make, instead, is with reference to the distance they are from the boundaries of the settlement which give rise to expressions such as *"in the middle"*, *"outside"* and *"inside"*.

"Squares" in Timbau are identified with their use and thus the squares are said to be places *"where children can play, to have parties or to play football"*. In other words, squares are places for leisure and where social events take place. Yet, the respondents recognize that some parts of the settlement are called a square by virtue of their spatial characteristics of being wider. Ten interviewed in Timbau, though, do not consider those

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[31] or an inchoate neighbourhood.

spaces as squares because they are not used as such: *"There is no square because there is no leisure area, they call it square just because it is wide"*. Additionally, twenty out of twenty three respondents also in Timbau have mentioned just the square which is closer to their homes although there are three squares in the settlement: *"Square, just Bangu, there isn't any other"*.

In Marcílio Dias seventeen out of twenty out respondents have said that there are no squares in the settlement, apart of the ones which exist just *"as plans"*[32], and the only area recognized as a leisure place, close to what could be considered as a square, was the football field.

Plazas are seen nevertheless as a different urban category, they are wide spaces which, as an interviewed pointed out, *"don't have benches, don't have plants, don't have anything"* or*" plazas are empty places"*.

Such a clarity in terms of understanding and explaining urban spatial concepts are clearly indicative of the settlers strong familiarity with key aspects of urban culture. Above all, they show their ability not only in understanding them but also in manipulating them in their favour.

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[32] Two respondents mentioned the existence of plans or projects for a square.

The house, on the other hand, is often defined' in the following form by the respondents: *"it goes up to the gate or to the wall"*. The wall is seen as the boundary between the house and the street[33]. Streets, in opposition to the house, are seen as spaces which people are not entitled to use for their private benefit: *"Once, someone put a stall to sell things in the street and we asked him to move away"* or *" Our house goes up to the wall. We are not entitled to build beyond that because it is the street"* or *"things have to be done at home"* or *"streets are public spaces"*. Five cases in Timbau are exceptions to this rule since the respondents consider the pavement in front of her house as part of it. This shows that squatters do understand and dominate not only key spatial urban concepts, as mentioned above, but also that are perfectly aware of the rules of living in an urban society. It is very difficult to talk about the streets without mentioning the houses because most respondents when referring to limits of their houses, use the street as the reference. The

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[33] Fourteen Timbau's respondents made reference to the wall to define the limits of the house, three others mentioned the gate, one referred to the facade and another one to the veranda. In M.Dias, on the other hand, nineteen named the wall, two others referred to the wall and gate, one used the footpath to define the house's boundary, and another one defined the limits as follows: *"The house occupies the whole plot so it is the building which defines the house and beyond that there is the public footpath."* One resident remarked, nevertheless, the difficulties posed by not having a wall to define the house: *"The limit is normally given by the wall. The limits of my house extends 1.5m beyond the verandah, but because I don't have a wall no one respects it, they enter in my plot and knock my window."*

respondents have also alluded to notions of 'private and public in connection to the delimiting of the house domain.

In the case studies here, however, definitions which place streets and houses in a relation of opposition (A. Vogel, 1985, p.19; Da Matta, 1983, p.70 and C.Santos et al, 1983, p.150) are not fully applicable. In some urban configurations which receive the name of alleys in Timbau, for example, and which are defined as such by their residents, access are controlled by gates at the entrances. Thus the definition of streets as being public territories with no controlled access, in opposition to houses as private territories with controlled access (as suggested by the authors mentioned previously), cannot be used for this case where the space of the street or of the alley is open (and outside the domain of the house) but enclosed by the gates. Or in another example where some groups of houses, occupied by kin, in what originally could have been a single plot, there is no easily definable boundary between public and private because the access is not controlled, and activities take place in open spaces which have nevertheless a private character (washing-up, family conversation, and so on). One of these cases is, in fact, an access road from outside to Timbau. Otherwise, in Marcílio Dias, as observed by one of the respondents: "In Lobo Junior just one side of the

street has got houses, the opposite side there' is the Navy blank wall", so here the street is defined by only one row of houses.[34]

The limits of the streets are normally defined by street naming and people seem to perceive their street as a whole entity without considering the length, changes of direction or width as a boundary or barrier : " *the street is the whole, and follows after the curve"*. Alleys, nevertheless, are seen as a different urban category from streets because they are *"narrower and shorter"*. In fact, the width of the urban configuration seems to be of key importance for their definition. Respondents appear to follow a scale where squares are the widest spaces, followed by the plazas, then by the streets and last by the alleys.

The difference between lanes and alleys, for both Timbau and M.Dias' residents, is that normally lanes connect two streets whereas alleys are cul-de-sac. Furthermore, streets, as distinct from lanes and alleys, have access to cars and trucks (the garbage truck and the gas delivery truck). The movement of strangers is also mentioned by three respondents in Timbau and in M.Dias as a way of differentiating between streets and lanes or alleys :" *I wouldn't*

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[34] It could be said that in syntatic terms just one side of the street is unconstituted because it is remote from building entrances. Thus in the case of this interviewed streets are related to the concept of being unconstituted in one of its sides.

mind if a stranger stopped or stayed in front' of my house in the street but I would say that a stranger wouldn't be allowed to pass here in this lane which gives access to these houses here including mine". One respondent, however, has given an interesting definition of a lane: *" Lanes are streets which are named after the name of a resident who has been living there for long time".*

In Marcílio Dias, nineteen respondents have also mentioned another spatial category which are *"the main streets".* The following quotations from the interviews are illuminating : *" For me this is the main streets because it traverses the Estate splitting it in half. It has a lot of movement and even buses pass here".* Hence quite striking definitions of streets have arisen: *"Streets are the main roads and normally have got houses on just one side. For example, in Lobo Junior St. only one side has got houses. The other side is the blank wall of the navy"* or *"in the street that leads to the favela (21 de Abril) just one side has got houses facing onto it because on the other side the houses are facing the lanes and have their gable ends to the streets with no entrances or openings onto it".*

Lanes are, on the other hand, seen as *"disconnected from the main streets"* or *" as a group of 20 houses aligned in a space which is more enclosed than a*

street" or "Some people say that my street is a main street but I don't agree because it is too hidden away to be a main street". In Marcílio Dias, added to the concepts presented above, there is the concept of openness and enclosure to differentiate respectively streets and lanes.

Avenues, following the same line of reasoning, are defined by M.Dias' residents as streets which are "longer, wider and which support heavier traffic". The term avenue is generally acknowledged to have been reserved for main through routes. Yet, paradoxically, two of these interviewed referred to them as follows: " Lobo Junior is an Avenue maybe because there is no movement of cars" and "There are two types of Avenues, one which has a lot of traffic, and another, as one there is here in the settlement, which is quiet."

A new urban concept, that of a block, also emerged in Marcílio Dias when the respondents were trying to define lanes. This concept was explained by one of these interviewed as follows: " A lane is part of two blocks and a block is two neighbouring rows of houses arranged in such a way that the sides have no front" or" a block is both sides of an lane" or" a block is the row of houses that my house is part plus the ones which back onto this row". There are, nevertheless, a few cases that demonstrate the

difficulty in grasping such a concept and éven a misunderstanding of the concept: *"I don't know what a block is. I've just heard people talking about it so I've memorized mine in order to know my address"* and *" two attached rows of houses are not in the same block"*.

The concept of next-door neighbour, according to the questionnaire's answers, appears to be a social idea because it is related to the notion of a person with whom the respondents have a close relationship (3 cases in Timbau and 7 in M.Dias). In addition to that, it is seldom assigned to someone living not more than three doors away from the respondent (13 cases in Timbau and 17 in M.Dias).

In trying to find out about what people would regard to be the limits or boundaries of the settlements (if any), some main points were observed. Firstly, there seems to be an agreement in both places in relation to the existence of boundaries (or limits) which define the inside and the outside of the settlement (roughly 80% in both settlements). Secondly, to a great extent there appears to be an agreement about the streets which define these boundaries in both settlements (22 out of 29 in Timbau and 18 out of 22 in M.Dias). Yet, in some Timbau cases, the

boundary is not included as part of the settlement.[35.] Six respondents in Timbau have identified the settlement in terms of its geographically distinctive feature as well : *"Timbau is the hill"*.

Both settlements are to a degree physically self-contained which in turn allows them to be spatially discrete and makes the identification of limits or boundaries easier [36]. Timbau is planted in a flat area, being the only hilly part. Marcílio Dias is clustered by institutional and industrial buildings, geographical features and the squatter settlement from where people came originally. Four M.Dias residents have defined the settlement as *"a square"* surrounded by these boundaries.

The existence of neighbourhood and "neighbourhood consciousness", as understood in the literature[37] analysed in the light of the data collected can also be

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[35] Timbau's respondents have included the boundaries as part of the settlement in eighteen out of twenty two cases. On the other hand, in M.Dias all the eighteen respondents have included the boundaries. In one case, nevertheless, the interviewed has defined the boundary as follows: *"The opposite side of Alabama St. is not Timbau because if a resident build something the municipality would interfere"*.

[36] This self-containment may help explaining how in the 50's the military people managed to fence Timbau and attempted to control the access to the settlement, as one respondent suggests: *"There was a fence which separated the Baixa (the neighbour settlement) from the military area (Timbau), this fence used to demarcate the military area which Timbau was part"*.

[37] The neighbourhood unit is defined by Mumford as being *"social and architectural definable units, comprised by the places where a group socially bounded build their everyday life around them"* (Mumford, L, in Town Planning Review, vol. 24, January 1954, pp.114-115).

denied. Most of the people interviewed do not seem either to hold the kind of neighbourliness, or the sense of belonging together as a sentiment which is synonymous with great (i.e. as people capable of great cooperation) mentioned in the literature. On the contrary, the impression left from most of the respondents is that: firstly, there is not a consensus about the limits of an area in which people are more socially and spatially aware of events and of each other; and secondly, both socially and geographically, the reach of this awareness is quite reduced, being socially represented by the next-door neighbour relationship, and spatially, restricted to the street where they live[38]. In fact, many of the respondents have stressed the existence of an exogenous social network or a local one but of kin nature, rather than an internal local cohesion based on a social unity of the type suggested in the neighbourhood definition.

People living in Timbau tend to distinguish themselves from those living in the neighbouring squatter settlement named Baixa do Sapateiro. Whilst still on the subject of the existence of internal social differences materialized spatially, an interesting observation can be quoted which was made by a Timbau resident, mentioning his father, Agamenon, who is one of the local leaders : *"my father does not accept, but I believe that people*

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[38] see Chapter III of this thesis for a fully discussion of this subject.

considers Timbau a " Morro" (meaning hill in Portuguese) *instead of a* "favela" (squatter settlement), *a Baixa do Sapateiro as a Baixa* (meaning low area in Portuguese), *and the other areas* (referring to the neighbouring settlements) *as 'favelas'. There is a distinction".* Similar incident also happened during the field work in Marcílio Dias and a local bar owner commented with two girls: " *you are so beautiful, you shouldn't live in the favela* (referring to the neighbour squatter settlement from where the residents of the Estate were removed) , *you should ask your father to buy a house here. This* (the Estate) *is a developed place, organized; over there* (in the favela) *is dirty and messy".*

So far this section has dealt with the existence and definition of several spatial configurations and boundaries as defined by the settlers in different forms. In a sense, the data suggests that these spatial differences clearly embody social ideas and concepts which are fundamentally an integral part of the city's urban system rather than on its margins. The network analysis undertaken in the last chapter has also shown that the communities analysed are highly politicized, not only in terms of the way they manage and structure their built environment but

also in terms of their political participation 'in the decision making process of governmental institutions external to the settlement, at the city level itself.

It appears to be the case, though, that in addition there is also a political dimension expressed through different forms of control of the spatial configuration and with different agents participating in this control according to the typology of the street, as it was already suggested in Chapter IV of this thesis.

To clarify this point, the distinction used elsewhere[39] between roughly a system of main streets which are of vehicular circulation and which connects the area with the super-grid and a large number of alleys forming an internal net off the main roads, exclusive for pedestrian circulation, will be used. The field observation and the data from the questionnaire suggests that in Timbau's system of main streets there is a much higher control of the alignments and of the process of growth than in the alleys [40]. The alleys seems to be territories where the decisions were mainly taken by their residents, and when the RA wanted to interfere it was already too late.

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[39] This distinction was first made in Chapter III of this thesis.

[40] In Chapter II this process was thoroughly described, and it was put forward that in Timbau the RA in connection with the Army had a leading role in controlling the process of spatial growth.

To conclude this section it could be said that these squatter settlements at least have shown themselves in all fundamental aspects, normal parts of urban growth in Latin American cities. Their residents follow rules, notions, concepts and mechanisms which are common to the society of which they are members[41]. The only single difference seems thus expressed by a non-correspondence between the formal frames of reference defined by the existing set of ideas about those populations and the actual reality which their lives and places represent. More simply, the lack of adequate concepts to explain the phenomenon represented by squatter settlements[42] seem to have generated a series of superstitions and over-simplifications which in turn have originated theories and myths (which are now taken for granted in any planning policy) such as the ones of marginality and rurality.

Some points for further discussion

This chapter was the third of a set of linked chapters which tried to understand and explain the underlying real social, spatial and political order existing in two squatter settlements. It has examined how they and their residents behave in actual life and what is the possible logic behind it. On the way, it has also shown how many influential ideas taken for granted

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[41] They are neither exploited nor marginals.

[42] and their political, social, economical and spatial working.

in planning have little to do with the actual' urban environments they are used to explain[43].

The next and last chapter of this thesis will be focused on the findings of this thesis to discuss the role urbanism and planning, as a fundamental social, spatial and political form of action, could have in the direction of future housing developments.

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[43] Jacobs, J., **The death and life of Great American cities**, Penguin Books, 1984, p.16, notes that "*Cities are an immense laboratory of trial and error, failure an success, in city building and city design. This is the laboratory in which city planning should have been learning and forming and testing its theories. Instead the practitioners and teachers of this discipline (if such it can be called) have ignored the study of success and failure in real life, have been incurious about the reasons for unexpected success, and are guided instead by principles derived from the behaviour and appearance of towns, suburbs, tuberculosis sanatoria, fairs, and imaginary dream cities – from anything but cities themselves'.*

CHAPTER VI - <u>Final discussions</u>

Abstract

The purpose of this chapter is to give a very brief description of the main findings of this thesis and the answers they offer to the main research problems. The main of this chapter is, however, to use these main findings to suggest alternative ways planning and design should approach the subject of housing for the poor and of unplanned settlements. Finally, it discusses the role designers and the planners might play in the XXI century regarding the growth and shaping of future urban developments.

The main research findings

The findings relate to the three main research questions of this thesis, which are: first, how suitable is the concept of <u>neighbourhood unit</u> to explain the spatial and social workings of the case studies? Second, how far can the current idea of <u>leadership and community participation</u> explain the set of community actions which can be found in both settlements throughout their development? and third, can actually and conceptually be those groups be regarded as <u>marginal</u> as frequently proposed by the literature?

The empirical findings in connection to these' issues can be summarized as follows: first, the idea of squatter settlements as socially and spatially bounded inchoate neighbourhood units does not seem to bear any relation to the actual pattern found in the case studies; second, the idea that squatters are solidary and cohesive communities composed mainly by mutually supportive ties which do not extend beyond the neighbourhood, and with participation being a main form of collective action, also does not actually fit with the processes undertaken by the two social groups described in this thesis; and third, the idea of those groups as having their own system of values and behaviour, in other words, as living at the margin of the dominant economic and politic system, appears to be completely inadequate.

The spatial analysis of the settlement has revealed that despite the apparent differences, Timbau and M. Dias have many similarities in terms of the way they structure their internal configurational structure. In both settlements there seems to be a certain correspondence between spatial and physical characteristics and the syntatic property of integration as well as the patterns of movement. This is shown by a correspondence between respectively high, medium and low integrated lines and the system of main, local and pedestrian

streets[1]. It was also seen that in both settlements there is a general tendency towards physical discreteness and autonomy such as to stress the local character of the urban fabric.

Even though the spatial analysis have found that the two settlements are relatively segregated, there is no evidence that they constitute clear and well defined discrete spatially segregated neighbourhoods. Moreover, the analysis has suggested that segregation has a positive role to play in the sense that it helps the settlements to have a strong local structure, thus defining a local to global relationship.

The findings suggest that inhabitants are more likely to distinguish part of their streets, their whole streets and the whole settlement than any well-defined social and physical sub-area within the settlement which could be called neighbourhood, yet they seem to have a clear idea of the settlements' boundaries.In this sense, both settlements can be seen as pronounced cases of relative self-contained

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[1] Thus with areas within the settlements which differentially construct the interfaces between strangers and inhabitants and among locals. This means that in certain parts of the settlements strangers are kept under strong control and surveillance of locals. Morphological differences might be associated to differences in the social interface constructed and to the degree of interaction between strangers and inhabitants. More simply, easily accessible areas will tend to create a stronger potential field of interaction between visitors and residents.

systems, yet not self-referential[2]. The analysis has found instead, a spatial structure much more complex that the one of the neighbourhood unit, where integration and segregation figure both as key features.

In Timbau, nevertheless, its underline peripheral integration[3] and the fact that the settlements seems to work better embedded in its surroundings suggests that space enables residents to take advantage of patterns of natural movement in the area to create global relatedness. In this sense it works such as to integrate the group and to avoid the area to become too isolated yet it still to engineer the construction of the interface between strangers and inhabitants which is controlled by locals.

More simply, all Timbau's morphological characteristics, including its relative segregation, have to be understood as instrumental, rather than dysfunctional, properties of its system. Moreover, its relative spatial segregation might be understood as nothing more than an elaborate group mechanism to

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[2] In Chapter III it was suggested that one of the possible explanations for Timbau's syntatic separation might be that it is a instrumental strategy adopted to compensate the lack of visual segregation created by its outstanding hilly topography among the flat neighbourhood.This self-containment obviously makes easy the clear identification of the limits or boundaries of the settlement.

[3] The spatial analysis of Timbau in Chapter III has shown that it depends on its outside peripheral structure to hold the system together and to connect it globally. This structure which encourages strangers to pass around the edge of the settlement was called here "peripheral integration".

protect and preserve inner dignity in the face of so many outside pressures and impingements. An instrumental mechanism which regulates the local global interaction such as to guarantee that control remains with inhabitants[4]. It is, thus, the interplay of segregation and integration which in both places produces this movement interface in which strangers are not excluded from the settlements but are under the inhabitants' surveillance.

The integration core of M.Dias builds a similar pattern than the one of Timbau in the sense that it is structured so as to bring strangers straight to the heart of the settlement while some internal areas remain more difficult to access. Those spaces which make up the core are at one locally and globally important. This, however, reveal a pattern which, like Timbau, channels natural movement through the settlement into specific main access streets that are under strong surveillance by the locals. Therefore movement produced by the global network does not seem to contribute towards an increase of pedestrian movement through the settlement. Overall, pedestrian movement, although very dense, seems to be locally generated rather than globally, with through

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[4] In Chapter IV it was suggested that a plausible explanation for it is that space, in this case might be about keeping social categories apart. The political role of this separation will thus be to allow the community group to have a social and spatial discrete nature, which in turn may offer them the possibility of having a clearly defined political identity able to bargain for improvements to the area.

movement (with origins and destinations outside the settlements) becoming only a marginal part of the movement as a whole.

The findings suggests finally that M.Dias like Timbau has very localized grid structure, with a street network which does not transcend settlement boundaries. This seems to suggest their importance as local centres with integration as a global property of perimeter zones in the first case and of the preexisting industrial grid in the second case. The key to the problem seems to be the understanding of how the local structure is constructing global relatedness (socially, politically and spatially) and vice-versa. Timbau is a true example of how a part of a city can maintain its local properties and differentiation without losing its continuity and globallity.

The fragmentation and strongly localized scale of Timbau's layout makes difficult to understand its local structure from the global system, even though the differentiation it creates facilitates the understanding of the global structure of the settlement from its local patterns. M. Dias' layout, however, gives more information of the local from the global system. The situation, thus, seems to be quite the opposite, that is a global pattern which facilitates the understanding of the local system with a local system not differentiated enough to give clues about

the global pattern of the settlement as a whole. Both settlements construct a double axial spatial code, at the global level through the super-grid which are the core lines, and at a local level of the settlement's fabric itself; a sort of grid within a super grid. Local and global measures, such as integration and control, seem to be working in M.Dias such as to compensate each other, thus in the shallower areas, and therefore more accessible, control is increased while in the deeper areas control is reduced.

The fact that M.Dias becomes more segregated and unintelligible as it gets larger suggests that the system is not able to take so much advantage as Timbau of the natural movement pattern. It is note worthy that M.Dias fits into its urban context in a conspicuously dissimilar form from that of Timbau. Timbau constructs integration such as to keep the strangers x inhabitants interface almost peripheral to the settlement (at the edges), whereas in M.Dias the integration core cuts across the system bringing strangers straight through the settlement[5] .

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[5] What seems to emerge as a picture of Timbau is a configuration which is structured such as to keep strangers in the periphery, at the same time as it draws them from the perimeter and channel them into a restricted area of relative shallow and more globally oriented streets, while the rest of the settlements remains relatively inaccessible to visitors. It seems obvious that for Timbau integration as well as segregation are of key importance for that.

Previous syntatic studies have invariably shown that movement patterns are globally rather than locally determined[6] . Thus, the relation between integration and the density of movement tend to become stronger as the prime area of interest is embedded into a wider urban context. The converse is the case with M.Dias indicating that it constitutes a strongly localized area where movement patterns seem to be locally rather than globally determined.

The empirical analysis of the movement pattern has shown that the people in the Timbau use space both to organise the local interface with strangers and inhabitants and to project wider global networks across space, guaranteeing that their encounter field does not become too localised. It has also shown that both settlements might not be very popular as a through-route or as a destination for visitors. Despite of their relative self-enclosure and isolation, both settlements however seem to have their streets populated with people coming from outside. This is an evidence that they are not socially and spatially cut off, yet they are strong locally controlled. As a consequence, visitors are not excluded from the settlement but, rather, they are policed by locals. Those areas, conversely of what is unwisely accepted in the architecture and planning literature on

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[6] For instance, Hillier et al, **Natural Movement**, Unit for Architectural School, 1990, pp. 11 and 15.

neighbourhood, are not areas belonging almost exclusively to the people who live there. On the contrary, <u>both settlements use space rationally to overcome their relative isolation by constructing a global interface</u>[7]. Actually, it will be completely misleading to see these settlements as local spatial structures without an effective global structure, as normally the idea of neighbourhood unit suggests.

The origin and destination study has shown that, although most of people using the streets in both settlements are locals in short journeys, the proportion of people, the majority locals, which have origin or destinations outside the settlements is significant. In addition, the fact that most of journeys have either their origin and destination inside the settlements suggests that most of strangers are visiting these places rather than passing through. The pattern found thus reveals that the settlements are structured spatially so as to build a very strong interface among inhabitants at the same time that it maximizes global interaction through the maintenance of global journeys within the settlement.

The movement analysis of both settlement has also revealed that, alike many lively, successful and

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[7] It is interesting however that as much as 90% of Timbau's respondents have said to receive visits of strangers while in M.Dias amounted to 60%. One possible inference is this is a consequence of M.Dias being more segregated syntatically than Timbau.

integrated areas of western European towns, there is an intense flow of people and a strong probabilistic interface between rather similar numbers of men, women and children. Moving children, moving men and moving women tend to populate the same spaces in the settlements. The existence of a much higher density of moving adults than of moving children guarantees that the healthy property of many successful urban areas of children's surveillance by adults. Despite the overall segregation, the distribution of movement shows that streets in both settlements are well used most of the day and this makes them safe and lively spaces.

The pattern found also shows that people are likely to stop and interact in the same places where there are people moving. Finally, this suggest that the streets in both settlements are well equipped to handle strangers and inhabitants and they are able to create through the structure of the grid a potential field of encounter and interaction among them. The data have actually reflected a situation of intense interaction of visitors and inhabitants, challenging the assumption that a sense of urbanity and community depends on the absence of strangers. The systems work as a whole without separating local and global movement such as to take advantage of being both localized and globalized.

The evidences suggest, as many other syntatic studies have, that the configuration of the grid is pervasive in determining of how people move through the settlements and that the distribution of movement is globally rather than locally determined; yet it seems to have little effect on static behaviour.[8] In other words, movement and the patterns of co-presence in space is a functional and instrumental product of the complex, and sometimes ambiguous, nature of the spatial grid.

The analysis of the land use distribution through the grid has shown that shops and the location of facilities are scattered around the settlement, and seem to be locally rather than globally oriented with regard to movement. This suggests that configuration has in the two settlements insignificant impact on the land use distribution. The relation between parts and the whole and between integration and segregation is never clear-cut and obvious. This suggests that it is necessary to take a less simplified view of organic settlements, a view which that admits complexity and ambiguity as an intrinsic part of their systems.

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[8] This means that people in the settlement tend to select certain spaces as major places of interaction regardless of their importance as major movement channels. Yet the location of one of Timbau's square in the space of highest concentration of static people shows that the configuration of space has also a major role in terms of the inhabitants interaction, or in other words, in terms of the relationships created locally.

So far as the second area of interest of this thesis is concerned, that of the correspondence of neighbourhood[9] to closed groupings rather than open ended networks, the idea put forward here is that squatter communities in Third world cities have to be understood as unbounded social groups which operate taking the best of the opportunities and constraints created by the capitalist urban system they live in. They build their settlements gradually with the resources available and the opportunities they create. In this sense, the idea currently put forward in the literature that the social patterns followed by community members are strongly based on the extended family as the main form of mutual support and on the use of strong ties does not seem to hold.

The findings suggests instead that neighbourliness remains the most intense and important tie[10]. It is interesting however, that there seems to be an optimum scale for interaction in which it is necessary to create some social distance where there is too

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[9] For example, Perry, C.A, **The neighbourhood unit formula**, first published in **Housing for the machine Age**, Russel Sage Foundation, 1939; Lewis, M., **In defence of the neighbourhood**, Town Planning Review, Vol.24, Jan. 1954;

[10] Neighbourliness is a major form of interaction as well as it constitutes a major supportive tie. Only about 30% of the cases have met their friends outside the settlements. Although in Timbau strong ties are more, local oriented than in M.Dias, with long-distance (global) social networks weaker for the first than for the second. Thus weak ties in M.Dias have more significance than in Timbau. It was shown, however, that men and women have different networks, with men being relatively more connected globally than women, yet they follow similar solidarity patterns and use the same type of supportive tie.

much proximity. A possible inference is that this might be the scale of the street[11]. Thus the strength and the nature of the relation and the availability of assistance in both everyday and emergency situations seems to be strongly dependent on spatial proximity. In fact, the residence pattern seems to be structured by kinship related families living in spatial proximity. Additionally, the data has also shown that although people make use of kin living locally as well as neighbours, they do not depend on them as social resources for their livelihood. The relations are markedly of a capitalist and urban nature rather than rural or marginal. Squatter settlements are thus characterized by relations which are common to the society they live in which are essentially urban rather than based in traditional kinship mutual assistance networks as commonly suggested in the literature. Settlers have, otherwise, called the attention to the existence of two main types of networks: an external social unbounded network and a local network of neighbourliness and kinship. None of these two types of networks could be classified as internal locally bounded of the type suggested by the

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[11] It is surprising that, although residents know better by name their next door neighbours, interaction is more intense with people living in the same street. The concept of door neighbour appears for the settlers as a social idea which is related to the notion of a person with whom they have a close relationship. In addition to that, it is also assigned to someone living in very close spatial proximity, and normally not more than three doors away.

neighbourhood unit idea[12], neither it could be said that the group constitutes a social unity in the sense of a neighbourhood.

The relation with remote kin and migrants is not one of economic exchange or mutual assistance, and it tends to become weaker as time goes by. An effective tie among kin seems also to be conditioned to relative spatial proximity. Thus the idea that, as members of a marginal urban stratum, migrants hold a specially strong relationship with their kin living in their place of origin is completely wrong in the cases studied here.

On the other hand, paid labour is used as a primary source for the construction and up-grading of the houses, that is, there is a predominance of capitalist relations rather than of reciprocity. The help of local friends or relatives seems to be restricted to very specific and short term tasks. Ties developed through visiting are only likely to offer support or be involved in to community related matters but not in personal matters. So strangers, although an important elements of the community members' network, are not part of their supportive ties. Furthermore, individual community members' ties appear to cover the whole

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[12] The idea that space could only be good to settlers by virtue of being associated with a clearly discrete closed social group, separated physically and socially from the city at large and thus being free of the undesirable presence of strangers is pervasive in modern town planning.

city, rather than a small segment which could be considered the neighbourhood.

This data is revealing. It shows that there seems to be a misunderstanding from the authorities of how the process of auto-construction actually takes place. There is a confusion between to self-built[13] and auto-construction. This suggests that official self-built projects are not really aware of what auto-construction is about and that there is a discrepancy between what it actually is and how the projects are thought and designed[14].

Additionally, the RA and/or any other local association appears to have played no significant role at all in terms of direct involvement in the actual construction of the houses. The findings suggests that it is the RA which is the main source of help in matters related to the settlement (collective public matters) but not to the home (private individual matters). It acts as a kind of local regulator.

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[13] In the sense of the owner building his/her house with his/her own labour.

[14] The questionnaire data analysed on Chapter IV shows for instance that people in Timbau have changed less the plan of their houses than in m. Dias. This suggest that, although in M. Dias the process have been classified by the authorities as participatory, people seem to be less satisfied with their dwelling than in Timbau. A possible inference is that in Timbau people were actually in full control of the decisions involving the design of the houses as their built them while in M.Dias they have solely built it.

Research into residential level mobilization has unwisely assumed that communities are solidary groups composed only by mutually supportive ties and reciprocity networks. The empirical data of this thesis has shown that community ties are markedly hierarchical. The relation between community members and local leaders[15] (or the RA) is formal, rather than mutually supportive, and it often involves conflicts of interests[16]. Additionally, the data has shown that active residents participation is very low[17] with the leaders almost handling community affairs alone[18].

Despite the fact that residents do not engage actively in the struggles promoted by the RA, they seem to feel well represented by it in terms of their interests and priorities. The community's support to leaders will thus depend heavily on the success they have in achieving the goals established. Priorities and resources (financial and human) are allocated in

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[15] As mentioned previously, an overall characteristic of leaders seems to be a more spread and denser network of contacts than the one belonging to a normal resident.

[16] Neighbourliness is the cannel through which comments about problems in the settlement flow, rather than through through the RA.

[17] Almost 90% of the respondents in both settlements have said not to have any involvement in the o process of getting resources to improve the settlement. This shows that it is let completely to the RA. Yet there is a consensus about the most important achievement and how they were achieved by the RA. A significant number of people in M.Dias, however, where not ware at all of how improvements were achieved.

[18] The settlers seem to believe that their role is to pay the RA contribution of money, while the RA's role is to promote improvements based on these resources or in any political resource it might have.

agreement with both parties to reach the target, and despite of possible conflicts, they appear to succeed to fulfil their real needs and overcome their underprivileged position. This is a process, which was named auto-construction, based on the self-determination of people - the users - over their lives and places which, actually, does not seem to constitute a harmonic practice of communal cooperation as it is widely suggested in the housing literature. There are many differences between community members and its representatives, as well as an imbalance in terms of the exchange of support, such that communities actually are far from that image of harmony and solidarity so often advocated in the literature on participation. Relations between the RA and the residents, instead, seem to be based on instrumental and practical reasons[19].

The thesis has in turn revealed that the current idea of neighbourhood socially and physically bounded is not able to explain the social, spatial and political logic of to the case studies. On the one hand, the spatial and movement analysis has suggested that

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[19] The emergence and the development of leadership structures sprang up around issues related to the improvement and physical up-grading of the settlement. The existence of a formal representative organization such as the RA is a key element to turn the community eligible to get improvements. But, spatial decisions about the configuration and alignments of the streets seem also to have been largely influenced by the leaders' action. RA can thus be seen as local bodies which obtain and manage resources in order to improve the conditions of the settlement. It is clear, nevertheless, that local leaders and the RA are key agents regulating not only the political, but also the spatial working of those places.

integration as well as segregation are combined to define the spatial logic of the settlements. On the other hand, the network analysis has shown a pattern which is neither fully locally integrated nor globally segregated. The cases, otherwise, have demonstrated that integration as well as segregation are simultaneously used as an instrumental tool to empower the groups. In terms of politics, the analysis has shown that the settlements are highly connected to external institutions and politicians. In this sense, the RA is extremely important for the settlement's political power and works as a main instrument for the group's social mobility and global connection. Finally, the history of the community in both settlements has also shown that the idea of discrete communities as cohesive social groups with no internal hierarchies or social differences and conflicts, embodied in the concept of <u>community participation</u> is completely mistaken, yet some kind of social and spatial unity exists. A social unity which for instance allow the group to be identified at a global level as a community and a spatial unity which entitles the settlement bargaining for improvements within a defined territory.

As mentioned in early sections of this thesis the importance of unplanned squatter settlements in the world as a major form of housing is obvious. According to the United Nations, more than 30% of the

world population in 1970 was already living in squatter settlements. Over the last thirty years many of these agglomerations, entirely produced by the poor have been built. The table in **figure 6.1** given by M.Castells in the City and the Grassroots shows the proportion of squatter settlement in different cities of the Third World.

Fig. 6.1. Incident of slums and squatter areas in selected cities of developing countries.

Country	City	Slums and Squatter Settlements as Percentage of City Population	
Sub-Saharan Africa			
Cameroon	Douala	80	(1970)
	Yaounde	90	(1970)
Ethiopia	Addis Ababa	90	(1968)
Ghana	Accra	53	(1968)
Ivory Coast	Abidjan	60	(1964)
Kenya	Nairobi	33	(1970)
	Mombasa	66	(1970)
Liberia	Monrovia	50	(1970)
Madagascar	Tananarive	33	(1969)
Malawi	Blantyre	56	(1966)
Nigeria	Ibadan	75	(1971)
Senegal	Dakar	60	(1971)
Somalia	Magadishu	77	(1967)
Sudan	Port Sudan	55	(1971)
Tanzania	Dar es Salaam	50	(1970)
Togo	Lome	75	(1970)
Upper Volta	Ouagadougou	70	(1966)
Zaire	Kinshasa	60	(1969)
Zambia	Lusaka	48	(1969)
Middle East/Mediterranean			
Iraq	Baghdad	29	(1955)
Jordan	Amman	41	(1971)
Turkey	Ankara	60	(1970)
	Istanbul	40	(1970)
	Izmir	65	(1970)
Lebanon	Beirut	1.5	(1970)
Morocco	Casablanca	70	(1971)
	Rabat	60	(1971)
Latin America and Caribbean			
Brazil	Rio de Janeiro	30	(1970)
	Belo Horizonte	14	(1970)
	Recife	50	(1970)
	Porto Alegre	13	(1970)
	Brasilia	41	(1970)
Chile	Santiago	25	(1964)
Colombia	Bogota	60	(1969)
	Cali	30	(1969)
	Buenaventura	30	(1969)
Ecuador	Guayaquil	49	(1969)
Guatemala	Guatemala City	30	(1971)
Honduras	Tegucigalpa	25	(1970)
Mexico	Mexico City	16	(1970)
Panama	Panama City	17	(1970)
Peru	Lima	40	(1970)
	Arequipa	40	(1970)
	Chimbote	67	(1970)
Venezuela	Caracas	40	(1969)
	Maracaibo	50	(1969)
	Barquisimeto	41	(1969)
	Ciudad Guayana	40	(1969)

So far the main concern of housing has been with cost affordability and design efficiency. To achieve this planners and architects have set standards and expectations which bear no relation to the indigenously created housing and with the processes involved on that. Building efficiently but without a broad understanding of the local context in terms of how people produce, use and explore space may create housing inappropriate to needs and wasteful of human and material resources. Clearly to be able to provide adequate housing it is first necessary to have this understanding. No one seem, nevertheless, to have a developed any form of describing and analysing the form in which squatter settlements are produced and managed by people.

The analysis of the case studies in this thesis suggests that squatters settlements have to be seen as a stable phenomena with a very permanent look which is characteristic, normal and integrated to urban society in Latin America, yet it can not be explained by official and formally approved planning standards. They may in fact even be seen as authentic space cultures which are not though dominated by the trajectory of the European urban industrial mode. Furthermore, the comparison between the grid-like and visually ordered planned M. Dias and the organic disorderly unplanned Timbau has shown that despite their visual dissimilarities the two settlements

enable similar life styles[20]. This suggests that although space does not determine behaviour, it provides through its morphology the potential for different cultures to utilise it so as to enable their cultural and lifestyles preferences. Thus the design of a successful layout is likely to be related above all to the understanding of the culture and its life styles rather than to design preferences and technologies. The challenge of planners, architects and policy makers for the year 2000 is to be able to analyse, understand and then act on such dynamic and complex urban phenomena.

Moreover, Timbau's process of growth can not actually be designated as unplanned. Obviously, the settlement hasn't experienced a planning process as it is formally conceived by orthodox planning, but the findings suggests that it clearly resulted from a conscious process of decision-making, with a strong component of community participation, which followed specific rules to define the shape and working of the built environment.

In addition the idea currently accepted of squatter settlements as rural enclaves within the urban context does seem completely mistaken. The findings suggest that the process may be better described as

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[20] A settlement in a complete different culture with the similar regular grid might have been appropriated in a complete different form.

an urban-urban migration with migrants in search for better life conditions within the urban industrial system. This reveals a vital form of integration and articulation to the system, a movement of ascension rather than of decay. The strategy adopted by those populations seems thus to be of taking advantage of the possibilities offered by the dominant social, spatial, economic and political system rather than of dependency or marginality, that is they succeed only by making the most of their assets.

Additionally, Chapter IV has shown that also in terms of individual aspiration, ideals and concepts, are completely integrated to society as a whole and they are totally impregnated with the dominant urban capitalist values. For instance, the fact that settlers have shown a clarity in terms of understanding and explaining architectural and urban spatial concepts (i.e. squares, streets, avenues, lanes and so on)[21] are an inexorable indication of their strong familiarity with key aspects of urban culture. They show a understandable aspiration for normal urban services and better life and economic conditions. They express a common desire to improve their present situation by

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[21] The data presented in Chapter IV has shown that during the first period the settlement didn't have a distinct spatial structure as well as a sociopolitical identity. In the period from 1956 to 1965 the settlement consolidates its definite spatial configuration structure as well as its political structure. It is in this period that the settlement experiences a set of more radical changes, both in political as well as in social terms. The last period (1965-1980) reveal that as the settlement becomes more globally connected spatially the more the political connection with the global system is increased.

raising the living standards. Changes, however, normally correspond to an improvement of the present situations rather than a structural change in their social, economic and spatial conditions which could be represented by, for example, a wish to live the settlement or to move dwelling. The thesis has proposed to alternative concepts to name those processes undertaken by squatters in the production of their built environment. The first was covered by the term <u>auto-construction</u> and the second is the idea of <u>liminality</u>.

The term auto-construction is applied meaning a development practice which is at once political, social and spatial. It is a piecemeal process of up-grading the settlement, at the same time as dwellings are improved, and this in turn involves a process which is socio-political. It is through that complex mechanism that the settlement gets constructed not only spatially, but also socially and politically. As the development of the settlements described here has shown changes in the local political scene were accompanied by changes in terms of the level of services and up-grading and by variations on the pattern of social interfaces (i.e. locally and globally).

The analysis of the progressive spatial development of Timbau has demonstrated that changes in the spatial configuration and morphology of the settlement

accompany changes in the level of services provision and infrastructure of the settlement. On the other hand, its political structure and leadership patterns change as the settlement increases in spatial complexity[22]. This is indeed a process where the improvement of the physical environment works as a main motor for political engagement, becoming itself both the means by which space is up-graded and the sociopolitical system itself increases in complexity. This is to say that the group by constructing its spatial system was also constructing their sociopolitical system and vice-versa[23]. The whole auto-construction process seems thus to be a key strategy to turn the system, on the basis of the scarce available resources, a viable model to face society[24].

This model is represented by what Turner's describes as <u>liminality</u>, that is a situation of structural change,

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[22] In other words, the sociopolitical rules devised by the group aiming at goals of physical nature, defined a set of solidarities and social groupings, where space has become the mean by which these were constituted and realized.

[23] Turner, V., **Dramas, Fields and Metaphors**, Cornell University Press, London, 1974, p.258.

[24] This in fact, can be said to constitute an <u>alternative form of urbanism</u> which given the dimension of the phenomenon in some cities of developing countries might be in the way to become the major predominant form of urbanism in those countries. The distinction might be in the form in which the transpatial /spatial and integration/segregation relate to each other to define the type of urbanism. Thus Timbau and M.Dias may constitute one a possible variation of these combinations of transpatial/spatial and segregation/integration which use the instrumentality of the grid to reinforce local and spatial solidarity without loosing global and transpatial connections.

or in Turner's terms[25]*"when seemingly fundamental social principles loose their former efficacy...and new modes of social organization emerge, at first to transect and, later, to replace traditional ones"*. The concept thus translates quite well the idea of squatter settlements as an alternative solution which has emerged as a consequence of the inefficiency of traditional forms of housing to deal with urban phenomena in Third World cities. A solution which has increasingly became predominant in those cities.

Timbau viewed through time whilst embedding itself more firmly spatially within the city, by means of including more and more global lines in its more easily accessible lines, does that without becoming part of a large conurbation process which forms the city. In other words it could be said that Timbau's grid evolution has undergone a global intensification of its main street grid followed by a local intensification of the rest of the grid. A similar process has happened with its political and leadership structures whereby the group has managed to become more globally connected and integrated without loosing its local identity and importance.

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[25] This is revealed, for instance, in a decrease of the RA's political power, as well as the weakening of local relations with a more individualist behaviour becoming predominant over a group behaviour. Further more, the increasing number of newcomers living in the settlement combined to old residents moving out seems also to contribute to eliminate old relations of neighbourhood.

To conclude it could be said that the analysis of the settlements have shown a number of single key points.

First, is that squatter settlements have shown themselves in all major aspects a fundamental and normal constituent part of Latin American cities. Second, their residents make use of rules, notions, concepts and mechanisms which are well-integrated and common to the society which they are members. Third, it seems that it is the incapacity, generated by the lack of adequate concept, theories and tools to explain and analyse such phenomena represented by squatter settlements - none of these appears actually to do with understanding them, which in turn have given origin to many ideas such as marginality, participation and neighbourhood, which have little to do with the actual populations and urban environments they are used to explain. This suggests that the actual terms in which city planners and architects engage in debate are misleading and in need of reformulation.

In addition critique undertaken so far of the to widely accepted concepts in the planning and housing literature on squatter settlements, the empirical analysis of the cases study and the understanding of their socio-spatial and political logic were intended to provide planning ideas for action and to suggest policy strategies. This brings the present work back to three questions, which were posed in the opening

chapter: Should we stop, replace or reproduce this type of urban development?

In many aspects M. Dias, like Timbau, can be said to be a successful environment. Despite M.Dias relative wide streets, it still posses a dense concentration of people in terms of dwellings per hectare enough to generate diversity. On the other hand, the movement analysis has shown that streets are effectively populated for most of the day through the whole week by a well balanced number of users which seem to have a quite reasonable amount of routes to choose within the settlement. Finally, although the project in M.Dias has defined a limited number of building types, the fact that the project has allowed an piecemeal process of dwelling's upgrading and changes, will in the long term guarantee a great diversity of buildings in direct connection with the diversity of social and economic circumstances of their inhabitants. The very process of changing the dwellings and increasing densities gradually, but continually can result in increasing diversity too. Despite of that, the major question is whether or not it can be considered a satisfactory solution in terms of people's needs and priorities.

The analysis carried on in the three empirical chapter and its main findings, which are summarized here, have aimed to show how the settlements actually

work (socially, spatial and politically). It has ' shown for instance that although M.Dias was not expected to reproduce the same type of arrangement of its former squatter settlement, it has in many aspects a similar structure of Timbau squatter settlement. The differences nevertheless, imposed to an extent by the planning process it has experienced, are enough to make the places unlike each other in key aspects. Two of these are in its spatial and political workings which have undermined its local power to control the system of relations. More simply, the planning process has defined a new spatial, political and social environment which has weakened the local relations yet it had maintained the area relatively globally segregated. In other words, it has produced a new order which has not built enough global connections to compensate for the weakening of the local relation so the area has become globally as well as locally segregated. The nub of the problem seems thus to be how it is possible to have a spatial, social and political order that relates the local organization of the system to the global structure without losing either its local identity or its global relations.

This shows that any attempt to produce responsive environments should start from an actual understanding of the way those people control, regulate and produce their places when resources are locally managed, and of the way global relatedness is

built. A major question which emerges from 'that is whether or not the current idea of the proactive and prescriptive planning can actually be effective in producing adequate environments for the poor. It seems that a more effective planning strategy which understands the cities not as definitive products of planners and architects but instead as a dynamic phenomenon which is built step by step and everyday by the people who live in them. The role of city architects and city planners should thus be first to understand how urban forms work and develop in order to incorporate those mechanisms and processes in their work . They should help people to develop and improve those processes through their specific tools and their knowledge about space rather than attempt to impose on people modern orthodox planning ideas of how cities ought to work and what ought to be good for people living in them.

Dealing with short streets

Very short lines tend to be excluded from use and movement analysis because their length does not allow for an observation to take the necessary time required for producing reliable information. Thus these lines are normally excluded from the analysis. Since in Timbau short lines are an important feature of its urban grid this research had to develop a different strategy so as to avoid a distortion on the statistical picture of the movement observation data.

The strategy to identify distortion in the observed data was to check the relation between the total number of moving people and the relativazed rate in phm (people per hundred metre/minute) as the table below shows[1]. The cases where the second number was close or above the first, that is the relativazed number of moving people per metre/minute (phm/m) was higher than the total number of people observed in the line, where considered distorted and thus excluded from the analysis. These lines which were excluded are marked in bold in the table below. The table starts on the number 22 which is the first observed space in the system.

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[1] These were expressed by x:y with y corresponding to the total number of moving people observed in the line and x these figures relativazed in a hundred metres per minute. The relation expressed the number of times y was bigger than x. In distorted cases this relation tends to be 1:y$\leq$ 1.

Line Nº	relation between the phm/m and total moving people observed.
23	1:16
24	1:10
25	1:8
26	1:9
27	1:13
31	1:12
38	1:5
39	**1:0.8**
40	1:7
41	**1:0.6**
48	1:22
49	1:17
50	1:32
51	1:13
52	1:6
53	1:8
55	1:3
57	1:9
58	1:3
59	1:3
61	1:13
64	1:3
65	1:3
66	1:5
67	1:10
69	1:5
70	1:36
71	1:62
73	1:5
74	1:5
75	**1:0.5**
89	1:3
90	1:4
91	1:8
92	1:4
93	1:3
94	1:3
95	1:14
101	1:4
102	1:6
107	1:6
108	1:8
109	1:10
110	1:4

Line Nº	relation between the phm/m and total moving people observed.
111	1:22
112	1:2
113	1:2
114	1:3
115	1:9
116	1:4
118	1:21
119	1:6
120	1:17
121	1:21
122	**1:0.7**
123	**1:0.7**
124	1:3
125	1:2.2
126	1.13
130	1:5
134	1:14
135	1:5
136	1:4
140	1:16
145	1:21
147	1:12
148	1:3
151	1:9
152	1:15
153	1:8
154	1:7
155	1:6
156	1:2.5
157	1:10
158	1:11
161	1:18
162	1:10
163	1:6
164	1:23
170	1:23
172	1:20
173	1:15
174	1:10

Data collection and selection of sampling procedures.

The questionnaires :

A pilot study was ran on a similar population of a nearby settlement before applying to our cases study. As a result of this study some of the question were adjusted to make them more clear or easier to answer in a more precise by reducing the ambiguities. This can be exemplified by the question 14 which originally asked the respondent to mention the main changes the settlement has experienced since he has been living there and give the date. This question was reformulated by asking the respondents to relate the important events of his life with the stage of development of the community. As a consequence of this change it was possible to collect the data sought, or in other words, to know more precisely the dates in which the settlement has changed more substantially.

The selection of the sample was done in a randomised form by applying a table of random numbers to the whole population (or universe) covering the entire selected settlements. The method used was to assign sequentially a number on the map of the settlements to each house part of a block and then to chose the number according to the table of random numbers.

The sampling size (the size of the sample $\doteq$ N) was defined so as to have a representative number of questionnaires. This was estimated assuming that the information required are all related to the question of time of residence in the area. To define the value N the following information are required according to Hubert, M & Blalock Jr. (1972, pg.213) :

(1) the confidence level to be used

(2) the degree of accuracy within which we wish to estimate the parameter

(3) some reasonable estimation of any parameters that may appear in the formula below which gives the confidence interval:

X+- 1.96 $\partial \div \sqrt{N}$

where X = the mean of the distribution
∂ = the standard deviation
N = the number of observations

In this case these values will be respectively : 95% or 1.96 for the level of confidence desired, 4 years as the accuracy wished for the both cases (Timbau and Marcílio Dias). In the first case the value for the standard deviation is 12.931 and in the second case it is 10.705 (see Appendix II - Statistical data of time of residence) , thus applying the formula above we will have respectively N1= 30 and N2 = 26. In other words, in case 1 a representative sample will need 30 cases,

whereas in case 2 it needs 26 cases. The questionnaire was then conducted by adopting a conversational approach where the questions were predominantly open and with the respondent's replies being noted by the surveyor. Any additional detailed data given by the respondent even if not strictly related to the question was recorded. The adoption of this method of using the questionnaire as a kind of structured interview has in fact proved to be very flexible allowing the surveyor to clarify the question asked, when needed, in order to have the required information.

Care was taken, however, not to guide the answer. Also, the questionnaire was designed placing questions that serve as mutual checks close to each other in a way to allow the surveyor to check the consistency of the information at the time of the survey. An example of this checking mechanism were in between questions 1.a,1.b and 3, where the respondent was required to first give the time he/her has been in the area, followed by the places where he/she has lived prior of moving to the settlement with the respective dates and, at last, if he/she has lived outside the city , when and where it happened. Therefore, as all the questions were organised according to a time sequence and were non-overlapping, any inaccurate information could be easily spot.

_____

This questionnaire is to be applied in Morro do Timbau and
Marcilio Dias as part of the field research.

_____

I. SPATIAL AND POLITICAL RECONSTRUCTION

1. How long have you been living ...

a) in this area ?   since (please state the year)....19...
b) in your present dwelling ? since (please state the year)....19...
c) if you lived some where else in Rio or in the settlement could
you please mark in backward order on the map below the places
where you have lived with the respective dates.

2. If you have already moved of dwelling within the settlement
could you describe how was the house swap? Who have helped
you in the swapping? Did someone helped you in finding a new
house and in negotiating yours?

3. Have you ever lived outside Rio? Could please specify the
places in backward order where you have lived (mark on the
map of Brazil or even outside Brazil).

4. If you have lived outside Rio

a) do you have contacts ?(please specify)
b) do you have relations? (please specify)
c) do you ever visit them?
d) how frequently you see the above people?

5. Why did you come to leave here?

6. Who have told you about this place ?
a) a relative   (   )
b) a close friend   (   )
c) a distant friend   (   )
d) a workmate   (   )
e) a neighbour   (   )
f) anyone of the above - please specify (   )

7. How did you choose the location of your dwelling ? What are
the things that in general are regarded as important in the
choose of the dwelling? Why people decide to come to live here?
How do they do? How does the settlement has grown in terms of
who live beside who/how the private space is
extended/subdivided?

8. If you could where would you like to live in the settlement (please specify the reasons)? What is the place in the settlement which you regard as ideal?

9. Has your dwelling changed internally and externally since you move to it
a) the material changed (Please specify the date)
b) the house was expanded - could you please try to draw the main
changes (please specify the date)
c) the facade was changed - could you please try to draw the main changes (please specify the date)
d) the access to the house has changed - try to show the change (please specify the date)

10. What was the source of the change (who has promoted it) and who has participated in it and how (who has helped you to achieve them or stoped you) ?

a) the owner occupier   (   )
b) the relatives   (   )

c) friends from the settlement   (   )
d) friends from outside the settlement   (   )
e) workmates   (   )
f) public authorities or a notable   (   )
g) paid labour   (   )
h) workmates   (   )
i) the residents ass.   (   )
j) another local association (please specify)   (   )
k) an outsider association (please specify)   (   )

11. If you could what changes would you like to make in your dwelling (aspirations)?Would you give priority to what:
a) the material
b) the number of rooms
c) the organization of the room (the plan)
d) the facade
e) the access to the house

12. Do you ever wanted to make changes that you couldn't? Why wasn't you able to make them? Has someone ever stop you from doing them?

13. What would you consider as being your house, your door neighbours, your part of the settlement, the squares of the settlement, your settlement and your borough (could you please specify and mark on the map below)? What in the settlement would you regard as being your business (the private domain) and the business of everybody in terms of space (the public domain)? Show me which bit of your street.your house is.

14 . Has the settlement changed since you come to live here?What are the main changes? Could you try to summarize these changes in few stages and specify when did they happen?

15. Where did the resources come from? How have the residents afforded these improvements?

16. Have you got involved in the process of access to the resources?

17. Who outside the settlement has helped in these improvements?

18. Did any politician get involved?

19. How would you describe the way the settlement has grown? Please indicate schematically in a drawing the form it has grown and specify how the individual(plots) and public spaces has being extended (subdivision/incorporation of new area...).

20. How the pattern , configuration and form of the streets was arrived at, how did it came to be like that? Has that always being as it is now? Are there any rules of how and where you can built which everybody knows? Are there any places where you are not allowed to build? Is everybody aware of that and why? How then the street patter is maintained, why people do not build houses in streets or squares?

21. Are there any open places where everybody meets? How do you call them?

22. Could you point out the main political meeting (the one which stands out in your mind) which took place in the settlement and specify the issue ? Could you describe it? Could you plot it into the map ?Where usually this kind of political meeting happen?Was the meeting held in the streets (in which ones)? Did it happen in strategic locations (please specify) or was it moved throughout the settlement? Did it enter in people' houses? Did people make the effort to participate? Was there anyone which do you think participate more actively?

23. Where did you stay in this event...
a) inside of the house with the doors closed (non participating)
b) inside of the house with the doors closed (non participating visually but hearing it)
c) inside of the house with the doors closed looking from the window
d) inside of the house with the door opened and looking from the window
e) inside of the house with the doors and windows opened
f) at the door
g) in the street
h) in your part of the settlement
i) in one of the squares
j) no one of the above - please specify

24. What was your involvement in this event

a) not aware at all
b) aware but not participating
c) participating (please specify)
d) partially active (please specify)
e) actively engaged (please specify)

25. Who where the people involved in these kind of events?

26. Were you involved in those events?

37. Were you at those times an active participant of the association?

28. What was considered to be an important issue at those times?
a) for you
b) to the association

29. Specify the five more important events you can remember. (marking in the map the extension and the kind of ·
improvement they brought and when did they happen- information probably to be collected later) and name the main people whom in your opinion were more influential in getting these improvements, specifying who they are and marking in the map below where these people live in the settlement.

30. What kind of changes as a result of those events took place in your dwelling, your street, your part of the settlement and in the settlement (could you please briefly describe them)?

31. Did the changes happen throughout the settlement? or Did it happen in particular places? Who has benefited from them? Who was affected by them?

32. Were there things that you didn't anticipate happen? How do you feel about them? Is there anything which concerns you? Has these improvements made any physical difference to you?

II. NETWORKS

32. How many faces do you recognise from people living in the settlement
a) hardly anyone   (   )
b) a few   (   )
c) quite a lot   (   )
d) many   (   )
e) almost everyone   (   )

33. How many faces do you recognise from people living in your street
a) hardly anyone   (   )
b) a few   (   )
c) quite a lot   (   )
d) many   (   )
e) almost everyone   (   )

34. How many people do you greet from those living in the settlement?

35. There is any special group or people in the settlement with whom you don't get in well? Where do they live(please mark on the map)

36. How many people do you know well enough to talk from the...

	next door neighbour	part of the settlement	street	settlement	borough
none	( )	( )	( )	( )	( )
a few	( )	( )	( )	( )	( )
quite a lot	( )	( )	( )	( )	( )
many	( )	( )	( )	( )	( )
almost everyone	( )	( )	( )	( )	( )

37. How many people you talk to, do you know by name from the....

	next door neighbour	part of the settlement	street	settlement	borough
none	( )	( )	( )	( )	( )
a few	( )	( )	( )	( )	( )
quite a lot	( )	( )	( )	( )	( )
many	( )	( )	( )	( )	( )
almost everyone	( )	( )	( )	( )	( )

38. How many people from the residents association you know well enough to talk to ? Do you know them by name ?

39. How frequently do you meet them
a) daily   ( )
b) once or twice a week   ( )
c) weakly   ( )
d) monthly   ( )
e) annually   ( )

40. How would you regard your relationship with people from the association?
a) friends
b) formal (respect and distance is involved)
c) godfather
d) patron

40. Do you talk about what is happening on the settlement with your neighbours?
a) yes, often ( )
b) sometimes ( )
c) never ( )

41. And with someone from the residents association
a) yes ( )
b) no ( )

42. With who?

43. Do you talk about what is happening on the settlement with someone outside of the settlement?
a) yes ( )
b) no ( )

44. With who ?

45. Who are the more influential people in the settlement? Could you please mark on the map below where do they live.

46. Can you remember the situations which did you have required help from somebody else?

47. Who have helped you ?

	personal matter	dwelling	settlement
friend	( )	( )	( )
neighbour	( )	( )	( )
relatives in the settlement	( )	( )	( )
relatives outside	( )	( )	( )
influential people in the settlement	( )	( )	( )
influential people outside the association	( )	( )	( )

48. With who of the below would you regard that you have a
formal contact:
friend   (   )
neighbour   (   )
relatives in   (   )
the settlement
relatives outside (   )
influential
people in the
settlement   (   )
influential
people outside   (   )
the association   (   )
workmates   (   )

49. Most of the people you regard as having a friend
relationship you know from

a) door neighbour
b) met in the street in the settlement
c) met in the street outside the settlement
d) met in the residents assoc.
e) met in a local association
f) met in an outside association
g) met in the work
h) none of the above (please specify)

50. Most of people who you know you can ask help are from

a) door neighbour
b) met in the street in the settlement
c) met in the street outside the settlement
d) met in the residents assoc.
e) met in a local association
f) met in an outside association
g) met in the work
h) none of the above (please specify)

51. Most of people you could say you have a formal relationship
but have helped you in some occasion of your life are from
(please specify if anyone of these occasion the matter was
related to improvements in your dwelling or in your settlement)

a) door neighbour
b) met in the street in the settlement
c) met in the street outside the settlement
d) met in the residents assoc.
e) met in a local association
f) met in an outside association
g) met in the work
h) none of the above (please specify)

Categories of the questionnaire grouped data

Timbau

QUESTION	1c	2	3	4a&4b	4c	4d
CATEGORY	Local	Process	Region	Relation	Time	Type of Comm.

1	Timbau	other plot	Never swoop		North	Relatives	Every
						Visit	month
2	South Zone+	Have	Southeast	Friends	Every 2		Telephone
	Center	swoop			months		
3	North Zone+	Nobody	Imp. occasions	Mail			Northeast
	Suburbs						
4	Abroad	Once a year	News fr. somebody				
5	No	Every two years					
6	Seldom						

••

QUESTION	5	6	8a &8b	
CATEGORY	Reason	Person	Ideal place	
Reason	*Change*	*Material change*	*Expansion*	
9	9a	9b	9c	

1	Through Kinship	Relative	The same	
Quite	*Yes*	*Wood to brick*	*No.of rooms*	
2	Imp.life condition	Aqc./friend	N.Jerus.	
Busy	*No*	*Finishings*	*No.of floors*	
3	Through acquitan.	Neighbour	Capiv.st	
Urb.Condit.	*Pitchet to flat roof*		*The plan*	
4	Through army/not.	Notable	Outside	
Others		*No change*		
5	No answer	Other Streets	StXalleys	
6	*No answer*	*Pr.Inhauma*		

••

QUESTION	9c	9d	9e	10
	Facade	Access	Reasons	Source
CATEGORY	*Ideal Change*	*Problem*	*Sett.changes*	
	11	12	14	

1 (yes)	Changed	Change	Family needs	Owner
	The material		*Neighbours*	*Services*
2 (no)	No change	No change	Others	Relatives
	The no.of rooms		*RA*	*Comm.Serv.*
3 No answer	No answer	Friends	The plan	Army
	Title			
4 Paid labour	The facade	No	+Strangers	
5 Local assoc.	No change	No answer	No answer	
6 Friends for slab		No answer		
7 Relatives for slab		Build a wall		

QUESTION a/Children CATEGORY	12 Problem *Outsider* 17	14 Changes s. *Politician* 18	15 Resources *Growth s.* 19	16 Involved *Mett.place* 21
1	Neighbours *aware*	Services *Yes*	RA *Houses imp.*	Yes Not *The square*
2	RA *No*	Comm.Services *Dens.houses*	State *In.home*	No Nobody
3	Authorities *Technician*	Title *No answer*	Comm. *Plot subdiv.*	No answer *Streets/all*
4	No *Politicians*	+Strangers	Polit. *No.floors*	*Flat roofs*
5	No answer *Government*	No answer	Instit. *Not aware*	*Pier*
6	No answer	Others		Nothing changed

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QUESTION CATEGORY Place	21a/Woman 22/Actors Place	21a/Man Mett.Pl.	21b 22/Desc. P.Events	22/Place P.Events P.Events
1	At the doors Show/music	In the bars	Lgo Caetes	Banqu Sq RA
2 Residents	Inside home Walked	Samba/Pagode	Lgo Meirelles	Main sts
3 Children	The Church	At the doors Visited residents.	Pca Bangu	In homes
4 Elderly	In the bar	Inside home Truck with camp	J.Magalh.	Capivari
5 Inside cars	Others	LgoIracema	RA head.	Pol.'contact
6	Pier	N.Jerus. Ass+speech at RA	V.Pinheiro	
7	Capivari			

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QUESTION	22/Aim	22/Person		23
CATEGORY	P.Events	P.Events		Stay
24	25	26	27	
Type of Involv.	*People*	*Involved*	*RA part.*	

1 To win votes	Loc.ass.candidate			In.home
Not aware	*Yes*	*Yes*	*Services*	
2 Authority in camp.	Door	Not part.		No
No	*Comm.Serv.*			
3 Others	Street	Participating		No answer
No answer	*Title*			
4 No one	The sqs			Part.Actively
Not aware				
5 No answer	Other			Act.Engaged
Nothing				
6 No event	No answer			Others

• •

QUESTION	28a/You	28a/RA	29/Issues
CATEGORY	Imp.Issue	Imp.Issue	5+imp.issues
	5+imp.issues	*Changes*	
	29/Actors	30	

1	Services	Services	Services
	Residents	*Sevices&Infra*	
2	Comm.Services	Comm.Services	Comm.Services
	RA	*Houses improv.*	
3	Title/Land	Title/Land	Gen.Improvements
	Govern/notable	*The title*	
4	Not aware	Not aware	Title
	The Army	*Constr.of walls*	
5	Nothing	Nothing	
	Crime increase		
6	Others	Others	

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QUESTION	31	31	32	32
CATEGORY	Changes	Places	Difference/Good	Difference/Bad

1 Services&Infra	Whole sett.	Urbanization/Pav.		Crime
2 Houses improv.	Not aware of other	Service&Infr.		Bad people /new comers
3 Const. of walls	Problems on the higher part	Title		Monotony
4 No answer	1st/main st,2sd/alleys	Transport		
5 The hill benef.+				

1.a.26, 1932   ,
1.b.9
He didn't live in the favela .He was born in Marcilio Dias
1.c.Center/r.Santana;2.Cordovil for 18 years;3.Vigario/5 years
He lived in Mage until he was 15 "She came from Paraiba,lived 3
years in Botafogo, met the husban that was born in MD 30years
ago". 71/78 she has lived in M.D with her parents;78/83 she has
lived at Ilha do Governador.
2. yes
3.Since 66 I left Ceara.Went first to Fortaleza and in 1972 to
Rio/MD I lived for 20 years in the Morro do Juramento, born in
Ricardo Albuquerque/lived 10 years in J.America/lived 2 y.in M.D.
close to the S.Seb. MarketPca das Nacoes/He lived 18 year in
Timbau before moving to the M.D.Housing Estate .
4. "He sold her shack,went away and later returned and bought
another house.The whole family lives in MD". As he explains: I
left Natal /Rio Grande do Norte in 1969. My grandparents already
were living(they've come from Paraiba)in Timbau so in 58 he
moved. "He grown up in Praiba up to 8 when his mother brought
him to Rio,later she brought her parents."He was born and grown
up in Paraiba. He was born and rised in Ipoeiras/Ceara and
came to Rio in 1971.He was born and raised in
Ipoeiras/Ceara.He wasn't a fisherman became in Rio/MD : I was
born in Joao Pessoa-Rio Grande do Norte. All his family now
lives in Rio. He left J.Pessoa (North) in 1969 .His father came
from the North. His wifee left Recife with a friend when she was
She is the only one in Rio. All her relatives still live there.
"uncles, cousins (relatives)".An aunt in the North+2 aunts and 2
uncles in Mage+a cousin working in Portugal. Her relatives went
twice from the North and her aunt came one to Rio. Her father
and a brother are in Brasilia :I've got some cousins in the North
Once a month she recieve news from his relatives of Recife T h e
whole family and relatives are in Recife.Her mather has visited
them 3 years ago.Grandfather+grandmother+cousins
cousin of his father uncles and aunts. She went there once.
Every year during january hollidays I visite them:I usually go to
Mage once a month. Since she arrived in Rio she never returned
to Paraiba (almost 8 years)I visited them in january last year (one
year ago)   "Twice a year relatives from Ceara came to stay with
him,stay 1/2 to 1 year working and return".My father visits them.
Visit them 2 or 3 times a year. Each 3 years. There has been 7
year I don't see them. Once a year by mail. She writes to them
every three months.

Every two months recieve news in letters from them. His wife got parents in Bahia and she phones them every month.He recievies news through the father every year. My father got ill in the North so my mother decided to come to Rio and the father later got a job here. I don't have contacts with them, only through letter.
5 ."Her mather used to live in ""Buraco da Lacraia""favela nearby Av.Brazil and moved to MD 13y ago"   She came from the North with her mother straight to MD where her aunt was already living His grandfather brought him to live in M.D. when he was 2 years old   Her mother already lived in MD when 26 years ago she went to live with herShe lived in Bras de Pina then moved to MD where she has lived for 12 years before getting married.She used to live in Caxias and wor in Kelson where she met her husban who was from M.D. He lived in Caxias and Olaria/moved to a shack in Penha and looking for another shack found 1 in MD She was born in Penha/lived in Caxias up to 22years old/got married someone from M.D. Lived in B.Pina/husband and father in law are fisherman.My husband was born and raised here.
They've came to Rio in search of better life conditions and of a job   I went to talk with the governor because were threaten of removal and he promise to help us.*   His parents came to Rio in search for job.The father was a st.-sweeper so he found the shack in M.D.   In Paraiba I used to work on farming so I've decided to come to Rio in search of + opportunities   No answer "I've came to live in my brother's house(MD)in search of better life,is just an illusion/a dream."   My sister in law used to live in M.D. so she arranged a shack for me in the favela.   I used to live nearby the market in a borrowed shack but the owner needed and I've bought 1 in MD I've decided to come to live here because I couldn't afford to pay rent any more   His   father used to work at Ultralar so he went to know that there was a shack available here   a.the sister of my mother   "Almost my whole family lives in M.D. -cousins,brothers in law,..." I   d o n ' t know. We moved to MD beacuse this was the only way we managed to avoid paying rent   Through letters   The   shack in Penha was on a hill so we had to carry water up to the hill and my wife couldn't/was ill   Her sister lives in MD and her mather lives on the rear of the plot of her sister(not pay rent) "I've met my husband in Ball in M.D,got married and went to live there." W   e keep in touch.People whi go there bring sometimes news.   H   e doesn't have any contact with them.No contact is kept.Her grandfather already lived in Marcilio Dias.My father is a fisherman and already knew MD before moving to here/he used to start the fishing.fr.here   I used to live in Penha and have

sunbath in MD/I went to live with a friend here latter got the shack
6 .a. grandparents "f.It was the social worker from the' ""palacio""
in cojunction with the ex-Pres. of comm. Rondon"   f.in his job
by walking around he saw that the shack in M.D.was being sold
and bought ita.she met the husband who was born in M.D.
a.brothers   a.Brother-but the whole family came after (the
mather and his 8 brothers)to the same house a.sister in law
d.a workmate of his father told him that there were shacks
available in M.D.   I've got relatives at Pinheiro and a person
there saw me looking for a house and told me that there was in
MD   f.Working in delivery for Ultralar he got the opportunity to
pass in MD and to see a shack.   a.The sister of my grand father
used to live here so he moved to here   f.I don't know, my mother
came to live here because 2 sisters of her where already living in
M.D. She came to Rio in search of better job opportunities and
then she met later the husband/came to MD   f.no   one   has
indicated us M.D.We found it looking for to buy a shack.   a.Got
married of someone that was raised in M.D*   a.Husband.My
father in law had a brother living here so he moved from Alagoas
to MD My father came first in search for a job and brought the
family later.**My father have got a friend that used to spend
vacations here so he gave to my father his house   I've came to
live in M.D with my parents   f.Almost the whole family lives
in MD:mother in T.Vila Lobos and sister in Sobral Pinto.
f.Father used to start the fishing from M.D.   b.A close friend
He was almost born in M.D. He lived up to he was two years old
in "Morro da Mangueira ,Cordovil/1 & 1/2 years and M.Dias"
M.Dias; Penha/1985;Pavuna/1986;Marcilio Dias. He lived in
Morro do Cruzeiro but moved to MD with her mother when she
was 1 year old. "I moved to a friend's shack,who moved to the
estate,because my shack was on the area to be lanfilled*"
7. The blocks were divided and asigned through sortition.But
because we were shop owners we've a bigger plot.
Some people don't like the block and change for a house in
another,others leave back to the North". No. (see line 40/41)
No.The plots were chosen by sortitiont.One person was
responsible for the block and then this person "There   was   an
assembly,somebody else attended in my place and I've
receieved this plot from sorti-"   "The block was chosen by
sortition.It is a very quite streets because it hasn't got any
shop,shops are"   There was an assembly of many blocks and
through a sortition each group had assigned a block.The   "This
house was of a guy but ours was going to take long to be build,
our hut was in very unsafe con-" "We've formed a group chosing

the people we wanted as neighbours,this was going to be the first"   The sortition of the block and the plot was organized by the President.   This was one of the 1st blocks and I've chosen it because it was close to my work and it was going   In   t h e opportunity when I was looking for to buy one I've asked a resident and he indicated me this   The first house was built jointly (mutirao)with all the residents of the block than by sortition the   recieved a corner plot.People form the block agreed with that.The aunt of my husband had divided   We used to live in the 31block but there was only gays and prostitutes over there so my husband They've done a lsit and then a sortition and this number was assigned to us.People that were a.   a . t h e husband   The place of this house was chosen by the President.He has chosen the block and the plot and decided

I didn't chose the plot.I always went well with Mr.Francisco so he promise to get me a good plce   This is a project of NBH/CEF so they've defined the blocks for the fisherman and my husband moved   b.godfather(padrinho)   b.   a.She got an aunt there was already leving in M.D "This street is very quite,already not having front neighbours is a great thing.It is good because it"

We've only chosen the block and the people we wanted as neighbours.I went from door to door of my   The number of residents have increased a lot.No one wanted to keep working jointly(mutirao).Many

"invited relations and friends and the plot was sorted.Chico,the president of the community was "tion.I've picked out a block of joint work(mutirao) but I wasn't able to work jointly so then they've   "noisy.The neighbourhood is not the same of the favela,I think this isn't important.People went to "   "assemb ly was organized by IBAM.Nowdays there is a lot of people living here,many people have built"   ditions and I was pregnant so we've change our house with the guy.The more important point to chose   "block and nobody wanted it because was too far away,and then the plots were sorted*"   to be built soon and I wanted to move quickly.My house in the favela was one of the first to be   one.I was in need of a house so anyone was fine as far as i didn't have to pay rent.   plots were assigned.My father was called to make part of this group in a meeting organized   her plot with her brother.The streets here have so complicated names!   wanted to move to the 11block.The residents first have chosed the blocks and then the plots were

neighbours in the favela now are spread around the estate.There ia a lot of people which I don't know   We tried to keep the same group living in this block that used be neighbours of the same street in   "The block was formed from a group that was intersted in the 25 block.Mr.Antonio,vice-president," who was

going to live.Allthe blocks and plots were assigned in this
form.Everything was decided by for my house and'I trist his
choice.The place really doesn't matter.what matters is to be free
from to it.The important thing is that is near by the Pier but just
some residents here are fisherman.The We've chosen our house
according to the neighbourhood.The first house had so many
criminals Mr.Francisco was whom assigned tu us this
block.No one here has decided anything just him.Then I t
was a lady from the project that brought us here because all the
plots in this block were already "is a main street,it has got
footpath,it isn't noisy,it hasn't got Forro or Bars.Most of the people
that" "neighbours in the favela and asked who wanted to live
closeby,to be kept as neighbours.They've" people that went
to live in the estate have left relatives here in the favela or have
brought them from
who has chosen the responsible for the block.He has asked
people who they would like to have in "given me one in this
area which was fine.The est.was built in a piecemeal way,still
peop.in the favela" live in M.D. in shacks and after they were
moved to the estate but still thre is plenty of peop.there.
extensions on the rear.In this block almost everyone has built a
room on the back for relatives. a house for me is the
neighbourhood. desocuppied becausethe area
was going to be filled up with earth.The groups were then formed
with by the RA assigned by sortition.We've
chosed this one because we wanted to move soon. "here.I think
that people had also brought relatives from outside to live
here,they've built for the" the favela.The new people here are
people have bought houses.The population has increased a lot.
then invited the people to form a group and assigned the plots by
sortition. the President.He has decided even how the area
was going to be divided in plots because he was in the rats and
to get rid of the favela.My neighbour has built some rooms to
accomodate their relatives"estate has already grown a lot,there is
too many outsiders.In the favela it is full of new shacks " living
nearby.Here most are old neighbours.Usually people chose the
houses by sortition.The the plots were assigned by
sortition.Many outsiders have bought houses.Some have bought
the "occupied,only this one was available.The favela has
grown a lot.But here people has built new stores" visit the
settlement is because they have friends or relatives here.
"agreed and then I with a neighbour called Marli,that latter left the
block,have organized the group.* " "the North.People always
manage to accomodate the relatives,on the rear of the plot or

even building".

8 . No.This was the first block to be built. I've tried already to change for a house in D.Eugenio S. My mother in low lived there*
"A person from V.Pinheiro that were passing in this estate,saw some houses with a sign to sell" They used to live in the block 7 but it was to messy so her father saw the sign and swap the house. I've swoop house because the other one was close to my grandmother's house and I don't go well with her In the favela we used to swap shacks quite a lot but here we never changed the house.   "I like this place here,there is the bus stop nearby.There is one bus which goes to the city in the morning"
This is the best palce.The bus to Caxiax stops nearby.It is very quite.I wouldn't like to live in a   "the best palce is up there in the front,in the Av.Lobo junioor.This street here is very boring,it has"This alley here is the best palce for me because is very quite and neighbourhood is very good. "This is the best place,the neighbourhood is nice and it is quite.Here in this street where I'm seating" "the help of Francisco,starting from the band which was going to be filled up.*"   The best palec for me is Lobo Junior because there isn't neighbours opposite to you and is a wide   The best palec for me is Lobo Jr.It is better because it close of the exit.In this area here when   This is the best palce.The atmosphere here is better.It is nearby the bus stop and easy to access   The worst area is the one beyond 21 de Abril near C.B.This area around here is good because is the

realtives.People has also brought relatives to the shacks and then they have recieved a house.   "Many people has built on the rear,others accomodated rel.in their houses while they were homeless"   The best places are this street or Lobo Junior which is the same block but on the back.I prefer   contact with CEF. that came from the north. waiting to be registred and to get a house. block representative choses the number of the block and then after the plot is assigned by sortition. foundations others have bought houses.Some have told their relatives that houses were available.   and extended their house to the rear.There much more people living here.Some has got houses If I could I would chose to live outside here.Everything is too far away from here.You have to have   "In this palce.I like my house.I know all my neighbours,the street is very quiet.The clothes-line are "." 　 a ""wood flat""."

The best place is Lobo Junior near the Pier because this area here is to busy.There is too many   and   there   was   one   to Penha.I'm against the RA because I think they should struggle another bus line   "main street because it is too busy, too noisy

and too messy." "If I could chose I wouldn't chose to live here,it is the busiest area.I would like to live up there in theCX" too mmuch movement specially of children to my taste.Lobo Junior is much quiet and after all is "There is nothing worst than a bad neighbour,it is a a real problem (""pedra no sapato"")" "there is too much noise,and movement of cars(NSra.da Penha).The interviwed in fact was seat" "I would chose nearby the main streets,in Lobo Jr or E. Salles where there's a lot of mov.ofcars.Not " "street (funny enough, the interviewed live however in a street with the same characteristics).The" there is fload we have to pass through the favela to access the Av.Brasil and it gets full of mud.This part here is the center.This street and Av.Lobo junior are the main streets. center of M.D and behind the main street.The best block is the 33 because of the heighbours.This is the best street of the estate.I've got relatives living nearby and friends.I like the alley "The best place is Lobo Junior.I don't like my street. Lobo Jr is closer from outside,it is a main" "Lobo Jr. ,it is main street,and one of the best because is starta in Penha and comes up to here."The more in the front,the closer to Lobo Jr,the better.It is better because is nearby Av.Brasil and it ""The best place is the main street,the D.Eugenio Salles becouse it is closer by the commerce_the "This is the best place because it is more quiet.At night is very quiet.In Lobo Jr there is to much The best place is Dalva de Oliveira because is quiter than my street.People there are nicer and I'm gone extend my house in the rear.A friend of mine got married and went to the favela to get house by buying them.Most of the ones that have sold their houses have left this place."very strong legs to go to a so far school.on the otherside of Av.Brasil. I wouldn't like to live inside there,"left outside and no one takes anything. "I like more the favela.It is quite.""There(in the estate) I saw people I don't know.Here(in the favela) ""cars and the bars opposite my house at fridays,saturdays and sundays play music all day long.""in the main street, in the Av.Lobo Junior.There is closer,here you have to walk more to arrive."closer to my mother."in the end of the axial line,facing her street in the shadow,seat talking with her neighbours." "by the pier.In this alls.the sew.is precarious.There,is better because there're +mov.of peo./buses." main streets are not bad.The alleys are bad=too narrow+too many people closeby+no acc.to cars Lobo Junior is more paved. favela live there. I don't like this street because there isn't access to cars."because is hiden and safer,it hasn't got movement of cars." "street.I don't like to live in an alley,what is bad is the neighbourhood."only thing you see is the Navy'wall and that is

good. isn't so tiring to get out.I wouldn't like to live down there (la pra tras)or down the main st(E.Salles) " c h e m i s t r y , t h e bakery..."noise of cars."I've got mates living there.Because it is a main street,it has got little movement." "The best place is Av.Lobo Jr.Because there isn't so many people in the street,there isn't so much" The best places are my mother's street and my mother in law's street(T.Esperanca &D.Oliveira)"there,the only place acceptable is this street here.".There everybody stays inside home,here evybody stays outside in the street.It is the main" No///////They are quiter and safer for children to play. Yes Yes   (in the estate).Overt here(in the estate)there are too many newcomers.

9.No/No/No/No/No. I've changed twice.The 1st house was going to be at Tanc.Neves 13 and they've changed to 22*.
I feel more free to do whatever I want despite of being more civilized and more ordered over there
9.Yes.In 1986/7 I've put some finishings like tiles on the floors and on the walls.I've built a slab.There was a Navy soldier living in the rear of my plot who gave me the material. .I'am starting to put plaster on the walls.We've put plaster on the walls+tiles on the floor.In 1988 I've changed first the roof to tiles and then changed it into a slab.I've put some finishings like plaster on the walls and tiles on the floor in 1985.I've put some finishings:plaster on the walls+painted the walls.I've changed the finishings: on the flor+plaster on the walls.It has got flat roof and it is a 2 storey house+garage.I've put some finishings like plaster on the walls and change the floor..We've build a slab " I ' v e changed the finishings:put plaster on the walls,changed the floor,put tiles above the sink".We've apinted the walls.   .I've change the finishings:the plaster on tthe wall+put some I've changed the finishings:put some tiles.I've put plaster in the external walls.I've changed some finishings:put plaster on the walls and glass on the windows. . I ' v e   c h a n g e d   t h e finishings:painted the walls+change the networks+the floor+the sanitary basin.I've changed the finishings two years ago:put a slab+plaster on the walls+tiles on the floor..I've moved the toilet to the rear because I don't like the small of toilets.It's bad having them inside.I've built another room on the rear.I'm building a room on the rear that is going to occupy the whole plot..I've changed the acces door to the bedroom moving it in a way that it does not face the toilet..I've added 2 more bedrrooms + the garage.In fact,I've changed completly the plan.On the rear we extended the roof and created a covered area for work and

seating.We're building another floor on the flat roof-a first floor.
We've built a room on the rear of the plot and nocked down a
wall to make the livingroom larger.We've recieved two
foundations and then we've turned they in a single house. . I' m
building a bedroom on the rear for my son and building a
veranda to make the house colder..I've moved the toilett to
outside..I've put some finishings:plaster and painted the
walls.I've built a bedroom for the children on the rear..I've added
a veranda between the house and the wall by extending the roof
over.The only access is through the garage.There isn't any other
oppening to the street.We've changed the windows and put tiles
on the external walls.I'm building a veranda in the front.I've
changed the front veranda existing on the plan into a long living
room. N.Just the wall was buil to make it taller and put a fence.
Yes.I've built a wall and then covered the front creating a kind of
veranda..The varanda on the front is part of the original plan.The
access used to be through a door in the middle now is through
the garage.I've build a wall with the material distributed through
the President of the RA.Altough we've got 2 plots we've have
restricred the access to a sinle one.My son in low put plaster on
the walls+the daughter have built the wall+soldier helped in the
slab..There was plenty of dusty so we've decided to put tiles on
the floor."I've decided to change the house because it was to
small for the children,and in our room there was"   I   '   m
extended the house because every year my father in low visit us
and stay here."I've decided to build a wall in order to keep the
children a bit more controlled, not to stay free in the" I didn't like
the door of the bedroom giving straight vision to the toilet   I ' v e
wanted to changed it so I've nock down the existing house
leaving just the foundations.The original plan was too small and
the houses are all the same.We were entlited to have 2 houses
To accomodate the family+to improve the thermal confort of the
house.I've built the slab hoping one day to be able to build a
house for my suns on the flat roof.   I've   build   the   wall
because I fill more protected against crimeof the shootings and
with the wall taller is more difficult for bullets to rich us. put tiles on
the floor and plaster on the wall. "f.the bricklayers from IBAM.The
fisherman don't know how to build,they've paid people to do it."
a;b.brothers in law+father in law;f.bricklayer+carpenter from IBAM
a.;e.workmates from a company of M.D. g.a bricklayer from inside
the estate (local)   a.I've done it with my husband who is a
fisherman   a.I would like to change the tiles into a slab(too
hot);b. 2 rooms for her daughter and grandchild   a.;b. from
MD;c.to put the slab;d.I gave material to workers and they helped

me 2 days;g.tiles+floor   No applicable (see recorded
interview)

10. I would like to build 2 bedrooms on the 1st.floor   No answer
"d.I would make the rooms larger,when I've built them they didn't
let me to make them larger"   a.I would built a slab   a . To
build the slab and to put tiles on the floor   a.I would like to
build a slab. a.I would like to build a slab.b.My daughter is geting
married so she will build a room on the rear   a.I would built a
slab;d.I would change the sew.syt of the all./the exit is to small so
floods when rain   a.Finishing:I would like to put plaster in the
external walls   a.I would build   a slab;b.I would build
bedrooms on the 1stfloor. No.   "c.move the toilet+the water
tank to outside+door opening to inside,e.build a veranda in the
front" a.I would build a slab;b.I would built a bedroom on the top
of the one we've built on the rear-1stfloor   b.I would like to
build 2 bedrooms and a bathroom in the rear.c.I would change
everything.* a.change the roof into a slab because this roof is
awful;b.build a room for guests+sw.Pool on the slab..I would put
some finishings such as plaster on the walls and change the
floor. a.I would like to put plaster and paint the walls;b.I would
build a room on the rear for us.* a.I would put   tiles on the
floor+paint the walls+tiles on the kitcken walls+put a slab   a . I
would change the floor;b.I would like to split the livingroom in two
rooms;d.wall on the back a.I would change the finishings:plaster
on the walls+change the doors into wood doors;b.wall

Everyone does want they want.b.I would build 3 more rooms+a
veranda on the flat roof.   No applicable (see recorded
interview)

12. In the BNH time I've decided to build the WC outside the
house but they didn't create problems   Yes.I wanted to make the
rooms larger but I didn't have money to buy the needed
add.material c.I would move the toilet to outside on the rear of the
plot   Nobody interferes in the construction.We know exactly the
limits of our plot.   .If I could I would have built the house with
the toilet outside+2 bedrooms instead of 1+put slab. I wanted to
build a flat roof but the CEF'enginners didn't let me arguing that
the plot wouldn't supp.   .The CEF'enginner just explained me
how to built but he didn't put any objection   "House:limit   is
def.by the walls;Street:is a single one(axial l);Area:there is the
fisherman area,"   "House:the   walls   define   the
limit,plot=house;Sq:there isn't,it is going to be build but I don't
know "   I couldn't build the toilet outside because i didn't
have money.

13. House:the limit is defined by the wall;Area:it is from here to

Lobo Jr.;Street:my house is in the all Street:the whole street is the same(the axial line);Square:I wanted to move the 'toilet from inside to outside ant the BNH stoped me from doing it.House:the walls define the limits.Neigh.D.:the only one is the mother in law who was whom recom-   H o u s e : l i m i t e d   b y   t h e walls/gate.Sq:there isn't.Alleys(trav):are sts.disconnected to the main street   House:the footpath is the boundary of my plot on the front.Sq:there isn't any.Alley:is a public space BNH didn't allow us to put the slab when we built the house+the water tank outside*   "House:the limit is the wall,the footpath isn't ours;Sq:there isn't;Alley:are 20 houses one after the"
"House:limit is normally given by the wall,my house has got 1.5 beyond the veranda,people don't"Area:just my street.Neigh.D:I don't like to mix with neighbours the only"House:limits are defined by the wall,beyond the wall is public dom.Sq:there isn't,just the field.;" "House:The house occupies the whole plot so it is the building which defines my property,beyond that" " t h e Porcao area,but I don't know about this one here;Neigh.D:the 2 beside me+the 1 opposite me;" "where;Neigh.D:I don't have a lot of intimacy,the closer one is my aunt that lives beside me.Street:" House:the wall defines the limit;Street:the house is between the 2 main streets(21 de Abril and   Street:my house is in the part of the street that is closer to the main street;Sq:there isn't just the House:the walls define the limit;Square:there isn't.Area:the only indication I would give is this   House:it is defined by the walls and the gate;House:is in the street which ends on the pier;Area:I   "StreetXall:there isn't any difference,it is just a question of naming;Avenue:it is larger and longer;" h e r daughter in law whom was building on the rear of her plot used part of the material. "House:the limits is the wall;Area:my house is in the fisherman area which is between the pier,"   "No/People from BNH tryed to convince me to follow a plan,they didn't like me to build the WC out." House:the limit are defined by the walls;Street:is the whole st. even after the curve;Neigh.D:beside House:the limit is the wall.In the st. I just interfer when the children brake glasses playing.Sq:there   "there   isn't any.Street+Avenue,what is really matters is to be quiet,not to have movement of people in the street."House:the   limits   are defined by the wall;Street:I would say that my house is nearby the material   No applicable (see recorded interview)
mended us to live here because she was the responsible for this block.Street:I live in the main   Main st:is where there is more movement of cars which are Lobo Junior+Dalva de Oliveira.Neig.D: "Neigh.D:Iare the one I know best,they are

from the favela and live opp.to meat the right hand side"
"House:the limits are defined by the walls;Area:it's the worst,it's
from the alley nearby(Aluisio Al.)"   other and the more
enclosed streets are the ones we call alleys;Block:are both sides
of the alley; Av: "respect,they enter in my plot because there
isn't wall and nock in my window.Sq:just in plan."   exception is
the one besides me;Alleys:the quiets streets.Street:are the main
roads where there is   Area:it's the blockSt.Xalley:the st. is
wider and more app.for traffic of bus+tracks.Main st:more
people+cars+   "is the footpath which is public;Area:I would
say that is in the beginning closeby the Av.Brasil,stricking"
StXalley:the street is wider and has movement of bus+tracks
while the alley doen't support traffic.

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