

**POST OCCUPANCY EVALUATION OF FIVE  
STOREY  
WALK UP DWELLINGS:  
THE CASE OF FOUR MASS HOUSING ESTATES  
IN ALGIERS**

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**A THESIS SUBMITTED FOR THE DEGREE OF DOCTOR OF  
PHILOSOPHY**

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**August 1991**

## **ABSTRACT**

### **POST OCCUPANCY EVALUATION OF FIVE STOREY WALK UP DWELLINGS: THE CASE OF FOUR MASS HOUSING ESTATES IN ALGIERS**

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Because of the acute shortage of housing in Algeria, resulting from a high birth rate and the migration of the rural population to the cities, large mass housing programmes have been launched since the late 1970s, providing the urban population with dwellings and housing facilities just outside the existing urban perimeters. The urgency of unmet housing needs has meant that certain qualitative aspects of dwelling design, such as its adaptability to users' needs and its social adequacy, have generally been overlooked or somewhat ill considered.

The present thesis investigates residents' reactions to the design of their housing environment in four selected estates in Algiers. The research methodology is based on a combination of questionnaires, interviews, photography and records of physical traces. A sample of 128 housewives has been interviewed and different indicators have been used in order to assess their evaluation of the various physical and non-physical features of their housing environment. Adaptive changes made to the original design of the dwellings have been recorded, as well as the space use patterns of the main living areas. The relationship between residents' satisfaction with their dwelling and their perception of the various features of their housing environment has also been investigated.

The research findings have resulted in a number of recommendations which are applicable to the programming, the design and the management of future mass housing estates in Algeria.

## DECLARATION

No portion of work referred to in this dissertation has been submitted in support of any application for another degree or qualification of this or any other university or institute of learning

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M. Behloul

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## ACKNOWLEDGEMENTS

I would like to express my thanks to my supervisor, Dr A.M. Craven for his help and assistance throughout this research work. I would also like to take this opportunity to express my gratitude to the Algerian Government and the Algerian Embassy in London for their financial assistance. I am deeply indebted to the residents of the studied estates *who opened their doors for me and made this research work possible*. Thanks are also due to the various architectural offices in Algeria who provided me with the information necessary for the present work. I would also like to thank my father Hamid and my mother Naziha for their moral support and encouragements during the period of research. Finally, I and this work owe a great deal to the personal support of my fiance Fethi whose help and cheerfulness kept me going through the darker moments of research.

*TO MY PARENTS AND MY GRAND MOTHER LOUIZA*

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## **1.1. INTRODUCTION**

The present thesis investigates the responsiveness of the five storey walk-up dwelling type to the needs of Algerian households. A field study was carried out in four large scale public housing estates in Algiers and a sample of 128 housewives has been interviewed. Residents' assessment of both physical and non physical attributes of their housing environment has been evaluated. Residents' perception of the internal organisation of their dwellings has also been examined in terms of how adequately it meets their needs. An important part of the study consists of comparing residents' satisfaction with their dwellings in the four estates and identifying which attributes of the housing environment are most likely to contribute in promoting a higher degree of residential satisfaction. The results of the study are aimed at improving the design quality of future similar housing projects in Algeria.

## **1.2. DISTANCE BETWEEN THE ARCHITECT AND THE USER-CLIENT**

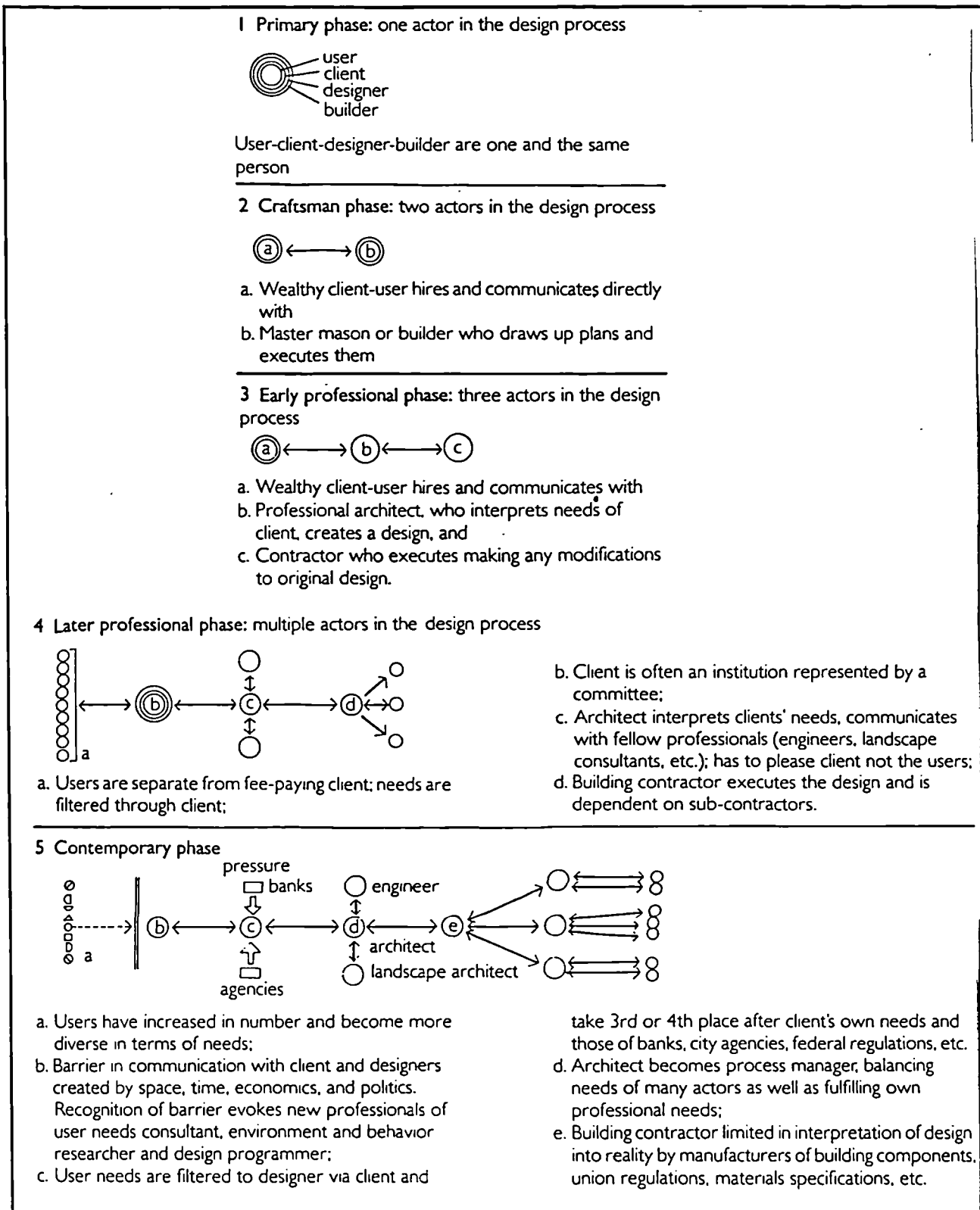
In pre-industrial society, the architect either intuitively understood his clients needs, because they were similar to his own, or these needs were codified by tradition and the architect had only to follow the custom. With the onset of industrialisation the relation between the architect and the user acquired a new dimension. Not only did architects no longer have the direct contact with the user-client that had been common in the past but, more importantly, the client who paid for the project was not necessarily the person who would use the project and this separation between the paying-client and the user-client was critical. Cooper (1977), presents an interesting diagrammatic representation of how designer-building user relations have changed through the course of history (see fig 1.1).

Since the industrial revolution most housing and many environments have been designed and built for a client other than the user. No matter how much designers negotiated with paying clients it was difficult to plan for the needs of user clients who were neither well known nor readily available to plan with.

## **1.3. DISAGREEMENT BETWEEN ARCHITECTS AND BUILDING USERS**

During the design process many assumptions are made by the architect about how occupants will react to and feel about given environments. It is frequently the case that the stated purposes of a particular setting are not met because the architect's assumptions turn out to be wrong. Significant disagreement between experts and users have indeed been demonstrated in several studies of residential

**Figure 1.1 : Designer-user relations at different periods in history**



Source : Cooper (1977), p. 140



environments (Lansing and Marans, 1969; Boudon 1972; Cooper 1975; Darke, 1982, 1984).

One of the earliest examples of the discrepancies between architects and building users is Le Corbusier's 1926 villa settlement at Pessac in France. Over a fifty-year period, the inhabitants of Le Corbusier's project have become their own architects. They have made changes to their houses both internally and externally (Boudon, 1972). One of the first manifestations of a new approach to housing architecture (which shifted from Le Corbusier's "Unite D'Habitation" at Marseilles) was a housing project for Morocco designed by Bodiansky Candilis and Woods, members of the 'Ateliers des Batisseurs' formed by Le Corbusier. The architects paid special attention to one aspect of the traditional Muslim life, the persistence of the patio as a completely private meeting place for the family. (Smithsons, 1955 pp 2-7). While this approach was a first step towards recognising the cultural dimension in the design of mass housing, it remained a mere reproduction of some archetypal features of traditional housing architecture.

#### **1.4. CHANGING THE BOUNDARY BETWEEN ARCHITECTS AND USERS**

Whereas the ideology of Modern Architecture has tended to deal with how people should live rather than how they do live, a new approach to the field of housing started by taking into account the social dimension of architecture. Soon after World War II, with many moderate and high density housing projects being constructed in major western cities, questions were asked for the first time regarding the social and psychological effects of residential environments on their occupants.

It became increasingly evident that outcomes which support the user's own values and lifestyles cannot be planned without some input or participation from the users during the design process (Gutman, 1972; Zeisel, 1974). This led many designers to give some control to the user client by developing mechanisms that change the conventional boundary between designers and user-clients. Three main alternatives can be identified in this respect:

- Flexibility in design
- Direct Users' participation
- Design Evaluation Research

Although the present work is more concerned with the third alternative it is useful to dwell briefly on the characteristics of the two others.

#### **1.4.1. Flexibility**

"The housing process simply does not work if the occupants are not involved" asserted Habraken, author of "Supports" (Habraken 1972). Habraken's introduction of the concept of flexibility in the design of a project was aimed at providing building users with a more direct control over their surroundings by enabling them to adapt a structure to their needs. Habraken's ideas for supports were thought to offer the ultimate flexibility for accommodating different social needs. The concept consists of a huge structural framework, varying in size from a few stories to several thousand feet in height, into which individual room-size or apartment size units can be put or taken out at will.

Rabeneck et al (1974) indicate that a number of contemporary building systems in Europe and Britain reflect the philosophical directions of Habraken because of their design flexibility and adaptability and their opportunity for user participation. They present a list of a wide variety of possible reasons why a household feels the desire to perform some physical alteration to its house. Those reasons include the desire to accommodate or to signify a change in family make up or family activities, desire to improve the quality of the house with respect to social and market criteria, desire to alter the relationship between rooms, desire to reallocate functions within existing space and desire to be different or to conform to stereotype arrangements .

In England, the PSSHAK (Primary Support System and Housing Assembly Kit), designed by Hamdi and Wilkinson (1971), was an application of the support structure philosophy. The range of design variations arrived at by tenants reflected the requirements of a cross-section of the population more faithfully than any architect would have done. Out of forty five dwellings only two or three turned out to be the same (Ravetz, 1980). However, the building ended up as a conventional block of flats because moveable walls were rarely moved by users once they had been initially set up.

#### **1.4.2. Direct User Participation**

The second alternative consists of a direct user-participation in both the design and the building process. Because direct participation on the part of the

users is the only way user needs and values can really be taken into account, advocacy planners such as Fathy (1973), Turner and Fichter (1972), Zeisel (1974) Turner (1976) and Alexander (1977, 1979, 1985) have argued that people need to participate in planning their own environment because it gives them a feeling of control over that environment and a greater satisfaction.

According to Becker (1977), there are different degrees in user participation:

- Users are not consulted at all
- Users provide information to a designer who then creates the design
- Users choose among already completed designs
- Users create the project themselves.

Examples of different degrees in user participation are described in the following two sections

*a. Self help projects*

The owner-planned squatter settlements around many South American towns and cities are the most extreme and most publicised examples of user participation philosophy (Payne, 1977,1984). In these examples, a professional is hardly ever involved. Every item is owner planned, from the initial occupation of free land to the construction of individual houses. However, this type of participation has not been planned for initially as it has often begun illegally. The subsequent success in establishing a working community and solving housing problems with minimum public expense and social stress have led on occasions to government approval of the squatter settlements in the form of aid and provision of sites and services, allowing a full participation of the low income population in solving its housing problems.

*b. Direct participation in the design process*

There has been a significant trend towards direct involvement of lay people in the definition of new buildings during the early stages of the design process. Obviously, the more the user is involved in the basic planning decisions, such as determining room sizes and location, the better the concept of participation works. The users provide information to designers during the design process about

what they would like to see happen and they might also determine which alternative is to be implemented.

Drawings have traditionally been the medium for communicating design proposals. It became increasingly recognised however, that the medium of representing and communicating design proposals was the essence of the strengths and weaknesses of participatory design methods (Lawrence 1979, 1982). Consequently a number of architectural techniques that enable either small scale or full scale simulations of building have been developed and applied (Bentz 1981, Eisemon 1975, Hardie 1983, Lawrence 1979, 1982). Lawrence (1988) presents an interesting review of a range of subjects that have been evoked by the use of small scale and full scale three dimensional models as tools for design during the genesis of a housing project. In Switzerland, the Laboratory for Architectural Experimentation allows for the full scale simulation of buildings. Using large but light weight blocks, families can easily construct and revise life size plans for their homes (Lawrence, 1982). Several studies show that the mode of environmental simulation can yield distinctly different results, particularly with respect to the perception and judgment of the third dimension (Lawrence 1979; Seaton and Collins 1972). The proposed role for full scale models is to represent diverse possibilities in order to give lay people and professional designers the possibility to think and communicate with and to appraise and modify alternative design solutions. These models are not meant to be replicas of future buildings.

In Sweden, efforts have been made in recent years to invite the tenants' organisations to participate in the planning of their residential environments and in influencing the design of their dwellings. The tenants' input forms an important part of building research which becomes the basis for building regulations, guidelines and recommendations. Although the need for and value of participatory design is easy to understand and is widely recognised, making direct user participation work is not always simple. Because people are not used to being consulted and are even less accustomed to being asked to participate, the participation process becomes a cumbersome process. Moreover, design assistance is often available in inverse proportion to users' needs for it. The wealthy who already occupy the less stressful settings can afford to hire consultants to improve those settings.

In the case of large scale housing projects, where no policy of direct user participation generally exists, evaluation research may be an important first step

towards improving housing and neighbourhood conditions of the poor and the low income users.

### **1.4.3. Evaluation Research**

The third alternative that reduces the gap between architects and building users was proposed by environment and behaviour researchers. It consists of evaluating the built environment after it has been occupied for some time in order to make more visible to architects the effect of their decisions on the users. Evaluation research allows designers to better understand users' desires, needs and reactions to the built environment and provides them with a more reliable and valid feedback than occurs when relying exclusively on intuition and subjective opinion. A new multidisciplinary field has thus emerged from the more traditional disciplines. This field has been labelled environment-behaviour studies, environmental psychology, environmental sociology, evaluation research and environmental design research (Moore et al, 1985).

By the late 1970s, the performance concept was used throughout the architectural profession and dealt mainly with the following three aspects :

- the technical aspect which deals mainly with fire safety, sanitation and ventilation, exterior walls, roofs, interior finishes, acoustic, illumination, electrical and environmental control systems.
- the functional elements which directly support the activities within the buildings and must be responsive to the specific needs of the occupants, both quantitatively and qualitatively.
- the behavioural aspects of building performance which link occupants' activities and satisfaction with the physical environment.

Behavioural evaluations of building performance are concerned with how the psychological and sociological well-being of the buildings' occupants is affected by the design of the building. Whereas the scope of building science was traditionally limited to quantitative measures of properties of building materials, finishes, structures and spaces, it has become increasingly common to assess the qualitative nature of these elements by involving people in evaluation studies.

In earlier years, the contribution of environmental design research to the literature on the subject tended to be organised along the lines of traditional social and behavioural science categories such as privacy, personal space,

environmental cognition, and attitudes and preferences (see the EDRA proceedings, 1969-on). However, a research review by Ross and Campbell (1978), at the end of the first decade of EDRA, showed a shift in emphasis to the organisation of place types. The reviewers also noted that more research had been conducted on the building scale than on either the larger urban settings or the interior spaces, and that housing was the single most studied setting. Bechtel and Srivastava (1978) identified over 1000 conducted evaluations in the area of housing evaluation alone.

Different definitions of design evaluation research can be found:

- Friedman, Zimring, and Zube, (1978), define "environmental design evaluation" as "a diverse set of studies and practices with a common objective, assessing the effectiveness of a designed environment for users"
- Moore et al (1985) define "environmental design research" as "...the study of mutual relations between human beings and the physical environment at all scales, and applications of the knowledge thus gained to improving the quality of life through better informed environmental policy, planning, design and education."
- Gittford, (1987, p.342), defines "social design" as "studying how settings can best serve human desires and requirements".

During the past two decades, there has been a proliferation of evaluations of buildings in use which have collectively born the label of "Post Occupancy Evaluation" (POE). By the end of the 1970s the first book on POE was published and attempts were made at defining the field of POE as "an appraisal of the degree to which a designed setting satisfies and supports explicit and implicit human needs and values" (Friedman, Zimring and Zube 1978). Zimring and Reinzestein (1980) define post occupancy evaluation as "the examination of the effectiveness of designed environments for human users"

The field of POE research is defined in more detail in the next Chapter, as the aim of the present thesis is to adopt the models and the methods of this type of research in order to assess the degree of responsiveness of the design of the widely spread "five storey walk up" apartments to Algerian households needs. The knowledge gained from the research would feedback into the selected projects and feedforward into the design of future similar housing estates.

## **1.5. RESEARCH CONTEXT**

This section explains very briefly the conditions in which mass housing environments emerged in Algeria and the urgent need for POE studies.

### **1.5.1. Urban Mass Housing Policy in Algeria**

The acute shortage of housing in Algeria due to the high birth rate, the large movement of population to the cities and a low housing production rate when compared with the constantly increasing needs, resulted in a situation where thousands of dwellings were urgently needed within the existing urban areas. The idea of industrialising the building process and the demonstration of well-organised sophisticated component factories did not fail to impress professionals and decision makers who took as a model the experience of Europe in the past three decades.

Housing policy, perhaps not unnaturally, was mainly defined in quantitative terms and expressed as targets of housing units to be built. So many thousand dwellings per year became a very familiar slogan in the Algerian media. Criteria of cheapness of construction, mass production and the provision of only a limited number of spaces for each housing unit in order to build a greater number of units per project were given priority over the qualitative aspects of dwelling design, such as its adaptability to users' needs and its social adequacy. The urgency of unmet housing needs meant that design decisions were liable to be ill considered.

### **1.5.2. Influence of the Architect on Housing Design**

In the context of Algerian public urban housing, the sphere of influence of the architect on urban housing construction is somewhat slight. Numerous directives, limitations and criteria which influence the form of the designed environment, such as municipal zoning, legislation and administrative guidelines for public housing, represent an important set of constraints on the design process that is effectively outside the control and influence of the designer. Number and size of dwellings to be planned have been largely predetermined by the Ministry of Housing (now dissolved) and the architect has had only partial influence on dwelling and plan type. However, even within this very limited sphere of influence, the architect still had some degree of responsibility concerning the decision about site planning and the internal organisation of the dwellings.

### **1.5.3. Lack of Diversification in Housing Solutions**

The policy that guided the production of mass urban housing has resulted in very limited options, as almost the same versions of five storey apartment blocks have been widely built throughout the country with very few recent alterations in their design. The same subsidised urban housing type was aimed at different social categories with different incomes in various parts of the country. It is clear that the necessity to build as many dwellings as possible in a short time may have obstructed possible innovation in housing architecture and has certainly determined the spatial disposition and concentration of dwellings. Not only did the policy fail to meet its numerical aims but it also failed to consider the qualitative aspects of *housing production in general and the social adequacy of the produced built environment in particular*.

### **1.5.4. Necessity for Housing Design Evaluation Research**

In assessing the parameters which determine housing design, a fairly accurate measure of some parameters, such as family size, income and climate can usually be achieved. Other parameters, such as patterns of living and users' personal preferences, are not so easy to identify, particularly at a time of important social changes. Such parameters have rarely been taken into consideration in the design process as they have rarely been identified in systematic research which would bring them to the notice of designers. Consequently, instead of having had a process of adaptation of housing design to the local conditions and specific needs of Algerian households, it was rather the adaptation of the households to the new type of housing that was expected by the decision makers. An "average" size of dwelling has been decided upon for an "average" size of household.

Inadequacies in the design of mass housing dwellings and the general layout of housing estates are thus likely to have occurred and to have been repeated over and over. There has been no systematic and frequent evaluation research to assess the extent to which the produced housing environments were responsive to their occupants' needs and to recommend incremental improvements to the design of mass housing projects of the same type.

Furthermore, because residential mobility is very restricted due to the acute housing shortage, the quality of the five storey walk-up apartments is likely to have an impact for a significant proportion of residents' life time. There is thus an urgent need for post occupancy evaluation research to be carried out in such



environments in order to identify important areas in the design where improvements should be made.

## **1.6. THESIS OUTLINE**

An overview of the different alternatives aimed at reducing the gap between designers and building users having thus been presented, the next chapter defines in more detail the field of POE research and describes the methods and models that have emerged from previous evaluation studies. The methodology adopted in the present study and the criteria used for the evaluation are described in Chapter 3. Chapter 4 provides the social and historical context of the research field as well as outlining of the criteria that led to the selection of the four housing estates in the suburbs of Algiers as a field of study.

The presentation of the research results ranges from general matters presented in Chapter 5 to more specific matters presented in Chapters 6 and 7. All the investigated aspects are considered again in Chapter 8, according to their relationship with residents' satisfaction. Chapter 5 presents residents' evaluation of their external housing environment as well as their perception of their neighbourhood. Chapter 6 describes residents' overall evaluation of the internal organisation of their dwellings and their preference for suggested types of dwelling arrangement. Residents' perception of the shape and spaciousness of the main living areas in their dwellings is assessed in Chapter 7, along with the observed space use patterns of the dwellings. Chapter 8 presents the results of a further data analysis which investigates the relationship between residents' satisfaction with their dwellings and their perception of both physical and non-physical attributes of their housing environment. The results are summarized in Chapter 9 and guidelines are presented for improvements that could be made in the design and the management of future public housing projects similar to those being evaluated in the present study.

## Chapter 2 : POST OCCUPANCY EVALUATION RESEARCH : GOALS AND MODELS

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## 2.1. INTRODUCTION

Post occupancy evaluation (POE) is a systematic evaluation of completed and occupied settings. It has its origins in academically based studies in the 1960s and the 1970s when evaluators were curious about how 'users' behaved in and reacted to buildings and was part of a larger effort to define the design process in terms of rational models derived from information gained through research.

The 1960s witnessed the growth of research focusing on the relationship between human behaviour and building design which led to the creation of the new discipline of environmental design research and the formation of interdisciplinary professional associations such as the Environmental Design Research Association in 1968. The field of POE has expanded from the academic to the professional world. While it is still a maturing field, there appears to be a growing commitment towards the inclusion of POE in the building process. Today POEs are conducted as part of the specialised services being offered by a growing number of consultants as well as a select number of progressive architectural and planning firms. This has resulted in a shift in emphasis from studies that reflect the interest of evaluators to studies reflecting the needs of building program managers, facility managers, facility programmers, architects and others (see Zimring et al, 1988)

In the 1980s, POE developed into a discipline of its own and the 1980s witnessed a number of advances in theory, method, strategy and application of POE. The growth of POE is indicated by the recent formation of relevant international organisations in different parts of the world, such as the 'International Association for the Study of People and their Physical Surroundings' (IAPS) based in Europe, the 'People and the Physical Environment Research Association' (PAPER) based in Australia, New Zealand and South East Asia and the 'Man-Environment Research Association' (MERA), which is a Japanese organisation.

The aim of the present Chapter is to define in more detail post occupancy evaluation research, its importance as a necessary stage in the design process and to present the models that have emerged from previous studies and which have been applied to monitor and evaluate existent buildings.

## **2.2. EVALUATION RESEARCH AND THE DESIGN PROCESS**

Architects have frequently expressed the wish that social scientists should provide a standard checklist of user needs in housing so that their product could be found more suitable (Broady, 1968; Gutman, 1972; Zeisel, 1975; Lasswell, 1974). The difficulty with general theories of human needs is that the physical specifications of solutions are likely to take extremely diverse forms both in different cultures and classes within the same culture. It also does not attend to the specific needs of subgroups with various physical limitations such as the young, the elderly, and the infirm.

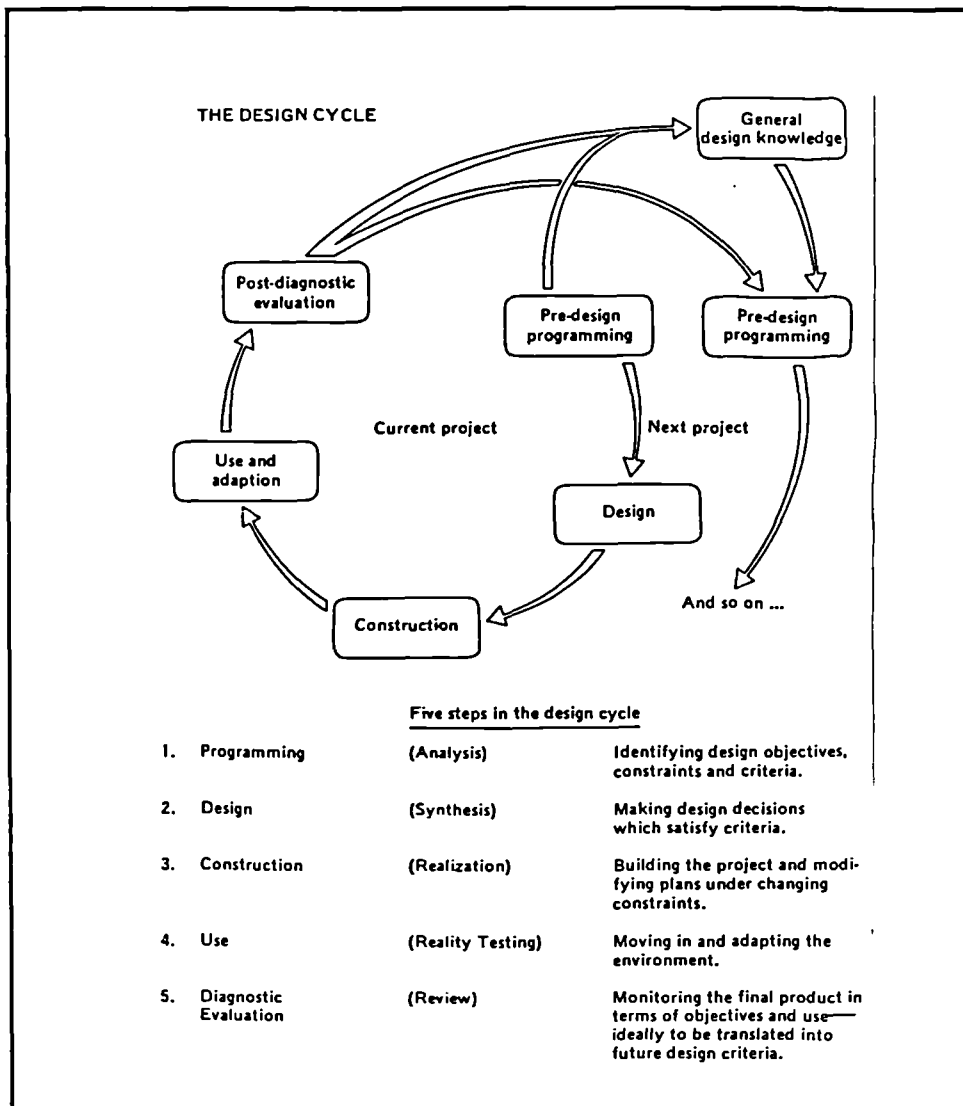
Post-Occupancy Evaluation is increasingly becoming an important stage in the design process. Whereas a typical building project terminates with the construction of the building, it is becoming more common that the design process follows the stages suggested in Zeisel's (1975) model of the design process (see fig 2.1). The process includes:

- Decision to build (politicking and financing).
- Programming (setting goals and constraints).
- Design (translating the programme into a form).
- Construction.
- Use and adaptation (by occupants).
- Evaluation.
- Feedback (to modify the building or to assist in programming of future buildings)

An important feature of this model is its cyclical nature: POE is both the beginning and the end of the design process. The results of evaluation research must be made not only towards improving the fit between users and their environments, but also towards reducing the differences between the designer's and occupant's definitions of good design.

However, feedback remains an area to which the architectural profession, in general terms, pays little attention. In her 1974 study of American architects and planners, Reizenstein (1975) found that only a small fraction of respondents reported that they often made use of evaluation research findings. Reasons for lack of use included difficulty in finding research information and constraints such

**Figure 2.1 : Post occupancy evaluation in the design process**



Source : Zeisel (1975), p. 20

as time and money. Werner (1988) provides examples of buildings where POE was an integral part of their planning process and gives support for the belief that POE does in fact improve the quality of settings for users.

### **2.3. DIFFERENCE BETWEEN POST OCCUPANCY EVALUATION AND SOCIAL RESEARCH**

Post occupancy evaluation is "an examination of the effectiveness for human users of occupied designed environments" (Zimring and Reizenstein, 1980), "it is the process of evaluating buildings in a systematic manner after they have been occupied for some time" (Preiser, Rabinowitz and White, 1988). The POE approach uses the occupants' needs as the criteria by which the building is judged, bases its conclusions on user impressions, and employs survey and interview methods. POE must be distinguished from most social science experiments. As Friedman, Zimring and Zube put it, "whereas social science strives to control extraneous factors, evaluation often describes those factors; whereas social science is most concerned with discovering causes for behaviour, evaluation looks at influences on behaviour, whereas social science aims to reduce the number of factors, evaluation often examines complex systems" (Friedman, Zimring and Zube 1978, p3).

Another important difference between social research and POE research remains in the fact that the former is person-centred because it focuses on the way individuals think and feel about the places around them, whereas the latter is place-centred, it focuses on the quality of a setting from a human perspective. Moreover, social research often embodies psychological constructs (such as emotions, meaning, concern, preferences) whereas POE research attempts to measure physical characteristics such as environmental quality using users' perceptual skills. Because POE research is place centred, observers with specific functional relationships to the place evaluated are usually selected.

### **2.4. GOALS OF POST OCCUPANCY EVALUATION RESEARCH**

Application is the "raison d'être" of evaluation research. Diagnosis of existing buildings is a means of gaining various types of information, which may be classified into three sets. The first set is the specific data related to a particular building and groups of occupants regarding the functioning in use of that setting. The second set is the feedback data enabling the architect and the client to assess how well the designed environment meets the intentions and requirements

established in the design brief. The third set is the data from specific contexts that can be compared with evaluations of other buildings serving the same purpose, thus enabling the formation of generalised and context specific information.

According to the type of information gained, the results of a POE research can feedback, feed-forward, and feed-in to architectural projects.

#### **2.4.1. Feedback**

In the feedback process, evaluation research is generally applied to an existing building which has typically not "worked". The researcher is invited to discover the causes and to suggest a solution to a particular set of problems. POE can feedback into existing projects in such a way that it can be considered as a "diagnosis", the applied use of the results being a form of treatment.

#### **2.4.2. Feed-in**

POE can be used to feed-in to a project when the evaluation research is conducted specially for a building which is not yet built and is still under design.

#### **2.4.3. Feed-forward**

In this case, the results of studies of one building are applied to the construction of another building. It is with the notion of feed-forward that the majority of problems found in evaluation research utilisation are to be solved.

There are two broad sets of information which can be collected within POE research. The first set consists of the details of the problems and their solutions in relation to the particular building being studied, and the second set is the information of a more general nature which has the potential for use in future designs. According to the type of application that a POE study is planned for, different dimensions can be found in POE goals.

### **2.5. DIMENSIONS OF POE GOALS**

#### **2.5.1. Generality**

POE research is explicitly concerned with different points on a continuum from generality to specificity. Because the unit of analysis in POE is usually the

designed setting, the limits of generality are typically considered in terms of settings.

### **2.5.2. Breadth of focus**

The breadth of focus of a POE research project means the degree to which evaluators focus on single attributes of a setting as opposed to viewing settings as holistic systems. For example, some researchers concentrate on relatively specific physical or perceptual characteristics of settings such as density, whereas others cast a wider net and attempt to characterise more completely the complex social and physical workings of a setting. Many researchers focusing on single attributes acknowledge the broader issues but do not include them as the primary concern of their evaluations. Some authors have chosen to work at one level independently of any other. For example, in evaluating student housing, Moos (1978) emphasised the space and layout within the house, whereas the Department of Environment (1972) studies dealt with the estate outside the dwelling.

### **2.5.3. Timing and application**

Some researchers intend to provide findings that can immediately inform design and planning decisions, while others are concerned with long term compilation of data.

## **2.6. MODELS OF POST-OCCUPANCY EVALUATIONS**

Despite the considerable active interest in the field of environment evaluation, almost all commentators and researchers who have addressed the area of evaluation have pointed to the non-theoretical nature of the field. This criticism can be found in articles and research reports by individuals actively engaged in evaluation research in both the USA (eg. Zimring and Reizenstein, 1980; Marans and Spreckelmeyer, 1982) and the UK (eg. Canter, 1983; Kenny, 1983; Donald and Hedge, 1984; Donald, 1985). All these reviewers point to the fact that the lack of any overriding theory has led to studies being non-comparable and noncumulative.

However, there are two broad categories of evaluation models (Donald, 1988). The first of these are descriptions of the process of evaluation and called the "structure process" approach to evaluation (Friedman, Zimring and Zube,



1978). The second category of evaluation models are descriptive models of psychological phenomena.

### **2.6.1. A Descriptive Model**

Descriptive models describe the categories and cognitive structure which individuals who are evaluating their environment impose upon that setting. A model was presented by Canter (1983) and labelled "A Purposive Model of Place Evaluation". The model is 'purposive' in that its basic definition of evaluation is "the extent to which an individual experiences a place or setting as helping to achieve his or her goals" (Donald, 1988, p228). The foundations of the model are grounded in the belief that there are fundamental processes which underlie place experience and these processes are argued to be consistent across people and places.

More details about this model can be found in Canter (1983) and Donald (1985). However this type of model is mainly used in psychological research.

### **2.6.2. A Process Model**

Whereas the previous model describes people's experience and evaluation of place, the process model provides a way to organise the information required for an evaluation. Friedman, Zimring and Zube, (1978) provide an example of this model in their "structure process" approach to evaluation. The structure aspect of the model is a five part conceptual scheme for organising an evaluation. The five parts are:

- a. The users.
- b. The setting.
- c. The proximate environment.
- d. The design process
- e. The social historical context.

#### *a. The Users*

The users are those who are involved in the normal activities housed by the building. Their backgrounds, preferences, behaviour and needs must be

considered in the setting's design. In many cases, the major problems in an evaluation are defining the user groups, understanding the characteristics which describe them and understanding the distinct needs of each group.

*b. The Setting*

The setting includes the actual building or designed out-door environment that will be created or renovated and the organisation that will occupy the building. The setting embodies physical as well as social attributes.

*c. The Proximate environment*

The proximate environment includes the nearby surroundings of the setting. Each designed setting exists within an immediate physical and social context. Each setting exists in a neighbourhood and is affected by local conditions such as climate, air quality, water quality, transportation, presence of cultural and other facilities and safety.

*d. The Design process*

The design process refers to the sequence of steps through which architects and social designers proceed in order to produce a habitable building. In the design process, the designer is only one of the actors in a complex process. Other "actors" who can play roles in this process are the client, who may not be the user, the users, the financier, boards and committees and public officials and agency representatives responsible for the administration of different public projects and programmes. Each individual brings to the design activity or process a set of values, preferences, attitudes and limitations which, in part, are conditioned by his or her role and which have to be accommodated somehow in the production of a designed setting.

There is another important factor which impinges on the design activity. It consists of numerous directives, limitations and criteria which influence the form of the designed environment. These include municipal zoning plans, legislation, policies, and administration guidelines for public housing and open space programmes. These elements constitute an important evaluative factor, a set of constraints on the design process that is effectively outside the control and influence of the designer.

*e. The Social historical context*

The four informational factors described so far need to be viewed in terms of a larger social-historical context. A description of this context might include social and political trends which might affect the setting (such as the economic climate or social attributes) as well as the historical changes in these trends, both in terms of the past and the projected future.

## **2.7. LEVELS OF POES**

POE is a systematic and formal process which can take place at different levels of effort based on the amount of time, resources, personnel, depth and breadth of evaluation. Three levels of POEs can be distinguished: indicative, investigative, and diagnostic (Preiser et al 1988).

### **2.7.1. The Indicative POE and the Investigative POE**

The basic level for a POE is the indicative level where the evaluation is carried out within a very short time span using few resources so as to indicate major failures and successes of an architectural project. At a higher level, there is the investigative POE which is more time-consuming, more complicated and requires more resources. Often an investigative POE is conducted when an indicative POE has identified issues that require further investigation, both in terms of a facility's physical performance and the occupants' response to it. Unlike the indicative POE, in which performance criteria are partly based on the evaluator's experience, the investigative POE establishes research criteria that are objectively and explicitly stated before the evaluation is carried out.

### **2.7.2. The Diagnostic POE**

The third level is the diagnostic POE which is a comprehensive and in-depth investigation conducted at a high level of effort. It is different from an investigative POE in three ways. First, a diagnostic POE uses a multi-method approach in data collection which includes questionnaires, surveys, and physical measurements. Second, it uses more extensive data collection and sophisticated analysis techniques. Third, because diagnostic POEs are usually large scale projects, involving many variables, the attempt is often made to develop results that indicate relationships between variables.

An important part of diagnostic POEs has been research, the goal of which is the correlation of physical, environmental and behavioural measures, thus providing a better understanding of the relative significance of various performance criteria. The results and recommendations of a diagnostic POE are long term oriented, aiming to improve not only particular facilities, but also the state of the art in a building type through improvement of the design criteria and guideline literature.

## **2.8. MILESTONES IN POST OCCUPANCY EVALUATIONS OF HOUSING PROJECTS**

The relationship between people and the settings in which they live represents a theme running through much environment-behaviour research. The housing environment has been studied from a variety of theoretical and methodological perspectives (Wohwill and Weisman, 1981, p.323-367).

A review of milestone POE studies carried out in the 1960s, 1970s and 1980s, and which concerned different types of buildings, has been presented by Preiser et al (1988). In the area of housing post occupancy evaluation research, perhaps the earliest attempt at systematic building evaluation was made by Markus (Markus et al, 1972) and his colleagues in the late 1960s at the Building Performance Research Unit at the University of Strathclyde, Scotland. The first influential work came exclusively from Britain, and most notably from the Architectural Research Unit at the University of Edinburgh and the Sociological Section of the Ministry of Housing in London (Cooper, 1977, p142). The Architectural Research Unit employed both social scientists and architects with the aim of setting up a practice, research and teaching unit which would initiate a fresh approach to the field of housing by taking into account user needs and by combining the findings of research studies with actual design work.

The Ministry of Housing and Local Government (later the Department of the Environment), through its Sociological Research Station, has conducted a series of housing evaluation studies. Some of these studies have been longitudinal studies monitoring housing needs and preferences before and after moving to new prototype dwellings (Ministry of Housing and Local Government, 1969; DOE, 1972). Other studies have compared several housing developments of the same type of density concerning a particular aspect of the environment (DOE ,1972). These studies have influenced thought about housing form and were particularly

influential in the virtual ban of further high rise housing for families subsequent to 1968.

The development of user needs and preferences studies has also occurred extensively in the United States. An important milestone in the diagnostic evaluation of housing was carried out by Cooper (1975) who emphasised the application of survey, interview and observation techniques in POE data collection. In her single POE low income housing project, Easter Hill Village, Cooper addressed many specific design features that contributed to the success or failure of the evaluated housing scheme. The study includes analyses of space utilisation both within and outside the home and an extensive series of recommendations based upon the study are presented. Many of the POEs studies carried out in the English speaking developed countries have been examined and assessed by Cooper and Sarkissian in 1986. They analysed nearly one hundred studies of what people like and dislike about their housing environment in low-rise medium or high density family housing estates and presented a wide range of guidelines for the design of similar housing projects.

Becker (1974) conducted an evaluation of a number of multi-family housing projects sponsored by the New York Urban Development Corporation. This POE generated comparative data that were used to identify patterns within and across housing types and user groups as well as suburban and urban sites. In "Housing Messages", Becker (1977) analyses housing design issues such as personalisation, participation and the housing management process.

Newman's (1972) research on crime in high-rise public housing was one of the studies that had a critical influence on housing policy in the United States. His study highlighted the relationship between the occurrence of crime and project size, scale, layout and ability to control territorial spaces in public housing. Qualitative and quantitative analyses of housing developments in 15 cities were presented, focusing on the relationship between physical design variables, possibilities for informal surveillance of public spaces, social contact and the occurrence of crime.

Zeisel and Griffin's (1975) study presents findings from a POE research of 212 units housing development. Research questions focused on issues of orientation, territory and privacy.

Another important diagnostic POE project of the mid 1970s which significantly influenced policy of the U.S Department of Housing and Urban

Development was conducted by Francescato et al (1979). Based on a nation-wide sample of 37 housing developments, this research project tested the nature and relative importance of various factors that contribute to housing residents' satisfaction. A set of reliable techniques for evaluating housing satisfaction was developed that has since been used by other researchers. The POE permitted the involvement of the residents in the improvement of their housing and helped in selectively directing limited modernisation resources to those aspects of housing developments that were most likely to increase residents' satisfaction.

Since then there has been a proliferation of user needs and preference studies, helping designers to avoid the repetition of past mistakes.

## **2.9. CONCLUSION**

The flow of information from completed projects to those still on the drawing board is the essence of post occupancy evaluation research. It has been commonly suggested that architects, planners and building managers can employ the findings of evaluation research as feedback to enable incremental improvement in building design. Evaluation research provides organised information for the designer and reduces the uncertainty in which he or she works. The process of evaluation research is of a descriptive nature (using questionnaires and observation as research tools) and is most often aimed at application.

Although the two past decades have witnessed a significant amount of evaluation research in the field of housing, there is still a continual need for housing research that develops and tests basic theoretical models of housing satisfaction from both longitudinal and cross cultural perspectives. The present work deals with post occupancy evaluation at a diagnostic level. The research design and the methods used in the present research work are described in the next Chapter.

## Chapter 3 : RESEARCH DESIGN AND METHODOLOGY

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### **3.1. INTRODUCTION**

POE can be distinguished from other types of research in that, first, it tends to focus on a single type of building; secondly, the investigator describes rather than manipulates or changes a setting; thirdly, the work is almost always conducted under natural conditions rather than in a laboratory and, finally, a major goal of the study is the application of the results to improve the same or similar settings.

The present Chapter describes the research methodologies that have emerged in previous diagnostic POEs and discusses the methodology used in the present POE research. The selection of evaluative criteria for the present study as well as the selection of data collection procedures are explained in detail.

### **3.2. RESEARCH DESIGN**

This section explains the reasons that guided the choice of residents' satisfaction with their dwellings as the key evaluation for the present POE and presents the critical items that needed investigation.

#### **3.2.1. Residents' Satisfaction: a Building Performance Criteria**

The selection of any particular evaluation criterion is a reflection of the perspective from which the evaluation is made. In turn this perspective is influenced by the goals that may be identified for the specific situation that is being evaluated. Therefore, although there are no absolutely "right" or "wrong" criteria, there are criteria that are more or less appropriate to answer the question being asked.

It has frequently been pointed out that one major weakness of the criteria used to evaluate housing is that they tend to ignore the criteria held by those who, after all, are the very target of the housing programme, namely the residents themselves. To compensate for that, the criterion of residents' satisfaction has been used with increasing frequency in a number of recent studies (Gutman and Westergaard, 1974; Michelson, 1977 a,b; Francescato et al, 1979; Galster and Hesser, 1981; Darke, 1982; Anderson et al, 1983; Weidemann and Anderson, 1985), permitting more reliable information about what the residents regard as acceptable housing quality.

Measures of residents' satisfaction with their living environments have the potential of providing a useful and socially acceptable criterion for evaluating housing and for assessing the importance of various characteristics of that housing



in meeting residents' satisfaction. Francescato et al (1977, 1979) proposed that people's satisfaction with where they live was sufficiently important in itself to merit examination. According to Galster (1987) household satisfaction with their residential environment has become the pre-eminent indicator employed by housing developers, analysts and policy makers in at least three ways:

- first, it has been used as an evaluative measure for judging the success of housing developments constructed by the private sector (eg Lansing et al, 1970; Zehner, 1977) and by the public sector (eg, Onibokun, 1974; Rent, 1975; Francescato et al, 1977-79; Weidemann and Anderson, 1980; Hourihan, 1984)
- secondly, it has been used as an indicator of residential mobility (Michelson, 1977 b.)
- thirdly, it has been used as an assessment of residents' perceptions of inadequacies of their current housing environment so as to direct forthcoming private or public efforts to improve the status quo (eg, Sanoff and Sawhney, 1971; Bohland and Davis, 1979; Francescato et al, 1977-79; Weidemann et al, 1977; Anderson et al, 1983)

Since most of the available data from previous housing evaluation research refers to users' satisfaction and to the components contributing to its promotion, the use of residents' satisfaction as an evaluative criteria in the present work allows the comparison of the results with those of previous studies. The theoretical issues relevant to the interpretation of residential satisfaction as well as the factors predicting it are presented in Chapter 8.

### **3.2.2. Determining the Critical Items to be Investigated**

It seems obvious that the personal space, the 'home', is likely to be the space that affects residents' behaviour, well being and general satisfaction more strongly than any other part of the built environment or outdoor spaces. A number of important questions are raised in the present work with regard to the quality of mass housing dwelling design in Algeria. The questions examined are aimed at improving the design quality of the dwellings by assessing the extent to which the average size and the different features of the widely spread five storey walk-up apartments are adequate and responsive to their residents' needs. Among the aspects being examined are the residents' perception of their dwelling design as well as their housing aspirations and possible preferences for more traditional housing organisations. An important issue raised in this research concerns

whether there is a conflict between the residents' apparent wish to embrace "modernity" and the persistence of traditional space use patterns and traditional activities carried out within the dwellings. Such considerations would allow recommendations to be made for the design of more responsive spaces for specific identified needs.

Special attention is given in the present post occupancy evaluation to the adaptive physical alterations made or intended to be made to the dwellings by the residents. Although the main focus of the present diagnostic evaluation is on the dwellings, however, other features of the housing environment are also investigated, such as residents' perception of their estate and neighbourhood in general, its security and its maintenance. Another important feature in the design of the dwellings is the type and location of private external spaces allocated to them. Understanding their different uses by the residents as well as their degree of importance would allow specific recommendations for future improvements in their design to be made.

Different indicators have been used in order to assess residents' evaluation to the various physical and non-physical features of their housing environment (see questionnaire in Appendix A). However, evaluation is more than a list of weaknesses and problems. After both strengths and weaknesses of the housing environments being investigated have been identified, suggested changes are ranked in terms of their apparent contribution in promoting a higher residential satisfaction.

### **3.3. DATA COLLECTING PROCEDURES**

In their review of housing evaluations, Bechtel and Srivastava and others (see for example Friedman et al, 1978, Zimring and Reizenstein, 1980) have noted that most diagnostic POEs involve multi-method research, which consists of a combination of questionnaires, interviews, photography and measures of behavioural response.

#### **3.3.1. The Questionnaire**

The questionnaire is a relatively quick and effective way of gathering a large body of information. In the present research, the information has been gathered through structured face to face interviews carried out by the researcher herself. The interviews were usually conducted within the confines of the respondents'

dwelling. There were, however, a few cases where the researcher was not admitted inside the dwelling and the interview took place at the door step. The average time for each interview was thirty minutes. However, there were some cases where the interview lasted from forty five minutes to a whole hour because the respondents wished to add free comments and were encouraged to do so.

Zeisel (1981) has suggested that there are three critical issues in questionnaire construction: rapport, conditioning and fatigue. He proposes starting with general questions and moving to more specific ones because the interviewer can influence the responses by the order of the questions. He also proposed that fatigue can be reduced by grouping questions on similar topics and using a similar response format.

Such considerations have been taken into account during the design of the present questionnaire which contained a predetermined set of questions. Both closed questions, where the respondent is given a choice of several categories of response, and open-ended questions have been used (see questionnaire in Appendix A). The beginning of the questionnaire consisted of a general open ended question. The open ended format avoids suggesting problems to the respondents and valuable information was gained through this type of question as the respondents were free to express what they felt and what they thought were important features of housing quality.

The information gained during the interviews was derived from factual objective questions and, opinion subjective questions.

*a. Factual information*

The factual information concerned both the respondents and the setting being evaluated. The 'who' questions were designed to provide factual information about the population under study, such as average age and number and age of children at home. Such data can be used in three ways. First, they make it possible to describe the population under investigation in very precise terms. Second, the data can help to explain why there may be variations among the reported behaviour or feelings of a population. Finally the data can show how a study population differs from or is similar to another one. The questionnaire also provides factual information about the objective environment, which may be described in physical, socio-cultural or organisational terms.

*b. Opinions and feelings*

Whereas environmental characteristics for a particular physical setting can be described in much the same way as characteristics of occupants of that setting, the true value of environmental data is in their analysis vis-a-vis data covering the feelings and behaviour of the people associated with that setting.

While questions about the thoughts and feelings of people and their behaviour concerned mainly different aspects of the internal organisation of their dwellings, roughly a third of the questionnaire dealt with residents' perception of their estate and their neighbourhood as well as the maintenance and management of the housing environment as a whole. The results of this part of the survey are more qualitative than quantitative and include detailed accounts of the respondents' use and perception of the different spaces within and outside their dwellings.

In studying the users' response to a large and complex environment such as the housing environment, the verbal response has the advantage of getting a broad view of the area of concern in a relatively short time. However, in addition to the questionnaire, a combination of different data gathering techniques was used in order to compensate for some of the deficiencies that might otherwise exist.

**3.3.2. The Use of Unobtrusive Measures**

Survey techniques have come under strong criticism because of several inherent weaknesses. These include the assumption that the respondent can verbalise his responses to the environment. Questionnaires are limited by the respondents skills or interest in discussing their feelings, by lapses of memory, and by the desire to appear intelligent. Patterson (1974) argues that the main problem with the use of questionnaires is that they have rarely been validated with behavioural data. According to him the threats to a questionnaire's validity generally result from the 'reactive' nature of the methodology. Reactive measures are those which allow the respondent to be aware that he is being measured and which therefore may result in changes in the behaviour of the respondent. It would not appear to be unreasonable to assume that the respondent would ask herself two questions: why have I been chosen? and what do they want from me?

To overcome these weaknesses several modified techniques have been developed and used successfully in exploratory and descriptive studies by

employing non-verbal responses. These methods include direct observation or measurement of traces the users have left and which are known as unobtrusive measures. The value of unobtrusive measures lies in their non-reactivity, allowing for behavioural assessment free of threats of validity found in the use of questionnaire and interviews. Used in conjunction with the questionnaire, the unobtrusive measures can provide the valid and informational data necessary for an objective evaluation.

The use of unobtrusive measures is discussed by Webb et al (1966) and they are described as they apply to environmental evaluation by Zeisel (1981). Observing and recording physical traces makes it comparatively easy to generate hypotheses about the causes, intent and sequence of events that led up to the traces. Observing physical traces means systematically looking at the physical surroundings to find a reflection of previous activity. Traces may have been unconsciously left behind or they may be conscious changes people have made in their surroundings, for example a curtain hung over an open door way or a newly built wall.

Physical traces can be classed in four sets:

- Physical traces which are a by product of use and which reflect what people *do in settings*.
- Adaptations for use which are things and changes that people *do to settings* in order to make the environment more responsive to their needs.
- Display of self, which are changes people make to establish places as their own, to make them express who they are personally.
- Public messages which are changes such as graffiti.

The interviews themselves were carried out all day long during several successive days on each selected estate. An important amount of information was gained through photographic records of different types of physical traces left in the external environment and through sketches of furnishing layouts and other physical traces within the dwellings themselves. However, one obvious difficulty was to record physical traces within the dwellings without violating household privacy which is jealously guarded by some families.

### **3.4. SAMPLING**

#### **3.4.1. Sampling Method**

Simple random sampling is a method of sampling in which selections are made by chance. With this method, the first sample member is selected from the list by a random number and subsequent numbers are selected according to the fixed sample interval. The sample interval is obtained by dividing the total number of names on the list by the required sample. In the present research, the impossibility of obtaining detailed information about the households living in the selected housing estates or even a list of all the households within each estate limited the choice of the sampling method.

Because mass housing in Algeria was not aimed at a specific social category, the occupants of the five storey walk-up flats represent a wide cross-section of the population. Different households from different social backgrounds live within the same housing estates and within the same blocks of flats. Consequently, a sample selected at random is very likely to be representative of the population living in the investigated housing environments.

The method of sampling chosen in the present study is cluster sampling. It involves the selection of population units in groups or clusters. In each estate a systematic selection of blocks of flats was made. Within each selected block of flat a number of households were interviewed at random. Although the disadvantage of clustering is that it reduces the randomness of the sample, one of its advantages is that if a selected household is absent or not available for the interview at the time of the survey, the researcher can simply try to obtain an interview from another cluster household.

#### **3.4.2. The Person Interviewed in the Household**

In sampling households, there is a particular problem regarding whom to interview. Within a household, different members may be best placed to answer different questions. Since two thirds of the questionnaire concerned the dwelling themselves, it was considered appropriate to interview the housewives exclusively. This choice can be further justified by the following reasons.

In Algeria, women are usually responsible for at least all family management that occurs in the home, such as cleaning, cooking, laundry and caring for children. They are often spatially confined to their dwellings by social customs.

Although they are increasingly joining the work force, employed women form a decided minority and withdrawal from the work force is common during childbearing years. Consequently, housewives are likely to spend a considerable amount of time inside their flats and are the ones who are the most affected and the most aware of the quality and adequacy of the dwelling design in meeting the needs of their household.

Previous research has found differences between men and women in their perception of different attributes of their housing environment, those differences being perhaps due to traditional division of labour (Michelson, 1977 b.). It is surprising that gender is not always included in the list of background characteristics of an important number of studies, as many of them fail to identify the sex of the respondent. A housing evaluation by Canter and Rees (1982) provides a good example supporting the concept of environmental role. In their study, they found that husbands and wives revealed differences in their perception of their housing. Whereas housewives tended to focus on the house and the amenities surrounding the home, husbands were less concerned with such issues. Another advantage of interviewing the housewives is that they are more likely than any other members of the household to be available for answering the face to face questionnaire and allowing the researcher to visit the different spaces within the dwelling.

#### **3.4.3. Sample Size**

The size of the sample was fixed with reference to the researcher's capacity to carry out the survey and to the size of the samples in previous similar housing research. Also taken into account was the degree to which the population is homogeneous. Since the research findings will be relevant to qualitative understanding of people's feeling about their residential environments rather than allowing a set of quantitative predictions to be made, it was considered appropriate to have a sample of at least thirty households per estate. In each of the four studied estates, a sample of 30 to 33 households was selected and the number of respondents in the whole sample reached 128 housewives.

### **3.5. COMPILING AND ANALYSING DATA**

The first step of the data analysis consisted of coding and entering the raw data on the computer. Because a significant proportion of the questions was of an open-ended format for the reasons mentioned in section 3.3.1, predetermined

data categories were not available and the appropriate coding could not be assigned until all the raw data were assembled.

The second step of the data analysis process consisted of tabulating the data, which involved counting the number of times a particular answer to each question was given by the survey respondents, in order to identify response patterns.

After reviewing distributional data covering survey responses, hypothesised relationships between variables were examined. A useful way on focusing on variation in responses was treating satisfaction as a criterion variable in a conceptual and operational model, where variables measuring physical, social and contextual attributes of the residential environment as well as individual characteristics were used as predictors of satisfaction. The analysis involved then examining relationships between the variables and conducting statistical tests of significance. Thus it is the extent of covariation of satisfaction with other variables rather than the level of satisfaction itself that is the focus of the second stage of the data analysis.

The data processing has been carried out using the Statistical Package for Social Science (SPSS, 1988) available at the Computing Services of Sheffield University.

### **3.6. PRESENTATION OF THE RESULTS**

The way the information and results of a POE study are presented have an important impact on whether the information is used or not. Different disciplines and individuals are accustomed to different ways of presenting material. For example social scientists are used to reading written reports, and designers respond better to visual presentation. Reizenstein (1980) proposed that presentations should be specifically tailored to various purposes and audiences. She also suggested that evaluators should consider careful use of graphics.

The presentation of the findings in the present study takes into account those considerations and the results are presented under two types of format: detailed written descriptions of the aspects being considered supported by photographic records and graphic presentations of summarised results together with architectural drawings of the aspects being evaluated.



### 3.7. CONCLUSION

The exploratory nature of the present work results in the consideration of a large number of variables measuring residents' perception of both physical and non-physical attributes of their housing environments in general and their dwellings in particular. The combination of different data collection procedures allows the researcher to gather a significant amount of information. The data analysis proceeds from simple description of residents' evaluation of the various investigated features, to complex analysis of hypothesised relationships between variables measuring residents' perception of the various attributes of their housing environment and the variables measuring their satisfaction with their dwellings. The presentation of the results ranges from general matters presented in Chapter 5 to more specific matters presented in Chapters 6 and 7. A summary of the main findings as well as the recommendations are presented in the last Chapter of the thesis. The historical and social context within which the present housing evaluation research has been carried out as well as the criteria that led to the selection of four housing estates as a field of study are described in the next Chapter.

## Chapter 4 : CHARACTERISTICS OF THE FIELD STUDY

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#### 4.1. INTRODUCTION

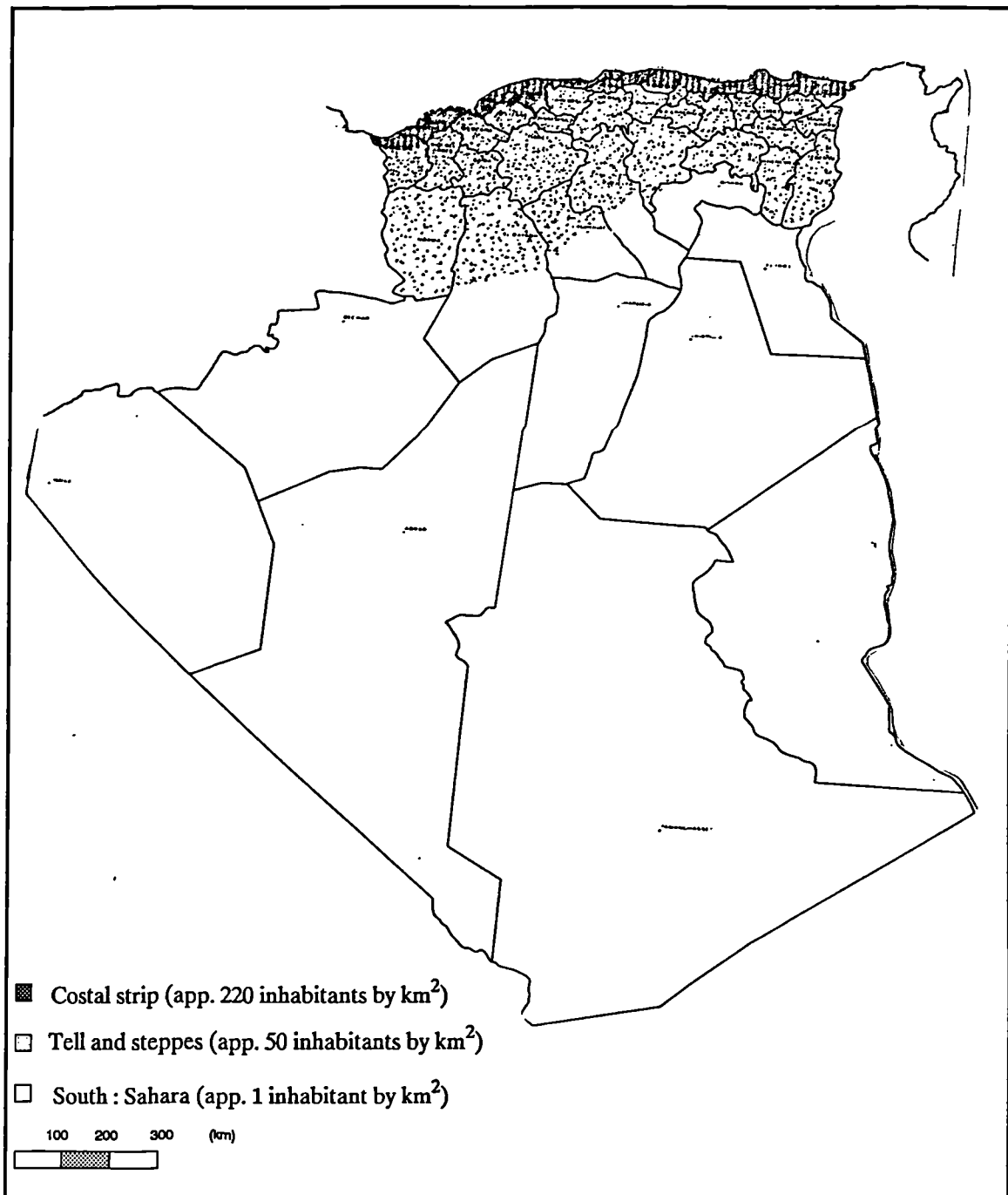
Algeria is the second largest country of Africa, with a surface area of 2,382,000 sqkm. The Sahara desert, in the south, occupies 5/6ths of the whole surface area of the country and contains only 7% of the 25 million population. A significant proportion of the population (40%) is concentrated in the coastal strip, which represents only 1,7% of the whole surface of the country (O.N.S, 1988,p.9) (see fig 4.1)

The French occupied Algeria for more than a century (1830-1962) and were concentrated in the Northern regions as they focused on agricultural exploitation of the best lands, mainly along the Mediterranean coast. After independence, in 1962, the northern part of the country was the only part that had the necessary infrastructure for any immediate development. Consequently, the first economic development plans undertaken by the Algerian Government were all located there, aggravating the already existing unbalanced growth and exacerbating the exodus of the rural population.

The urban population had been increasing since the end of the nineteenth century. It has been estimated that the proportion of the population living in urban areas doubled between 1886 and 1954 (see fig 4.2), rising from 13,9% to 25% (O.N.S, 1988, p.18). Between 1954 and 1962, urban growth was directly linked to the circumstances of the war of liberation, which resulted in the gathering of the rural population and its migration to the cities. The urban population increased from 25% in 1954 to 31,4% in 1966 (O.N.S.,1988, p.21). In 1987, the urban population represented 49,67% of the whole population (O.N.S, 1988). The annual rate of population increase in Algeria is among the highest in the world, being estimated at 3,08% between 1977 and 1987. The growth rate was even higher in the urban areas, however, as it reached 5,46%. This represented a small increase on the already high annual figure for urban population growth of 5,40% evident between 1966 and 1977 (O.N.S, 1988, p.25). Between 1977 and 1987, the Algerian population virtually doubled, from 12 millions to 23 millions with 57% of the population under the age of 20 by the later date (El Moudjahid, 1988). It has been estimated that, by the year 2000, the population will reach 34 millions if the population growth rate remains the same (El Moudjahid, 1988).

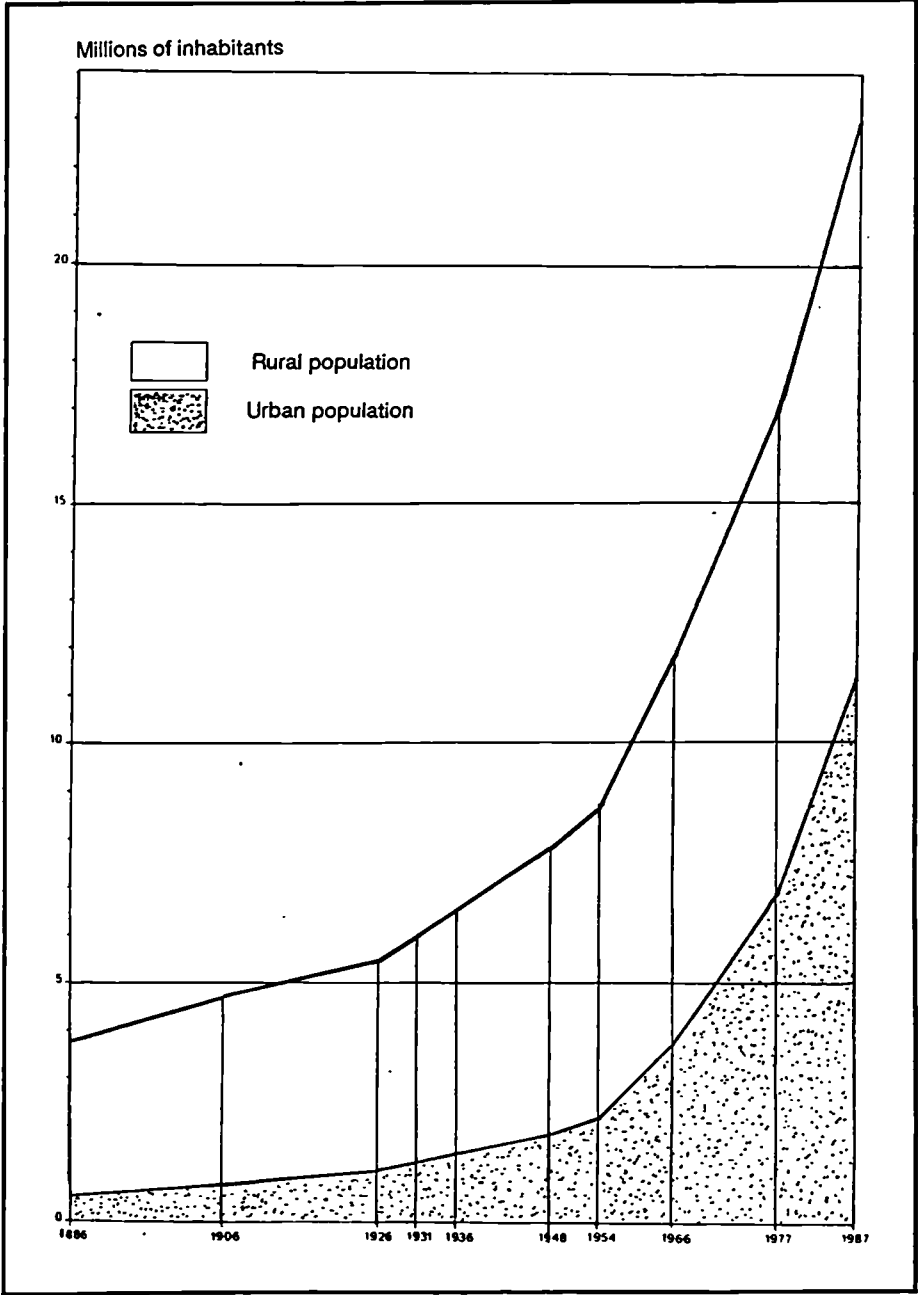
Because of the rapidly growing population, particularly in urban areas, the Algerian Government has embarked on a massive prefabricated building programme, which covers housing as well as other community buildings. Taking the experience of Europe in the past three decades as a model, the idea of

**Figure 4.1 : Density of the population in Algeria**



Source : ONS (1988), p. 9

Figure 4.2 : Growth of the urban and rural population in Algeria



Source : ONS (1988), p. 17

industrialising the building process was thought to be the ultimate solution for responding quickly to the increasing needs in housing.

It is the aim of the present Chapter to explain in more detail the social and historical circumstances in which the prefabricated housing environments examined in the present research emerged, and to give a brief overview of the policy that guided their construction. The criteria that led to the selection of four housing estates in the suburb of Algiers as the field of study are described along with the characteristics of the selected estates.

#### **4.2. DEVELOPMENT POLICY AND HOUSING CONSTRUCTION**

After a few years of independence, the Algerian Government launched a large programme of industrialisation. The first National Development Plans, (1967-1969) and (1970-1973) concentrated on establishing heavy industries, such as the hydrocarbon and steel industries which are controlled by the state. It was stated clearly that the priority was to be given to industrial investments at the expense of those of a more social character, such as housing. It was not until the end of the third National Development Plan (1974-1977) that housing problems emerged as being one of the urgent priorities in the development policy of the country. During the period 1974-1977, different national companies were allowed to import industrialised building systems to Algeria without any particular conditions being imposed. Consequently, some twenty six different heavy prefabricated systems were imported from two hundred different companies (Yahiaoui, 1983, p.170).

Realising that housing industrialisation was being carried out without any organizational framework and that the development of urban areas was progressing without much control, the Government felt the necessity of setting up the first political structure that was responsible for housing policy and the development of urban planning. This structure was created in 1977 as the "Ministry of Urban Planning, Construction and Housing" (MUCH).

The new Ministry was faced with two alternatives, either continuing the use of heavy prefabricated building systems and setting up large industrial units for their manufacture in Algeria or setting up smaller industrial units, possibly on building sites, that were more appropriate to local conditions and to the ability of the local workers (Yahiaoui, 1983, p.170).

As the heavy prefabricated systems had not been introduced without several problems and did not have the expected results (Boubekeur, 1986), the second alternative was chosen and resulted in the development of small building companies using more flexible and more manageable industrialised building techniques such as the framework construction system, the panel system or a combination of different systems called hybrid systems.

In 1979, it was decided to stop the importation of heavy prefabricated systems and use the existing capacities combining different prefabrication processes. A profound revision of the housing policy was carried out between 1978 and 1979. In 1979, a Polish team was asked to establish a technological model for housing production in Algeria. After having evaluated the housing situation at that time and estimated the short and the long term needs, the study set two goals for housing production. The first goal was the production of 100,000 urban dwellings per year, to be reached between 1980 and 1985, and the longer term goal was to reach a production of 200,000 urban dwellings per year by 1990. (INERBA, 1980).

### **4.3. THE QUANTITATIVE HOUSING CRISIS**

#### **4.3.1. Housing Deficit**

An analysis of the housing production between 1980 and 1984 show that, four years after the decision to build 100, 000 dwellings per year, actual production had hardly reached 88,000 dwellings per year in the best circumstances ( Boubekeur, 1986, p36). Whereas some 700, 000 dwellings were intended to be built between 1980 and 1984 (Guerroudj, 1990), only 458,000 dwellings were in fact finished (El Moudjahid, 1988) .

The fixed targets for housing production have never been reached, not only because of the poor productivity of the building sector and important delays, the causes of which have been largely analysed by empirical studies (Benamrane, 1980; Benmatti, 1982; Boubekeur,1986) but also because of the worsening economic conditions of the country. The sudden fluctuations of the oil market have had serious implications for the National Economy. As a consequence, the five year development plan (1980-1984) emphasised the necessity for more involvement of the private sector in the construction of housing, so as to lift the burden off the state as far as house building was concerned. The aim of the Government was to encourage other sources of financing so that only 40% of housing production would be financed by the state (Construire, 1987).

Other measures have been taken by the Government in order to reduce the costs of the mass housing construction programme. Among these measures was an attempt made in 1987 to deliver the dwellings to their future residents in an unfinished state. The residents would be responsible for the finishes work, the cost of which was deducted from the amount of the dwelling's rent. This initiative was very unpopular because of the scarcity of building materials and the high price of the finishing work. Consequently this alternative has not been applied to the extent to which it was initially planned.

A second alternative was to sell the mass housing dwellings to their renting occupants in order to release the pressure from the public expense with regard to the management and the maintenance of the housing stock. An opportunity was given to the residents of the mass housing estates to buy their dwellings at very affordable prices by paying monthly instalments instead of the rent.

A third alternative, which affected directly the quality of the urban mass housing dwelling, was introduced in April 1987 and consisted of reducing the average size of the dwellings from 67sqm to 65sqm (Guerroudj, 1990). The crowded conditions within the existing dwellings have thus been getting worse, not only because of the small size of the dwellings as compared with the average size of an Algerian household but also because of the widening gap between the housing production rate and the increasing housing requirements, resulting in some cases in co-habitation of two households within the same dwelling.

#### **4.3.2. The Average Occupancy Rate per Dwelling**

The average occupancy rate per dwelling is calculated by dividing the total number of the population by the total number of dwellings, regardless of the type and the size of the dwellings. This ratio is a useful indicator of the housing situation and is used to make provisions for housing production. In 1987, the total number of dwellings in the country was estimated to be 3,075,000 dwellings with an occupancy rate of 7.55 people per dwelling (El Moudjahid, 1988). By the year 2000 it is estimated that, in order to reduce the occupancy rate to 7 people per dwelling, to compensate for the present deficit and renovate the old housing estates, the Government would need to build 2.4 millions dwellings (El Moudjahid, 1988). In order even to maintain the same level of housing deficit as in 1987, it was apparent that production should have reached the order of 200,000 dwellings per year (Tebbal, 1987, p.33). Boubekour (1986, p.41) argues that if the occupancy rate per dwelling was to be reduced to 5.69 people per dwelling by the



year 2000, housing production should have been of the order of 300, 000 dwelling per year since 1980.

According to the latest census (O.N.S, 1988), the occupancy rate per dwelling is higher in rural areas, reaching a value of 7.77 people per dwelling as compared with 7.33 people per dwelling in urban areas, the national average occupancy rate per dwelling being 7.55 (O.N.S, 1988, p. 79) (see fig 4.3). However, an occupancy rate of eight people per dwelling might be more acceptable than an occupancy rate of six people per dwelling, depending on the size of the dwelling. Because the occupancy rate per dwelling does not accurately express the crowding conditions of the dwellings, the occupancy rate per room is usually used to give a better idea of the crowding conditions within the dwellings.

#### **4.3.3. The Average Occupancy Rate per Room**

The national occupancy rate per room is calculated by dividing the total number of the population by the total number of habitable rooms. International organisations estimate that the average acceptable occupancy rate per room varies between 1 and 1.5 whereas crowded conditions would be evident with 2 and 2.5 people per room (Boubekeur, 1986, p.38). In Algeria, the national average occupancy rate per room has been increasing since 1966 (see tab 4.1). It was estimated in 1977 at 2.91 in urban areas and 3.33 in rural areas, (Yahiaoui, 1983, p.168) which is far beyond the conditions which are recognised by international agencies.

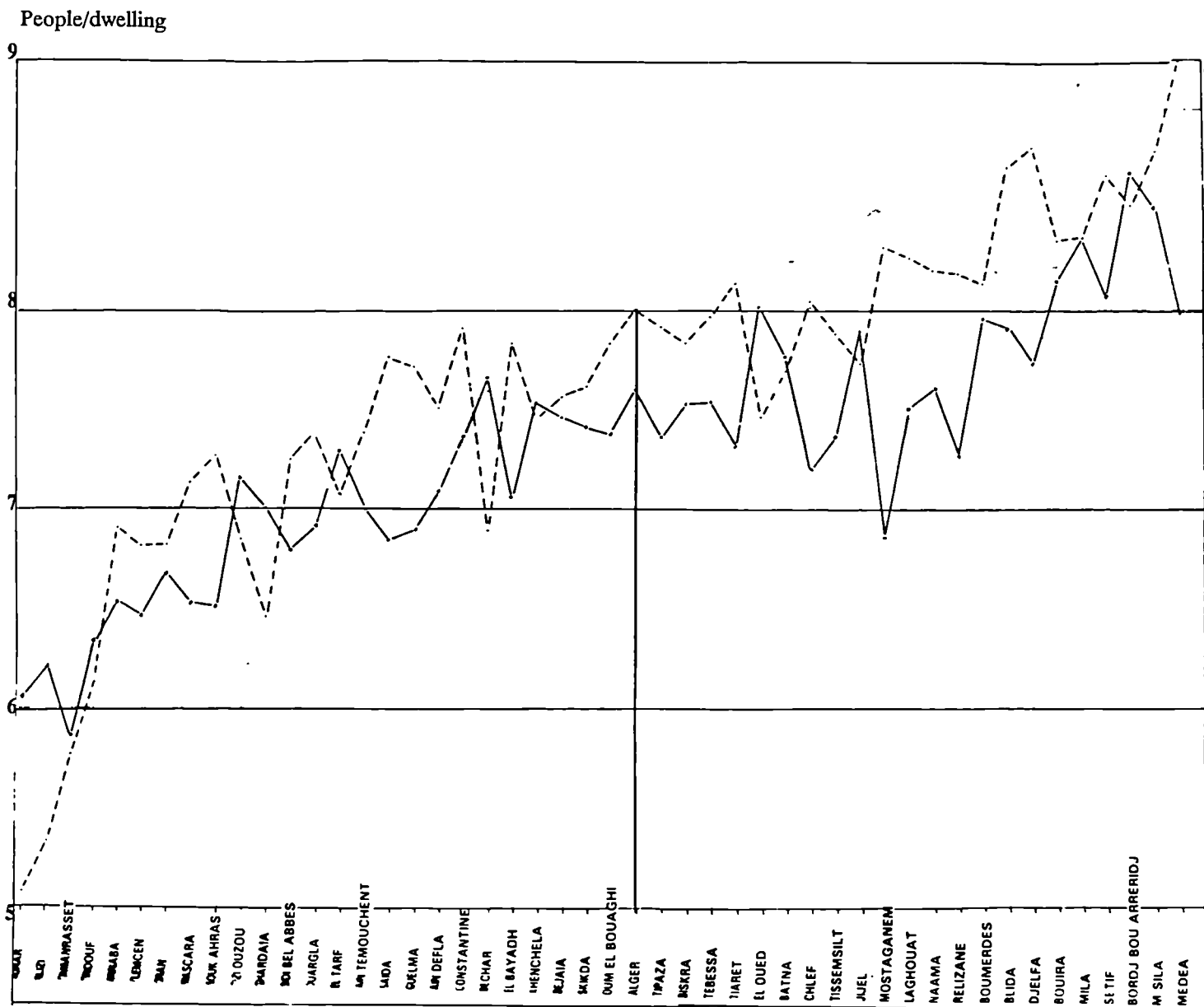
Benamrane (1980) argues that even this measure is somewhat biased as it does not refer to the floor area of the rooms. To compensate for this, it has been suggested that a ratio of residential floor area per person would be more significant in expressing the degree to which over-crowded conditions exist. However, such a ratio has been rarely used in Algeria.

### **4.4. THE "ZHUN" HOUSING ESTATES**

#### **4.4.1. Urban Planning and the ZHUN Policy**

The first urban planning policies were introduced in Algeria after the first world war and were limited to coastal regions where the French colonisers were concentrated. It was not until 1960 that urban plans were established for other areas of the country as well. The "Plan de Constantine" was introduced in 1957

Figure 4.3 : Average occupancy rate per dwelling in rural and urban areas



— Average in urban counties  
 - - - Average in rural counties

Source : ONS (1988), p. 80

**Table 4.1 : Some indications about the housing crisis in Algeria**

AVERAGE OCCUPANCY RATE PER ROOM	NATIONAL URBAN	NATIONAL RURAL
1966	2.39	2.86
1977	2.91	3.33

Source : Yahiaoui (1983), p.168

AVERAGE OCCUPANCY RATE PER DWELLING	NATIONAL URBAN	NATIONAL RURAL
1977	7.4	8.5
1987	7.33	7.77

Source : ONS(1988), p.79

and was the first economic development plan to be implemented in Algeria by the French (Deluz, 1988). Under this scheme, factories, housing estates and various social facilities were planned throughout the country, mainly in urban centres. In the same period the "Zone d'Urbanisation Prioritaire" (zone to be urbanised in priority) and the "Grands Ensembles" (large housing estates - usually high rise) schemes were introduced in France, following an acute shortage of housing and social facilities, and were consequently extended to Algeria.

Between 1959 and 1962, Urban Developments Plans, "Plan D'Urbanisme Directeur" (PUD), were prepared for several Algerian towns by different French agencies. Between 1962, the year of independence, and 1968 French legislation was still in place. In 1967 and 1968, however, several state design agencies were established (such as ETAU, ECOTEC, CADAT) and started to make certain modifications, as outlined in the "Code Communal" in 1967 and the "Code de Wilaya" in 1969. These two documents defined appropriate methods of development of regional and local plans. A detailed account of the major urban planning events since the independence can be found in Hazame (Hazame, 1984, pp. 86-89).

It was not until the year 1972 that the French urban planning and housing legislation were abolished and new Algerian legislation introduced (Hazame, 1984). In the first four year National Development Plan, (1974-1977), the PUD (Plan D'Urbanisme Directeur) was still the fundamental document and consisted of graphical representations of the main intentions with regard to future urban development in the towns populated by more than 10, 000 people (Benmatti, 1982, p.152). The PUD was complemented by two other documents, the "Plan Communal de Developpement" (PCD) and the "Plan de Modernisation Urbaine" (PMU).

Every "Commune" or district of rural character was intended to have a PCD and every town or commune of an urban character a PMU. These documents indicated the location of future urban development and took account of the social, economic and spatial elements of future development, with special regard being paid to housing and social facilities.

Some insufficiencies of this structure were identified and a series of measures have been taken to improve the planning machinery. The most important measures are:

1. The "Zone d'Habitat Urbain Nouveau" (ZHUN) which is concerned with the development of mass housing programmes in the suburbs of urban areas.
2. The "Zone Industrielle" which is concerned with the development of a number of industrial projects
3. The definition of urban limits
4. The detailed procedure for drawing up PUD's, PCD's and PMU's
5. Public land tenure and legislation

(Hazame, 1984).

Whereas housing programmes used to be merely isolated operations not conforming to any urban planning scheme, they have rightly come to be seen as major urban determinants since the creation of the Ministry of Housing in 1977 and the implementation of the ZHUN policy. The first Ministerial circular set the main strategy for developing and implementing the ZHUN programme, which became the major frame within which large scale urban housing projects were to be implemented in the suburbs of several Algerian towns.

#### **4.4.2. Scale of the ZHUN Programme**

According to Benmatti, by June 1978, 34 ZHUN estates were approved and 41 were still on the drawing board (Benmatti, 1982, p.153). Between 1980 and 1982, 76 ZHUN studies were completed and 109 were under study in 1983 (Saf, 1983 ). In 1988 it was estimated that 250 ZHUNs were under study, of which 130 were already launched (Guerroudj, 1988).

In addition to the fact that the ZHUN programme is widely spread, it is important to mention that each ZHUN operation is of the scale of thousands of dwellings grouped into mainly five storey walk-up blocks of flats. The programme is obviously affecting a significant proportion of the Algerian urban population and the quality of the produced housing environments has a considerable impact on the lives of the people.

## **4.5. THE QUALITATIVE HOUSING CRISIS**

### **4.5.1. The Urban Quality of the ZHUN Estates**

The planning of the ZHUNs has been strongly influenced by the ideology of the French concepts for new towns. The structure of the ZHUN estates is usually based on three levels: the district, the neighbourhood and the residential grouping. Each level is defined according to a specific number of housing units within which different types of facilities are made available.

The ZHUN programme has had a considerable impact on the shape of the urban space and the quality of the built environment. Because of the urgency of the housing problem, planning and architectural studies have frequently been allocated only a limited amount of time, resulting in important aspects being neglected or overlooked. The approach to the planning of the ZHUNs has usually been superficial, resulting in a poor integration of the new housing estates with the existing urban environment. Consequently, a landscape of scattered prefabricated blocks of flats lacking any urban character has invaded the urban space of several Algerian cities.

While residents are usually very happy to be allocated a new flat after years of long waiting, they are frequently confronted with a number of problems in the early stages of their occupancy. It is frequently the case that residents move into the ZHUN estate while other parts of the same estate are still under construction, aggravating residents' perception of the unfinished aspect of the external environment. Moreover, the necessary facilities are almost never implemented at the same time as the housing programme and the ZHUN estates are usually poorly served by public transport. This is particularly the case in the early years of their existence. Bearing in mind that most of the residents do not usually own a car, they are confronted in their daily life with a tremendous number of difficulties, particularly when trying to have access to shopping and other facilities. The basic facilities are often added later wherever there is enough space, aggravating the already poor quality of the built environment. The spaces between the buildings are usually ill defined and poorly planned, giving to the ZHUN estates an appearance of repetitive monotonous groups of blocks of flats.

### **4.5.2. The Housing Typology of the ZHUN Estates**

The housing typology of the ZHUN estates varies from two to five storey walk-up apartments, although higher buildings tended to be built in the earlier

years. The largest proportion of the dwellings (85%) consists usually of three room apartments with a habitable floor area fixed at 67 sqm by the Ministry of Urban Planning, Construction and Housing, (MUCH, 1979) and reduced to 65sqm lately (Guerroudj, 1990). The national average size of an Algerian household was estimated to be 7 people in 1987 (O.N.S, 1988, p82) (see fig 4.4). An important question which arises is the extent to which the three roomed dwellings are responsive to the needs of households of seven people or more. Bearing in mind that housing mobility is very limited for the majority of the population, households are bound to stay within the same dwellings for a significant proportion of their lifetime. Most of the dwellings are publicly rented, though some attempt has been made to sell the dwellings to their occupiers as mentioned in section 4.3.1.

The late 1970s and the 1980s witnessed an increasing interest among authors and researchers in the evaluation of the urban housing situation in Algeria. However, the majority of the published studies concentrated mainly on the quantitative evaluation of the housing crisis (Benmatti, 1982, Boubekour, 1986; Benamrane, 1980; Hamidou, 1989). While most studies placed stress on the inability of the existing production system to meet the increasing housing needs and suggested possible alterations and reinforcements of the production structure to increase housing production, the design quality of the produced environments has usually been ignored or overlooked.

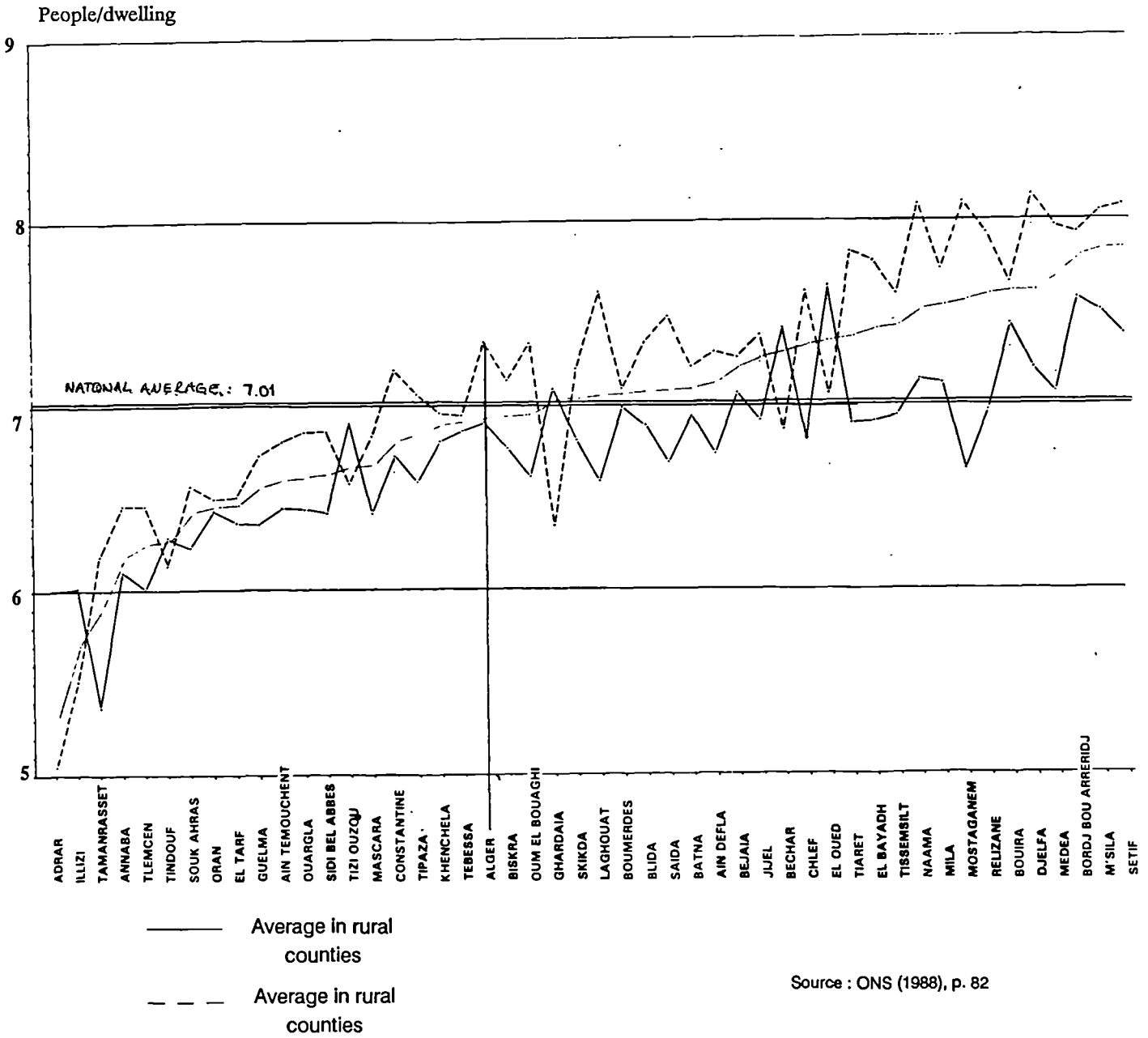
## **4.6. MASS HOUSING DWELLING DESIGN**

### **4.6.1. The Perception of the New Urban Dwelling**

Because European influence during the period of French colonisation was very deep, the modern type of dwelling in Algeria has tended to be linked more readily with the upper social categories, whereas the traditional dwelling has tended to be linked with the poorer social categories. This has had a significant impact on the way the new "modern" urban dwelling has been perceived as it was frequently associated with a social promotion (Boubekour, 1986, p25). However, as Boutefnouchet (1982) put it,

"Living in a flat in Algeria is an outcome of colonisation rather than social evolution. Instead of having had a process of adaptation of the housing to the family structure, it was rather the adaptation of the households to the type of housing available. This caused a clear

**Figure 4.4 : Average household size in the different counties in Algeria**



Source : ONS (1988), p. 82



divorce between the function of the flat as a type of housing and the life style of the large households whether extended households or households with a large number of children."

Whereas Algerian sociologists and anthropologists have frequently complained that architects do not consider social and cultural factors when designing housing projects and have criticised the lack of adaptability of the mass housing dwellings to their occupants' way of life, the initial attitude of the decision makers with regard to the adaptability of the mass housing dwellings to their occupants needs has been a deterministic one.

#### **4.6.2. The Deterministic Approach**

The notion of environmental determinism can be traced historically to early studies by zoologists, plant ecologists and naturalists, who sought to show how changes in the behaviour patterns of living organisms were directly influenced by characteristics of the physical settings within which they lived. Architectural determinism, so called, is of a different order. In its simplest interpretation, it holds that man can manipulate environments in order to produce specific behaviour.

The same programme of housing was aimed at all possible types of households and was widely built within different regions of the country. The specific needs of the Algerian population have not been considered in the design of public housing because it was assumed by the decision makers that Algerian households were evolving towards "a modern way of life" and possibly hoped that the inhabitants' behaviour would change within the new housing environments and thus adapt to the new type of dwellings.

However, several studies have shown the arrogance of the deterministic approach to architecture: the physical environment cannot change people's behaviour, although it may influence it. Environmental sociologists and anthropologists (for example Gutman, 1972; Michelson, 1970; Rapoport, 1969; Rapoport and Watson, 1972; Gutman, 1965-66 and Gans, 1968) argue that buildings and other physical environmental features do not determine behaviour. Forces of a cultural and subcultural nature, social class and other social relationships seem to play an even greater role in shaping human behaviour and even in influencing satisfaction with the total environment, as Gutman and Westergaard suggested (Gutman and Westergaard, 1974).

Considering the social and cultural aspects of housing in the design process does not necessarily mean reproducing features of traditional housing architecture, as they might be irrelevant to important social changes that have occurred.

As Rapoport (1969, p.78) put it,

"as soon as a given culture or way of life has changed, its form would become meaningless. Certain aspects of behaviour and the way of life are constant or change very slowly and that replacement of old forms is often due to the prestige value of novelty rather than lack of utility or even *unsatisfactory relation to the way of life*. Similarly, of course, acceptance of old forms may also be due to the prestige value of old things rather than real continued validity or utility of the forms".

An interesting piece of research, carried out by an Algerian sociologist, threw some light on the conflict that exists in the space use patterns of Algerian households within the new dwellings. Whereas the study was carried out among middle class households in Algiers whose life style has dramatically changed as compared with the traditional lifestyle in Algeria, it was found that traditional space use patterns and a number of traditional activities still remain. However, a strong tendency to conform to 'modernity' was observed among the studied households and was evidenced by the purchase of a certain stereotype of furniture items which are rarely used, and this, despite the lack of space for them (Bouneira, 1987). The rupture between the "traditional" way of life and the "modern" way of life has not been complete, even for the middle class households, resulting in specific needs which have to be identified in order to be catered for in the design of public housing.

#### **4.6.3. The Need for Design Evaluation Studies**

No systematic study has been carried out in order to evaluate the qualitative aspects of the widely spread "ZHUN" estates and the degree of responsiveness of mass housing dwelling design to their occupants needs. Whereas most of the existing qualitative studies criticise the poor quality and the lack of adaptability of the newly built urban housing environments, they do not give any clear information or guidelines on the aspects that should be given priority for future improvements in the design of the mass housing dwelling.

The position taken in the present work is that people and the built environment are linked in an active and reactive sense, there is a continuous process of adaptation which takes place when residents change both their behaviour and their environment. A useful way of identifying residents' needs is to look at the changes that they have made in the design of their dwellings in addition to their assessment of the various physical features of their dwellings.

Four ZHUN estates have been selected in the suburb of Algiers as a field study for the present research. The criteria that led to their selection as well as the characteristics of both the studied estates and the respondents within those estates are described in the remaining section of this Chapter.

## **4.7. CHARACTERISTICS OF THE FIELD STUDY**

### **4.7.1. The Selection of 4 ZHUN Estates in Algiers**

A total number of eight ZHUNs has been launched in Algiers since the 1970s and the beginning of the 1980s. Each programme consisted of thousands of dwellings with an overall total of 46620 dwellings (see tab 4.2). Among those eight ZHUNs, four have been selected for examination in the present study, the selection being made according to the location and the size of the ZHUNs and the year in which they were launched.

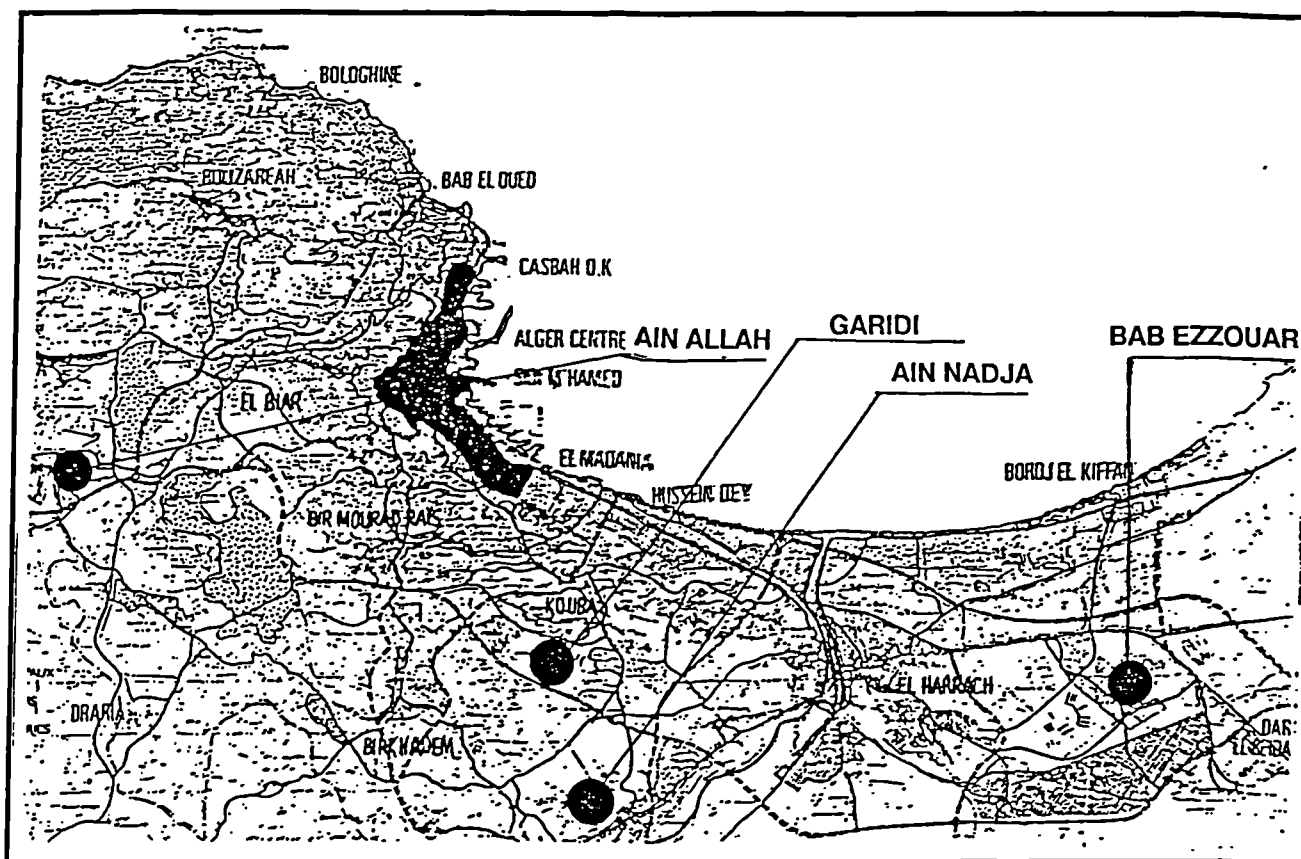
With regard to the size and the year they were launched, two estates have been selected from the largest ZHUNs that were commenced in the 1970s, that is the Bab Ezzouar and the Ain Nadja ZHUNs which consist respectively of 10, 800 and 11, 000 housing units. The two others have been selected from the smaller that were launched in the 1980s, that is the Garidi and the Ain Allah ZHUNs which consist respectively of 4820 and 3300 housing units (see tab 4.2). The survey was carried out within the earliest built parts of each of the selected ZHUNs.

All the four ZHUNs are located in the suburbs of Algiers within a maximum distance of 15 km from the city centre. They are located near a new network of motorways linking the East part of Algiers suburb to its West part. Their position in relation to Algiers city centre is shown in map 4.1.

### **4.7.2. Characteristics of the Selected Estates**

All the buildings on selected estates are of a prefabricated construction. The studied part of the Bab Ezzouar ZHUN (see fig 4.5) was built by "ECOTEC", a

**Map 4.1 : Location of the selected estates in the suburbs of Algiers**



**Table 4.2 : The ZHUN programme in Algiers**

Name of ZHUN	Area Occupied	Number of Housing Units	Launching Date
Ain Allah ■	83.5 ha	3300	1983
Garidi ■	210 ha	4820	1980
Said Hamdine	75 ha	1700	1982
Kouba Sud	118 ha	4700	1982
Bouzareah	40 ha	1600	1982
Mohamed Zaoni	-	5400	1982
Bab Ezzouar ■	685 ha	10800	1974
Ain Nadja ■	296 ha	11000	1978

■ Estates selected for the survey.

Source : Tadjerouni (1985), p. 162

**Figure 4.5: The Bab Ezzouar Estate**



state building company which used a prefabricated building system called "VARIABLE" imported from Switzerland. The building system has been somewhat altered by "ECOTEC" and consists of entire prefabricated box units which are assembled together on site. The difficulties involved with transporting and handling the box units resulted in cancelling the use of this building system for other parts of the Bab Ezzouar ZHUN.

The Ain Allah estate (see fig 4.6) has also been built using an imported prefabricated system. A Danish company started the site work in 1983 using a Danish prefabricated system which consists of a structure of prefabricated concrete load bearing walls and prefabricated light weight panels.

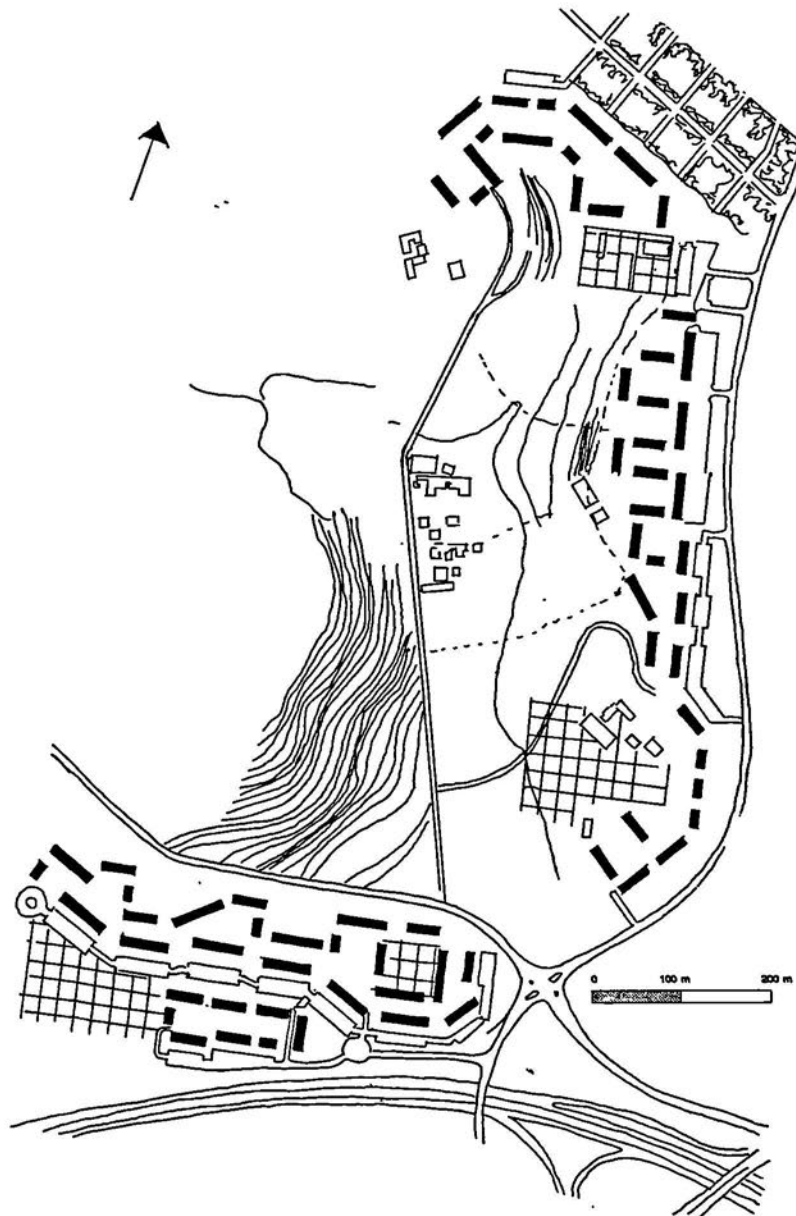
Both the Garidi (see fig 4.7) and the Ain Nadja (see fig 4.8) estates have been built by respectively the ENRIC and the DNC Algerian building companies, using a hybrid prefabricated system. The hybrid system uses prefabrication tunnels for the floor slabs and prefabricated-on-site concrete load bearing walls. Small blocks of light weight concrete are used for the infill.

The architectural design was carried out by state architectural agencies for all the estates, with the exception of the Ain Allah estate. All the studied estates started to be occupied in the first part of the 1980s. The studied households who had the longest residence were those living in the Bab Ezzouar estate, as they moved in in 1980. Those who had the shortest residence were from the Ain Allah estate, where the first residents moved in in 1985. In both the Garidi and the Ain Nadja estates, residents started moving in in the same year, that is 1983, while other parts of the same estates were still under construction. The characteristics of the respondents in the four estates are presented in the next section.

#### **4.7.3. Characteristics of the Respondents**

The respondents in the four estates were exclusively housewives for the reasons mentioned in the previous Chapter (see section 3.4.2). A sample of 30 to 33 housewives was interviewed within each of the four estates and the characteristics of the four samples were relatively similar, the proportions varying slightly in terms of the age of the respondents and their occupation as well as in terms of their household type and size. The tables displaying the various characteristics of the respondents can be found in Appendix B.

**Figure 4.6: The Ain Allah Estate**



**Figure 4.7: The Garidi Estate**

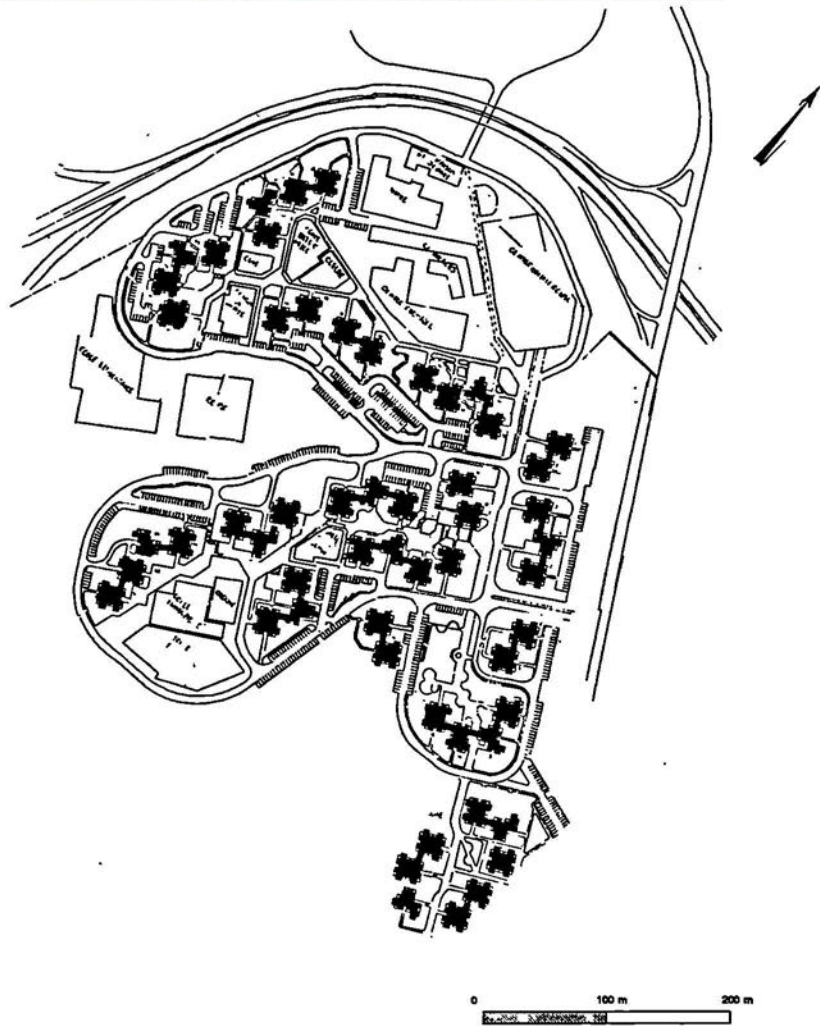




Figure 4.8: The Ain Nadja Estate



*a. Age of the respondents*

More than half the 128 housewives interviewed in the four estates (53%) were young housewives whose age varied from 23 to 35 years old. Almost a third of the 128 housewives were between the age of 35 to 45 years old whereas only a small proportion (15%) was over the age of 45 years (see fig 4.9a). The variation in the age of the respondents within the sub-samples in the four estates can be observed in fig 4.9b.

*b. Occupation*

More than two thirds of the 128 respondents (70%) were *non-working* housewives. Only a small proportion had worked previously and had left work and slightly less than a quarter of the interviewed housewives (22%) were still working at the time the survey was carried out (see fig 4.10a). When comparing the proportion of interviewed working housewives within the four estates, it appears that a higher proportion was interviewed in the Garidi estate (see fig 4.10b). The majority of the working respondents were either teachers in primary or secondary schools or were university lecturers.

*c. Family type and household size*

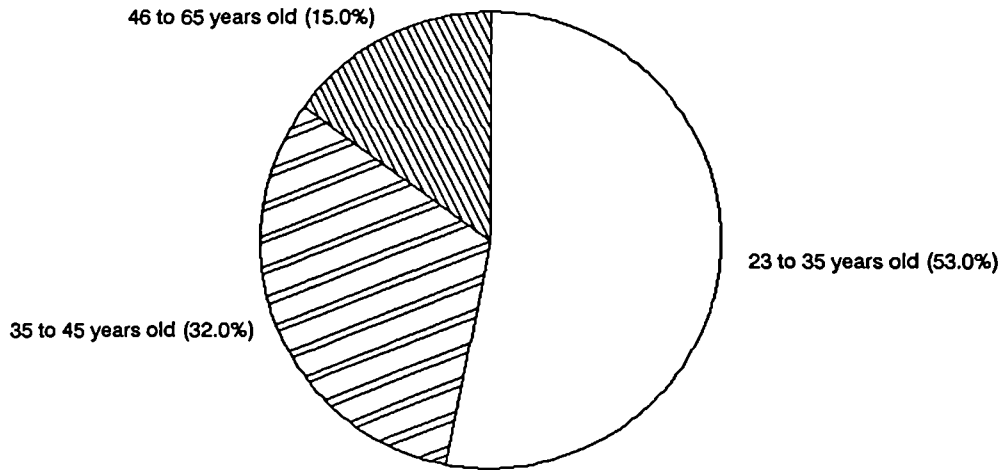
Whereas more than two thirds of the studied households (77%) were families of a nuclear type, 23% of them were extended households. Most of the extended households consisted of one of the grandparents living with their married son or daughter, or married children living with their parents on account of the housing crisis and the impossibility of getting their own flats. The size of the studied households varied from two to fifteen people. Almost half the sample (45%) consisted of households of five to nine people and almost a third of the whole sample consisted of households whose size exceeded ten people. More than half the 128 studied households (56%) contained more than three children (see fig 4.11a). The majority of the households had children of different ages, varying from young children to adults (see fig 4.12a,b ).

## 4.8. CONCLUSION

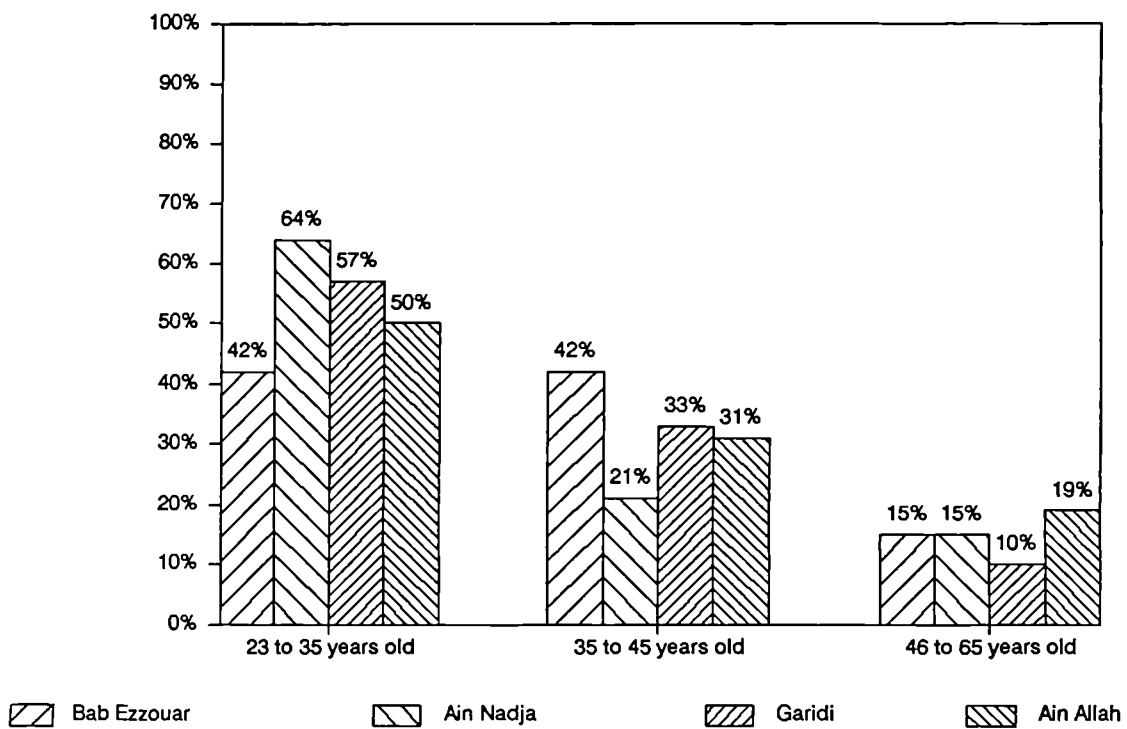
The quality of the built environments that have been generated by the ZHUN policy, as well as the quality of mass housing dwelling design, need urgent evaluative studies. The urgency of such studies is not only justified by the scale of the ZHUN programme, which is affecting a significant proportion of the Algerian

**Figure 4.9 : Age of the respondents**

a) In the whole sample

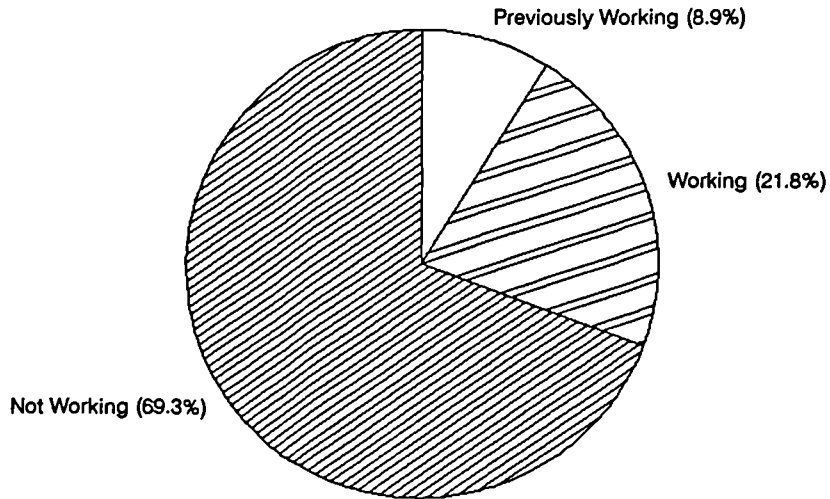


b) By Estate

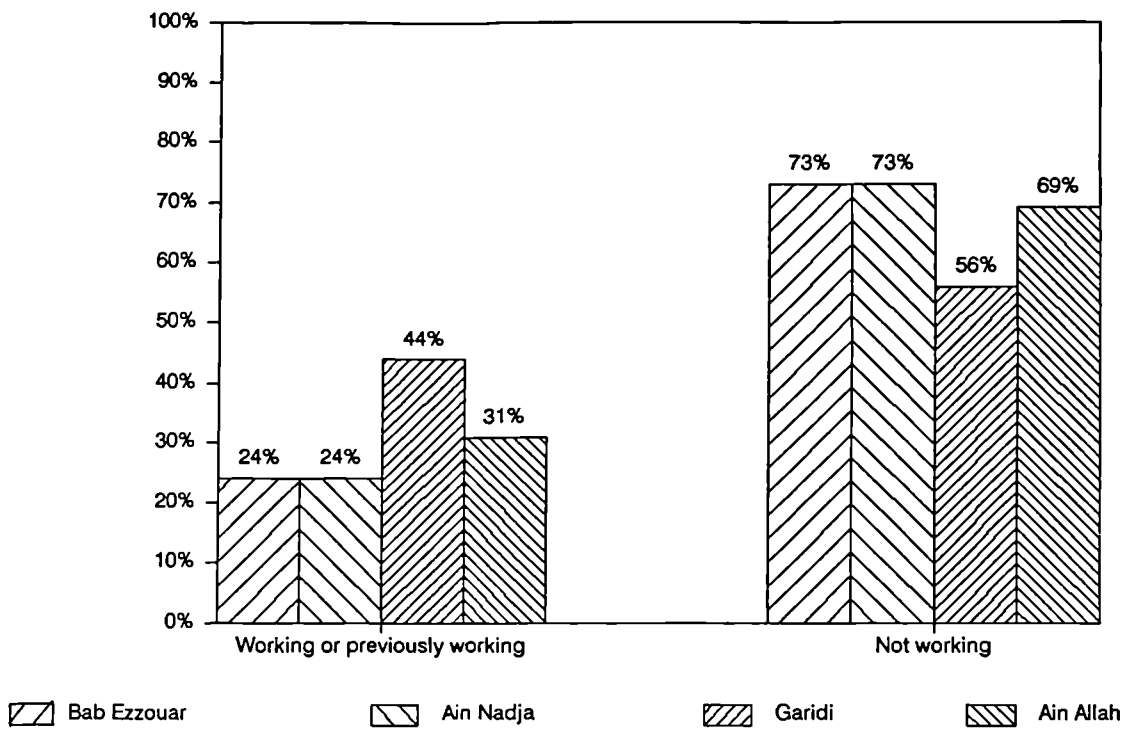


**Figure 4.10 : Proportion of working housewives**

a) In the whole sample

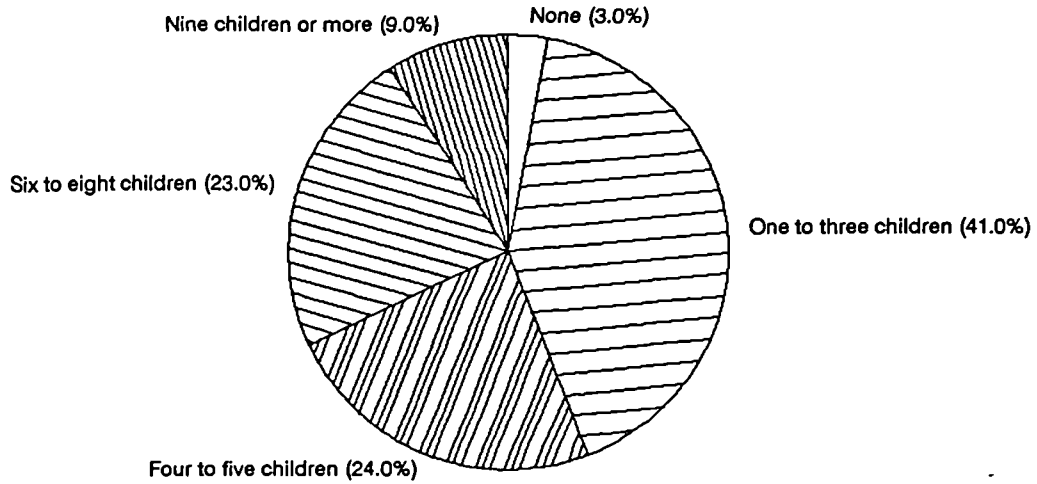


b) By Estate

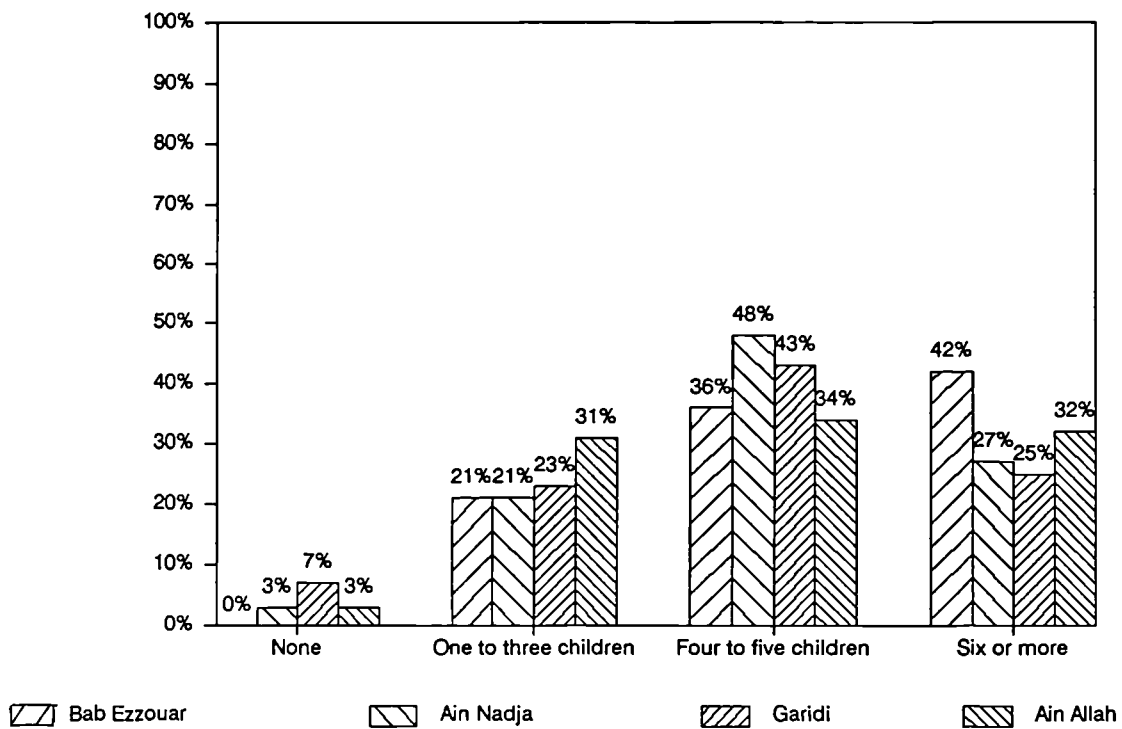


**Figure 4.11 : Number of children per household**

a) In the whole sample

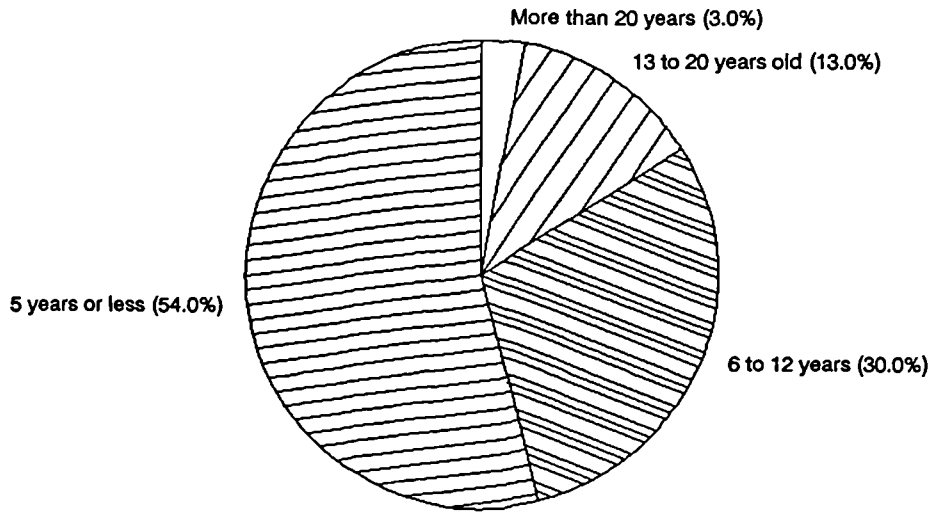


b) By Estate

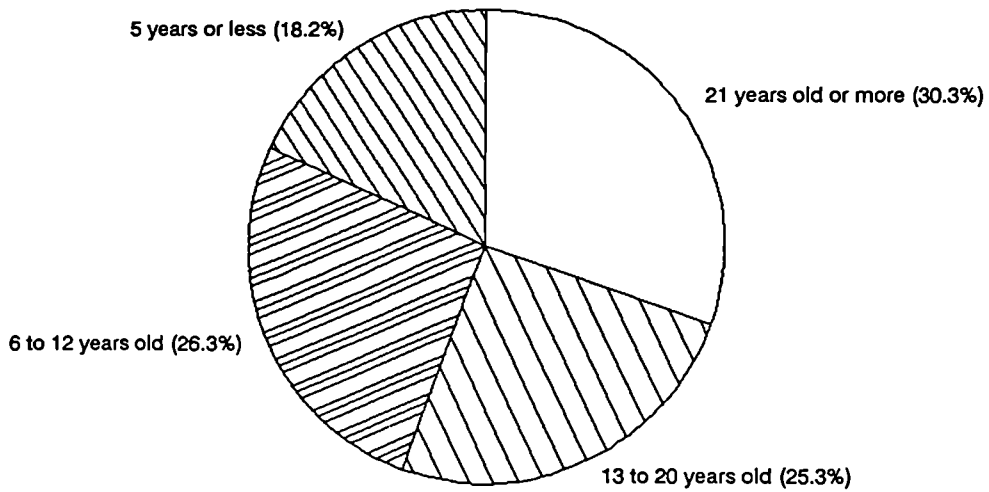


**Figure 4.12 : Age of children**

**a) Age of youngest child**



**b) Age of oldest child**



urban population but, also by the very limited housing mobility of the vast majority of the households, resulting in a greater impact of the quality of the ZHUNs environments on the lives of the people. Four estates have been selected for the present post occupancy evaluation research. They are all located within the suburbs of Algiers.

As stated in the previous Chapter, a random sample of thirty to thirty three housewives was selected within each estate. The vast majority of the respondents are non-working housewives whose households are of a nuclear type. Respondents' evaluation of the quality of both their housing environment and their dwelling design are presented in the next three Chapters. The results of the study are presented from general matters related to residents' evaluation of their estate (Chapter 5) to detailed matters related to respondents' evaluation of various features of their dwelling design (Chapters 6 and 7).

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## **5.1. INTRODUCTION**

Various aspects of the selected ZHUN housing environments have been assessed through residents' responses to both general open-ended and closed specific questions. The evaluated aspects include physical and social features of the environment. A detailed description of the residents' overall evaluation of their estate is presented in this Chapter as well as their perception of different physical and nonphysical features of their external housing environment. Such features include appearance and views, privacy and noise disturbances, maintenance and upkeep as well as the friendliness of neighbours living in the same block of flats. Furthermore, relationships such as appearance perception and upkeep perception, maintenance perception and degree of agreement between neighbours are tested. The results are supported by photographic records and are followed by a discussion of each topic. Additional tables displaying residents' responses to the various matters evaluated in the present Chapter can be found in Appendix C.

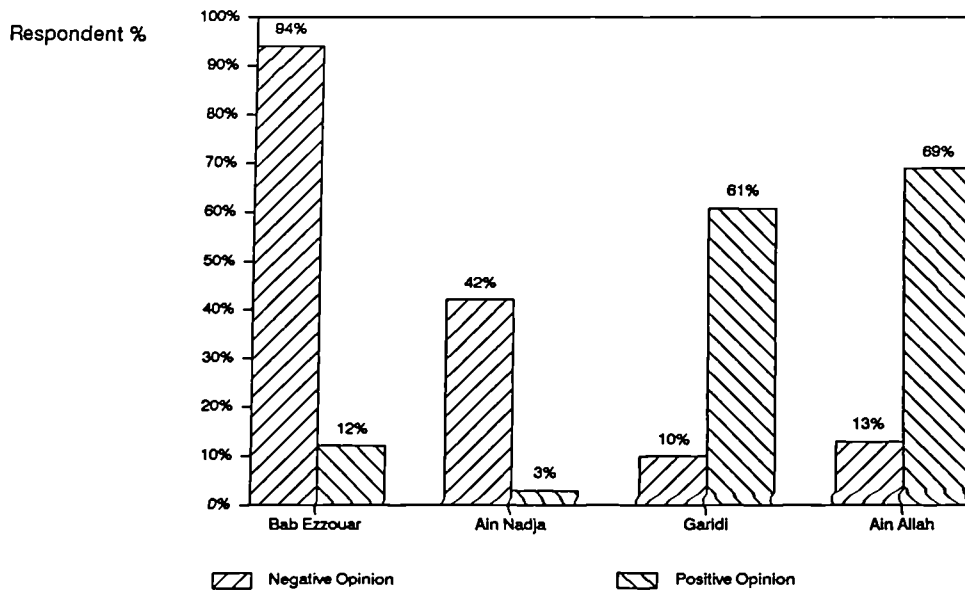
Since the external housing environment has been evaluated by housewives, the majority of whom spend most of their time inside the dwellings, it is important to mention that the evaluation of that environment mainly concerned the external spaces immediately adjacent to the buildings.

## **5.2. RESIDENTS' OVERALL OPINION ABOUT THEIR ESTATE**

### **5.2.1. Expressed Opinions**

The first question respondents in the four estates were asked was what they generally thought about their estate. The question was open in order to identify the criteria by which housewives judged their housing environment and the aspects which appeared to matter most to them. The responses revealed important differences between the four estates. Whereas the majority of the respondents in both the Ain Allah and the Garidi estates tended to have positive opinions, the majority of the respondents in the Bab Ezzouar and the Ain Nadja estates tended to have rather negative ones (see fig 5.1 and tab 5.1). The reasons given by respondents for their preference for other parts of their estates enabled important deficiencies to be identified.

**Figure 5.1 : Residents' opinion about their estate**



**Table 5.1 : What do you generally think about your estate ?**

	ESTATE								row total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
OPINION ABOUT THE ESTATE										
POSITIVE GENERAL OPINION.....	4	12%	1	3%	20	67%	22	69%	47	37%
NEUTRAL OPINION.....	6	18%	16	48%	14	47%	7	22%	43	34%
NÉGATIVE OPINION ABOUT THE FLATS (1).....	22	67%	10	30%	7	23%	7	22%	46	36%
NEGATIVE GENERAL OPINION ABOUT THE ESTATE (2).....	31	94%	14	42%	4	13%	7	22%	56	44%
MISSING.....	0	0%	2	6%	0	0%	0	0%	2	2%
column total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents based on the number of respondents per estate. Percents add up to more than 100% as some respondents gave more than one response category

1. Such as bad finishes and construction
2. Such as dirty environment, bad neighbours and lack of amenities

*a. The Bab Ezzouar estate*

The overwhelming majority of the 33 interviewed housewives in the Bab Ezzouar estate, that is 94% of the respondents, expressed a negative overall opinion about their estate. The most frequently stated complaint related to the maintenance problem and concerned, in particular, the dirty cellars which are directly accessible from the staircase entrance. Being built on what was originally wet land, almost all the blocks suffered from a cellar full of water and mosquitoes (see fig 5.2c). This situation was reported as being unbearable during the summer period, when cellar smells would spread and mosquitoes proliferate. Although some residents attempted to drain the water by means of pumping, this was not successful as a permanent measure, as the water would come back through the ground. In this regard, residents complained about the poor local management which, according to them, did not make any effort to solve the cellar problem.

The second most frequent source of complaint was the nature and quality of the spaces between the different buildings. Not only are these spaces very large in scale, they lack virtually any kind of landscaping, amenities or facilities (see fig 5.2a,b). Respondents stated that the external spaces were very muddy during the winter and very dusty during the summer season and this made the maintenance of the communal spaces, such as the staircases, more difficult.

Two thirds of the complaints (67%) concerned the flats themselves, as respondents criticised the widespread use of a plastic material for doors, suspended ceilings and floor tiling. Only 12% of the 33 respondents in this estate did not express any complaint.

*b. The Ain Nadja estate*

Slightly less than half the 33 respondents (42%) expressed negative opinions about the Ain Nadja estate. The housing being largely isolated from any urban centre, housewives in this estate complained about the absence of important facilities and the lack of frequent transport. They also complained about the long distances their children had to travel to go to schools. Complaints about the dwellings themselves were expressed in response to the first question by almost a third of the respondents. They concerned mainly the layout and the constructional quality of the dwellings. Two respondents complained about their neighbours and another respondent expressed concern about the safety of the children playing near the roads.

**Figure 5.2 : Disliked features in the Bab Ezzouar estate**



**a. Large scale public spaces without any type of landscape (see also b.)**



**b.**



**c. Cellar full of water and mosquitoes accessible from the block's entrance**

Complaints in the Ain Nadja estate as a whole, however, were less frequent than in the Bab Ezzouar estate. Almost half the 33 respondents (48%) expressed a rather neutral opinion as they neither criticised nor praised any aspect of their estate but said that it was "alright" (see tab 5.1).

*c. The Garidi estate*

Two thirds of the 30 respondents in this estate (67%) mentioned positive aspects about their estate in response to the first question. It seems that respondents in this case tended to evaluate their estate by comparing it with what is generally available elsewhere locally, as they frequently mentioned the fact that the Garidi estate was better than many other large housing estates in the suburbs of Algiers. The positive aspects that were mentioned by almost a quarter of the respondents were related to the good layout and landscaping of the external spaces and the attractive appearance of the buildings. One respondent mentioned also having good neighbours.

However, flat size and constructional quality were the major sources of complaint as they were mentioned by about a quarter of the respondents (23%). A few respondents complained also about the lack of transport as well as the lack of some important facilities.

*d. The Ain Allah estate*

The highest proportion of residents with positive opinions about their estate was recorded in the Ain Allah estate where 69% of the 32 respondents reported that the estate was either good or much better than other estates (see fig 5.1). However, respondents did not mention any specific positive aspects in response to the first question.

Only 20% of the respondents in this estate expressed negative feelings about either the external environment or the flats. Those respondents tended to complain about the small distance separating the blocks, which resulted in the flats being overlooked. They also expressed worries about the prefabricated construction as they tended to perceive it as fragile.

### **5.2.2. Respondents' Preference with Regard to other Parts of their Estate**

#### *a. The Bab Ezzouar estate*

Seventy three per cent of the interviewed housewives perceived other parts of the same estate as better than the part where they were housed. The most frequently stated reason was expressed by more than half the respondents (55%) and concerned the non-use of the plastic material in the dwellings. Two other major reasons, though stated somewhat less frequently, concerned the better location of some blocks of flats and the better relationship between neighbours. A better location was defined as meaning the nearness of some blocks of flats to the main roads and the main facilities. Better relations between neighbours was described as being the result of a greater social homogeneity in some blocks, where residents were all workers in the same organisation. This was considered as an advantage because residents were able to agree in getting organised in order to fence and maintain the external spaces adjacent to their blocks of flats.

The availability of larger flats within some blocks was also considered by some residents as an advantage that the majority of blocks lacked (see tab 5.2).

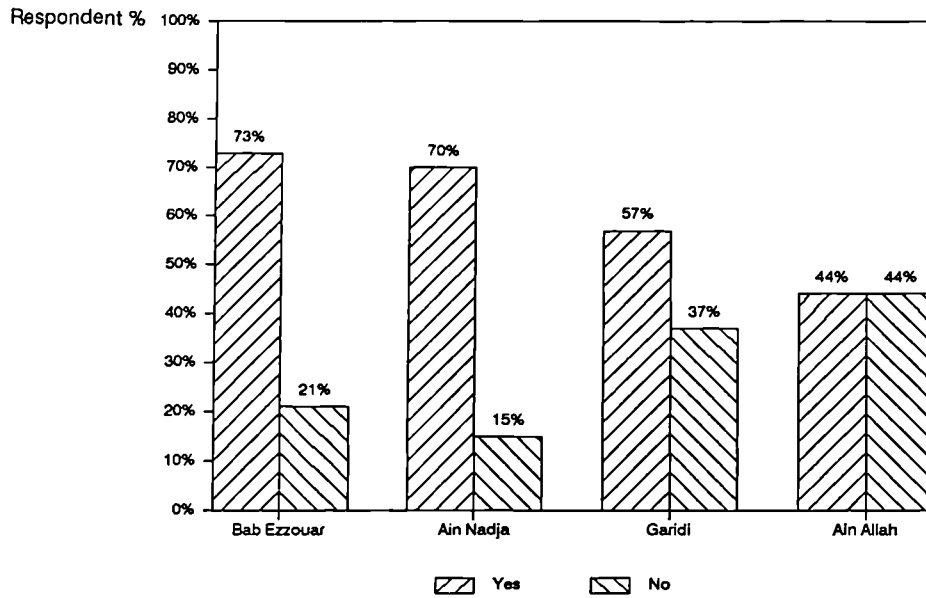
#### *b. The Ain Nadja estate*

Preference for other parts of the Ain Nadja estate was expressed by more than two thirds of the respondents (70%). The main stated reasons were of a similar nature to those mentioned by respondents in the Bab Ezzouar estate but were expressed in rather different frequencies (see fig 5.3). A better relationship between neighbours was mentioned by 28% of the respondents and better constructional finishes was mentioned by 24% of them. A smaller proportion (14%) mentioned the better location in relation to facilities and the better landscape quality of the external spaces in those parts of the estate that were first built .

#### *c. The Garidi estate*

Preference for other parts of the Garidi estate was stated by more than half the respondents (57%). The main reasons seem to be the same as those mentioned in the Bab Ezzouar and the Ain Allah estates. Better relationship between neighbours and better agreement between them to maintain the shared stairways were mentioned respectively by 40% and 30% of the 30 respondents. A better location of some blocks as well as the availability of larger flats within them

**Figure 5.3 : Respondents' preference for other parts of the same estate**



**Table 5.2 : Why do you think that some parts of the estate are better than others ?**

	ESTATE								row total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
<b>BETTER PARTS OF THE ESTATE</b>										
NONE.....	9	27%	10	30%	13	43%	18	56%	50	39%
BETTER LOCATION (1).....	5	15%	4	12%	1	3%	0	0%	10	8%
LARGER FLATS.....	2	6%	2	6%	2	7%	1	3%	7	5%
BETTER MAINTENANCE (2).....	0	0%	0	0%	9	30%	2	6%	11	9%
BETTER CONSTRUCTION (3).....	17	52%	7	21%	0	0%	3	9%	27	21%
BETTER NEIGHBOURS (4).....	6	18%	8	24%	12	40%	10	31%	36	28%
BETTER EXTERNAL SPACES.....	0	0%	4	12%	1	3%	2	6%	7	5%
column total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents based on the number of respondents per estate. Percents add up to more than 100% as some respondents gave more than one response category

1. Near the road and the facilities
2. A cleaner is paid by neighbours in the same block
3. flats with good finishes without plastic or unhygienic cellar
4. Neighbours from the same social category and with few children



was reported by few respondents. A higher quality of landscaping of the external spaces was mentioned by one respondent only.

*d. The Ain Allah estate*

More than half the interviewed housewives (56%) did not consider other parts of the estate as better. However, 44% explained that the best part of the estate was the up-hill part where residents are owner occupiers and where an agreement exists between neighbours to maintain both the shared stairways and the immediate external spaces adjacent to their building. A better neighbourhood was described by a few respondents as being the result of a smaller number of children per block. This was reported to be a significant advantage particularly with regard to the cleanliness and the quietness of the shared communal space.

A good definition and a better landscaping of the external spaces of some parts of the estate were mentioned by two respondents.

**5.2.3. Discussion**

Different criteria were clearly used by the various respondents in their overall evaluation of their estate. However, residents seemed to be more likely to identify and point out negative aspects rather than positive ones. The mentioned negative aspects dealt with both physical and non physical features. Poor constructional quality and poor site layout were raised along with poor management and maintenance of the estate. Relationship between neighbours living in the same block and general upkeep of the adjacent external spaces seem to be important aspects from the point of view of the residents as they were the most frequently mentioned criteria by which other parts of the same estate were judged as better. Comparison with what is generally available in the local housing market as well as in the other parts of the same estate seem also to have a great impact on residents' overall evaluation of their own housing environment.

All the aspects mentioned above were the subject of further specific questions in order to identify more closely areas where improvements could be made. Most of the remainder of this Chapter is devoted to these matters.

### **5.3. RESIDENTS' PERCEPTION OF THEIR NEIGHBOURS**

#### **5.3.1. Relationship Between Neighbours**

In order to evaluate the degree of interaction between neighbours living in the same block, respondents were asked various questions. Housewives in the four estates were asked how many of their neighbours living in the same block were considered to be friends. More than a third of the 128 respondents in the four estates (35%) answered 'none'. The majority, however, (44%) reported having one to three neighbours as friends. The highest proportion of those respondents was found in the Garidi and the Ain Allah estates (see tab 5.3b). Ten per cent of the 128 respondents in the four estates were reluctant to answer this question as they did not want to express their opinion about their neighbours and stated that they considered all neighbours as friends. Considering a neighbour as a friend meant visiting her occasionally and seeking help from her in specific situations.

When respondents were asked to give reasons to explain the number of neighbours considered as friends, it appeared that the most stated reason, expressed by more than a third of the respondents, was that residents preferred to avoid any relationship with their neighbours in order to prevent the eventual occurrence of problems or conflicts. This was reported in much higher frequencies in the Ain Nadja and the Garidi estates (see tab 5.3c). A smaller proportion of respondents was more specific, stating that their neighbours were not from the same social background. The lack of time to develop any kind of relationship with neighbours was mentioned by 12% of the respondents, the majority of whom were working women and were mainly from the Garidi and the Ain Allah estates.

#### **5.3.2. Respondents' Opinion about their Neighbours**

Responses to another question which was related to the design of the kitchen's loggia confirmed the tendency of respondents to avoid each other. Housewives were asked whether they would have liked to have the opportunity to contact their next-door neighbour from their own kitchen's loggia. The assumption was that non-working housewives might feel isolated and therefore would like to be able to meet their next door neighbour without having to cross any public spaces. However, responses revealed that the overwhelming majority of the interviewed housewives in the four estates (79%) were not in favour of such a proposition (see tab 5.4a). Whereas some of them (16%) explained that it was better to meet on the landing so that other neighbours would not listen to the

**Table 5.3.a : How many families in the building you have relationship with?**

	ESTATE								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
NUMBER OF FAMILIES KNOWN IN THE SAME BLOCK										
NOBODY.....	6	18%	2	6%	7	23%	2	6%	17	13%
1 TO 3.....	8	24%	9	27%	5	17%	3	9%	25	20%
4 TO 6.....	1	3%	3	9%	1	3%	5	16%	10	8%
MORE THAN 6.....	0	0%	2	6%	0	0%	0	0%	2	2%
ALL.....	18	55%	17	52%	17	57%	22	69%	74	58%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

**Table 5.3.b : How many of them would you regard as close friends**

	ESTATE								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
THOSE CONSIDERED AS FRIENDS										
NOBODY.....	12	36%	11	33%	13	43%	9	28%	45	35%
1 TO 3.....	12	36%	13	39%	15	50%	16	50%	56	44%
4 TO 6.....	2	6%	5	15%	2	7%	3	9%	12	9%
MORE THAN 6.....	2	6%	0	0%	0	0%	0	0%	2	2%
ALL.....	5	15%	4	12%	0	0%	4	13%	13	10%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

**Table 5.3.c : Why ?**

	ESTATE								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
WHY										
GOOD NEIGHBOURS or KNEW THEM BEFORE.....	5	15%	3	9%	0	0%	3	9%	11	9%
RELATIVES OR SAME SOCIAL CATEGORY.....	3	9%	0	0%	0	0%	7	22%	10	8%
HAVE NO TIME FOR NEIGHBOURS.....	0	0%	4	12%	7	23%	4	13%	15	12%
AVOID ANY RELATIONSHIP WITH NEIGHBOURS.....	13	39%	17	52%	13	43%	7	22%	50	39%
DO NOT KNOW.....	2	6%	4	12%	1	3%	1	3%	8	6%
NEIGHBOURS FROM A DIFFERENT SOCIAL CATEGORY.....	5	15%	1	3%	6	20%	5	16%	17	13%
MISSING.....	5	15%	4	12%	3	10%	5	16%	17	13%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

conversation from adjacent loggias (see tab 5.4b), more than a third (38%) stated that they preferred avoiding their neighbours because they were considered as an eventual source of problems and conflicts, perhaps because they 'did not have the same mentality' or 'were from a different social category'.

It was apparent that in the Garidi estate some efforts have been made in the allocation policy to ensure a better social homogeneity in some blocks of flats, whereas the social homogeneity that was found in some parts in the Ain Allah estate was related to the fact that the residents moved into their flats as owner occupiers. Residents were thus selected on the basis of their ability to purchase their flats and were roughly from the same social category.

A higher social homogeneity in the Garidi and the Ain Allah estates is reflected in a higher proportion of those respondents who expressed positive opinions about their neighbours.

### **5.3.3. Discussion**

The homogeneity of a neighbourhood is a perceptual phenomenon. It refers to residents' perception of each other in terms of attitudes, opinions and social characteristics. According to Keller (1968) the most crucial similarities between neighbours are life style, education, income and child rearing practice.

It appears that when families of different social and economic status dwell in the same block, there are less chances for relationships to develop and more likelihood of neighbours to avoid each other. A greater homogeneity between neighbours seems more likely to occur when residents have chosen to live in a particular development. This is not the case for the majority of the households living in large scale housing estates, where residents have little or no choice of flats and where the flats are rented at the same subsidised prices for the different social categories. Moreover, there is seldom an effort in the housing allocation policy to ensure a certain degree of homogeneity between neighbours living in the same block of flats.

Previous studies show that compatibility of residents is likely to promote satisfaction. The more other residents in the housing development are perceived to be similar, the higher the apparent level of satisfaction with the other residents and with the housing development (Lansing et al, 1970; Cooper, 1975; Ellis and MacCormac, 1977; Francescato et al 1979). In Darke's (1982) study, it was found that the number of acquaintances and close friends was closely associated with the

**Table 5.4.a : Would you like to have the opportunity to contact your neighbour from your kitchen loggia ?**

	ESTATE								Row Total	
	BAB EZZOJAR		AIN NADJA		GARIDI		AIN ALLAH			
WANTING TO CONTACT THE NEIGHBOUR FROM THE LOGGIA MISSING.....	0	0%	0	0%	1	3%	0	0%	1	1%
NO.....	23	70%	29	88%	25	83%	24	75%	101	79%
YES.....	10	30%	4	12%	4	13%	8	25%	26	20%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

**Table 5.4.b : Why ?**

	ESTATE								Row Total	
	BAB EZZOJAR		AIN NADJA		GARIDI		AIN ALLAH			
REASONS MISSING.....	8	24%	2	6%	7	23%	5	16%	22	17%
AVOID CONTACTS WITH NEIGHBOURS	2	6%	10	30%	8	27%	6	19%	26	20%
AVOID PROBLEMS.....	7	21%	4	12%	5	17%	7	22%	23	18%
IT IS BETTER TO MEET ON THE LANDING.....	6	18%	7	21%	4	13%	3	9%	20	16%
CANNOT HAVE A PRIVATE CONVERSATION ON THE LOGGIA.	2	6%	7	21%	5	17%	5	16%	19	15%
DEPENDS ON WHOM IS THE NEIGHBOUR.....	3	9%	0	0%	1	3%	2	6%	6	5%
WILL NOT BE BORED.....	5	15%	3	9%	0	0%	4	13%	12	9%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

level of satisfaction of the residents. It was also found that a degree of separation between different types of households was widely considered to be desirable. The degree of association between residents' perception of their neighbours and their degree of satisfaction with their dwellings in the present study is investigated in Chapter 8.

#### **5.4. MAINTENANCE AND UPKEEP OF THE PUBLIC SPACES**

##### **5.4.1. Access to Dwellings**

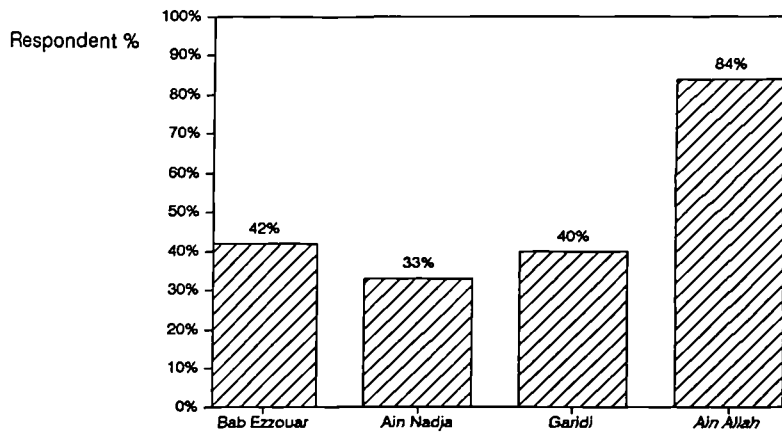
In almost all multi-storey residential units, access to the individual flats is gained by means of a common stairway. In both the Bab Ezzouar and the Ain Allah estates a stairway serves eight to ten dwellings, giving access to two dwellings per floor. In the case of the Ain Nadja and the Garidi estates the stairs serve ten to twenty dwellings, giving access to two to four dwellings per floor. The flats have generally no transitional space leading to their entrance, as the entrance door is normally directly accessible from the stairway landing. The main entrance to the block is generally open, so the stairs are accessible to anyone. Moreover, no-one within the blocks of flats appears to have responsibility for the shared stairway, as there are no resident caretakers.

##### *a. Upkeep of the stairways*

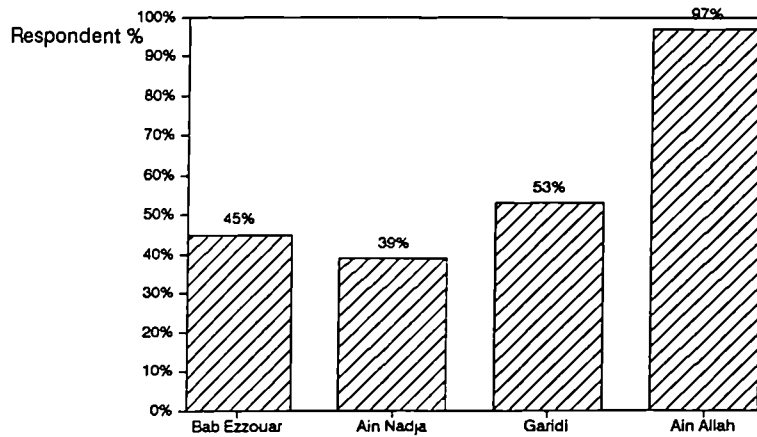
It is the council cleaners, who would usually come from outside the estate, who are responsible for cleaning the staircases of the different blocks. However, housewives complained that those cleaners do not come on a regular basis. Some housewives in the Bab Ezzouar estate complained that the council cleaners would usually limit their cleaning to sweeping the stairs, as they did not have access to water nor did they have access to a proper storage facilities for their equipment. Housewives explained that they sometimes helped the cleaners in cleaning the stairs while they provided them with water.

When residents in the four estates were asked how clean generally was their staircase, more than half the respondents in both the Bab Ezzouar and the Ain Nadja estates (55% and 61% respectively) perceived their stairway as dirty. However, this was not the case for the majority of the respondents in the Garidi and the Ain Allah estates (53% and 97% respectively) who stated that their staircase was either clean or quite clean (see fig 5.4).

**Figure 5.4 : Perceived cleanliness and neighbours organisation**



a. Proportion of respondents reporting that neighbours do get organised



b. Proportion of respondents who perceived their staircase as either clean or quite clean

**Table 5.5 : Perceived cleanliness of the staircase by neighbours' organisation**

	PERCEIVED HYGIEN						Row Total	
	CLEAN		QUITE CLEAN		DIRTY/VERY DIRTY			
NEIGHBOURS ORGANISATION								
NO.....	6	18%	18	44%	40	75%	64	50%
YES.....	28	82%	23	56%	13	25%	64	50%
Total Cases.....	34	100%	41	100%	53	100%	128	100%

Significance: .0000  
Contingency Coefficient = .43198 ; Cramers v =.4897

*b. Perceived cleanliness and neighbours' organisation*

Perceived cleanliness of the staircase was found to be significantly associated with the degree of agreement between neighbours living in the same block (see fig 5.4a, b and tab 5.5). When residents were asked whether their neighbours did get organised to clean and maintain the staircase and, if so, how this was done, it appeared that in both the Garidi and the Ain Allah estates not only did neighbours in some blocks of flats come together to clean the walls and the stairs but they also shared the payment of another cleaner who would come on a more regular basis than the council cleaner (see tab 5.6).

The pattern that emerged in the Bab Ezzouar and the Ain Nadja estates was different, as each housewife tended to clean her front door independently from the others. This was stated by respectively 18% and 27% of the respondents in the Bab Ezzouar and the Ain Nadja estates. However, no one appeared willing to clean the stairway entirely. Although a fair proportion of respondents in those two estates reported that neighbours did get organised (42% and 33% respectively), housewives in the Bab Ezzouar estate explained that this was the case only in some extreme situations, for example when the state of the staircase was such that it needed repainting or when the water in the cellar needed to be pumped. In the Ain Nadja estate, some respondents mentioned that neighbours could sometimes agree to share the price of the maintenance work on specific occasions, such as a wedding party or a religious festivity when the residents expected to receive an important number of guests and felt the necessity to improve the appearance of the shared stairway.

*c. Perceived cleanliness and stairway design*

Residents' perception of the cleanliness of their stairway was also found to be influenced by the quality of the staircase design. In both the Bab Ezzouar and the Ain Nadja estates, where the majority of the respondents said that their staircases were dirty, these staircases were found to be inadequately lit with dark painting and with a poor quality floor tiling, a floor finish being absent altogether in the case of the Bab Ezzouar estate (see fig 5.5a). In the Garidi and the Ain Allah estates, however, the staircases were well lit with large openings and cheerful and bright entrances that were well finished (see fig 5.5b and 5.5c).



**Table 5.6 : Type of neighbours' organisation with regard to the cleaning and maintenance of the staircase**

	ESTATES								Row Total	
	BAB EZZOJAR		AIN NADJA		GARIDI		AIN ALLAH			
STAIRCASE MAINTENANCE NONE.....	15	45%	18	55%	16	53%	5	16%	54	42%
THE NEIGHBOURS CLEAN THE STAIRS AND WALLS OCCASIONALLY.....	3	9%	6	18%	8	27%	15	47%	32	25%
EVERY HOUSEWIFE CLEANS HER FRONT DOOR.....	6	18%	9	27%	0	0%	3	9%	18	14%
THE NEIGHBOURS SHARE THE COST OF REPAINTING THE STAIRCASE.....	9	27%	0	0%	1	3%	2	6%	12	9%
THE HUSBANDS CLEAN THE STAIRCASE DURING SPECIAL OCCASIONS.....	2	6%	0	0%	2	7%	2	6%	6	5%
THE HOUSEWIFES HELP THE COUNCIL CLEANER.....	3	9%	0	0%	0	0%	2	6%	5	4%
THE NEIGHBOURS PAY ANOTHER CLEANER.....	0	0%	0	0%	4	13%	7	22%	11	9%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents based on the number of respondents per estate. Percents add up to more than 100% as some respondents gave more than one response category.

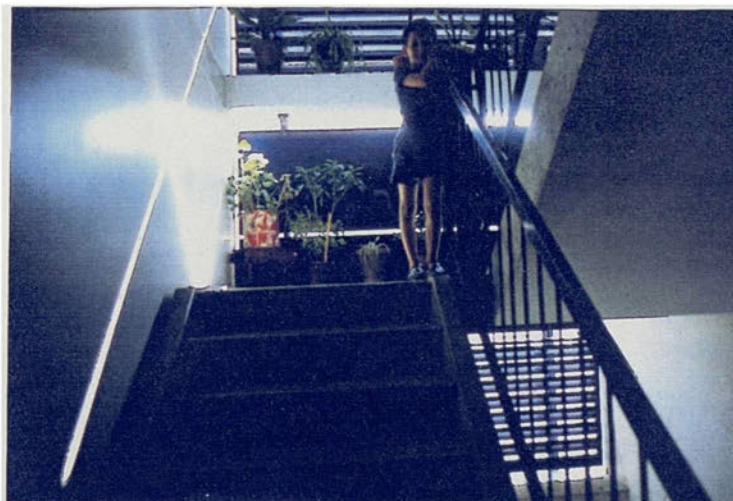
**Figure 5.5 : Perceived cleanliness and stairway design**



**a. Bab Ezzouar estate :**  
Poor daylighting, dark painting and lack of floor tiling



**b. Garidi estate:** large openings, and good finishes. Personalisation of the upper floor with plants and definition of territory



**c. Ain Allah estate:** Good finishes and daylighting, personalisation with plants in the upper floor

*d. Perceived cleanliness and child density*

Child density is another factor which seems to have an impact on the maintenance and the cleanliness of the stairs and the external spaces. As mentioned previously, child density was one of the criteria some residents used to evaluate their estate.

Fifty six per cent of the 128 interviewed housewives had more than three children with 44% of the children under the age of 12 years. Almost a third of the sampled households had more than six children. In even the best circumstances, a shared stairway serving two flats per floor in a five storey block would be likely to be used by at least thirty children and teenagers. Bearing in mind that most children spend at least some of their time outside the dwellings and that they are not provided with proper play areas, they represent a major source of litter and degradation of the public spaces.

Moreover, the number of people sharing the same stairway seems also to influence the cleanliness of the stairs and the chances of personal items being introduced in these spaces. It was frequently found that upper floors were not only cleaner but there were also more attempts on the part of the residents to decorate them with plants and pictures (see fig 5.5b, 5.5c). Such personalisation attempts were obviously the result of the fact that they were used only by the people living in the upper floor, which increased the feeling of responsibility of those residents towards those spaces.

#### **5.4.2. Maintenance of the External Spaces Adjacent to the Buildings**

*a. Space definition*

The external spaces between the housing blocks are all public; they are either access routes or open public spaces which often appear to be neglected (see fig 5.2 and fig 5.6). There is rarely any hierarchy or definition of the spaces between the blocks of flats. Instead of forming useful outdoor spaces, the large open areas are generally bare and deserted and a somewhat of "no man's land".

A planned hierarchy of spaces, from public spaces open to every one, through semi-private spaces intended for specific residents to private spaces intended for private households, is almost totally lacking in the four studied estates (see fig 5.2 and 5.6a,b). The Bab Ezzouar estate is a perfect example where no site planning

**Figure 5.6 : Lack of hierarchy and definition of the external spaces in the Ain Allah estate**



was initially done and where the position of the buildings was, apparently, dictated by the crane movements only.

*b. Residents' initiatives*

Whereas the majority of the residents seem to have no other alternative but to withdraw inside their dwellings and to remain detached from the communal spaces, the fact that some residents have put in a claim for the spaces adjacent to their units was evident during site visits. It was noticed, for example, that some residents in the four estates have fenced and landscaped the external spaces adjacent to their blocks of flats, despite the fact that they are not allowed to do so (see fig 5.7a,b,c). It is important to point out that this was most frequently achieved on the main entrance side of the buildings, whereas the other side was usually unused and not cared for.

Although such initiatives would be expected to come from residents living in the ground floor flats, an important finding was that this was not always the case. Residents living on upper floors were sometimes found to be the illegal "owners" of such spaces. However, it was frequently mentioned during informal discussions that some of the residents were opposed to their neighbours' initiative, though for no apparent reasons. Some housewives did complain that some of their neighbours threw their garbage and rubbish into the landscaped spaces. The observed fenced spaces generally created buffers between the ground floor flats and the public spaces and were used as gardens or yards where it was possible for the washing to be dried (see fig 5.8a,b).

As an example, one of the residents living in the third floor of a block of flats in the Bab Ezzouar estate took the initiative to fence a large space stretching from the main entrance of the block to the back corner of the building. The space was entirely closed off from the public spaces by the vegetation (see fig 5.8c,d). The resident allowed the researcher to visit this space and explained that although it was *his* space, neighbours were allowed to use it to cater for a large number of guests during wedding or other parties. This resident enjoyed planting trees as well as growing fruit and vegetables with the help of his sons. Not only did his initiative contribute to help his neighbours in solving the problem of catering for a large number of people, particularly during special occasions, it also contributed to enhancing the overall appearance of both the block of flats and its adjacent spaces.

**Figure 5.7 : Residents' claim for the spaces adjacent to their blocks**



**a. The Bab Ezzouar estate: Residents' initiative to personalise their block entrance**



**b. The Ain Allah estate: Contrast between large bare public spaces and the gardens**



**c. The Ain Nadja estate : Fenced space planted with trees and plants enhancing the appearance of the facade**



**d. The Garidi estate: Fenced spaces planted with trees**

**Figure 5.8 : Use of the external spaces adjacent to the blocks of flats**



**a. Drying the washing in the Bab Ezzouar estate**



**b. Drying the washing in the Ain Nadja estate**



**c. Landscaped garden in the Bab Ezzouar estate**



**d. The space is entirely closed off from the public by the vegetation**

Similar initiatives on a smaller scale have also been observed in the Ain Nadja and the Ain Allah estates (see fig 5.7b,c)

### 5.4.3. Discussion

A key element in the design of multi-family housing is its capacity to be easily managed and maintained. Cooper and Sarkissian (1986, p.286) argues that the quality of a housing environment depends more on the way it is maintained and cared for than on the design standards.

The availability of a resident caretaker would probably ensure a better standard of maintenance of the staircase. However, when this is not possible there should be at least a full time team of maintenance workers with special responsibilities clearly laid out and with adequate storage space and equipment.

More attention should be paid to the design of the staircases. While care should be taken to ensure a good daylighting of the stairways and to avoid vulnerable materials by ensuring a choice of finishes materials that stand heavy usage and that give a bright appearance, there should be more effort in the allocation policy to ensure that families with a large number of children are not concentrated in the same block of flats and are allocated flats on the ground floor. A study by Wilson (1978) found that all building forms are likely to experience vandalism once the number of children (aged five to sixteen) exceeds five per ten dwellings. However, this may not always be the case if reference is made to various cultures. In the Algerian situation the number of children is almost always higher than Wilson's figure as the national average size of an Algerian household has been estimated at 7.01 (O.N.S, 1988, p80). Reducing the number of residents' sharing the same stairway may well be likely to encourage a greater feeling of responsibility of the residents towards the maintenance and the upkeep of the staircase.

It also appears that areas such as the communal stairways and the external spaces, where nobody feels any personal responsibility, tend to be more vulnerable to vandalism and poor upkeep. Newman (1976) terms these areas which are not easily personalised or brought under control as 'non-defensible spaces'. The 'personalisation' of the spaces adjacent to the blocks of flats is an important way to establish a domain, to ensure more privacy to the ground floor flats and to improve the appearance of the estate. The addition or inclusion of



private open spaces appears to result in increased resident satisfaction and a lower maintenance cost.

From site observation and interviews with housewives it appears that mass housing residents are to some extent likely to invest energy and money in 'personalising' their entrances and in taking care of the spaces adjacent to their blocks. This may result in a natural hierarchy of spaces by the creation of important buffer zones between dwellings on the ground floor and the communal open spaces.

If the 'personalisation' of the adjacent external spaces was an established practice it might well encourage a different character for different areas in the same estate. However, the problem of how to divide the external spaces and how to allocate them to the residents and ensure that they are not used for other purposes than gardens or yards is not without problems and needs further investigation.

## **5.5. APPEARANCE OF THE ESTATE**

### **5.5.1. Architectural Attempts to Improve the Appearance of the Estates**

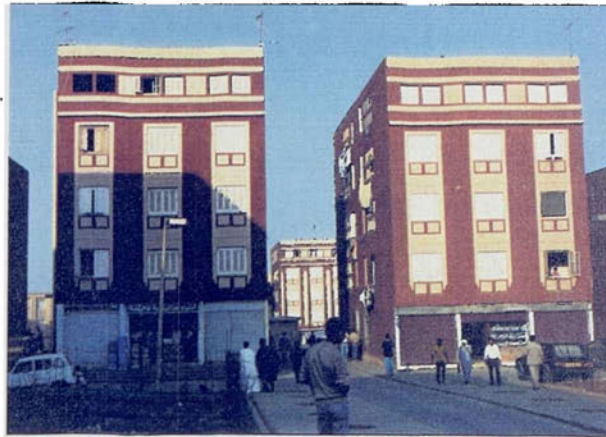
Some recent efforts have been made by planners and builders in the newly built ZHUN estates to try to overcome their monotonous appearance. These efforts include avoiding buildings of a slab-like appearance and breaking down the volume of the buildings, as well as including some variation in the buildings' heights and facade colours, as is the case in the Ain Nadja estate where the most recently built parts exhibit different colour combinations (see fig 5.9a).

Whereas the majority of the ZHUN estates seem to have more or less the same appearance (see fig 5.9a,b), both the Garidi and the Ain Allah estates present some distinct features in their overall appearance (see fig 5.9c,d). In the Garidi estate the facade design is inspired by some local architectural features.

### **5.5.2. Respondents' Evaluation**

Respondents were asked to evaluate the appearance of their estate according to a set of responses ranging from 'nice' to 'very bad'. The vast majority of the 128 respondents (81%) stated that their estate's appearance was either 'nice' or 'quite nice' (see Appendix C, tab C.3). However, responses varied from one estate to another. Higher proportions of those respondents who disliked the appearance of

**Figure 5.9 : Appearance of the estates**



**a. The Ain Nadja  
estate**



**b. The Bab Ezzouar  
estate**



**c. The Ain Allah  
estate**



**d. The Garidi  
estate**

their estate were from the Bab Ezzouar and the Ain Nadja estates and represented respectively 36% and 15% of the 33 respondents in each estate.

The appearance of the Garidi estate seems to be the most popular, as all respondents interviewed in this estate reported that their estate was either 'nice' or 'quite nice' (see fig 5.9d). In the Ain Allah estate, some respondents explained that the appearance of the blocks with the pitched roofs reveals that the whole project has been imported and seems to be out of context (see fig 5.10). Despite this fact, the great majority of the respondents (81%) said the appearance was either 'nice' or 'quite nice'.

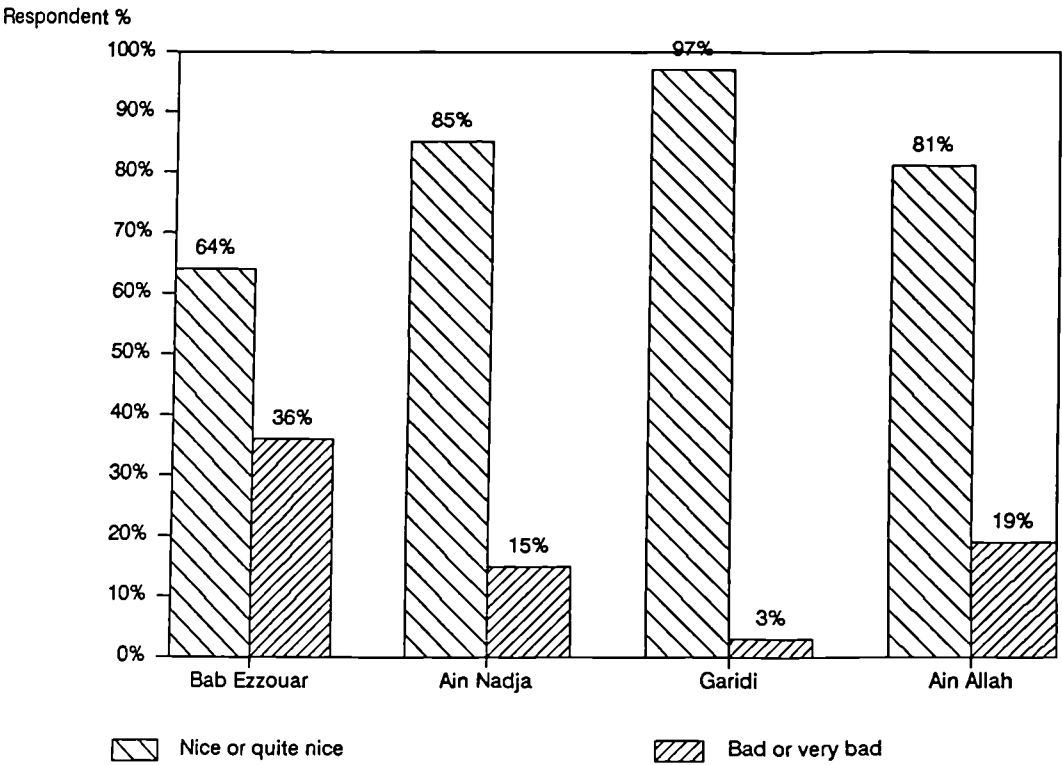
Respondents, as a whole, were not very critical about the appearance of their estates, probably because they were not particularly concerned about it or because all the ZHUN estates look more or less the same, so there are not many elements of comparison. However, it was found that younger housewives and working housewives seemed to be more critical towards the appearance of their estate than the older housewives.

### **5.5.3. Criteria Used to Evaluate the Estates' Appearance**

When housewives were asked what they thought about the view they had from their living room, it appeared that greenery and good upkeep of the external spaces seem to be important features by which respondents assessed their estate appearance from their dwellings. Respondents in the Ain Nadja estate preferred the appearance of the older part of the estate because of the landscaped spaces and the presence of trees (see fig 5.11a). Respondents in both the Garidi and the Ain Allah estates mentioned the good finishes of the external spaces in comparison with the quality of the external spaces that are generally found in other estates (see fig 5.11c).

Whereas the majority of the respondents stated that the appearance was either 'nice' or 'quite nice', most of those respondents reported that there was nothing interesting or special to look at from their living room window or that the view was limited to facing blocks. Moreover, some respondents stated that after a few years of occupancy, their estate was becoming too crowded and that the existence of facilities such as shops, cafes, bus stops and building sites prevented them from standing at their windows because of the lack of privacy. However, few housewives described the view they had from their living room as 'lively' (see

**Figure 5.10 :Residents' perception of the appearance of their estate**



**Figure 5.11 : Landscape quality of the external spaces in some parts of the Ain Nadja and Garidi estates**



**a. The Ain Nadja estate : Presence of trees and greenery**



**b. The Ain Nadja estate : A lively view appreciated by residents**



**c. The Garidi estate: A good landscape of the external spaces was an important criteria in residents' evaluation of the appearance of their estate**

fig 5.11b) and they appreciated some degree of activity as long as it did not affect their privacy.

Slightly more than a quarter of the housewives in the four estates (27%) mentioned that they 'did not mind' the type of view they had from their living room. However, none of the respondents mentioned the actual facades or other architectural features when assessing the view they had from their living room. The quality of the external spaces and the contribution of the greenery to it as well as the general upkeep of the estate seemed to be more influential in shaping respondents' perception of the appearance of their estate than the architectural features of the facades.

Another important aspect of the external environment which seems to contribute in shaping residents' overall exterior impression is the scale of the spaces separating the buildings as well as how residents and visitors find their way around. Some respondents in the Bab Ezzouar estate explained that visitors have difficulties in orientating themselves as all the spaces between the buildings look the same.

#### **5.5.4. Discussion**

The appearance quality of a housing estate is an environmental factor which is not easy to measure. It is related to the bulk and relationship of blocks and the nature of spaces created. A pleasing appearance may not only be associated with a particular facade treatment but also with a complex visual variety. This means a non-institutional appearance, which can be achieved with a variety of building heights, landscaping and space forms as well as pleasant views from the dwellings. A monotonous or repetitive design can be vastly improved by good quality landscaping. More investment in site planning arrangement and design time is perhaps of more benefit than attending to facade treatment.

As mentioned in the previous section about the maintenance of the external spaces, the contribution of residents in enhancing the general appearance of their estate should not be neglected. Although such a contribution might interfere with an overall visual coherence, the cumulative result of personal modifications may be a naturally occurring complexity and variety in the exterior visual environment.

General upkeep and maintenance of the housing environment was found to influence the way residents felt about the appearance of their estate. For many residents, appearance is almost synonymous with good landscape and good

upkeep. Several previous studies (D.O.E, 1972; Becker, 1977; Cooper, 1975; Coulson 1980) show similar results, suggesting that the four major factors contributing to residents' evaluation of appearance are maintenance, landscaping, outside materials and building shape and layout.

## **5.6. SECURITY AND VANDALISM**

### **5.6.1. Attempts of Break in or Burglary**

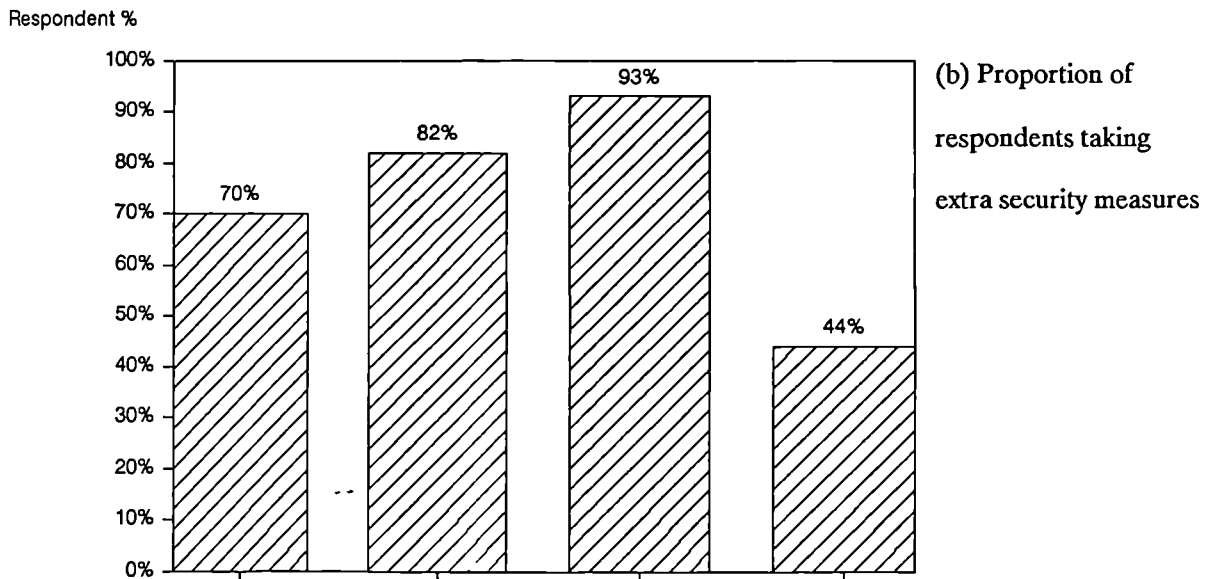
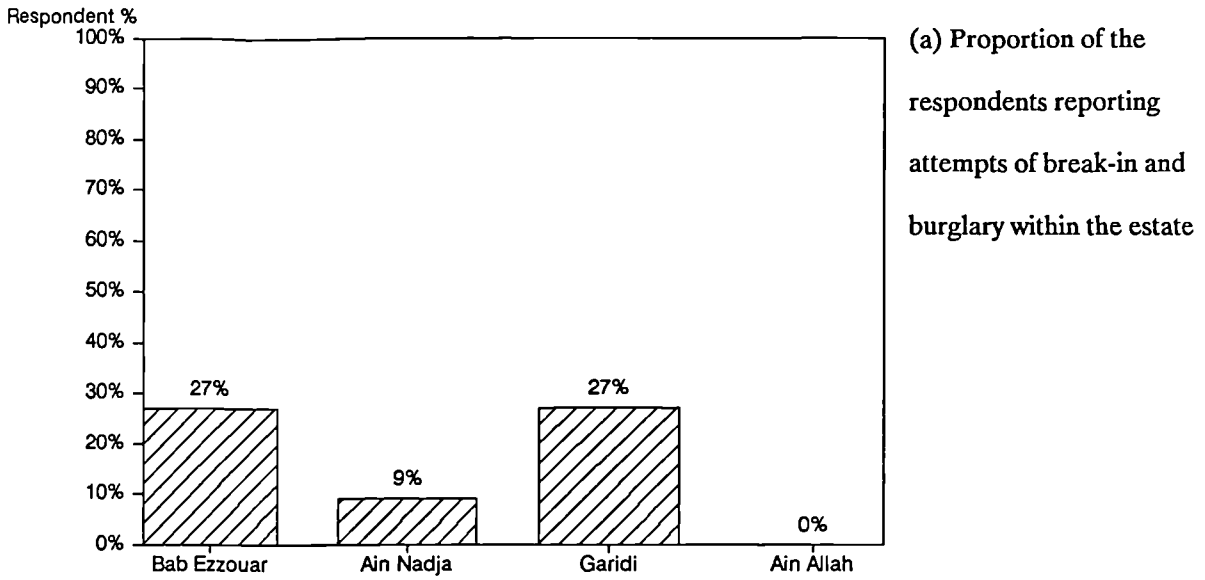
Whereas no respondent in the Ain Allah estate reported any break in and/or burglary attempts within other blocks of flats, slightly more than a quarter of the respondents in both the Bab Ezzouar and the Garidi estates were aware of such attempts (see fig 5.12).

While security is not a major problem, respondents expressed some concern with regard to the eventuality of a break-in and burglary of their flats. This was found to be particularly the case for the residents living on the ground or the first floor. As a result, an important proportion of the 128 respondents (72%) reported taking steps to improve the security of their flats (see fig 5.12).

### **5.6.2. Security Measures**

Preventive measures were much the same in all the estates, with the exception of the Ain Allah estate where a much smaller proportion of the respondents mentioned taking extra security measures (see tab 5.7). Preventive measures included reinforcing the door's lock, adding a second, metal door to the flat entrance (see fig 5.13b,d), adding iron grids to the windows and/or the loggias (see fig 5.13a,c) and even installing an electronic alarm system in some cases. The most frequent measures seem to be either reinforcing the entrance door's lock or adding an extra metal door, as reported by 28 % of the 128 respondents in each case. Other security measures consisted of making sure that there was always someone in the flat or that the entrance to the block of flats was locked at night. The latter was particularly mentioned by the respondents in the Ain Allah and the Garidi estates, where residents in some blocks showed a certain degree of cooperation on cleaning the staircase and maintaining the external spaces.

**Figure 5.12 : Burglary attempts and security measures**





**Table 5.7 : Type of security measures taken by the residents**

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
SECURITY MEASURES										
NONE.....	13	39%	6	18%	3	10%	17	53%	39	30%
ALWAYS SOMEONE IN THE FLAT	5	15%	2	6%	5	17%	0	0%	12	9%
REINFORCED ENTRANCE.....	2	6%	14	42%	10	33%	10	31%	36	28%
BLOCK ENTRANCE LOCKED AT NIGHT.....	4	12%	3	9%	3	10%	6	19%	16	13%
ADDITIONAL IRON DOOR.....	15	45%	10	30%	10	33%	1	3%	36	28%
ALARM.....	1	3%	0	0%	2	7%	1	3%	4	3%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents  
based on the number of respondents per estate.  
Percents add up to more than 100% as some respondents  
gave more than one response category.

**Figure 5.13 : Security Measures - Iron grids and Iron doors**



**a. Aln Nadja**



**b. Bab Ezzouar**



**c. d. Garidi**

### **5.6.3. Vandalism**

• Much of the damage seen was not vandalism in the sense of deliberate destruction but the result of normal childrens' activities. Some housewives complained about the damage to the greenery and to the stairways. However, very few physical traces of vandalism were observed during site visits.

### **5.6.4. Discussion**

Although security and vandalism do not seem to be a major problem within the visited estates, residents' concern is clearly expressed by their very strong tendency to add iron grids to their windows and reinforcing their dwelling entrance door. Windows with iron grids have been mostly observed for the flats on the ground and the first floors. The safety of the ground floor and the first floor flats could be enhanced by the provision of enclosed private or semi-private open spaces around the blocks. This could be a means of deterring both burglaries of those flats and vandalism to the spaces adjacent to them.

There is much evidence to guide designers in achieving safety through Newman's (1976) hypothesis of defensible spaces, which is a concept developed as an alternative to traditional security measures. The lack of territorial definition, poor lighting and poor surveillance may be at least a partial cause of vandalism and lack of security.

## **5.7. LIVING ON OR OFF THE GROUND**

Only 16% of the interviewed 128 housewives were living on the ground floor. Forty five per cent were living on the first and second floors whereas the remainder were living on the two last floors, that is the third and the fourth floors. Almost the same proportions of households living within the different floors of the blocks have been interviewed in the four estates (see Appendix C, tab C.10).

When asked whether they would prefer living on or off the ground, the overwhelming majority of the respondents in the four estates (77%) stated living off the ground. Only 14% of the 128 respondents stated that they would prefer living on the ground floor and most of them (61%) were large households of more than seven people (see Appendix C, tab C.11). Half of those who were interviewed in ground floor flats expressed a strong preference for living off the ground (see Appendix C, tab C.13).

The most frequently stated reasons for the residents' preference to live off the ground were the lack of security and privacy of the ground floor flats, as mentioned respectively by 40% and 48% of the 128 respondents (see tab 5.8). Another important reason, mentioned by a third of the respondents, was related to the problem of maintenance of the ground floor flats. Housewives explained that flats on the ground floor are exposed to both dust and dirt, not only from the adjacent external spaces but also from the flats above, as residents dust their carpets and blankets from their windows.

Moreover, some housewives tended to associate ground floor flats with feelings of suffocation and this was particularly the case in the Ain Nadja and the Ain Allah estates, where some blocks were felt to be too close to each other, as a distance of only about 20 metres was separating them. The argument was that housewives felt the air was fresher and cleaner in the flats in the upper floors, which were perceived as being away from noise and dirt and having a better sun exposition.

It seems that there are far more disadvantages in living on the ground than advantages. However, a very small proportion of respondents (9%) mentioned that the flats on the ground floor were advantageous for families with a large number of small children and for the possible opportunity of having a small garden. They explained that children had more freedom in the ground floor flats because their noise would not disturb the flats below and that, being on the ground floor, they do not have to run up and down the stairs several times a day. Having more water pressure in the ground floor flats than any of the other flats was also an advantage expressed by a few respondents.

## **5.8. PRIVACY AND NOISE DISTURBANCE**

More than half the 128 respondents reported that their flats were both overlooked and poorly sound proofed (see tab 5.9). A higher proportion of those respondents who complained about the fact that their flats were overlooked was found in the Ain Nadja and the Ain Allah estates, as it was reported by respectively 61% and 69% of the respondents in each estate (see fig 5.14a,b).

### **5.8.1. Overlooking**

Overlooking was not only brought about as the result of the small distance separating some blocks of flats, in the Ain Allah and the Ain Nadja estates, it was

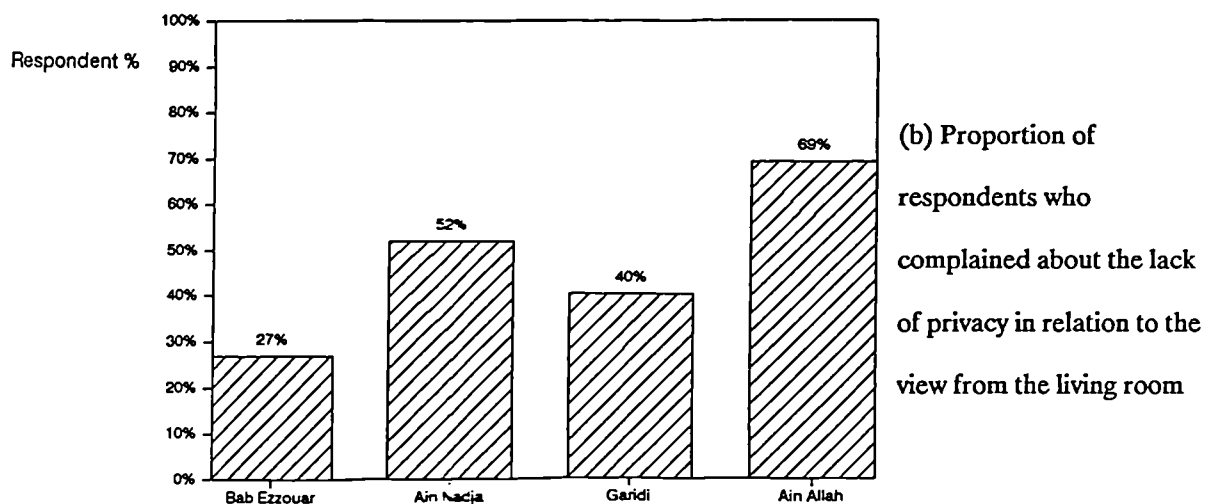
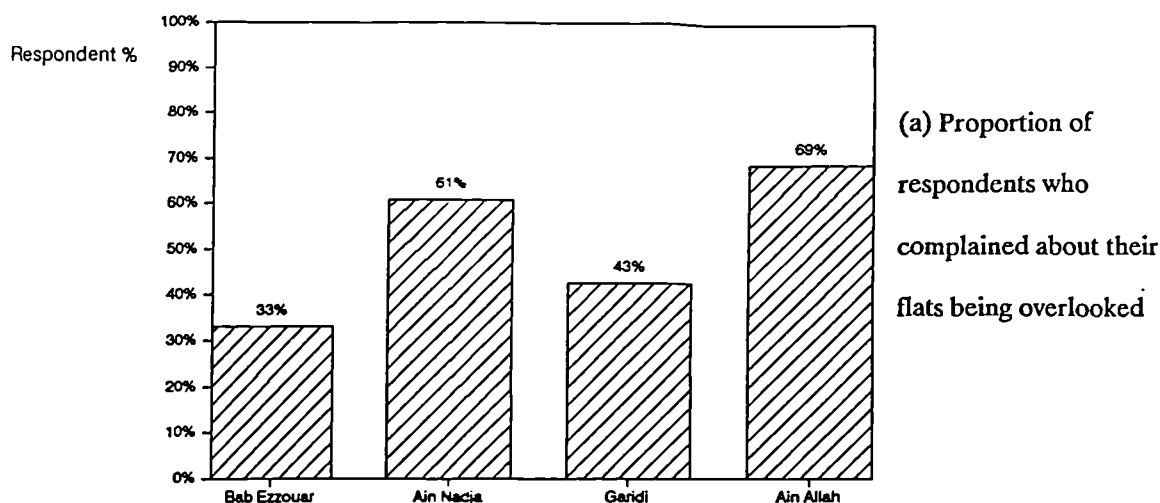
**Table 5.8 : Reasons for preference to live on or off the ground**

	ESTATE								row total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
THE GROUND FLOOR IS GOOD FOR CHILDREN AND FOR GARDENING.	4	12%	3	9%	3	10%	1	3%	11	9%
THE GROUND FLOOR FLATS HAVE NO PRIVACY(1).....	15	45%	12	36%	17	57%	17	53%	61	48%
THE GROUND FLOOR FLATS HAVE NO SECURITY.....	8	24%	14	42%	14	47%	15	47%	51	40%
MORE FRESH AIR AND BETTER VENTILATION OFF THE GROUND	2	6%	7	21%	2	7%	7	22%	18	14%
THE GROUND FLOOR FLATS ARE EXPOSED TO THE DUST (2)....	14	42%	8	24%	10	33%	9	28%	41	32%
THE GROUND FLOOR FLATS DO NOT GET ENOUGH SUN RAYS.....	0	0%	2	6%	1	3%	0	0%	3	2%
THE GROUND FLOOR FLATS HAVE MORE WATER PRESSURE.....	3	9%	2	6%	3	10%	1	3%	9	7%
MISSING.....	3	9%	4	12%	2	7%	3	9%	12	9%
column total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents based on the number of respondents per estate. Percents add up to more than 100% as some respondents gave more than one response category

- 1.The ground floor is exposed to the street and the crowd |
- 2.The ground floor flats get too much dust from the neighbours and from the external spaces

**Figure 5.14 : Privacy in the flat**



**Table 5.9 : Privacy in the flat**

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
PRIVACY MISSING.....	8	24%	4	12%	7	23%	6	19%	25	20%
OVERLOOKED.....	11	33%	20	61%	13	43%	22	69%	66	52%
NOT SOUND PROOF.....	18	55%	20	61%	17	57%	17	53%	72	56%
TOO CUT OFF.....	1	3%	0	0%	0	0%	0	0%	1	1%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents based on the number of respondents per estate. Percents add up to more than 100% as some respondents gave more than one response category.

also caused, in some cases, by the existence of a nearby building site or a bus stop which prevented some housewives from opening their windows or even opening the shutters. It was frequently observed that the shutters of the ground floor flats were kept permanently closed. As stated in the previous section, the privacy of the ground floor flats was significantly reduced by their direct exposition to public spaces and this was a major reason for residents' preference for living off the ground.

It also appears from the comments of some respondents in the Ain Allah estate that more care should be taken in the design of the window shutters. The design of the shutters was criticised by residents because it allowed overlooking from flats in facing blocks during the night when the lights were on. However, complaints about being overlooked from facing dwellings were less frequent than complaints about being overlooked from public spaces.

### **5.8.2. Noise Disturbance**

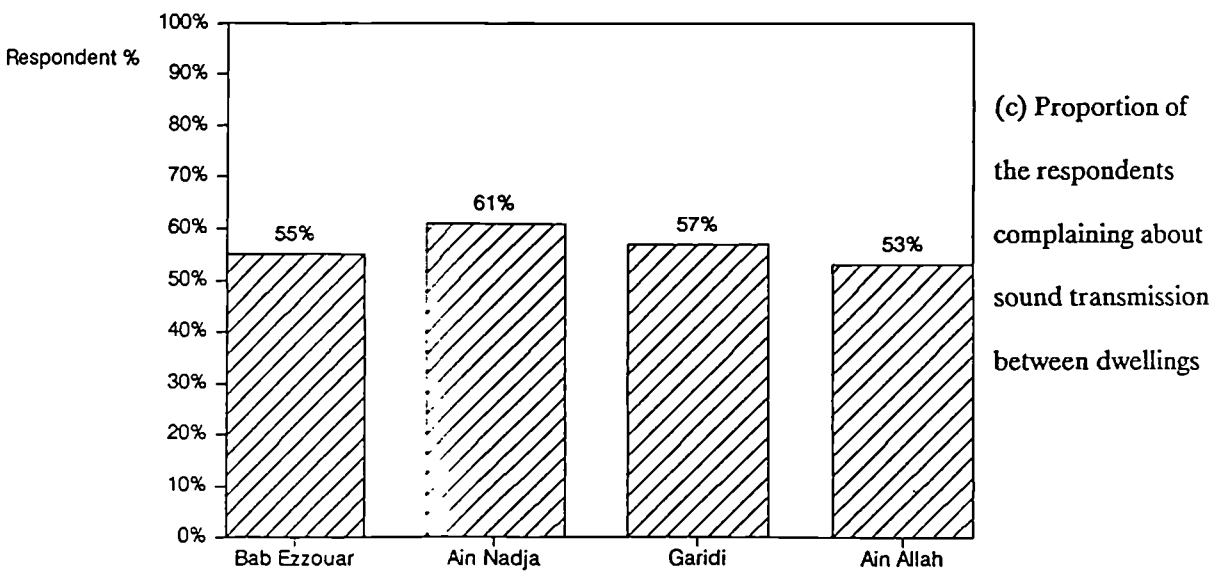
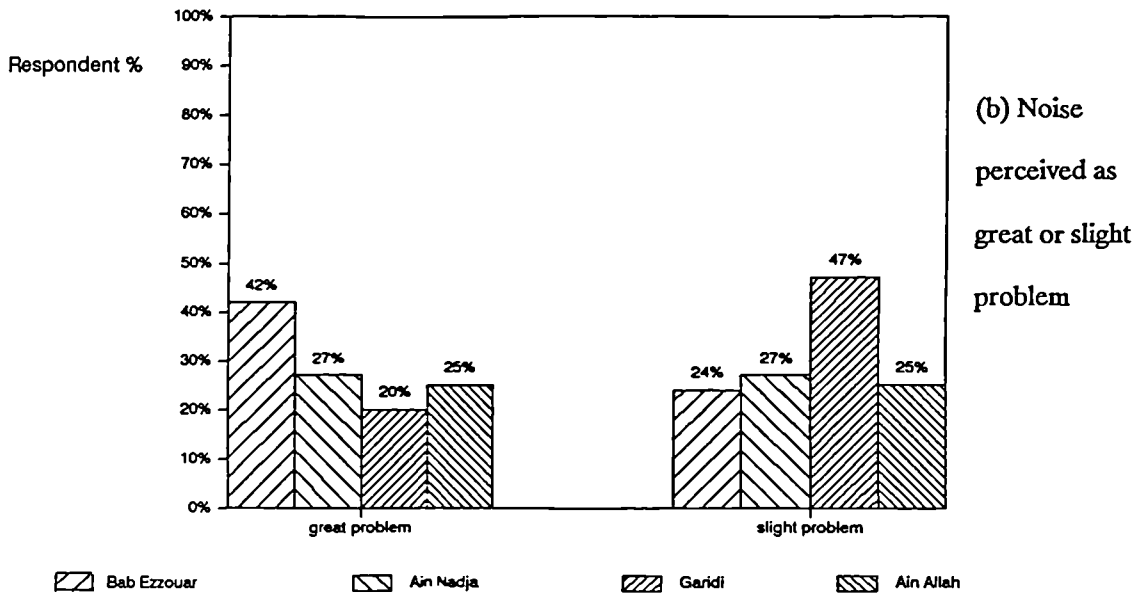
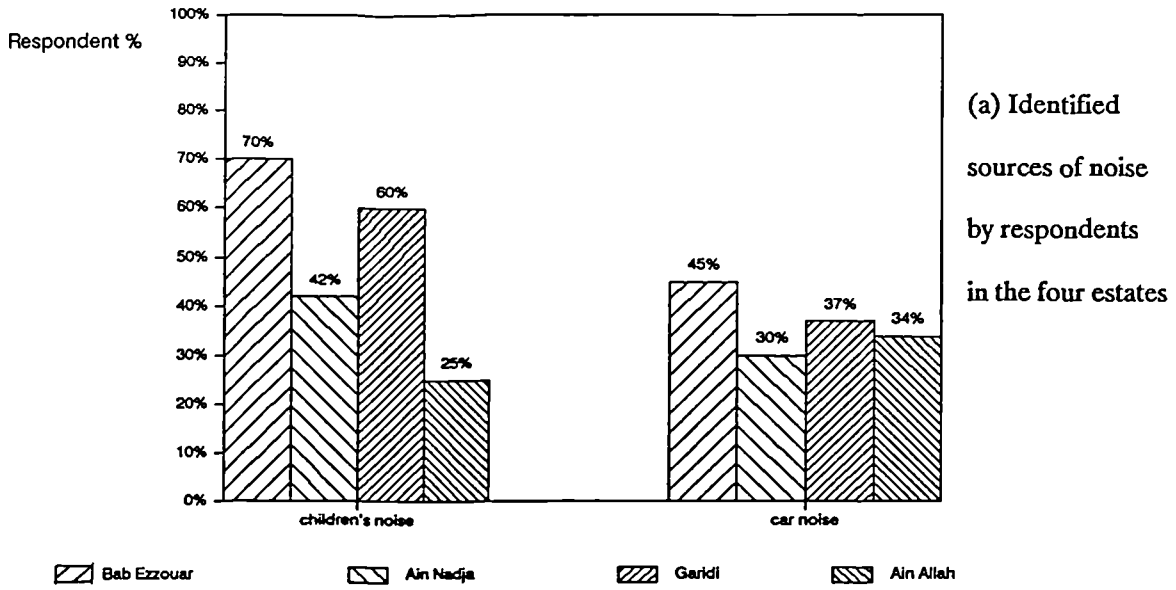
The majority of the respondents (60%) reported that noise was a problem varying from slight to great (see Appendix C, tab C.14). The proportions of such respondents by estate are displayed in fig 5.15b. Respondents were also asked to identify the noise sources and the replies confirmed that noise and disturbance by children playing outdoors were the major sources of complaints, as this was mentioned by 49% of the 128 respondents in the four estates. Children's noise was particularly a problem in the Bab Ezzouar and the Garidi estates, as it concerned respectively 70% and 60% of the respondents in each estate (see fig 5.15a).

Traffic noise generated within the estate or from adjacent main roads concerned more than a third of the respondents (37%) in the four estates. The highest proportion of respondents who complained about car noise were from the Bab Ezzouar estate (see fig 5.15a).

Other sources of noise were identified by some of the respondents. There were complaints in the Bab Ezzouar estate about the noise of the planes due to the nearness to Algiers International airport. Noises generated by building site work were reported by a number of respondents in the Ain Nadja and the Garidi estates.

Less complaints were recorded about the noise transmitted between dwellings. It seems that noise from outside the dwellings disturbed more tenants than noise from one dwelling to another. However, the poor noise insulation

Figure 5.15 : Noise disturbance





between dwellings is reflected in some of the respondents' complaints about neighbours' speaking or neighbours' television or radio. Building services seem to be major noise bridges between adjoining dwellings and this has resulted in a considerable reduction of the privacy inside the dwellings. As an example, the water heater in the kitchens of the Ain Allah estate dwellings was described as a "phone". Some housewives explained that they can hear from their kitchen any conversation in the kitchen of the upper floor flat.

### **5.8.3. Discussion**

Both noise disturbance and overlooking seem to annoy residents more when generated from public spaces than from adjacent or facing dwellings. The privacy within the ground floor flats seems to be the mostly affected, as those flats are directly exposed to public spaces. The enclosure of the adjacent external spaces and their use as private gardens by the residents could create important buffer zones between the public spaces and the ground floor flats, ensuring a much higher degree of privacy. The proximity of a bus stop or a building site seems to reduce considerably housewives' privacy, particularly in the case of ground and first floor dwellings.

The small distance separating some blocks of flats generates a feeling of suffocation among housewives living on the ground floor and a high exposition of the dwellings, particularly at night when the shutters are not properly designed to prevent overlooking. According to Cooper and Sarkissian (1986) lack of visual privacy is more likely to affect satisfaction than lack of aural privacy.

## **5.9. TENURE LONGEVITY AND MOVING INTENTIONS**

### **5.9.1. Tenure Longevity**

With the exception of the Bab Ezzouar estate where the majority of the respondents (91%) had been living in their flats for six to eight years at the time the survey was carried out, the majority of the respondents in the three other estates had been living in their flats for three to four years (see summary in tab 5.10).

The residents' perception of the different features of their estate seems likely to change over time. Residents' opinions about their estate tended to be more positive in the newer estates, the Garidi and the Ain Allah estates, which were

**Table 5.10 : Respondents' evaluation of their housing environment  
-Main findings-**

Aspects investigated		Bab Ezzouar	Ain Nadja	Garidi	Ain Allah	Comments
SECURITY - VADALISM	Attempts of burglary within the same block					Respondents expressed concern about the eventuality of being burglaried. This was particularly the case for residents living on the ground and the first floors.
	• Yes	27 %	9 %	27 %		
	Security measures					Iron doors were usually observed in the Bab Ezzouar and the Garidi estates
• Yes	70 %	82 %	93%			
• No				56%		
	Type of security measures					
	• Reinforced entrance		42 %	33 %	31 %	
	• Block's entrance closed at night	12 %			19%	
	• Iron doors and iron grids	45%	30%	33 %		
ON OR OFF THE GROUND	Preference for living on the ground					The vast majority of the respondents preferred living off the ground because of the lack of security and to the exposition to dust and dirt of the ground floor flats
	• Yes	21%	14%	20 %	6 %	
	Reason for preference to live off the ground					
	• No security on the ground floor	24%	42%	47%	47%	
	• The ground floor is exposed to dust	42%	24%	33%	28%	
PRIVACY	The flat is					Overlooking from public spaces was more bothersome than overlooking from facing blocks
	• Overlooked	33%	61%	43%	69%	
	• Not sound proof	55%	61%	57%	53%	
NOISE DISTURBANCE	Main source of noise					Noise from the outside seems to disturb residents more than the noise transmitted from one dwelling to another
	• Children	70%	42%	60%	25%	
	• Cars	45%	30%	37%	34%	
	• Neighbours	27%	33%	20%	13%	
TENURE LONGEVITY MOVING INTENTIONS	Tenure longevity					The majority had a tenure longevity of 3 to 4 years at the time of the survey, with the exception of those from Bab Ezzouar who had the longest longevity, 6 to 8 years
	• 1 to 2 years		36%	30%	24%	
	• 3 to 4 years	9%	55%	53%	76%	
	• 5 years		9%	17%		
	• 6 to 8 years	91%				
	Intention to move					The question about moving was hypothetical since housing mobility is very restricted.
• Yes	73%	82%	57%	53%		

**Table 5.10 : Respondents' evaluation of their housing environment  
-Main findings (cont.)-**

Aspects investigated		Bab Ezzouar	Ain Nadja	Garidi	Ain Allah	Comments
OPINION ABOUT THE ESTATE	Overall opinion about the estate			67 %	69%	Negative opinions were related to the poor construction quality, poor site layout, and poor maintenance of the estates.  Homogeneity between neighbours and a better constructional quality of the dwelling were the main criteria used by respondents to explain their preference for other parts of the same estate
	• Positive					
	• Negative	94 %	42%			
OPINION ABOUT THE ESTATE	Preference for other parts of the same estate			44%	53%	Homogeneity between neighbours and a better constructional quality of the dwelling were the main criteria used by respondents to explain their preference for other parts of the same estate
	• Yes	76 %	73 %			
	• No or do not know					
OPINION ABOUT THE ESTATE	Reasons (if yes)					Homogeneity between neighbours and a better constructional quality of the dwelling were the main criteria used by respondents to explain their preference for other parts of the same estate
	• Better construction	52%	21%			
	• Better neighbours	18%	24%	40%	31%	
NEIGHBOURHOOD	Perception of neighbours living in same block					The majority prefer avoiding any kind of relationship with the neighbours to avoid eventual problems
NEIGHBOURHOOD	• Avoid neighbours who are from a different social category	54%	55%	60%	38%	
UPKEEP OF THE COMMUNAL SPACES	Perceived cleanliness of the stairway			53%	97%	A significant relationship was found between respondents' perception of the cleanliness of their staircase and the organisation of the neighbours
	• Clean or quite clean					
UPKEEP OF THE COMMUNAL SPACES	• Dirty or very dirty	55%	61%			A significant relationship was found between respondents' perception of the cleanliness of their staircase and the organisation of the neighbours
	Organisation of neighbours to maintain the shared communal spaces				84%	
UPKEEP OF THE COMMUNAL SPACES	• Yes					A significant relationship was found between respondents' perception of the cleanliness of their staircase and the organisation of the neighbours
	• No	58%	67%	60%		
APPEARANCE OF THE ESTATE	Perception by the residents					As a whole, respondents were not very critical about the appearance of their estate
APPEARANCE OF THE ESTATE	• Nice or quite nice	64%	85%	97%	81%	

launched in the 1980s, than in the two other older estates, the Bab Ezzouar and the Ain Nadja estates, launched in the 1970s.

It seems reasonable to suggest that the longer the residents stay in an estate, the more likely they will experience problems within the estate. However, the small variation in respondents' length of residence within the same estate made the statistical testing of such a hypothesis impossible.

### **5.9.2. Moving Intentions**

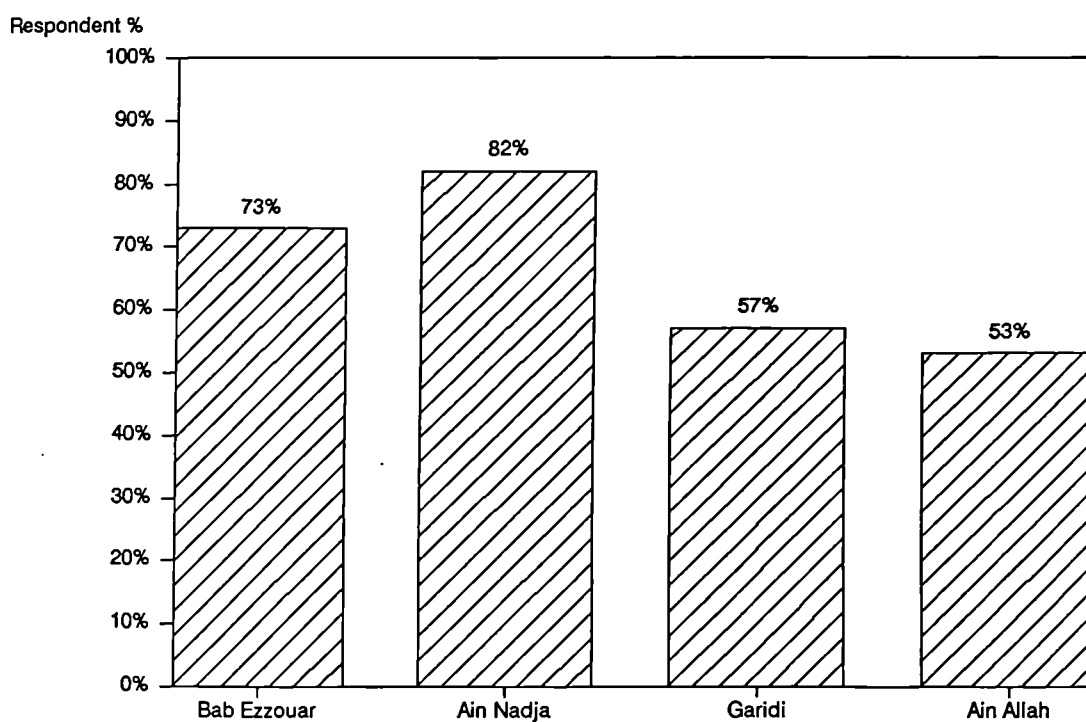
The acute shortage of dwellings in Algeria has resulted in a very restricted degree of housing mobility. The overwhelming majority of the residents in the ZHUN estates have no other alternative but to stay in the same flat for their whole lifetime. Despite this fact, respondents were asked whether they would like to move if this was possible. It must be emphasised that the question about moving was hypothetical and the desire to move was only an abstract possibility.

Whereas slightly less than half the respondents in the Garidi and the Ain Allah estates did not intend to move, even if it were possible, the large majority of the respondents in the Bab Ezzouar and the Ain Nadja estates (73% and 82%) respectively wanted to move (see fig 5.16). The main reasons seemed to be related more to the flats themselves than to the estate, as the flat size was the major stated reason for the intention to move (see Appendix C, tab C18). A few respondents reported that they would move only if it was to live in a single family house. However, estate 'image' or reputation seems to matter more for middle class respondents. One university lecturer resident in the Bab Ezzouar estate explained that she would like to exchange her flat with a smaller one in the Garidi or the Ain Allah estate because of a higher status generally associated with those two estates.

## **5.10. CONCLUSION**

The results presented in this chapter are summarised in table 5.10. Important differences in respondents' attitudes towards their housing environment were found between the four estates. Whereas the majority of the respondents in both the Bab Ezzouar and the Ain Nadja estates tended to identify several negative features within their housing environment and had negative opinions about their estate, the majority of the respondents in the Garidi and the Ain Allah estates

**Figure 5.16 : Proportion of respondents who wanted to move**



expressed positive opinions about their estates without however, mentioning any specific positive features.

When respondents were asked to assess different features of their housing environment, it appeared that the relationship between neighbours living in the same block, the maintenance and upkeep of the external spaces and the shared stairways, the landscape quality of the external spaces as well as the construction quality of the dwellings were the most frequently stated criteria by which respondents tended to evaluate their estate.

Better relation between neighbours in the same block did not necessarily imply a friendly relationship as the majority of the residents tended on the whole to avoid each other. It was rather perceived as a better agreement between neighbours to share some responsibility in cleaning and maintaining the shared communal spaces. This was found to be particularly the case when there was a greater social homogeneity in some blocks of flats and when the residents were owner occupiers.

Maintenance and upkeep seem to have a greater impact on residents' perception of their estate and its appearance than any other aspect. Whereas the maintenance of the shared stairways was the responsibility of council cleaners, it was frequently found that they were inefficient. Better maintenance was found when residents hired another cleaner and when they carried out periodic cleaning and painting of the shared stairway themselves. It also appeared that the less the number of people sharing a stairway and the less the number of children living in the same block, the more likelihood there was for good maintenance, decoration and 'personalisation' of the spaces on the part of the residents.

The maintenance could be helped by a more careful choice of building materials that stand heavy usage. The choice of good quality finishing materials with bright colours that are easily cleaned as well as the availability of good daylighting for the shared stairway would seem to have a great impact on residents' perception of the cleanliness of their staircase and their participation in maintaining it. A better landscape treatment of the external spaces could also prevent the transfer of dust or mud to the staircases.

However, better conditions cannot be achieved without a certain degree of social homogeneity and a limited number of residents using the same stairway. From a management point of view, there should obviously be more effort in the allocation policy to ensure a higher degree of social homogeneity as well as a

lower child density within the blocks of flats. It seems that the greater the level of responsibility accorded to each resident, the easier will be the task of management and maintenance of the communal spaces.

Whereas the large spaces between buildings remained undefined and unused, site observations showed that the spaces adjacent to the buildings tended to be greener and better defined and landscaped. Residents' claims for these spaces was evident in the four estates, despite the regulations which supposedly prevented them from 'personalising' these spaces. It seems that residents are likely to invest energy and money in taking care of their entrances and the external spaces immediately adjacent to their blocks.

Such initiatives are to be encouraged because of their several advantages. Not only do they reduce the scale of the public spaces and consequently reduce the maintenance cost, they also create important buffers between the ground floor flats and the public spaces, increasing significantly the privacy and the security of the ground floor flats. Moreover, they contribute in enhancing the overall appearance of the estates and re-establish the relation between the buildings and their immediate external environment. They were also found to help in the undertaking of a number of important activities that are difficult to carry out within the flats, as will be explained in the next two Chapters.

However, how to divide the external spaces adjacent to the blocks and how to allocate them to residents without raising conflicts, as well as how to ensure that these spaces are not used for other purposes than gardens and/or yards, remain a problem. This is certainly an important area of the design of multi-family housing which needs future investigation and experimentation.

The appearance of the ZHUN estates is another important matter that should be given more consideration in future design. The criteria that residents used in their evaluation of the appearance of their estate were more related to the quality and the scale of the external spaces, as well as the availability of trees and greenery, than to the architectural features of the facades of the buildings. However, the appearance of the Garidi estate seems to be the most popular as it presents some distinctness in the facade features as well as the overall shape of the buildings.

There should be more investment in site planning and more encouragement for the resident to contribute in landscaping the spaces adjacent to their blocks. The cumulative effect of residents' different initiatives may be a naturally

occurring complexity and variety in the exterior environment. A better hierarchy between the different spaces would not only help residents to identify themselves with the spaces but might also reduce chances for vandalism and burglary.

From respondents' responses, it appeared that the ground floor flats are unpopular for several reasons. The lack of privacy and security of the ground floor dwellings as well as their exposition to dust, noise and overlooking from the adjacent public spaces were the most frequently stated reasons for residents' preference to live off the ground. Although security and vandalism were not a major problem within the four estates, a strong tendency was observed to add metal doors and metal grills, particularly to the ground and the first floors flats.

However, the ground floor dwellings seem to be rather more popular among the large households with more than five children, as they were perceived as giving more freedom to the children, presenting the opportunity of having a garden and ensuring a water supply with more pressure.

Overlooking and noise disturbance were perceived as problems particularly when generated from the adjacent external environment. Nearby bus stops, building sites, shops and playing children were the most bothersome aspects to the majority of the respondents. Whereas a degree of activity was sometimes appreciated, there should obviously be more care in the site layout to create buffer zones between the blocks of flats and the public spaces and more careful placement of facilities such as bus stops, shops and cafes in order to prevent overlooking into the dwellings.

All the various aspects of the housing environments that have been assessed in this Chapter will be considered again in Chapter 8, in order to investigate their relationship with residents' satisfaction. This would help to identify those aspects that would seem to require priority in future improvements.

With regard to length of tenure, although it was not possible to test whether length of tenure affected residents' opinions about their estate, it was found that residents living in the newer estates tended to have more positive opinions about their estate and less wish to move from their flats than those living in the older estates. Because public housing estates seem likely to deteriorate quickly, regular maintenance is a key factor in the quality of multi-family housing estates. Not only should regular maintenance projects be carried out, there should also be more involvement of the residents in the improvement of the quality of their housing



environment. Such involvement can best take place within a defined organisational framework.

When examining the reasons for residents' moving intentions, it seems that the main reasons are more related to the dwellings themselves rather than to aspects to the external housing environment.

Residents' opinion about the size, internal organisation and the various spaces within their dwellings are assessed in the next two Chapters.

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## **6.1. INTRODUCTION**

Having presented in the previous Chapter the residents' evaluation of their housing environment, the present Chapter is more concerned with the dwellings themselves, as it presents the initial overall response of the residents in the four estates to the basic arrangements, internal organisation and construction of their dwellings. The perception of the residents to the adequacy of their dwelling as a whole was assessed through their responses to general open-ended questions. The questions dealt with what the residents liked and disliked about their flat and what they thought about its organisation. At this stage the questions did not prompt the respondents to give approbation or to comment on their dislike of any particular characteristics. The topics raised, therefore, were those which occurred to the respondents and were thus, it seems reasonable to assume, uppermost in their minds. However, in order to test the common assumption that a traditional organisation would be considered as more suitable, respondents were asked less general questions concerning whether they would have preferred a courtyard organisation or a flat with a central space instead of the existing corridor and were asked to give reasons for their preferences. The importance or otherwise of having private external spaces was also specifically assessed when residents were asked whether they considered having a balcony or a terrace as important and, if so, where they thought such spaces should be located and for what purpose they should be used.

An account of residents' responses to these questions is presented for each estate, as well as a comparison of the variation in responses between the four selected estates. All the responses are displayed in tables which are included in this present Chapter or in Appendix D. In addition, information is presented as to the nature of the changes which residents have already made, or intend to make to their dwellings. Such changes, and their degree of occurrence, provide in themselves valuable comments on the quality of the original dwelling design.

## **6.2. THE BAB EZZOUAR ESTATE**

All the flats in this estate have a modern European distribution of functions which are organised along a corridor serving, on each side, the living room, bedrooms, bathroom and kitchen. The kitchen is provided with a tiny loggia to "compensate" for the traditional courtyard. However, the loggia is not available for the ground floor flats. A few flats benefit from a large verandah available with the living room. The majority of the 33 visited flats consisted of two

bedroom flats (33%) and three bedroom flats (48%). The average floor area for the two bedroom flat is 65 sqm to which is added an extra one or two rooms and a verandah for larger flats (see fig 6.1).

### 6.2.1. Likes and Dislikes

When asked about what they liked and what they disliked, respondents tended to give relatively detailed information about their dwellings. When asked about their likes, more than half of the 33 respondents in this estate (64%) said that they did not like anything in their flats. Few respondents had a positive response. Only three liked their flat organisation, mentioning certain design aspects such as the large windows or the large living room, for those who have extended it. Almost a third (30%) gave approval to aspects that were not directly related to the design, such as good neighbours, water availability, nearness to work and the fact that their present accommodation was better than that in which they had previously lived.

When specifically asked about their dislikes, however, more detailed information was gained from the respondents as different features of the dwellings were criticised (see tab 6.1). The most criticised features were the plastic material used for doors, window frames, floor tiling and ceiling finish (55%), the dirty external spaces (39%), different features of the dwellings (33%) and the small size of the flats (27%) (see Appendix D, tab D.4).

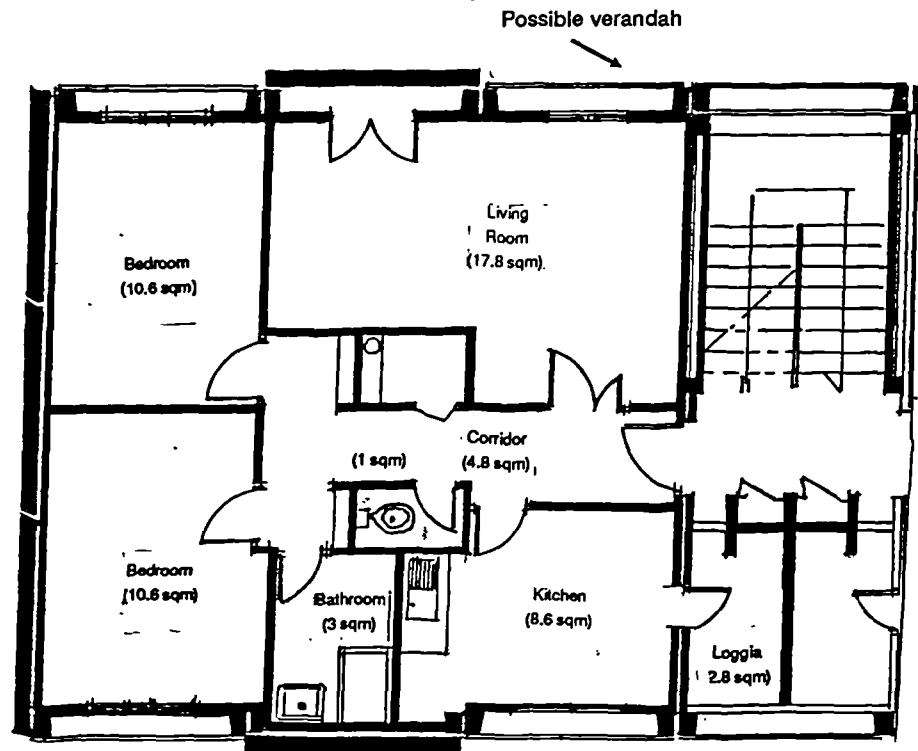
#### *a. The Plastic material*

Virtually all the finishes in the Bab Ezzouar dwellings are of plastic material, which is used for window frames and doors to floor tiling, ceiling finishes and 'plinths'. In many of the visited dwellings, the plastic doors could not withstand the excessive use, especially by children. Most of them were in a broken state with many cracks. The plastic floor tiling was described by some housewives as inconvenient because they were accustomed to ceramic floor tiling, which is easier to clean and maintain and cooler to sit on during the summer. Some housewives explained that they were in the habit of spreading a lot of water around when cleaning the floor and this caused problems with the neighbours below as the water infiltrated through the plastic tiling and the concrete floor to reach the neighbours' ceiling. The plastic material also caused worries about fire security and some respondents reported having witnessed fires in two flats where residents did not survive. Fire security is not only reduced by the plastic finishes

**Figure 6.1 : Dwelling layout in the Bab Ezzouar estate**

A two bedroom flat layout (scale 1/100)

Floor area : 65 sqm



**Table 6.1 : Respondents' opinion about their dwelling organisation in the Bab Ezzouar estate**

Criticised design features	
Corridor	Too long and too narrow, lacking an entrance hall
WC	Inconvenient size and position (facing the living room)
Space shape	Inconvenient shape of the living room (too many corners)
Size	Flat size and bedroom size were perceived as small
Entrance	Too close to the living room door
Daylighting and ventilation	Lack of natural daylighting and ventilation in the WC and the bathroom - Poor daylighting in the living room
Criticised constructional features	
Ceiling	The plastic suspended ceiling was perceived as too low (2.60 m)
Use of plastic material	Its use was mostly criticised for doors because of their heavy use by children and for floor tiling because of water infiltration

but also by the plastic suspended ceiling which runs through all the flats in the same floor without any apparent separation within the ceiling space to prevent the fire from spreading.

For those households who had enough financial means to carry out alterations, the first things they often wanted to do was to remove the plastic floor tiling and replace it with ceramic tiles and replace the plastic doors with wooden ones (see fig 6.2a,b,c). Some households had even removed the plastic window frames and replaced them with aluminium ones.

#### *b. Hygiene*

The second major source of complaint had nothing to do directly with the flats but concerned the general standard of hygiene of the estate and its impact on the dwellings. As stated in the previous Chapter, because of a marshy site all the blocks in the Bab Ezzouar estate suffered from a dirty unhygienic cellar with a proliferation of mosquitoes. This resulted in bad smells spreading from the cellar to the staircases and even to the flats. Furthermore, the lack of amenities and landscaping of the large external spaces caused problems inside the dwellings as many housewives complained about the mud in winter and the dust in summer, which made cleaning difficult. One housewife explained that she had to buy new shoes for her children every month because they are not able to withstand the conditions in the external spaces.

#### *c. Features of dwelling design*

A third of the respondents (36%) complained about some features of their dwelling design, such as the low plastic ceiling, which became even lower for those who fitted ceramic floor tiling, and the long and narrow corridor. One of the respondents stated that a pregnant woman would have difficulty moving in the corridor. Some respondents complained about the lack of balconies and storage space as well as the size and shape of both the kitchen and the living room. The lack of windows in the bathroom and the toilet was also heavily criticised.

#### *d. Flat size*

Twenty seven per cent of the whole sample in this estate complained about the size of the living room and the kitchen as well as the size of their flats. They

**Figure 6.2 : Removal of the plastic doors and floor tiling**



**a. Physical traces of the removed plastic floor tiling**



**b. Replacement of the plastic doors by wooden doors and the plastic floor tiling by a ceramic floor tiling**



**c.**

described it as very inappropriate for their household size. Residents' perception of the size of their dwelling as well as the size of the different spaces within the dwellings is further investigated in the next Chapter.

### **6.2.2. Opinion about Dwelling Layout**

When asked about what they thought about the arrangement of the rooms and the layout of their flat, more than half the sample in this estate (63%) said that the flat organisation was satisfactory whereas 20% had a negative response, saying that the organisation was very bad. A small proportion (17%) criticised the corridor by describing it as too long (5m long) and too narrow (1m width). They also criticised the fact that the corridor width was not increased in the entrance area to become an entrance hall, thus creating circulation problems. Only one respondent complained about the small size of the WC and the lack of windows in the sanitary block (see fig 6.1).

It is interesting to notice that in response to this question nobody complained about the lack or the quality of the private external spaces.

### **6.2.3. Alterations**

Seventy three per cent of the alterations which had been or were intended to be undertaken on this estate concerned the plastic finishes of the dwellings. Most of the respondents wanted to change the plastic doors in the first place, then the floor tiling (see fig 6.3). Almost all of those who had a verandah (18%) wanted to extend their living room into the verandah space and thus close it off externally, if they had not already done so. A significant number were thinking of breaking through the wall separating the kitchen from the loggia to increase the floor area of the kitchen (see fig 6.3b). Three visited housewives were thinking about breaking through the wall separating two bedrooms in order to have a larger bedroom. Two other housewives were thinking about piercing windows in the thick concrete walls in both the bathroom and the living room, which was criticised for not getting enough daylight (see fig 6.3b).

## **6.3. THE AIN NADJA ESTATE**

This is the only visited estate where the flat organisation was different from the single corridor distribution to the different spaces. There was clearly an attempt on the part of the architect to recreate a central space instead of having



**Figure 6.3 : Alterations made or intended to be made to the original design of the dwellings in the Bab Ezzouar estate**



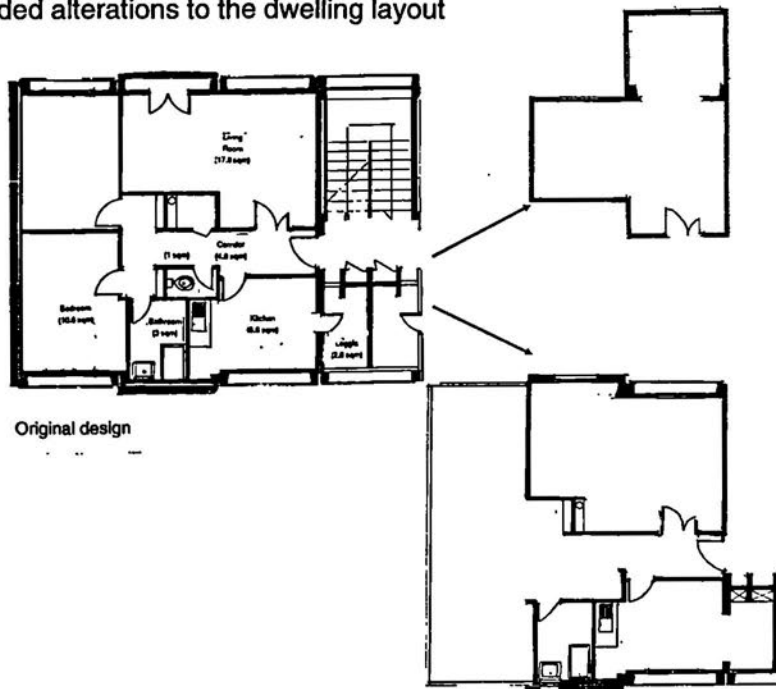
Replacement of the plastic doors and floor tiling in the kitchen

**a. Alteration to the dwelling finishes**



A living room being extended by adding in the veranda

**b. Intended alterations to the dwelling layout**



Altered living room: Most of those who had a veranda wanted to close it off to extend the living room

Altered living room, bathroom and kitchen: Those who did not have a veranda wanted to pierce an additional window in the living room. Some respondents wanted to increase the kitchen's size by adding in the loggia

a corridor. For some flats this space was a circulation space (see fig 6.4a) and for others it was the living room, which constitutes the central space around which all the other spaces are organised (see fig 6.4b). It is possible to speculate about the intention of the architect when he designed the private external spaces. His worry for the privacy of women may well have led him to design a kitchen's loggia where the women can stand and look on the outside world without being seen (see fig 6.5 and 6.6c). The living room balcony was also kept closed as its only opening is a window and does not look like a balcony from the outside. The closed aspect of the private external spaces may also be due to the architect wishing to prevent women from drying the washing outside those spaces.

### 6.3.1. Likes and Dislikes

When asked about their likes, the most frequently mentioned response, expressed by over a third of the 33 residents, was that they did not like anything in their flats. The second most frequent response was somewhat fatalistic, as 24% of the respondents said that they had no choice and that 'it is better than nothing' or said that it was at least better than their previous housing conditions. Only 18% of the respondents perceived some feature of their flats as worthy of approval. The most frequently mentioned positive feature was the flat size. A fair proportion of the respondents (15%) did mention non-physical features of the dwellings, such as tranquillity and the fact that 'we are living in our own flat and not sharing it with a relative'.

When asked about what they disliked, a third of the sample said that they disliked every thing in their flats whereas the majority (53%) tended to complain about specific features of their dwelling design (see tab 6.2).

#### *a. The Position of the living room*

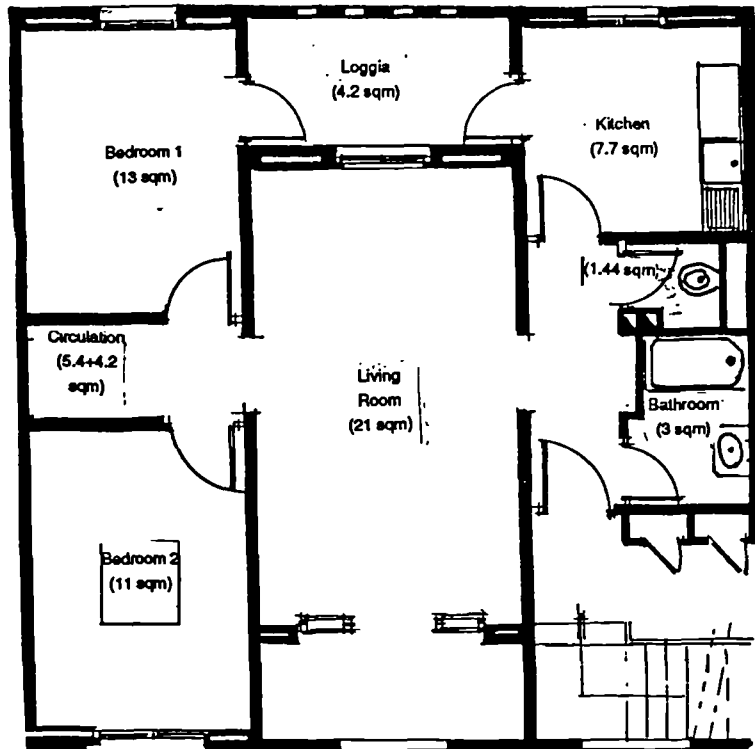
The most disliked feature was the position of the living room (39%) (see fig 6.5). Being divided by the circulation to the bedrooms and having many doors, the living room was a major source of complaints. A significant number of respondents commented on the difficulties involved in arranging the furnishings. Furthermore, the closed aspect of the loggia made things worse as the living room in most of the visited dwellings lacked a window directly to the outside and was lit and ventilated through the small openings of both the kitchen's loggia and the living room's balcony (see fig 6.5).

**Figure 6.4 : Dwelling layout in the Ain Nadja estate**

A two bedroom flat layout (scale 1/100)

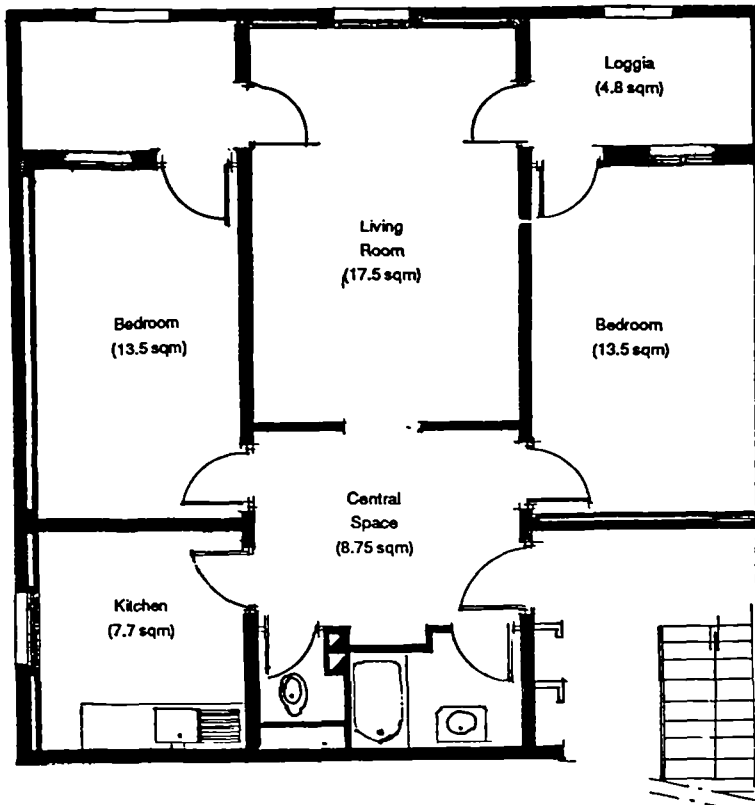
Floor area : 81 sqm

Type a.

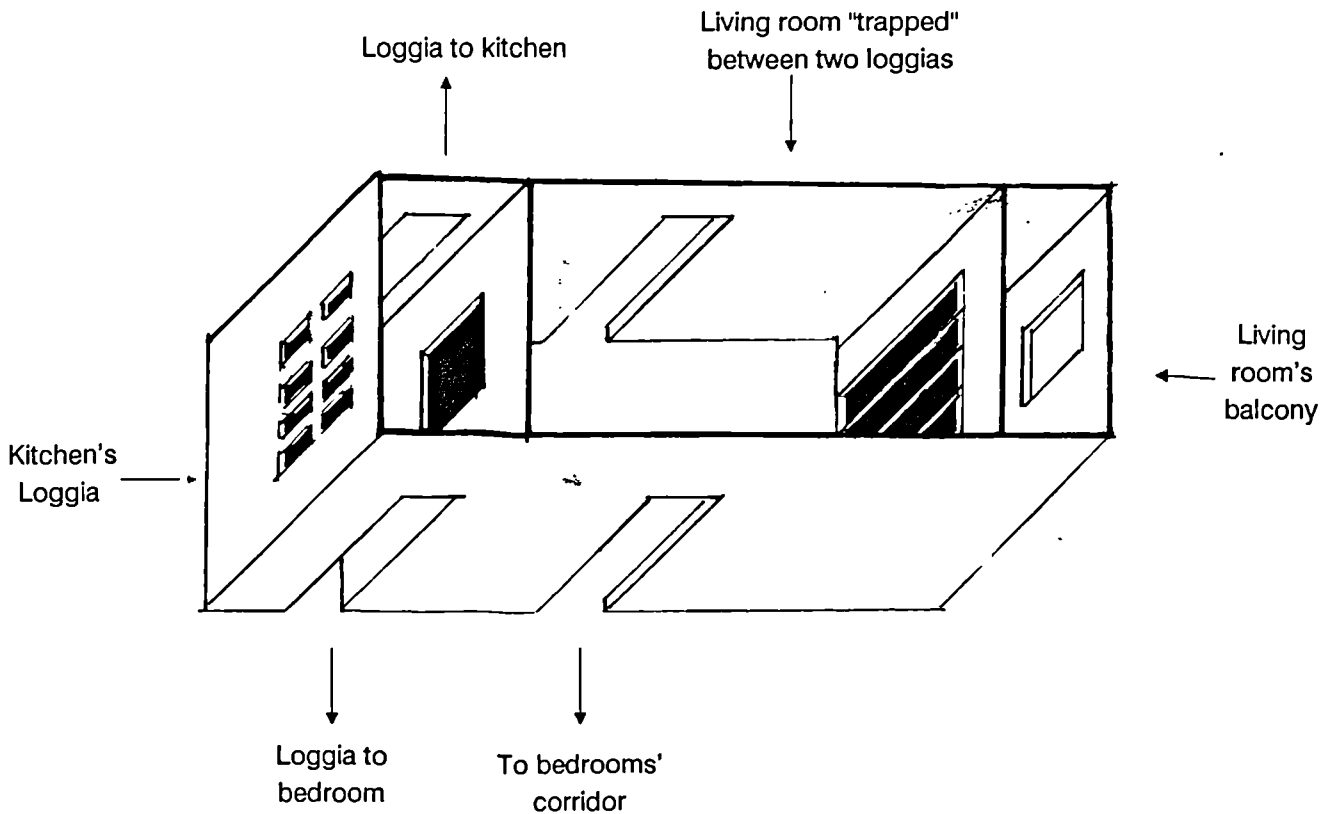


Floor area : 81 sqm

Type b.



**Figure 6.5 : Position of the living room in the "type a" dwellings in the Ain Nadja estate**



**Table 6.2 : Respondents' opinion about their dwelling organisation in the Ain Nadja estate**

Criticised design features	
Living room position in layout a. (see fig. 6.4)	Being divided by the circulation to the bedrooms and lacking any window opening directly on the outside resulted in the living room being the most disliked feature in the dwelling layout
Loggias	The closed aspect of the loggia resulted in poor lighting and ventilation of the living room and difficulties in drying the washing (see fig. 6.6)
WC	Inconvenient position as facing the living room (see fig. 6.4)
Daylighting and ventilation	Lack of natural daylighting and ventilation in the WC and the bathroom - Poor ventilation and daylighting in the living room
Flat size	Perceived as small
Criticised constructional features	
Finishes quality	<ul style="list-style-type: none"> <li>-Irregular shapes of the windows and door angles</li> <li>-Cracks in the walls</li> <li>-Flats were found without doors</li> <li>-Floor tiling was found covered with cement</li> </ul>

**Figure 6.6 : The criticised private external spaces in the Ain Nadja estate**



**a. Living room's balconies : most residents have placed windows to the openings**



**b. Kitchen's loggia : appearance from the outside**



**c. Closed aspect of the kitchen's loggia : most residents dry their washing outside the loggias**

*b. Constructional aspects*

The second major source of dislike was related to the constructional aspects of the dwellings, as 27% of the respondents complained about the finishings of the dwellings and the state in which flats were found when residents moved in. The bathroom and the WC were often found without wall tiling, the walls had many cracks, the doors were not in place and the floor tiling was found in some flats to be covered with cement. Some housewives complained that it took them more than a year to clean the floor. One respondent complained about the bad thermal insulation, saying that the flat was too cold in winter and too hot in summer.

*c. Flat size*

Flat size was not as frequently mentioned as in the Bab Ezzouar estate, as only 17% of the respondents complained that the flats were too small.

**6.3.2. Opinion about Flat Organisation**

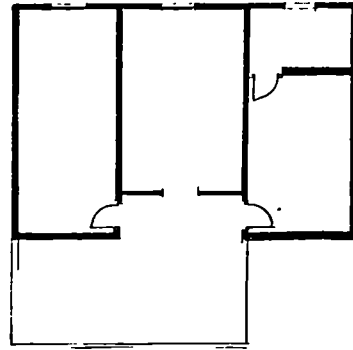
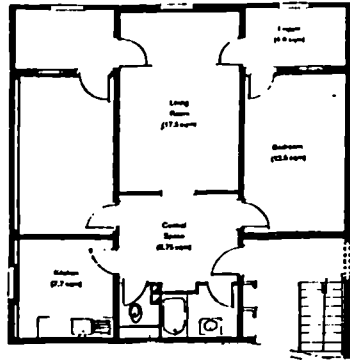
More than half of the respondents (55%) complained about the general organisation of their flats and the problems they have encountered, in particular because of the living room position. The most disliked feature was the "invisible" corridor dividing the living room, as well as the fact that the room was "trapped" between the kitchen's loggia and the balcony in most of the visited dwellings (see fig 6.5). Some housewives described themselves as 'being in a prison' and felt like suffocating inside their dwellings. The position of the WC was also criticised because it was facing the living room. However, almost half the respondents (45%) in this estate perceived their flat organisation as satisfactory.

**6.3.3. Alterations**

More than two thirds of the visited housewives (67% of the 33 respondents in the Ain Nadja estate) had the intention to alter their flat if they had not already done so. Most alterations made or to be made concerned the organisation of the dwellings (55%) (see Appendix D, tab D.6). Because of the closed aspect of the living room balcony, which has only a small opening (see fig 6.5 and fig 6.6a), the main alteration observed in this estate was breaking through the wall separating the living room from the closed loggia (see fig 6.7 ). This alteration had the advantage of increasing the living room floor area and ensuring better daylighting and ventilation of the living room. One visited

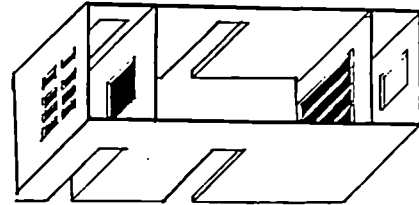
**Figure 6.7 : Alterations made or intended to be made to the original design of the dwellings in the Ain Nadja estate**

*Original design: type a*

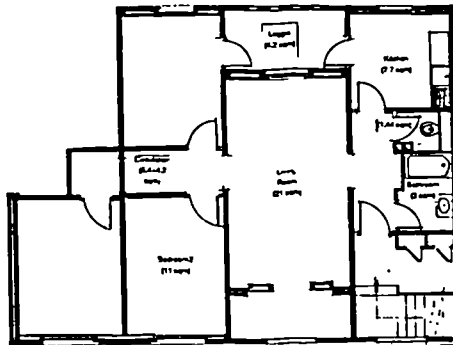


a.

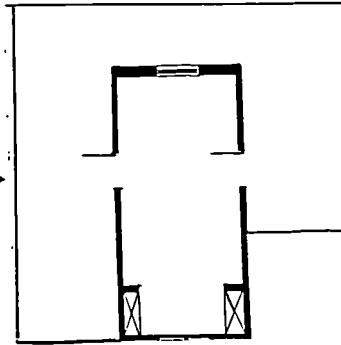
Bedroom extended to the balcony



*Original design : type b*

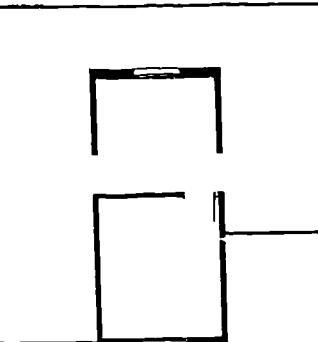


Living room extended to the balcony



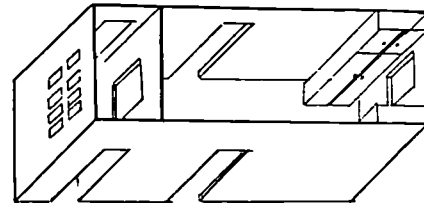
b.

Living room extended to the balcony and divided into two spaces



c.

Built-in storage space in the extended living room



housewife had even permanently closed one of the living room doors to reduce circulation and furnishing problems. Three households carried the alteration further as they divided the living room into two different spaces: one space used as a guests' area and the other as a living room where children could watch the television. One case of conversion was observed where the kitchen was transferred to the kitchen loggia and the kitchen space converted into an extra bedroom.

Less radical alterations were also carried out by around 20% of the respondents and concerned the finishings aspect of the dwellings, such as putting doors where none were before, placing wall tiling in the WC and the bathroom, building wardrobes in the living room balcony and re-shaping the irregular door and window angles, thus forming rectangular openings.

#### **6.4. THE GARIDI ESTATE**

All flats in the Garidi estate have the same layout and they all benefit from the availability of both a large kitchen loggia and a large living room balcony, as compared with the dwellings in the two previous estates (see fig 6.8). All visited dwellings in this estate were two bedroom flats with a floor area of 83.5 sqm.

##### **6.4.1. Likes and dislikes**

When asked about their likes more positive responses were obtained from residents than in the two previous estates. More than half the 30 respondents in this estate (53%) liked various different features in their dwellings. They approved of the kitchen size (23%) as well as the availability of both a kitchen loggia and a living room balcony (20%). Two respondents described the general organisation of the flat as being very good (see fig 6.8).

Aspects that were not related to the dwelling itself were also mentioned, as 23% of the respondents said they liked the quietness and the tranquillity of their dwelling and the fact that they were not sharing their flat with a relative. However, 30% of the respondents did not like anything in their flat or could not identify any item which they liked.

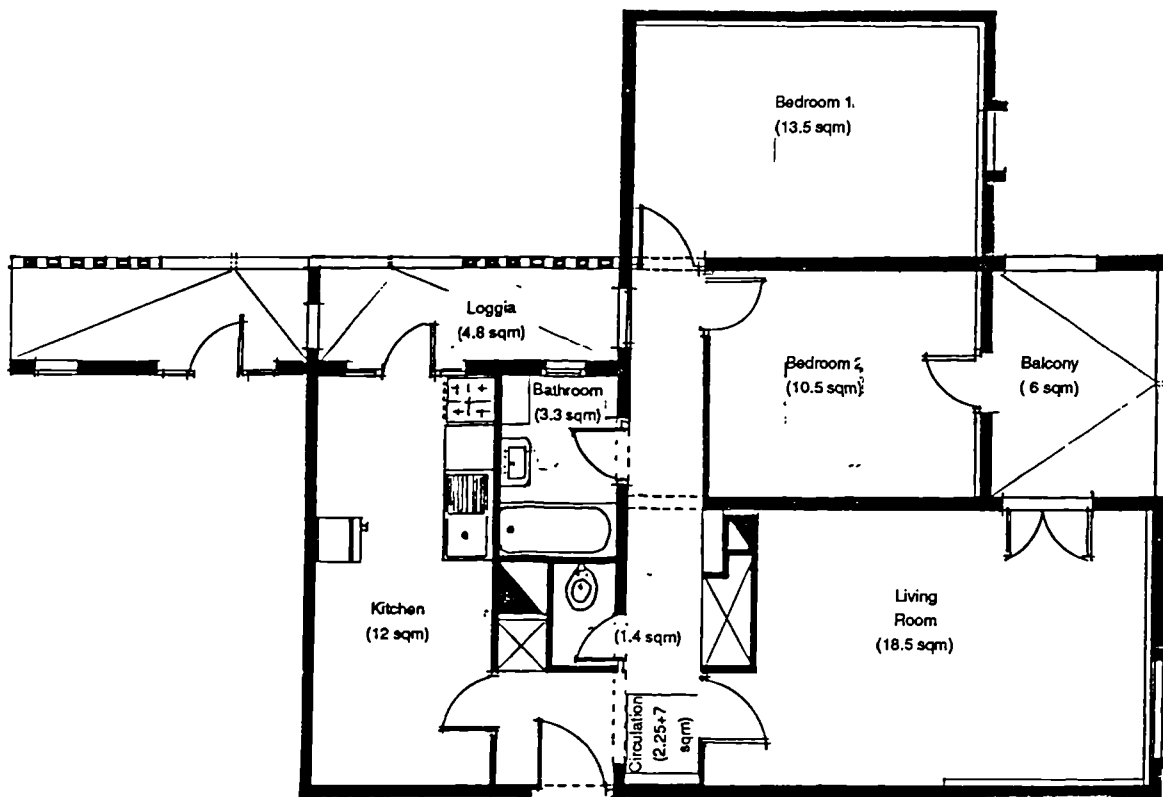
When asked about their dislikes, the first most frequently mentioned aspect was the small size of the flat. The second most disliked feature was the constructional aspect of the dwellings. Very few respondents stated that they disliked some physical features of their dwelling organisation (see tab 6.3).



**Figure 6.8 : Dwelling layout in the Garidi estate**

A two bedroom flat layout (scale 1/100)

Floor area : 83.5 sqm



**Table 6.3 : Respondents' opinion about their dwelling organisation in the Garidi estate**

Criticised design features	
Size	-Flat size perceived as small -The children's bedroom perceived as too small
Daylighting and ventilation	Lack of natural lighting and ventilation in the WC and the bathroom
Entrance	Too close to the living room door
Criticised constructional features	
Finishes quality	-Cracks in the walls -Water infiltration through the loggias -Need for completing the wall tiling in the bathroom and the kitchen

*a. Flat size*

More than half the respondents (55%) complained that the flats were too small in terms of the number of bedrooms, as all the visited flats had only two of them. The small size of one of the bedrooms (10.5sqm) was also disliked by the majority of the respondents. As will be seen later, the lack of space was the major reason for the observed or intended flat alterations.

*b. Constructional aspects*

The second most disliked feature concerned the constructional aspect of the dwellings. A third of the respondents complained about the bad finishes and the cracks in the prefabricated walls, the water infiltration through the loggia as well as through the ceiling of those who were living on the top floor flats.

*c. Design features*

Some housewives did complain about the lack of windows in the WC and the bathroom and mentioned the necessity to replace the wall tiling in both of them.

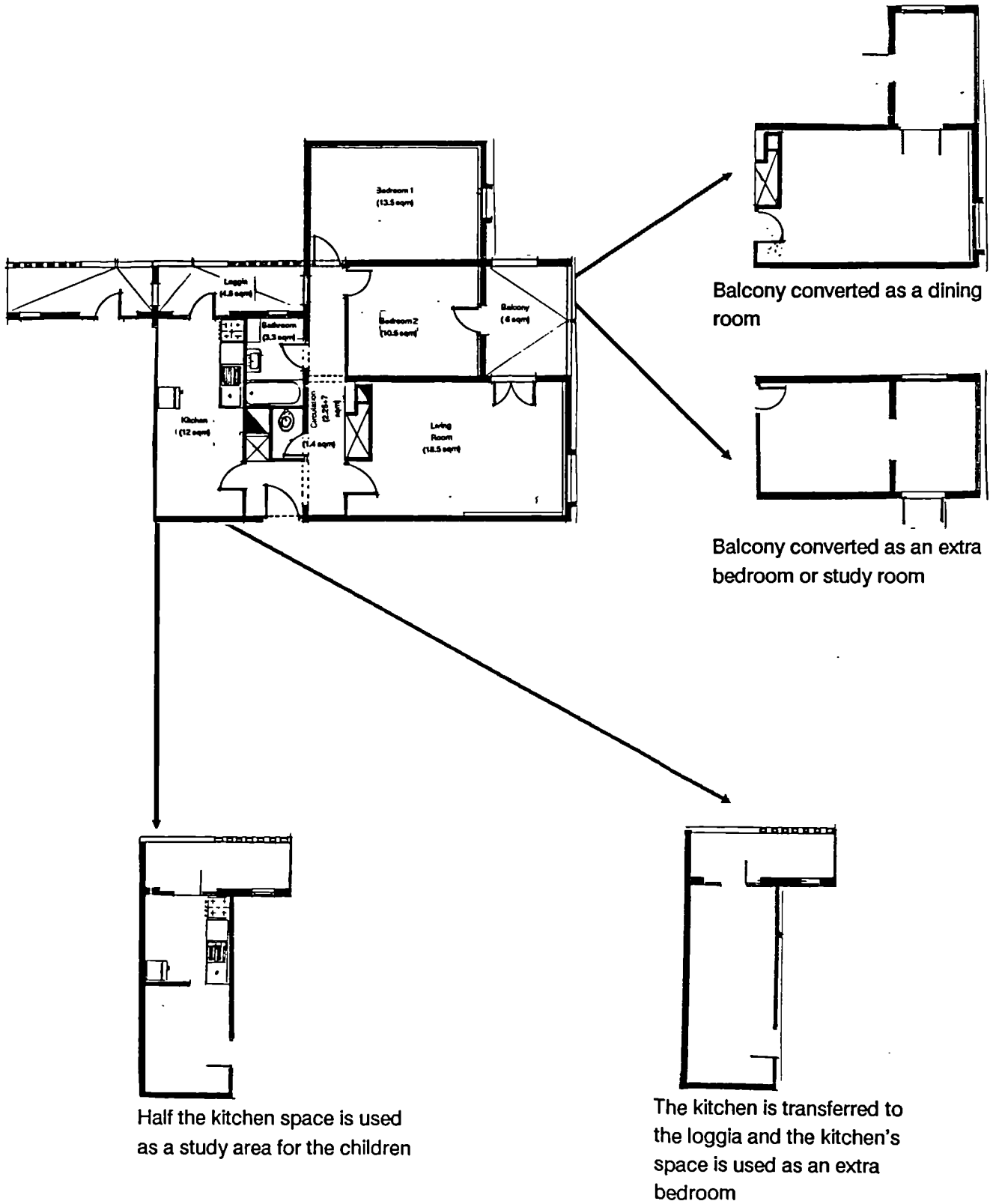
#### **6.4.2. Opinion about Flat Organisation**

A high proportion of the residents in this estate approved of the layout of their flats. Seventy three per cent thought that their flats were very well conceived. However, some respondents complained about the fact that the flat's entrance was too close to the living room door and that the entrance to the WC was facing the living room (see fig 6.8). Both the flat size and the children's bedroom size were criticised by the Garidi respondents as being too small. One housewife criticised the balcony as being too large compared with the size of the children's bedroom (see fig 6.8).

#### **6.4.3. Alterations**

Most alterations or intended alterations in this estate concerned the living room balcony. Because its floor area was relatively large (6 sqm), the desperate need for space in most of the visited dwellings resulted in the residents closing off the balcony (see fig 6.9 and fig 6.10) and converting the balcony into an extra bedroom (8 cases), or to a dining room (3 cases) or to a study room (1 case). The kitchen was also subject to conversion as housewives expressed the need for an extra bedroom which led them to transfer the kitchen to the 4.8 sqm loggia and

**Figure 6.9 : Alterations made or intended to be made to the original design of the dwellings in the Garidi estate**



**Figure 6.10 : The living room balconies are closed off by the residents**



use the 12 sqm kitchen as an extra bedroom. One housewife said that she would like to divide the kitchen and use half of it as a study room for the children, and another housewife wanted to increase the bathroom floor area by extending it into the loggia (see fig 6.9). Conversion intentions were recorded for almost half the respondents (47%) in the Garidi estate.

Intended alterations also concerned the finishes which were mentioned by 23% of the respondents. Finishes alterations consisted of the addition of floor tiling to the balcony, the completing of wall tiling to the bathroom and the repainting of the walls to hide the cracks. A small proportion (13%) intended to extend the children's bedroom into the loggia so that the floor area of the bedroom would be increased from 10.5sqm to 16.5 sqm. Only 23% of the respondents did not want to make any changes to their flat.

## **6.5. THE AIN ALLAH ESTATE**

A higher proportion of larger flats was found in the Ain Allah estate, where half the flats are four roomed dwellings whereas the other half have the usual two bedrooms and a living room. The sanitary block is quite separated from the rest of the flat as it is served by a second corridor. The kitchen's loggia is the only available private external space for the flats and is provided with a washing sink (see fig 6.11). The floor area of a three bedroom flat is 85 sqm.

### **6.5.1. Likes and Dislikes**

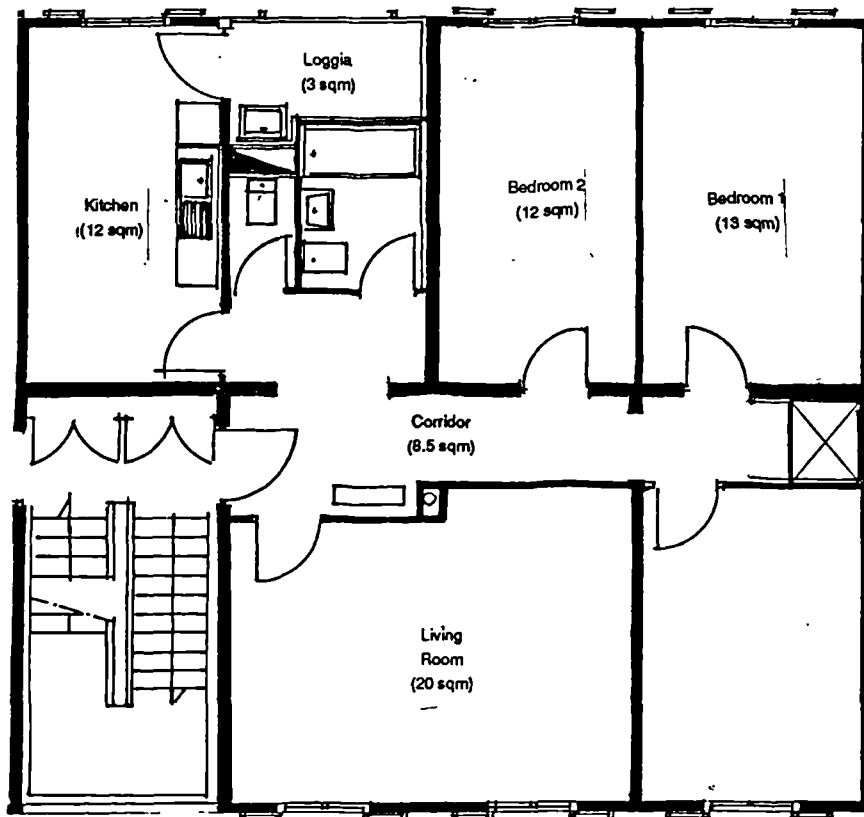
When asked about their likes, the majority of the 32 respondents in this estate had positive answers. Fifty three per cent of them liked the general organisation of their flats. Some respondents described their flats as being 'modern', 'functional' and 'practical'. Forty one per cent mentioned with approval specific aspects of their dwelling design such as the two separated corridors, the built in storage space, the large kitchen (see fig 6.11) as well as the relatively large size of the flats, as half the dwellings in this estate have three bedrooms.

Twenty one per cent of the respondents liked the quality of the finishes in their dwelling and the fact that they did not have to make any major alterations when moving in. A third of the respondents liked non-physical aspects such as the fact that they did not have to share the flat with any relatives. Water availability and good neighbours were also mentioned by 13% of the

**Figure 6.11 : Dwelling layout in the Ain Allah estate**

A three bedroom flat layout (scale 1/100)

Floor area : 93.5 sqm



**Table 6.4 : Respondents' opinion about their dwelling organisation in the Ain Allah estate**

Criticised design features	
WC	The WC is too close to the kitchen's door
Shape	The rectangular shape of the bedrooms was perceived as inconvenient (see fig. 6.11)
Criticised constructional features	
Prefabrication	<ul style="list-style-type: none"> <li>-Light prefabricated aspect of the facade (see fig. 6.12)</li> <li>-Difficulties in perforating the internal concrete load bearing walls</li> <li>-Poor noise insulation in the kitchen</li> <li>-Apparent gas and electricity services pipes on the walls</li> </ul>

respondents. An improvement over previous housing conditions was mentioned by five respondents who were re-housed from over crowded old houses in the Casbah of Algiers. When asked about what they disliked in their flat, the most frequently mentioned aspects were related to the prefabricated construction. Very few respondents complained about design features.

*a. Constructional aspects*

Fifty three per cent of the interviewed housewives disliked the light prefabricated facade of their dwellings (see fig 6.12) and expressed worries about its fragility and its likely life span. A few respondents complained about the prefabricated internal walls that were described as difficult to perforate and to decorate. Noise insulation was also a problem, particularly in the kitchen where the water heater was described as a 'telephone' because residents could hear through it all the conversation going on in the kitchen of the flat above.

*b. Design features*

Only six respondents out of the 32 complained about some design features, such as the rectangular shape of the bedrooms, which were described as being like corridors, and the services, which were running on the top of the walls and which were described as ugly. Perhaps surprisingly, only two respondents complained about the lack of a living room balcony.

### **6.5.2. Opinion about Flat Organisation**

Almost all respondents in the Ain Allah estate (97%) perceived the organisation of their flat as being either good or very good. One housewife liked the fact that the kitchen's entrance was quite hidden. However, one housewife complained about it being too close to the WC's door (see fig 6.11).

### **6.5.3. Alterations**

The vast majority of the respondents (84%) in the Ain Allah estate did not intend to alter their flats. This high percentage of non-alterations compared with the other estates can be explained by the fact that residents were satisfied with the quality of the finishes and this meant avoiding extra expense. Moreover, many facilities such as the telephone line, the water heater and television aerial were already provided when residents moved in. However, two respondents felt

**Figure 6.12 : Light prefabricated facade in the Ain Allah estate**





the need to put wall tiling on all the walls in the kitchen as it makes them easier to clean. Three other respondents wanted to make a small number of alterations, such as replacing the WC by a Turkish one or putting air conditioning apparatus in the bedrooms and the living room. One respondent felt it was necessary to break through the wall separating the living room from the corridor in order to have more light in the corridor.

Now moving from residents' overall assessment of the internal organisation of the dwellings in the individual estates to considerations of more general questions, the next section investigates residents' housing aspirations, their preference for more traditional dwelling organisations as well as their opinions about the type and location of the private external spaces that their dwellings should have.

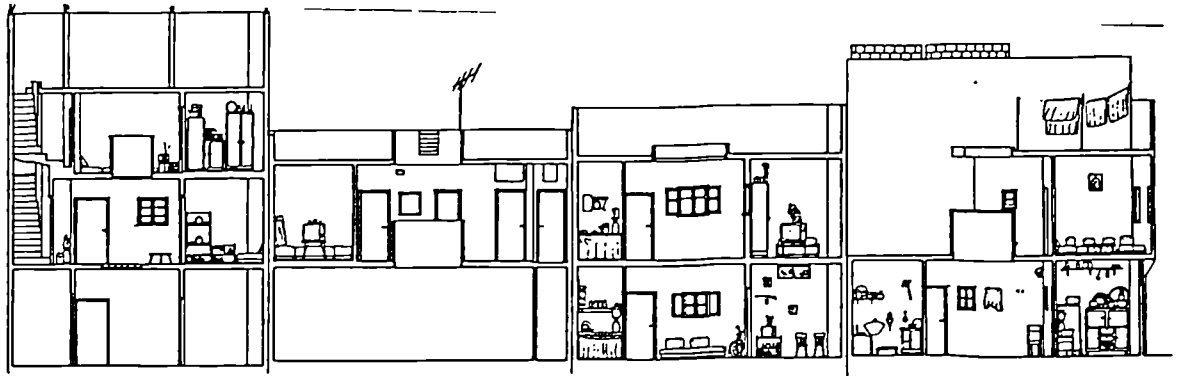
#### **6.6. PREFERENCE FOR A COURTYARD ORGANISATION**

It has been frequently argued that dwelling design that is inspired by traditional housing architecture would be more responsive to the needs of households than the imported 'modern' design of mass housing dwellings in North African cities. However, there has been no systematic research confirming this statement by comparing the reactions and degree of satisfaction of residents living in new 'modern' urban dwellings and the reaction and satisfaction of similar residents living in new experimental housing projects in which dwelling design would appear to have been inspired by traditional housing models.

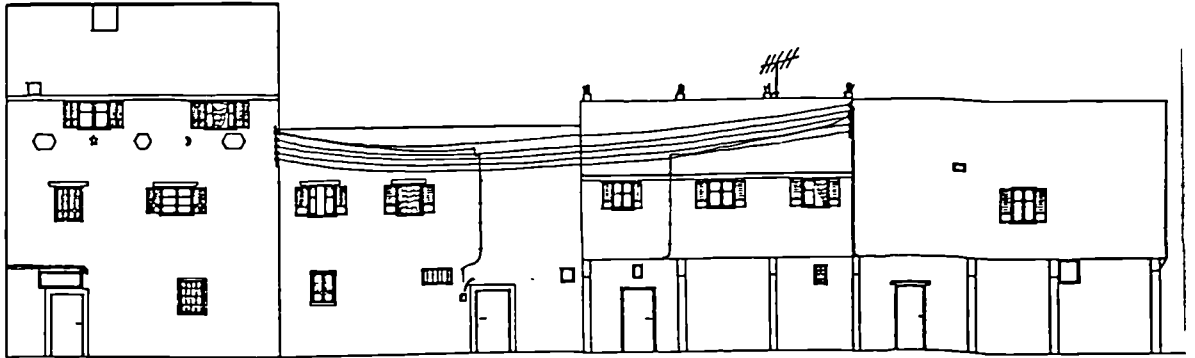
One research project, completed in July, 1985, about low income, self built urban housing in Morocco and Tunisia (Santelli, 1987) found that low income self built urban dwellings in both Morocco and Tunisia often have a dual aspect, that is a modern facade which states clearly its modernity by trying to resemble a 'villa' and an interior configuration of spaces which is still traditional and is inhabited traditionally by a number of related households. The self built houses were invariably of the courtyard type (see fig 6.13) with the rooms off it, be it a real courtyard as in El Hadjhamen (Tunis) or a more or less covered space as in El Hajja (Rabat). Their form is quite close and they illustrate continuing reference to a traditional North African model for dwellings (see fig 6.14a,b).

In the present research, in order to check residents' preference for a traditional dwelling organisation, respondents' were asked three questions. The

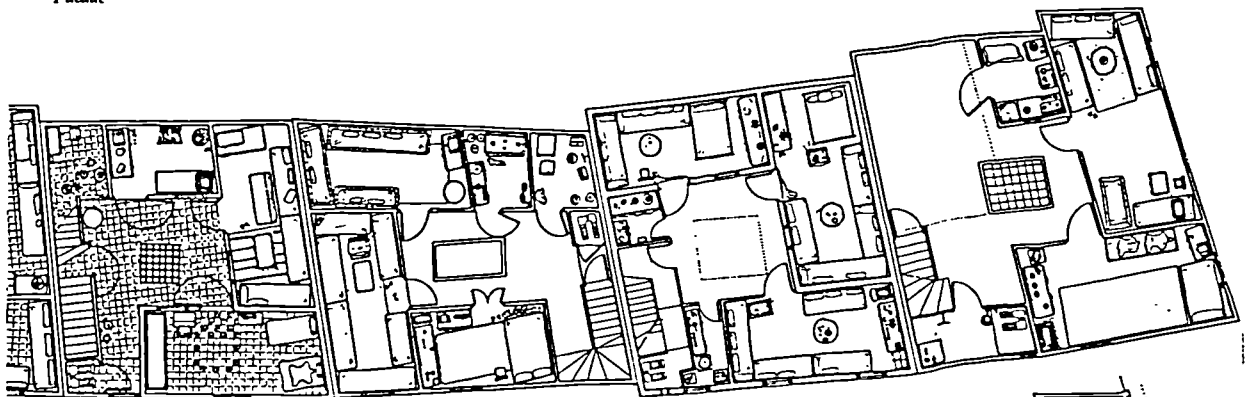
**Figure 6.13 : Low income self built houses in Rabat (Morocco)**



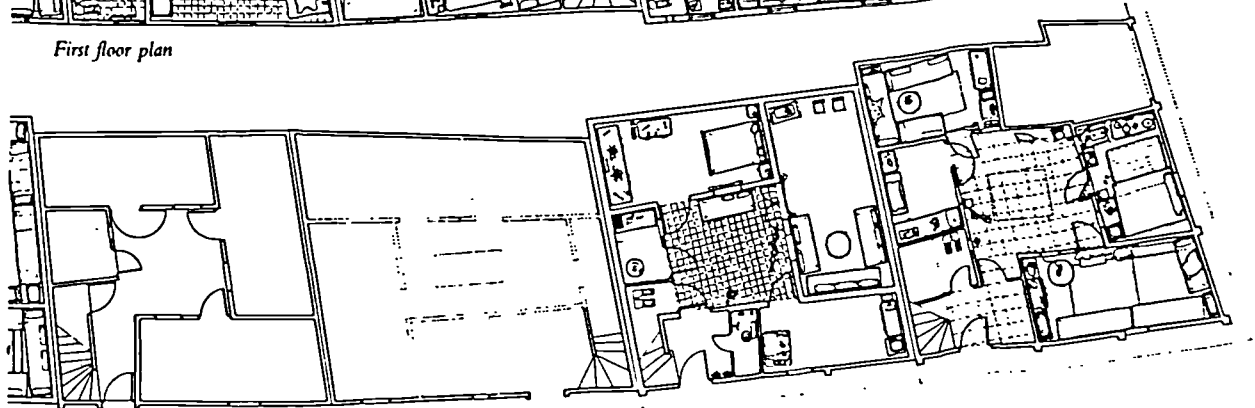
*Section*



*Facade*



*First floor plan*



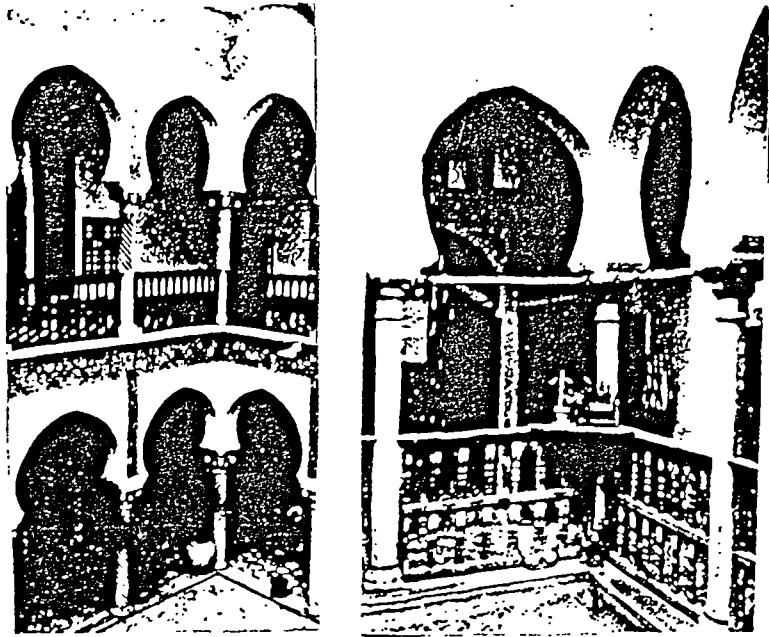
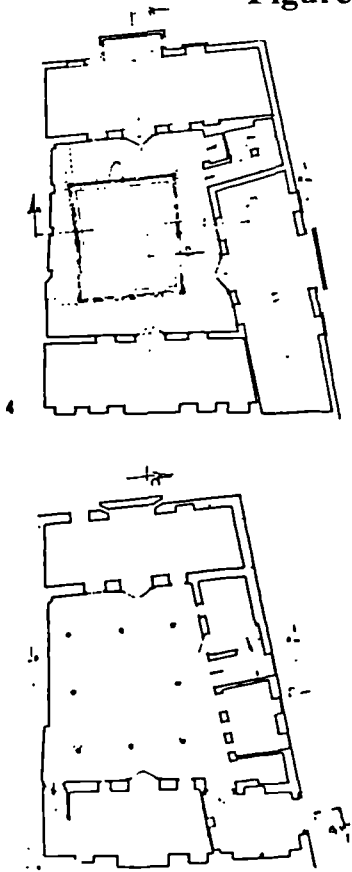
*Ground floor plan*

*Plans of the ground floor and first floor, street elevations and sections of houses in El Hajja. Note arrangement of living spaces around a central court, sometimes covered by glass bricks on lower floors*

Source : Santelli (1987), p. 46

**Figure 6.14 : Traditional North African dwellings**

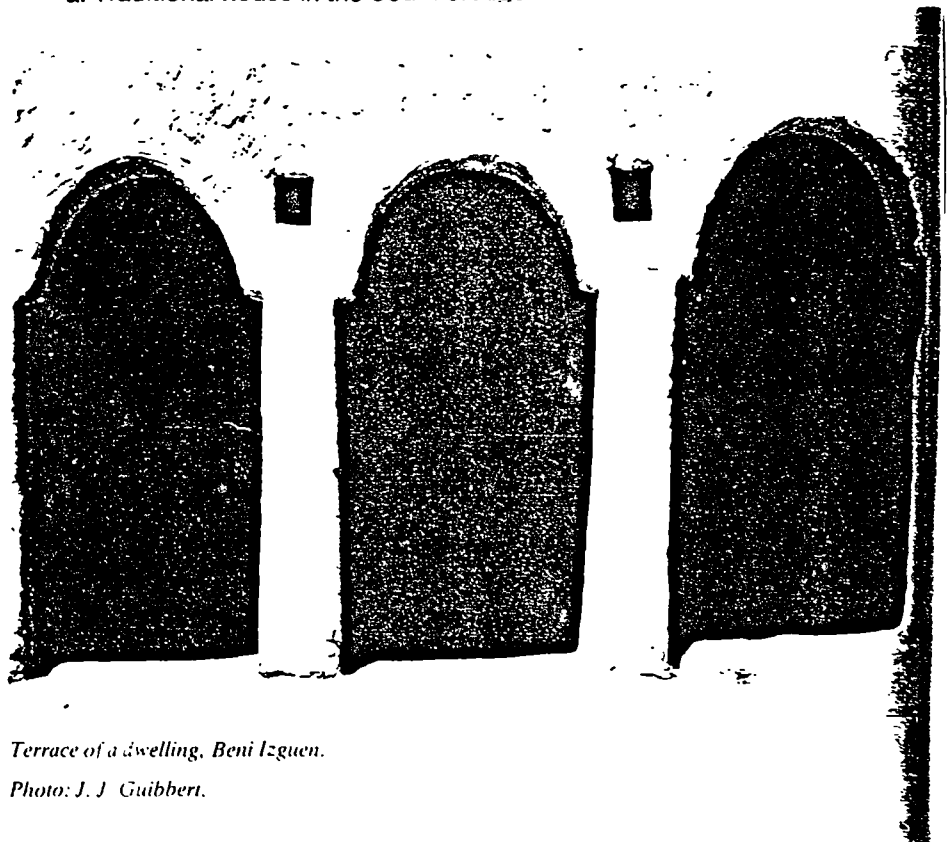
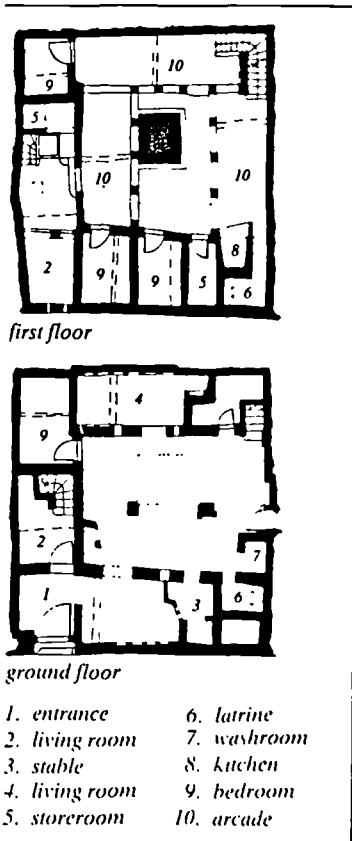
a. Traditional houses in the Casbah of Algiers



Source : Lesbet (1983)

Source : Atelier de la Casbah (1980), p.83

a. Traditional house in the South of Algeria



Source : Shwertfeger (1982)

two first questions dealt with residents' preferences for traditional dwelling organisations and the third question dealt with respondents' housing aspirations.

When asked whether they would have preferred to live in a courtyard house, the vast majority of the 128 respondents in the four estates (73%) replied in the affirmative. When asked to give their reasons, respondents tended to give the same reasons in the four estates, though with different proportions (see tab 6.5). The most frequently mentioned reason was expressed by nearly half the respondents and concerned the desire to have fresh air and sunlight and be able to grow plants. This need was mostly expressed in the Bab Ezzouar estate and in the Ain Nadja estate by respectively 55% and 45% of the respondents in each estate (see Appendix D, tab D.7). This may be partially explained by the quality and the closed aspect of the private external spaces in those two estates.

The second most frequently mentioned reason respondents gave in support of their preference for a courtyard organisation was to have their children playing in a safe place and be able to carry out specific activities (27%). Having a safe place for children to play was most frequently mentioned in the Bab Ezzouar and the Ain Allah and was less mentioned in the Ain Nadja and the Garidi estates, where the quality and amenities of the external spaces are better. Most of the specific activities that residents thought would be easier to carry out with a courtyard organisation were of a traditional character. Making couscous and exposing it to the sun, washing blankets carpets and wool every summer and organising parties have all been mentioned by the respondents in the four estates. It seems that traditional activities still persist and are difficult to carry out because they have not been taken into account in the design of the mass housing dwellings. This problem will be dealt with in detail when examining space use patterns in the next Chapter.

The third reason, given by 27% of the respondents, was that with a courtyard organisation there would be no neighbours and hence more privacy and freedom. The highest percentage of respondents who mentioned this reason were found in the Bab Ezzouar estate (36%) and Ain Nadja (27%) where less agreement between neighbours was found.

The least frequently mentioned reason was related to the construction of the dwellings, as 24% of the respondents explained that a courtyard house would necessarily be of a better construction than the prefabricated blocks. Almost half

of those respondents were from the Ain Allah estate, where residents expressed worries about the life span of their prefabricated dwellings.

It seems that when giving their reasons, respondents in the four estates stressed different aspects which reflected, to some extent, their problems with their present dwellings. Only a relatively small proportion of the 128 respondents (27%) preferred their current flat organisation to a courtyard organisation. Most of them were from the Garidi and the Ain Nadja estates. The most frequently expressed reason was that the courtyard would be exposed to weather conditions and would not be as clean as a corridor. A few respondents explained that it would be neither appropriate nor functional for a nuclear family. Some respondents in both the Ain Allah and the Bab Ezzouar estates had previously been living in courtyard houses in the Casbah of Algiers. For them, a courtyard house will always be linked with overcrowded conditions and noise. They explained that there is a "social evolution" and that courtyard houses are "old fashioned".

#### **6.7. PREFERENCE FOR A CENTRAL SPACE INSTEAD OF THE CORRIDOR**

Slightly more than half the 128 respondents (57%) said they would prefer a central space instead of a corridor. However, the proportions of the respondents were different in the four estates. Whereas more than a third of the respondents in the Garidi and the Ain Allah estates were quite happy with their present flat organisation, almost all respondents in the Bab Ezzouar estate (94%) preferred a central space to their corridor. This high percentage can be partially explained by the fact that almost any other alternative to their narrow and long corridor would have been better. In the Ain Nadja estate however, some attempt had been made in the layout of some of the dwellings to provide some sort of a central space (see fig 6.4b) though it was found to be disliked by most of the respondents living in those dwellings.

When the reasons for such preferences were given, it appeared that the main reason was that a central space could be used for various different purposes (see Appendix D, tab D.8). The most frequently stated purpose was to use the central space as a furnished entrance to the flat or as a second living room. The next most frequent purposes mentioned were the ability to use the central space as a dining area or as a children's play area. Using the central space as a second living room was particularly emphasized in the Bab Ezzouar estate, where the living room was perceived as being too small and very difficult to furnish. Other uses

have also been suggested by some respondents, such as using the central space for watching television or for organising parties. Clearly, the uses are not all of what might be described as "traditional".

The second major given reason in support of the preference for a central space was to gain more floor area. This reason was particularly emphasized in the Bab Ezzouar and the Garidi estates, where a fair proportion of the respondents complained about the size of their flats.

Twenty seven per cent of the 128 respondents preferred the corridor to a central space. The main reason given by the respondents was that the central space would be a lost circulation space, with neither natural lighting nor ventilation, and would not be as private as a corridor. Some respondents added on this by saying that "with a central space everyone can see where everyone is going".

## **6.8. ASPIRATIONS**

When respondents were asked about their housing aspirations, it was significant to find that among the 128 respondents only one said that she would like to live in a house with a courtyard (see Appendix D, tab D.9). It seems that there is some danger in accepting at face value the expressed preference for a courtyard, as the common desire was for a house or an apartment with functionally specific rooms, very much the antithesis of a courtyard house.

Fifty seven per cent of the 128 respondents said they would like to live in a 'modern villa', while less than half the respondents (41%) had somewhat lower aspirations as they said they would like to live in larger apartments. When considering residents aspirations in the four separate estates, it appears that higher proportions of those who aspired to live in a villa were in the Bab Ezzouar and the Ain Nadja estates, where the least satisfied respondents were found. The highest proportion of those who aspired to live in a larger apartment were from the Garidi estate, where the majority of the respondents perceived their dwelling organisation as either good or very good.

The preference for a courtyard organisation, expressed by so many of the respondents, is clearly quite opposite to their 'aspirations'. It seems that courtyard houses are linked with undesirable qualities (overcrowding conditions, backwardness) whereas there is clearly a social benefit attached to a 'villa' or 'large flat'. Housing preferences do not necessarily arise from the functional

adequacy of a housing design but from strongly held values and culturally based images of "the good life". A large flat or a villa are obviously associated with a better life and a higher social status.

Whereas the courtyard in the traditional house ensured women's access to fresh air and sunlight without reducing their privacy, the design of the private external spaces within the new urban dwellings does not necessarily satisfy this function. Although more and more women are joining the work force in Algeria, employed women still form a decided minority. Because most Algerian women are usually spatially confined to their dwellings by social custom, it is felt that the design and location of the private external spaces within the new mass housing dwellings should be given specific attention. The next section discusses housewives' opinions about the importance of the private external spaces as well as their use and location.

#### **6.9. PRIVATE EXTERNAL SPACES IMPORTANCE**

The balcony is usually the only form of private open area provided to the residents immediately outside their dwellings. When the balcony is adjacent to the kitchen and is used as an extension of this, it is normally called a 'loggia'. When it is adjacent to the living room and has a relatively large floor area, it is called a verandah or a terrace. If the flat roof of a block of flats is accessible, it is also defined as a terrace.

To assess how important is the availability of private external spaces for the residents of mass housing dwellings, respondents were asked whether they considered having a balcony or a terrace as important and, if so, where such items should be located and for what purpose they would be used (see Appendix D, tabs D.10 to D.13) .

Almost all the 128 respondents said that it was important to have a balcony as well as a terrace. When asked about the balcony location the majority of the respondents (65%) said that it should be adjacent to the living room and almost a third thought that it should be associated with the kitchen. A smaller proportion (20%) thought that it should be adjacent to the bedrooms. A few respondents said they would like to have balconies everywhere, as in some buildings in the city centre. Different purposes for the balcony were mentioned by the respondents, depending on its location. The main stated use for the living room balcony was to have fresh air and to grow plants. Only a small proportion

(10 respondents out of 128) said they would use the living room balcony as a sitting area during the summer evenings. Four respondents thought it could be used by children for playing.

The main stated use for the kitchen balcony or loggia was to dry the washing and to store different types of items. A few respondents thought that it would be used for children's play as well. Bedroom balconies were thought to be extremely useful to expose sheets, blankets and mattresses to the sun every morning, as well as for dusting carpets. Only one respondent said that it would be useful to have a balcony with the bathroom so that the washing could be transferred directly to the drying area without having to cross any other space.

When asked about the need for a terrace, 78% of the 128 respondents said that it was important to have one. Half the respondents thought a terrace should be located on the top of the building whereas a small proportion thought that it should be located with the kitchen (11%) or with the living room (18%) (a terrace is a much larger private external space than the balcony).

Different use purposes were expressed by the respondents according to the location of the terrace. The most frequently mentioned use for a terrace on the top of the building was for drying the washing and having parties (23 cases for each). The other frequently mentioned uses were washing carpets, blankets and wool and drying couscous. All these activities are difficult to carry out in the flats. Only three respondents said that it would be a useful place to meet neighbours and one respondent said it would be helpful for the slaughter of the sheep during the Aid celebration.

However, a housewife in the Ain Allah estate said that she had already experienced having a terrace on the top of the building and explained that it was very inconvenient because of all the noise and the problems between neighbours. She described it as being like a real 'circus'. In a study carried out in Baghdad on multi-family housing estates similar to those investigated in the present research (Al Noori, 1987), the housewives preferred drying their washing on their balconies rather than on the shared accessible roof because they had no control over who used the roof and thus felt it was unsafe to hang out their washing there.

It seems clear that if the flat roof of five storey walk-up apartments is to be made available as an accessible terrace and used by the residents in order to carry out specific activities, it should be designed so that residents' could have a



shared responsibility and control over who uses the roof and when, and should not be the cause of conflicts between neighbours.

For those who preferred a private terrace adjacent to their kitchen, the main stated purpose for its use was washing and drying the laundry. A few respondents said that it would be useful for preparing home made bread and for cooking as well as for eating sometimes. Growing plants and having fresh air was also mentioned by some respondents and a few mentioned that children could play on the terrace. Those who thought that the terrace should be located with the living room said that it could be used as a sitting area in the summer as well as a children's play area and would be useful to grow plants and have fresh air.

It is important to point out the fact that most of the uses that have been suggested for the terrace have been suggested for the courtyard as well and reveal the difficulties involved in carrying out specific activities within flats by a significant number of the respondents. When observing the use of the private external spaces during the survey, a number of stated purposes such as sitting out on balconies were never actually being carried out. This can be interpreted in two different ways. The first interpretation is that there is a difference between what people say and what they actually do. The second interpretation is that it is the way the private external spaces are currently designed which prevents the residents from carrying out some of the stated intended uses on them.

## **6.10. SUMMARY AND CONCLUSION**

The examination of the comments of the residents with regard to the internal organisation of their dwellings and the constructional quality, as well as their apparent preference for traditional organisations, revealed interesting results (see tab 6.6). It seems that with an awareness of the housing crisis as well as of what might be available on the housing market, there is a general acceptance among respondents that flats are where the majority of people will have to live .

The interviewed housewives were able to evaluate and criticise their dwelling design accurately. Their evaluation ranged from general matters such as flat size and general organisation, to detailed matters such as the quality of the finishes. It is appropriate to point out that responses to the open-ended questions gave what was believed to be a wide ranging view of the different problems

**Table 6.6 : Residents' evaluation of their dwellings' internal organisation -Main findings -**

Aspects investigated		Bab Ezzouar	Ain Nadja	Garidi	Ain Allah	Comments
RESIDENTS' PERCEPTION TO THE INTERNAL ARRANGEMENT OF THEIR DWELLINGS	Likes					
	• General organisation				53%	Specific physical features include a large kitchen or the number of bedrooms  Non physical features include tranquility and water availability during the whole day
	• Specific physical features		18%	53%	41%	
	• Non physical features	21%		23%	34%	
• Nothing or do not know	64%	39%	37%			
RESIDENTS' PERCEPTION TO THE INTERNAL ARRANGEMENT OF THEIR DWELLINGS	Dislikes					Design features include low ceiling or the position of the WC or the living room design Constructional aspects include the finishing materials or the cracks in the walls
	• Flat size	27%	17%	55%		
	• Design features	36%	53%	21%	19%	
RESIDENTS' PERCEPTION TO THE INTERNAL ARRANGEMENT OF THEIR DWELLINGS	• Constructional aspects	58%	27%	45%	53%	
	Perception of the layout					
	• Satisfactory	63%	45%	73%	97%	
INTENDED ALTERATIONS	• Negative perception	20%	55%	23%		
	Alterations					Finishes alterations such as repainting and wall and floor tiling.
	• Finishes alterations	73%	73%	23%		
	• Extensions	16%		13%		Extensions by closing off the balconies
	• Conversions			47%		Conversions such as changing the use of the kitchen
• Design changes		55%			Design changes such as knocking through a wall or building storage spaces	
• No alteration		33%	23%	84%		

**Table 6.6 : Residents' evaluation of their dwellings' internal organisation -Main findings (cont.)-**

Aspects investigated		Bab Ezzouar	Ain Nadja	Garidi	Ain Allah	Comments
THE LIVING ROOM	Preference for a courtyard house • Yes	94%	64%	60 %	74%	The main reasons were related to the availability of a private external space
	Preference for a central space instead of a corridor • Yes	76 %	64 %	47 %	41%	The main reason was to gain more space
	Housing aspiration • Villa • Larger flat	61% 39 %	58% 42 %	50 % 47 %	56% 41%	The housing aspirations contradict residents' preferences for traditional organisations
PREFERRED LOCATION FOR PRIVATE EXTERNAL SPACES	Balcony location preference • Adjacent to the living room • Adjacent to the bedrooms	73% 33%	64% 16%	70% 23%	53% 19%	Most of the respondents thought that it was important to have a private balcony <u>and</u> a terrace on the top of the building
	Terrace location preference • On top of the building	55%	64%	47%	44%	

within the dwellings, as aspects which might not have been mentioned by one respondent have been mentioned by another.

When comparing likes and dislikes of the residents in the four estates it appears that physical features of the dwellings in the Garidi and the Ain Allah estates were mostly liked by the residents, whereas the majority of the respondents in the Bab Ezzouar and the Ain Nadja estates did not like anything in their flats and tended to complain more than respondents in the two other estates.

The most frequently shared source of dislike in the four estates was the constructional quality of the dwellings. However, the specific constructional items that raised complaints among the respondents varied from one estate to another. In the Bab Ezzouar estate it was the inappropriate choice of the plastic material, especially for doors and floor tiling. In both the Garidi and the Ain Nadja estates, it was the frequent occurrence of cracks in the walls and the poor quality of finishes resulting in a frequent need for repair. In the Ain Allah estate, although the internal finishes of the dwellings were highly appreciated by the residents, the apparent fragility of the prefabricated facade, raised concern among respondents.

Disliked design features varied from one estate to another. Whereas a high proportion of the respondents in the Ain Nadja estate complained about the position of the living room as well as the aspect of the loggia and the balcony, respondents in the Garidi estate were most concerned with the small size of their dwellings. Details such as the lack of windows in the bathroom and the W.C, the inconvenient position of the W.C door in relation to the living room, the position of the main entrance door close to the living room door as well as the width and the length of the corridor have raised criticism in the four estates. Moreover, a rectangular shape to the bedrooms or the living room, where the length is markedly greater than the width appears to be strongly disliked by the housewives along with the presence of too many corners. The shape of both the living room and the bedrooms seems to be an important matter from the point of view of the respondents.

When considering the physical alterations that residents made or wanted to make to their dwellings, it appears that the most frequently reported type of alteration concerned the private external spaces that were closed off in order to increase the floor area of either the living room or a bedroom, depending on the

position of the balcony. Moreover, the kitchen's loggia was subject to conversion in the Garidi and the Ain Nadja estates, where residents explained that they wanted to close and use the loggia as a kitchen and convert the actual kitchen space to an extra bedroom. This suggests that the average size of the dwellings may be an important problem and this matter is further investigated in the next Chapter. Less radical alterations were also carried out by the residents and concerned the finishes of the dwellings, such the change of floor tiling in the Bab Ezzouar estate and the addition of bathroom wall tiling in the Garidi and the Ain Nadja estates.

However, the majority of the respondents perceived the general organisation of their flats as reasonably satisfactory, with the exception of the Ain Nadja estate where an attempt was made in the design to recreate the traditional central space within the dwellings. The central space is either a circulation space in some of the flats or the living room itself. Such arrangements have been strongly criticised by the respondents and were subject to various alterations.

When respondents were asked whether they would have preferred a traditional courtyard organisation, 73% were so minded. Reasons for their preference revealed that housewives lacked contact with external spaces and had difficulty in carrying out certain activities. Non-working housewives complained that they felt that they were somewhat suffocated inside their dwellings and this feeling was expressed in their responses by the desire to have a direct contact with the natural elements: air, sunlight and plants. The courtyard in the traditional house serves routinely for a variety of activities such as laundry, children's play and also for wool weaving and preparing flour for couscous. These activities have been mentioned by respondents when explaining their preference for a traditional courtyard house.

Respondents' preference for a dwelling organisation with a central space instead of the corridor was justified to some extent by the additional floor area that would be gained with such an organisation. However, in some of the Ain Nadja estate flats, where a central space is provided instead of the corridor, respondents were not particularly appreciative of such an organisation because the space was neither lit nor ventilated naturally.

When residents were asked about the hypothetical use of a central space within the dwelling, responses revealed that the suggested uses were not of what might be described as of a 'traditional' nature. Most of those who preferred a

corridor to a central space were satisfied with their present dwelling organisation and some of them explained that it was more private to have a corridor than a central space.

It is important to point out that many of the reasons that most respondents gave for their preference for a different organisation may well have resulted from the functional problems they had encountered in their present accommodation rather than from an exact knowledge or previous experience of the suggested organisations.

While most respondents preferred a traditional courtyard house to their current dwelling because it was perceived as solving a number of functional problems, their actual housing aspirations were either a larger apartment or a 'modern' villa. There is an obvious conflict here. While courtyard houses may be convenient in themselves they are clearly associated with backwardness, poor social categories and somewhat undesirable circumstances such as location in old centres and overcrowded conditions. The aspiration to improve social standing seems more important than a functionally suitable traditional house. A study carried out by Waltz (1985) about women's housing needs in Tunisia, found that the common desire of thirty families with modest income was for a house with functionally specific rooms and no courtyard.

However, the practice of sexual segregation for a woman confined to a cramped European housing type results in restricted light and air as well as a reduced level of social relations. The several conversations with the interviewed housewives about the type and location of the private external spaces within the 'modern' dwellings, as well as their potential use, revealed a strong preference among most respondents to have access to the roof of their building in addition to a private loggia and a private balcony within the dwelling unit. The main purposes for having an accessible terrace roof were to have fresh air and carry out specific activities that used to be carried out in the traditional courtyard house. Such activities include drying the washing, drying the couscous, washing and drying carpets, mattresses and wool as well as possibly organising parties.

In order to understand more thoroughly residents general responses and to suggest possible design solutions for future mass housing dwellings, a detailed analysis of residents' use and perception of the various spaces within their dwelling units, their design, shape and spaciousness, is presented in the next Chapter.

## Chapter 7 : SPACE USE PATTERNS AND SPACIOUSNESS PERCEPTION OF THE DIFFERENT ROOMS IN THE DWELLING

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## 7.1. INTRODUCTION

Having presented a general evaluation of the residents' perception of the internal design of their dwellings through their responses to open ended questions, this Chapter aims to assess the extent to which the size of the dwellings, as well as the size and shape of the main living areas within the dwellings, are considered by the residents as appropriate. It is also intended to test these two hypotheses.

- The first one is that important activities are difficult to carry out within the dwellings because they have never been taken into account in the early stages of the design process.
- The second one is that there exists a conflict between the residents' tendency to conform to 'modernity' and the persistence of traditional space use patterns and traditional activities.

Because the physical standards of dwellings in Algeria have not necessarily been established according to local needs but have to some extent been adapted from European standards for prefabricated mass housing, it is believed that they are not entirely appropriate for most Algerian families, despite the social changes occurring in terms of family size and space use patterns. To some degree physical standards have been derived from ergonomic and anthropometric studies. However, these standards vary between different cultures and even within the same culture. Hall (1966) was among the first to draw attention to the cultural variability of the use of spaces, the scale of the spaces, needs for privacy and the like.

Recently a growing interest in the socio-cultural and psychological forces involved in the development and use of space organisation has led researchers to work on these aspects in more detail. However, as Gittford (1987) argues, little is known about the effect of architecture on behaviour in the home and this lack of information is to some extent due to the discomfort aroused by allowing a researcher inside the home to conduct research. Thus, most research reaches 'inside' homes by interviewing residents or giving them questionnaires rather than monitoring actual behaviour in the home. In the present research, the interviews took place, in almost all cases, in the living rooms of the respondents. Whereas a significant number of respondents allowed inspection of the main living areas of dwellings and the making of sketches, very few allowed pictures to be taken inside the dwelling.



The material used for this Chapter consists of residents' responses to specific questions about their perception of the size and shape of the different spaces within their dwellings as well as the activities that are carried out in the different rooms. The information about space use patterns was complemented by furniture layouts of a significant number of the visited dwellings. The survey data and furniture layouts were very useful in determining needs for size and shape and information about the use of space in the main living areas of the dwellings. Observing the physical setting and recording physical traces helped to determine, to some extent, both how a space is used and its meaning to the residents.

## **7.2. THE LIVING ROOM**

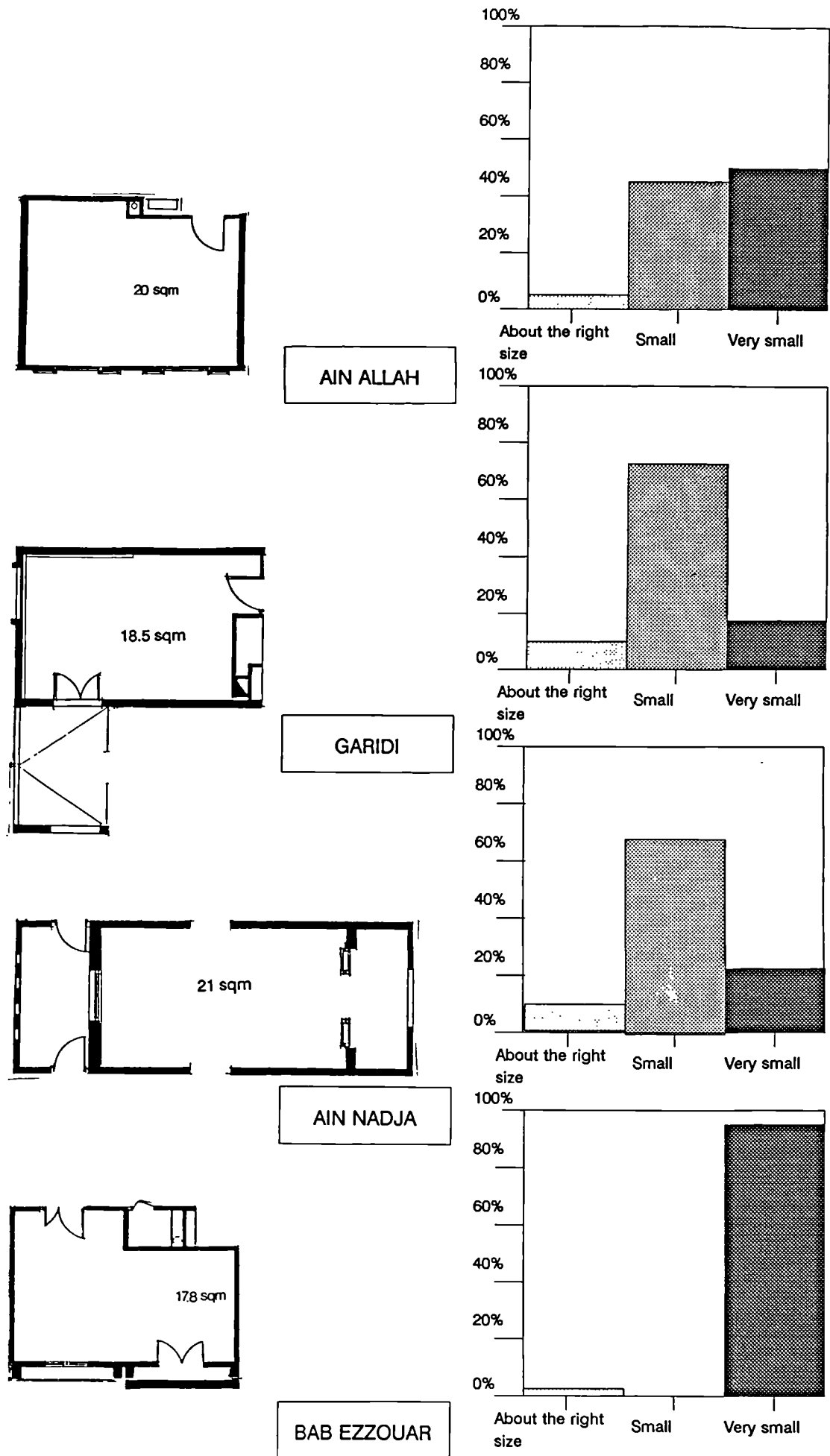
### **7.2.1. Size Perception**

The floor area of the living room in new dwellings in Algeria has been fixed by regulation of the Ministry of Housing as 18 sqm for one and two bedroom flats and 20 sqm for the three or four bedroom flats. (MUCH, 1979).

Whereas the largest living rooms were found in the Ain Nadja and the Ain Allah estates, where most of them are 20 sqm in area, smaller living room floor areas were found in the Bab Ezzouar and the Garidi estates with areas respectively of 17.8sqm and 18.5sqm (see fig 7.1). Respondents in the four estates were asked whether they perceived the size of their living room as being about the right size, small or very small. Despite the differences in floor areas in the four estates, the vast majority of the 128 respondents (95%) perceived the size of their living room as either small or very small (see tab 7.1a). It seems that even a floor area of 21 sqm for the living room is not considered by the residents as satisfactory.

However, the perception of the residents of the size of their living room seems not only influenced by the actual area but also by the shape and the availability of an adjacent balcony or verandah as well. In fact, despite the small difference in living room floor areas between the Bab Ezzouar and the Garidi estates (1sqm), the vast majority of the respondents in the Bab Ezzouar estate (97%) perceived their living room as very small whereas 83% of the respondents in the Garidi estate perceived virtually the same floor area as being merely small. This difference in size perception may be explained by the somewhat inconvenient shape of the living room in the Bab Ezzouar estate (see fig 7.1). Furthermore, the

Figure 7.1 : Perceived size of the living room in the four estates



availability of a living room balcony in the Garidi estate seems to compensate for the small size as the intention to close it and use it as a dining area was frequently expressed (see previous Chapter). In the Bab Ezzouar estate, those who had a verandah adjacent to their living room and closed it off, perceived the size of their living room as being the right size.

The majority of the respondents in the Ain Nadja, the Bab Ezzouar and the Garidi estates were in agreement in their perception of the size of their living room (see fig 7.1). It was only in the Ain Allah estate where, despite the same living room floor area in all the flats, respondents were divided between those who said the living room was small and those who said it was very small. This difference in size perception may be explained partially by the observed tendency of some households to have rather too many items of furniture. It seems that in addition to the shape and the availability of a private external space, the way the living room is furnished does also influence residents' perception of its objective size. The examination of the living rooms' furniture layouts and their perceived size helps to explain to some extent the difference in size perceptions.

### **7.2.2. Shape Convenience**

More than 50% of all respondents in the four estates complained about the inconvenient shape of their living room and the difficulties encountered in furnishing it in the way they wanted to (see tab 7.1). Whereas the same proportion of those who complained about the shape and the furnishing was found in the Ain Nadja, the Garidi and the Ain Allah estates (over 40%), a much higher proportion was found in the Bab Ezzouar estate, where 73% of the respondents expressed a high degree of frustration, not only because of the size but also because of the shape, which caused difficulties in the placing of the furniture. Some housewives explained that they had to dispose of many furniture items when they moved into their new flats. A housewife in the Bab Ezzouar estate complained that she used to have a very nice living room suite but had to sell it because there was no space for it in her present living room.

### **7.2.3. Furniture Arrangements and Observed Space Use Patterns**

In almost all cases, the interviews with respondents took place in the living room. This was helpful as it was possible for sketches to be made of the way the living rooms were furnished and thus gaining a very rough idea about the social

**Table 7.1 : Respondents' perception of the living room's size and shape convenience**

a. Size perception of the living room by estate

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
<b>LIVING ROOM SIZE</b>										
RIGHT SIZE.....	1	3%	1	3%	2	7%	2	6%	6	5%
SMALL.....	0	0%	28	85%	25	83%	14	44%	67	52%
TOO SMALL.....	32	97%	4	12%	3	10%	16	50%	55	43%
Column Total...	33	100	33	100	30	100	32	100	128	100

Category counts and column percents

b. Do you find the shape of your living room convenient ?

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
<b>SHAPE OF THE LIVING ROOM</b>										
NOT CONVENIENT.....	24	73%	15	45%	13	43%	13	41%	65	51%
CONVENIENT.....	9	27%	18	55%	17	57%	19	59%	63	49%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

c. Do you think you can arrange your furniture in the living room the way you want ?

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
<b>FURNITURE ARRANGEMENT</b>										
CANNOT.....	25	76%	16	48%	13	43%	15	47%	69	54%
CAN.....	8	24%	17	52%	17	57%	17	53%	59	46%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

and economic level of the occupants. The living room is usually the only area in the flat seen by a certain category of guests, such as colleagues and non-related people, and thus has a prestigious value. In a number of flats, it was very noticeable that the living room contained the best furniture and items of decoration. A strong tendency was observed towards having within the living room a very large wall unit with the living room divided into two spaces, a sitting area and a dining area, despite the lack of space for such an arrangement in a number of cases (see fig 7.2b). The tendency of families to own specific types of furniture, which are perceived by residents as symbols of modernity, such as the large wall unit, the dining table and the living room suite (see fig 7.2a,b and 7.4) explains the fact that even a floor area of 20sqm is rarely considered large enough. Unless limited by financial means or by a very high occupancy rate per room, there was no compromise on the part of the majority of the residents to reduce the number of furniture items despite the lack of space. When household size was large, the shortage of space important or the financial means limited, dual purpose traditional furnishing was often used in the living / reception room (see fig 7.3). Its convenience consisted in that the space could be used as a sitting area during the day and sleeping area during the night. However, it seems that, in some cases, an occupancy rate of four to five people per room would not prevent a household from under-using the living room if they could afford to buy the whole set of furniture items that could be found in their neighbours living rooms (see fig 7.4). In this case a separation is often made between a guests' reception room and a bedroom used as a living room.

Between the two extremes of totally modern or totally traditional living room arrangements, cases were found where both traditional and modern arrangements coexisted within the same space, particularly where the living room was used for sleeping by some members of the household (see fig 7.5). However, when residents were asked whether there was anything that they were not able to do in their flat because of the lack of space, responses revealed that those who did not have the 'modern' stereotype furniture items complained about the impossibility of having them, as there was a strong tendency among residents to aspire to the same modern arrangements as those found in their neighbours' living rooms.

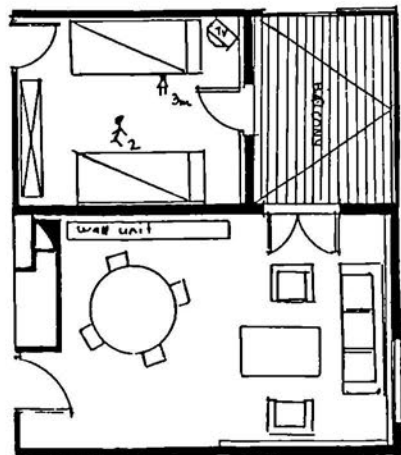
It seems that the message guests are intended to receive when entering the living room is one of conformity on the part of the occupants with modernity, by their exhibition of the various furniture items that were mentioned previously. However, this is often only a facade for a significant number of the visited

**Figure 7.2 : Symbols of modernity such as large wall unit and dining table**

a.



b. Layouts of "stereotype" furniture arrangement of the living room



The living room is being used exclusively as a reception area, divided into a sitting area with a large wall unit, and a dining area which is rarely used. One of the bedrooms is also used as a living room.

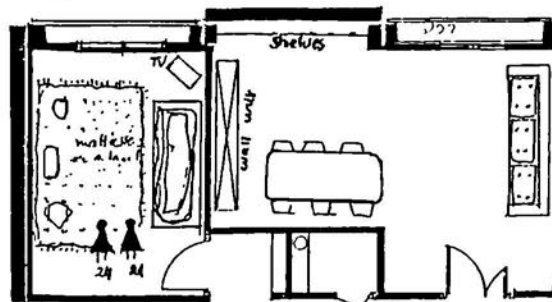
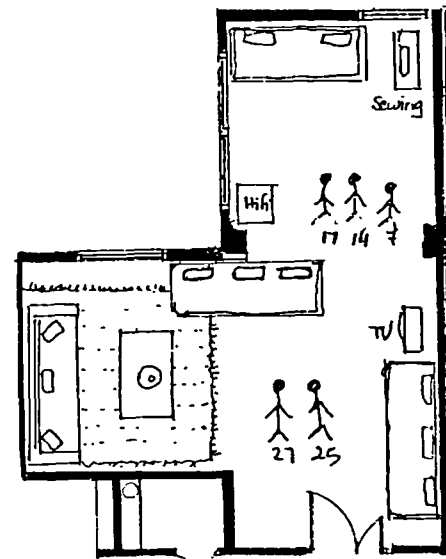
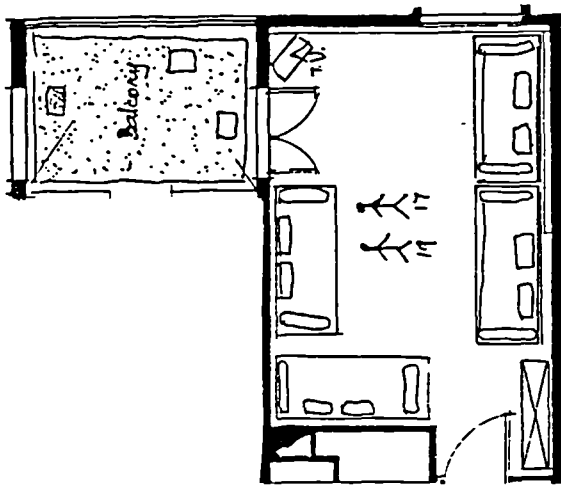
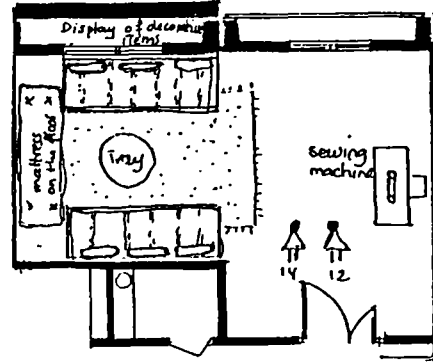
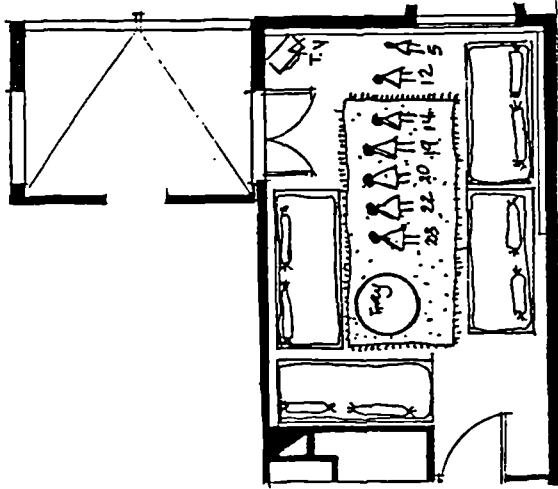
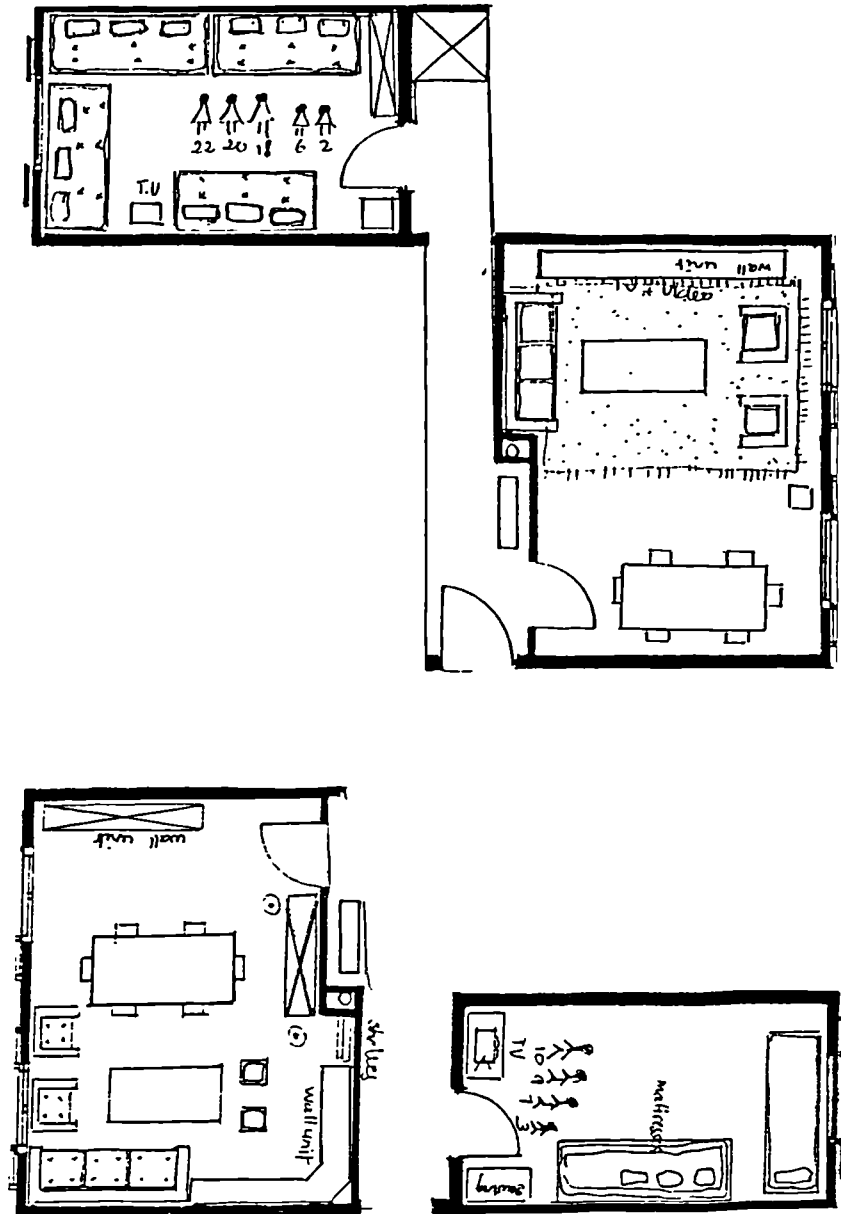


Figure 7.3: Dual purpose traditional furnishing in the living room



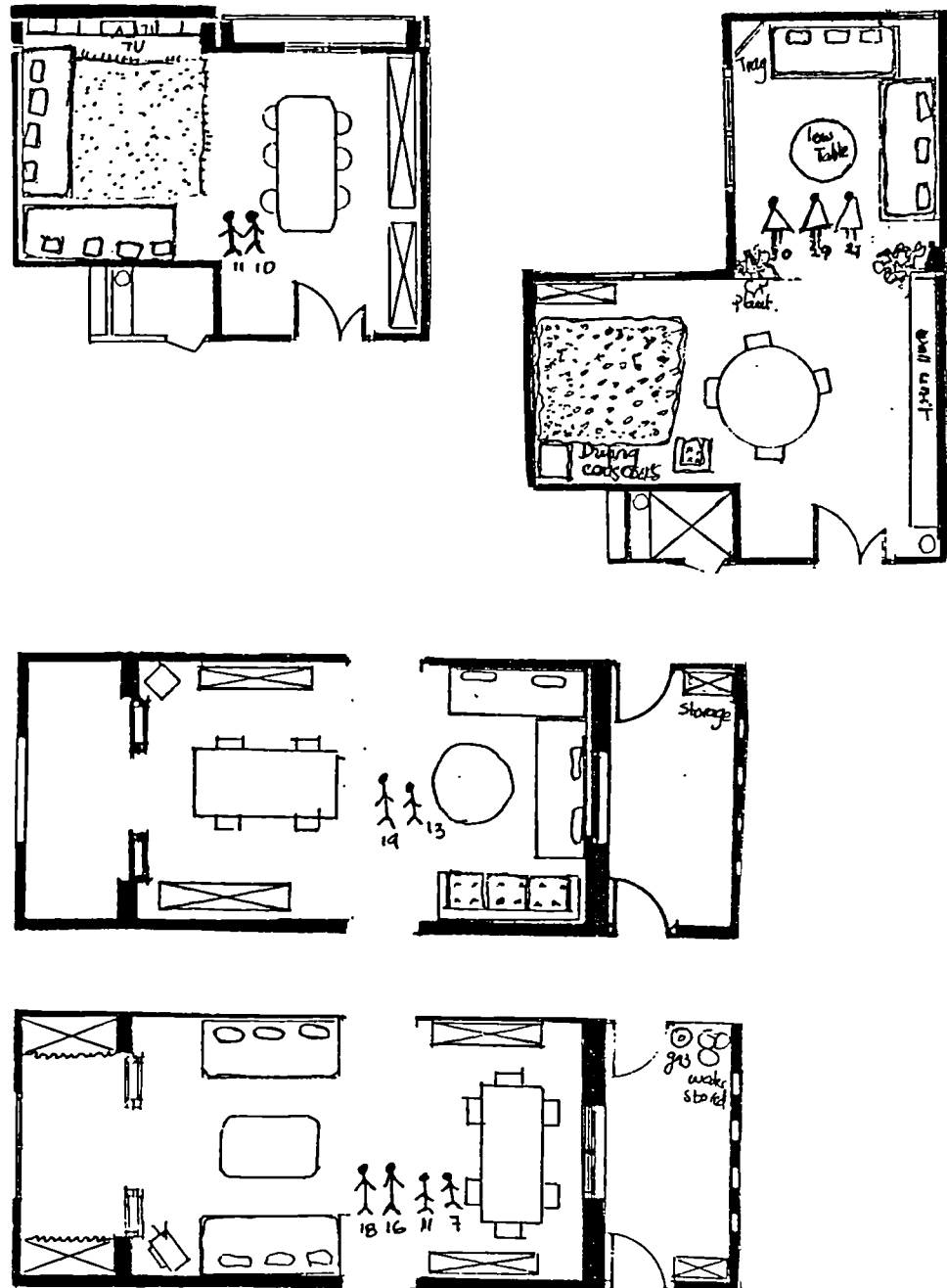
**Figure 7.4 : Under-used living room despite the size of the household**



The living room is being used exclusively as a reception area despite the high occupancy rate (4-5 people) in the bedroom used for sitting and watching TV



**Figure 7.5: Coexisting traditional and modern furniture arrangements**



Coexistence of a dining area and traditional arrangements in the living room. The latter is being used by the children for sleeping

households, as the living room is used as guests' reception room and a traditional living room arrangement can generally be found in the children's bedroom (see fig 7.4) or coexisting with the 'modern' arrangement within the same space (see fig 7.5).

In a study of living rooms, Laumann and House (1972, cited in Cooper, 1974, p.135) found that the presence or absence of certain objects is a good, if not a perfect, clue to status and attributes. It is the living room rather than any other room in the flat which provides these clues. As Cooper (1974, p.131) argues, in her article 'The House as Symbol of Self', the type of furniture installed, the way it is arranged as well as the decoration "are messages about ourselves that we want to convey back to ourselves, and to the few intimates that we invite into this, our home". More than any other part of the house, the living room reflects individuals' conscious or unconscious attempts to express a social identity.

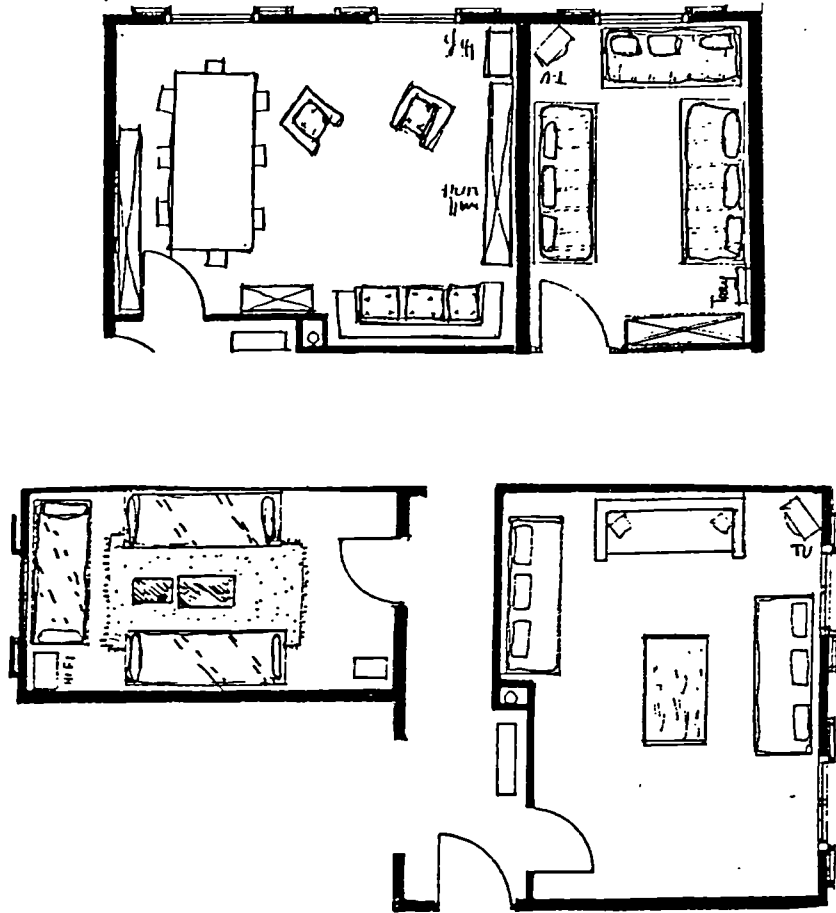
#### **7.2.4. Different Uses of the Living Room**

When residents were asked about the different uses of their living rooms, the majority of the 128 respondents said that it was mainly used for receiving guests and for watching television (see Appendix E, tab E.1). When asked specifically about sleeping in the living room, forty five per cent of the respondents in the four estates said that some members of their household do use the living room as a bedroom as well (see Appendix E, tab E.2). The highest proportions of those respondents were in the Bab Ezzouar and the Ain Nadja estates (58% and 45% respectively), where the highest proportion of dissatisfied respondents were found.

##### *a. The dining area*

When a dining area was available in the living room, it was found to be rarely used by the household as 84% of the visited housewives said that the family members took their meals in the kitchen. Respondents reported that the dining area was used only when guests were catered for or during the fasting month of Ramadhan. However, it was frequently mentioned that the dining table was used for studying or doing homework. When a dining table was not available because of the lack of space or because the household could not afford to buy one, the traditional tray was used as a flexible solution for catering for guests (see fig 7.7a,b). A fair proportion of the housewives said that they would have liked to have a separate dining room, called the "Salle à Manger", if space was available,

**Figure 7.6 : Traditional living room in the children's bedroom,  
separation between the guest's room and the living room**



The availability of larger flats in the Ain Allah estate ( three bedroomed flats) resulted in the third bedroom being used by small 'modern' households (3 to 4 people) as a living room . A clear separation is made between the guests' reception room and the traditional living room

Figure 7.7 : The dining table versus the traditional tray



and this despite the fact that it would not be used daily by the household for having their meals.

*b. The reception of guests*

It is important to point out that almost all the living rooms where the interviews were carried out were remarkably clean and tidy, although the housewives were not informed about the date of the visit. The usual concern about an eventual visit by a guest results in the living room being under-used during the day and even closed when space is available to watch television in another room. As mentioned previously, cases were observed where, despite a very high occupancy rate, the living room was under-used as it was employed exclusively as receiving area. The living room was transferred to one of the bedrooms, called by some the 'Arab living room' (see fig 7.7b), where every member of the household can watch television without being worried or disturbed by the visit of a guest.

Because receiving guests and relatives remains a frequent activity, despite the social changes occurring in Algeria, respondents were asked whether they would have preferred to have a special room for accommodating guests. This question was inappropriate in a significant number of cases where the number of bedrooms was so insufficient in regard to the size of the household, that an extra room would have necessarily been desperately needed. However, when respondents were asked why they would like to have a special room for accommodating guests, responses revealed the importance of keeping the receiving area clean and tidy and expressed the view that the availability of a guests' room would prevent the living room from being 'disturbed' (see Appendix E, tab E.5). Responses also revealed that receiving and accommodating guests, while still a frequent activity, tends to occur less frequently in large households because of the high occupancy rate per room.

Accommodating guests who stayed overnight usually occurred in the living room, as reported by 73% of respondents, or less frequently in a vacated children's bedroom. This resulted in some members of large households sleeping in the kitchen or even in the corridor. Only 12% of the respondents in the four estates reported having a spare room used as a second living room in which guests could be accommodated without disturbing the occupancy of the other rooms (see Appendix E, tab E.3).

### **7.2.5. Private External Spaces Adjacent to the Living Rooms**

As was noted in the previous Chapter, almost all housewives in the four estates thought that it was important to have a balcony adjacent to the living room (see Appendix D, tab D.10 and tab D.11). When asked about the employment of the living room balcony, the most frequently stated use was to get fresh air and grow plants. A very small proportion of the housewives (10 cases out of the 128) said that they used it as a sitting area during the summer evenings and in four cases thought it appropriate to be used by children to play. However, the observed external spaces adjacent to the living rooms were either closed off or used mainly for drying the washing and storage. Growing plants was observed only in a small proportion of the flats and sitting out on balconies was never observed during visits.

Whereas the living room balcony was available in all the flats in both the Ain Nadja and the Garidi estates, this was not the case for the majority of the flats in the Bab Ezzouar estate and in the flats in the Ain Allah estate. Only five of the 33 visited dwellings in the Bab Ezzouar estate had a large verandah, which residents tended to close off and use as a traditional living room which co-existed with the 'modern' one (see fig 7.8a,b,c).

The balconies were usually closed off to gain more internal living space. However, this was not the only reason, in fact even when the household size was small and when space was not a problem, some housewives explained that because the balcony or the verandah was usually very dusty and not really used, it was better to close it off in order to avoid cleaning it every day. It was clear that the initial closed aspect of the balconies adjacent to the living rooms has made it easy for the residents to close off these spaces by placing windows in the openings. Contrary to what might have been expected, some housewives expressed a preference for an open balcony with a metal balustrade which would allow them to have a view of the outside while they were sitting inside their living rooms. They complained about the feeling of suffocation inside their dwellings because of the lack of contact with the external world.

It seems that residents should be provided with the opportunity to have an open balcony which could be closed, depending on its different use purposes. This could be realised by a more flexible design of the balconies.

**Figure 7.8 : The closing off of the veranda in some flats in the Bab Ezzouar estate**



**a. The original design:  
a veranda available  
for some flats in the  
Bab Ezzouar estate**



**b. A veranda  
in the  
process of  
being closed  
off**



**c. A closed  
veranda  
used as a  
living room**

### **7.3. THE KITCHEN**

Housewives in Algeria generally spend a considerable amount of time in their kitchen. The preparation of meals is quite a lengthy process, bearing in mind that ready cooked food, frozen or canned dishes or processed vegetables do not exist on the market. Moreover, the size of the households often requires the preparation of large quantities of food. Traditional bread is still being prepared at home by a significant number of housewives together with large quantities of cakes which are prepared for religious festivities and for parties.

#### **7.3.1. Size Perception**

When respondents were asked about their perception of the size of their kitchen (see tab 7.2a), it was interesting to find that all the respondents in both the Garidi and the Ain Allah estates, where the kitchens have a floor area of 12 sqm, were in agreement in their perception of this area as being the right size (see fig 7.9). In the Bab Ezzouar estate, 97% of the 33 respondents perceived their kitchens' 8.6 sqm floor area as either small or very small. It was only in the Ain Nadja estate where respondents were not in agreement in their size perception of their kitchen. Despite the fact that it was the smallest kitchen (7.8sqm), 55% of the respondents perceived it as being the right size whereas 45% of them perceived it as being either small or very small. This difference in size perception may be partially due to the lack of a loggia in those flats with a central space. However, in some of them, the central space was used as an extension of the kitchen as the dining area was to be found there.

#### **7.3.2. Type of Furniture Items Used in the Kitchen**

The main furniture items that were found in most of the visited kitchens were: the cooker, the refrigerator, a table with chairs, a cupboard and/or storage wall units. The dining table and the chairs left very limited circulation space in the kitchen (see fig 7.10) particularly in the Ain Nadja and the Bab Ezzouar estates.

Some households, such as those which were rehoused from over-crowded courtyard houses in the Casbah of Algiers, had few furniture items in the kitchen and a low traditional table instead of a dining table. Getting extra furniture items in the kitchen was a major problem particularly in the Bab Ezzouar and the Ain Allah estates where respectively 94% and 88% of the respondents said it was not possible to install any other items because of the lack of space (see tab 7.2b).



**Table 7.2 : Respondents' perception of the kitchen's size and shape convenience**

a. Kitchen size by estate

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
<b>KITCHEN SIZE</b>										
RIGHT SIZE.....	1	3%	18	55%	30	100%	32	100%	81	63%
SMALL.....	19	58%	8	24%	0	0%	0	0%	27	21%
TOO SMALL.....	13	39%	7	21%	0	0%	0	0%	20	16%
Column Total....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

b. Is there enough work space in your kitchen ?

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
<b>WORK SPACE IN THE KITCHEN</b>										
NO.....	13	39%	14	42%	1	3%	0	0%	28	22%
YES.....	20	61%	19	58%	29	97%	32	100%	100	78%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

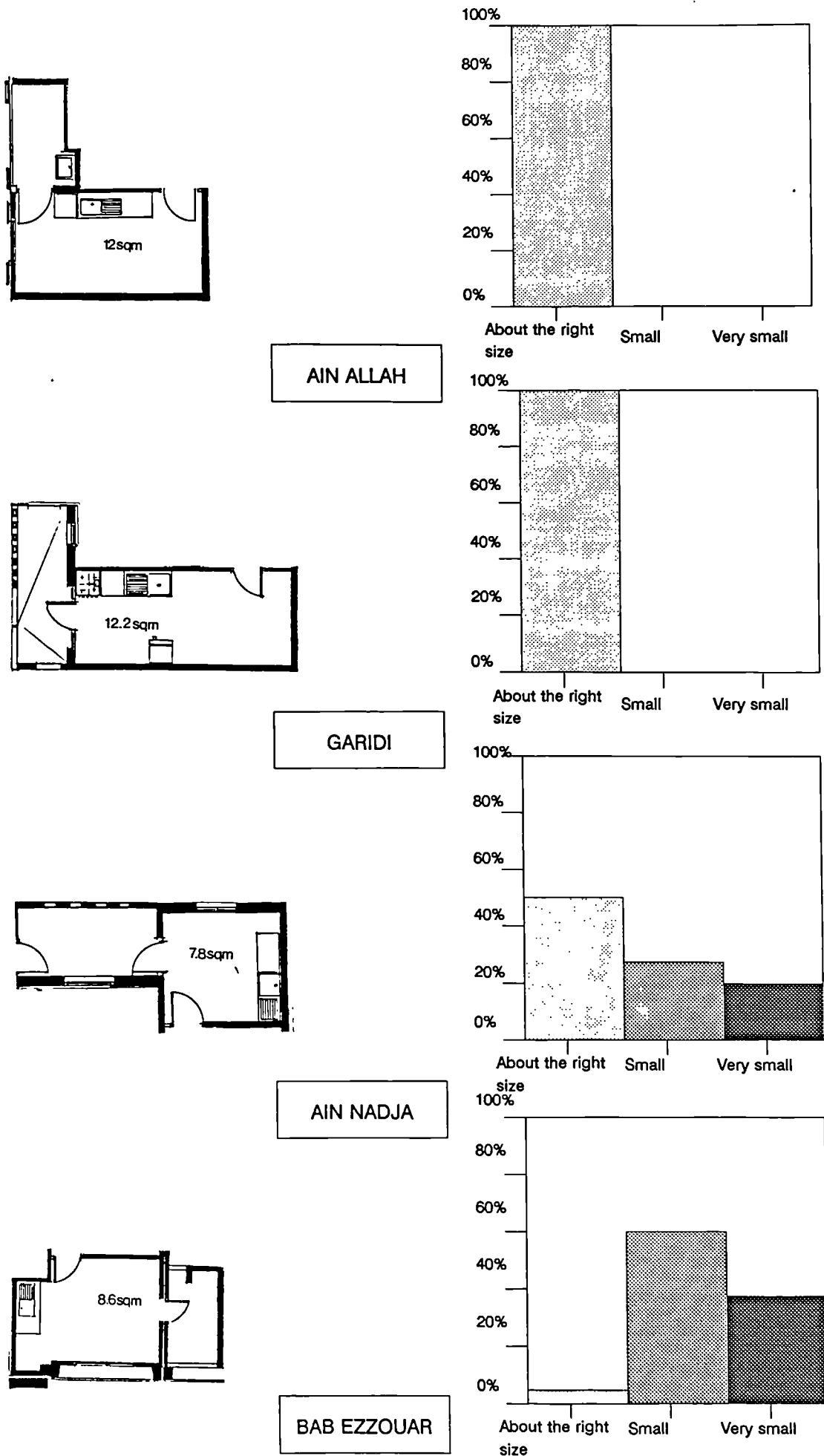
Category count and column percent

c. Do you have enough storage space in your kitchen ?

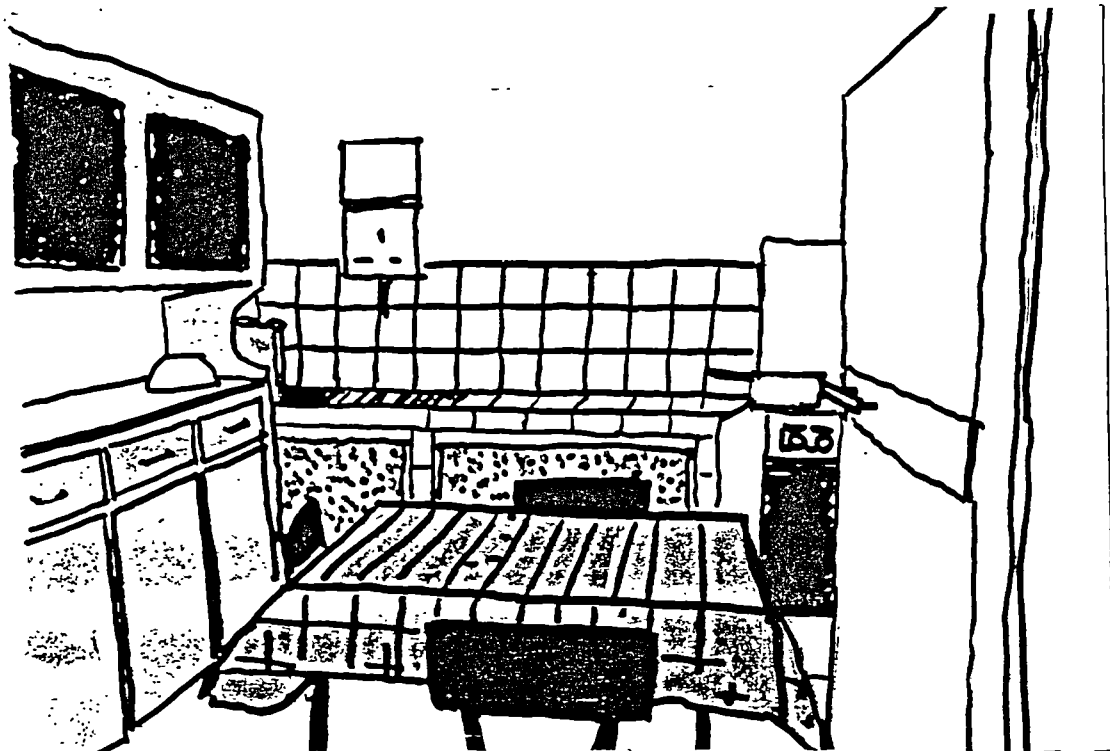
	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
<b>STORAGE SPACE IN THE KITCHEN</b>										
NO.....	15	45%	27	82%	1	3%	3	9%	46	36%
YES.....	18	55%	6	18%	29	97%	29	91%	82	64%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

Figure 7.9 : Perceived size of the kitchen in the four estates



**Figure 7.10 : Types of furniture items found in the visited kitchens**



### **7.3.3. Working and Storage Space in the Kitchen**

The working surface was criticised as being not large enough in both the Bab Ezzouar and the Ain Nadja estates by respectively 39% and 42% of the respondents. In the Garidi estate some housewives expressed their preference for a working counter placed across the width of the kitchen rather than across its length. In the Ain Allah estate, the position of the cooker was criticised as being too close to the loggia's door. Some housewives in the Ain Allah and the Garidi estates described their kitchens as being too narrow and expressed their preference for a less rectangular shape.

When asked whether there was enough storage space in the kitchen, 64% of the whole sample replied in the affirmative (see tab 7.2c). The vast majority of the respondents who had a 12sqm kitchen reported having enough storage space within the kitchen. The availability of sufficient storage space was not related so much to the availability of previously designed storage spaces in the kitchen but to the availability of enough space and free wall surfaces to enable residents to place cupboards and wall units within the kitchen. This explains the fact that almost all residents in the Ain Nadja estate (82%), where the smallest kitchen was found (7.8 sqm), and almost half the respondents in the Bab Ezzouar (45%), where a slightly larger kitchen was found (8.6 sqm), reported not having enough storage space in their kitchen. Some housewives explained that it was difficult to store everything in the kitchen and therefore used the living room wall unit to store all the dishes that were not needed daily. Storing food and especially traditional pastry such as 'couscous' was mentioned as being a problem because of the humidity in the kitchen.

### **7.3.4. Eating in the Kitchen**

The vast majority of the respondents (84%) reported having their meals in the kitchen (see tab 7.3a), despite the availability of a dining table in the living room in a significant number of flats. Almost a third of the respondents said that they did not usually sit all together to have their meals (see tab 7.3c) because it was not possible to cater for everybody at the same time. Large households tended to have their meals in shifts: children and adults or men and women separately.

**Table 7.3 : Having meals in the kitchen**

a. Do you usually have your meals all together in the kitchen ?

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
NO.....	7	21%	10	30%	2	7%	1	3%	20	16%
YES.....	26	79%	23	70%	28	93%	31	97%	108	84%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

b. If no, where do you usually have your meals ?

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
MISSING.....	23	74%	22	69%	28	93%	31	97%	104	83%
IN THE LIVING ROOM.....	6	19%	8	25%	1	3%	1	3%	16	13%
IN THE DINING AREA.....	1	3%	2	6%	0	0%	0	0%	3	2%
WOMEN IN KITCHEN AND MEN IN LIVING ROOM.....	1	3%	0	0%	1	3%	0	0%	2	2%
Column Total.....	31	100%	32	100%	30	100%	32	100%	125	100%

Category counts and column percents

c. Do you usually sit all together to have your meals ?

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
NO.....	18	55%	8	24%	5	17%	10	31%	41	32%
YES.....	15	45%	25	76%	25	83%	22	69%	87	68%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

#### 7.4. IMPORTANCE AND USES OF THE KITCHEN'S LOGGIA

Whereas all flats in the Garidi and the Ain Allah estates have a loggia adjacent to the kitchen, all the ground floor flats in the Bab Ezzouar estate and all the flats in the Ain Nadja estate with a central circulation space did not have a loggia adjacent to their kitchens (see tab 7.4a). When asked what they thought about the desirability of having a kitchen's loggia, 67% of the respondents said that it was a good thing whereas the remaining third said it was important and/or very helpful (see tab 7.4b). In response to other questions, a significant number of housewives thought that the availability of a loggia was very important for the ventilation of the kitchen.

When asked specifically about the uses of the kitchens' loggias, it appeared that the main uses were drying the washing (70%) and storage (76%). Different types of items were stored in the loggia and most of them were connected with the kitchen, such as bottles, vegetables and a traditional cooker as well as the rubbish bin and the items necessary for cleaning the dwelling. In addition to washing and storage, several other uses were mentioned, but less frequently such as washing up and preparing home made bread (see tab 7.4c). It seems that, depending on the design and the facilities available within the loggias, some activities are easier to carry out in one loggia than in another (see fig 7.11).

##### 7.4.1. Drying the Washing

When housewives were asked specifically about where they usually dried their washing, the majority of the respondents in the Garidi and the Ain Allah estates (90% and 100% respectively) reported using their kitchen's loggia for drying the washing whereas less respondents in the Bab Ezzouar and the Ain Nadja estates (27% and 58% respectively) reported doing so (see Appendix E, tab E.6) This difference can be partially explained by the inadequate design of the loggias in the Bab Ezzouar and the Ain Nadja estates (see figs 7.11c,d, 7.12b, 7.13a,b) resulting in the residents' use of other locations, such as windows, for drying their washing. The different designs of the loggias in the four estates and their uses by the residents are described in the following section.

##### *a. The Bab Ezzouar estate loggia*

The loggias were criticised as being too small and too deep and narrow (see fig 7.13a), which made drying the whole washing difficult if not impossible (see

**Table 7.4 : Importance and use of the kitchen's loggia**

a. Do you have a loggia with your kitchen ?

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
<b>AVAILABILITY OF A LOGGIA</b>										
NO.....	5	15%	7	21%	0	0%	0	0%	12	9%
YES.....	28	85%	26	79%	30	100%	32	100%	116	91%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

b. What do you think about the fact of having a loggia with the kitchen ?

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
<b>IMPORTANCE OF A LOGGIA</b>										
GOOD THING.....	21	66%	25	76%	9	31%	29	91%	84	67%
IMPORTANT.....	9	28%	5	15%	15	52%	1	3%	30	24%
HELPS A LOT.....	2	6%	3	9%	5	17%	2	6%	12	10%
Column Total.....	32	100%	33	100%	29	100%	32	100%	126	100%

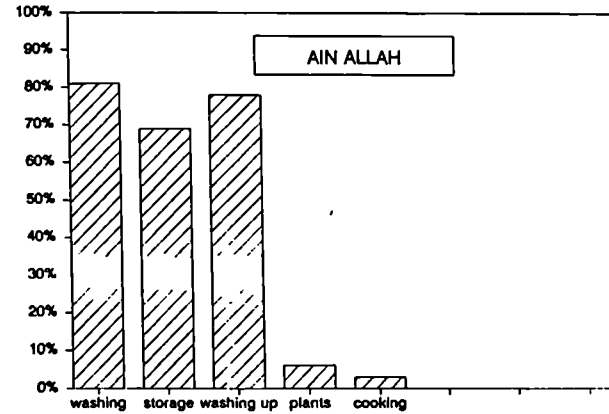
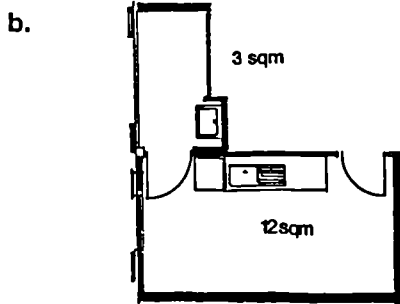
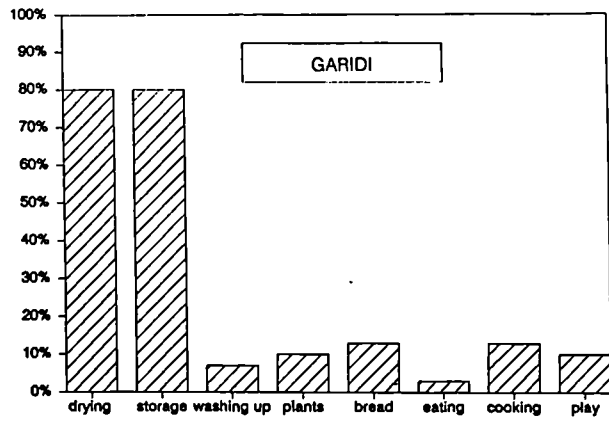
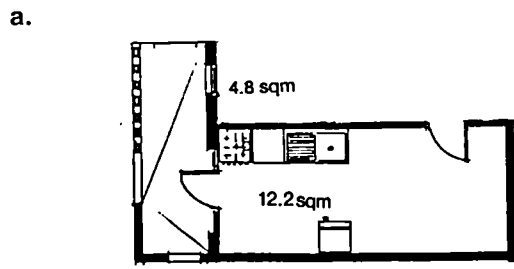
Category counts and column percents

c. Activities taking place in the loggia

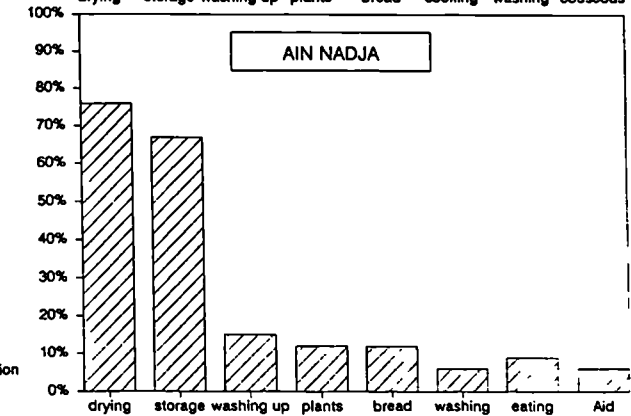
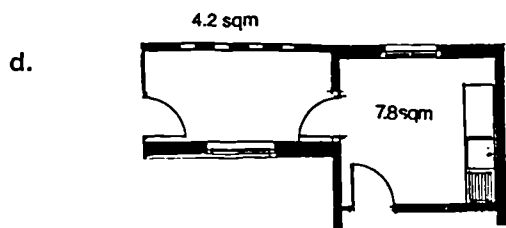
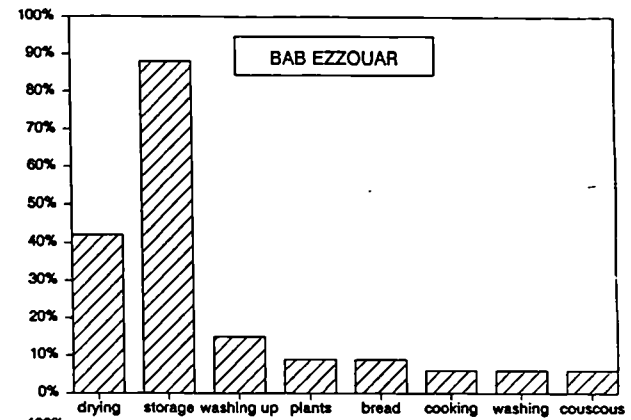
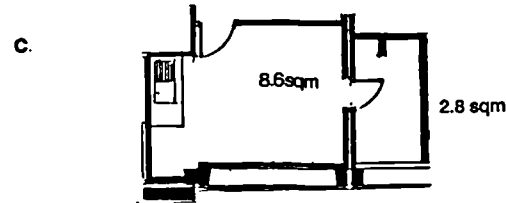
	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
<b>ACTIVITIES</b>										
CHILDREN S PLAY.....	1	3%	2	6%	3	10%	0	0%	6	5%
COOKING.....	2	6%	0	0%	4	13%	1	3%	7	5%
DRYING COUSCOUS.....	2	6%	0	0%	0	0%	0	0%	2	2%
DRYING THE WASHING.....	14	42%	25	76%	24	80%	26	81%	89	70%
HAVING MEALS.....	0	0%	3	9%	1	3%	0	0%	4	3%
AID SHEEP SLAUGHTER.....	0	0%	2	6%	0	0%	0	0%	2	2%
PREPARING HOME MADE BREAD..	3	9%	4	12%	4	13%	0	0%	11	9%
GROW PLANTS.....	3	9%	4	12%	3	10%	2	6%	12	9%
STORAGE.....	29	88%	22	67%	24	80%	22	69%	97	76%
WASHING UP.....	5	15%	5	15%	2	7%	25	78%	37	29%
WASHING CARPETS.....	1	3%	2	6%	0	0%	0	0%	3	2%
WASHING WOOL.....	1	3%	0	0%	0	0%	0	0%	1	1%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

Figure 7.11 : The kitchen's loggia design in the four estates



NOTES  
 drying : drying the washing  
 plants : growing plants  
 bread : preparing home made bread  
 washing : includes washing carpets and wool  
 play : children's play



NOTES  
 drying : drying the washing  
 plants : growing plants  
 bread : preparing home made bread  
 washing : includes washing carpets and wool  
 Aid : sheep slaughter performed during the Aid celebration  
 couscous : drying couscous



**Figure 7.12 : The kitchen's loggia appearance in the four estates**



**a. The Bab Ezzouar estate**



**b. The Ain Nadja estate**



**c. The Garidi estate**



**d. The Ain Allah estate**

**Figure 7.13 : Inside the kitchen's loggia**



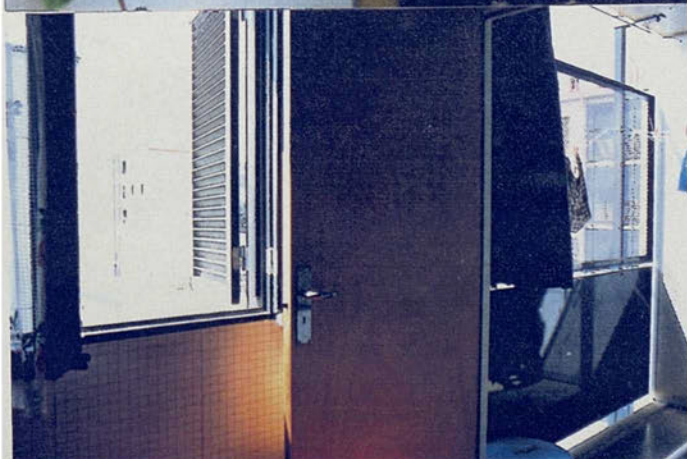
a. In the Bab Ezzouar estate:  
The loggia was criticised as being too narrow and too small



b. In the Ain Nadja estate:  
The loggia was criticised as being "like a prison cell"



c. In the Ain Allah estate:  
The loggia was criticised as being too small for drying all the washing



The loggia is screened for more privacy

fig 7.11c). One housewife stated that "it is difficult to dry sheets on their whole width in those loggias". Seventy six per cent of the 33 respondents on this estate reported using the windows for drying the washing. The facade concrete slabs were also used by housewives to dry the washing as well as to expose blankets and mattresses to the sun. The small proportion of residents who had a verandah with the living room and had not closed it, reported using it for drying their washing. However, a few cases were observed where, despite the large size of the verandah, the washing was still hanged on the facade because there were not enough of the sun's rays inside the verandah.

*b. The Ain Nadja estate loggia*

The design of the loggias in this estate was subject to heavy criticism on the part of the housewives. The kitchen's loggia was described as a 'prison cell' and housewives explained how difficult it was to dry the washing. Not only were the loggias not large enough to take all the washing, but their closed aspect prevented the washing from getting enough air and sun light, resulting in the washing being smelly and needing re-washing (see fig 7,13b). As the living room balcony was often also closed, the only alternative left was to dry the washing on the facade (see fig 7.12b). Drying the laundry thus took place outside both the living room balcony and the kitchen's loggia. Wires were put outside the kitchen's loggia (see fig 7.12b) and drying apparatus was hung outside the living room balconies.

*c. The Garidi estate loggia*

In this estate, the complaints about the loggias were of a different nature than those previously stated. They concerned mainly the problem of water infiltration from the upper floor loggias. The water evacuation from the loggia took place directly out of the facade and this caused problems to the loggias below where the washing which was drying was consequently stained, causing disputes and arguments between neighbours. However, it is important to note that none of the 30 respondents in this estate reported using the windows for drying their washing and in only a very few cases were they observed doing so during site visits (see fig 7.12c). The loggias on this estate seem to be the most satisfactory in terms of design and floor area (4.8 sqm), as compared with the loggias in the other estates.

*d. The Ain Allah estate loggia*

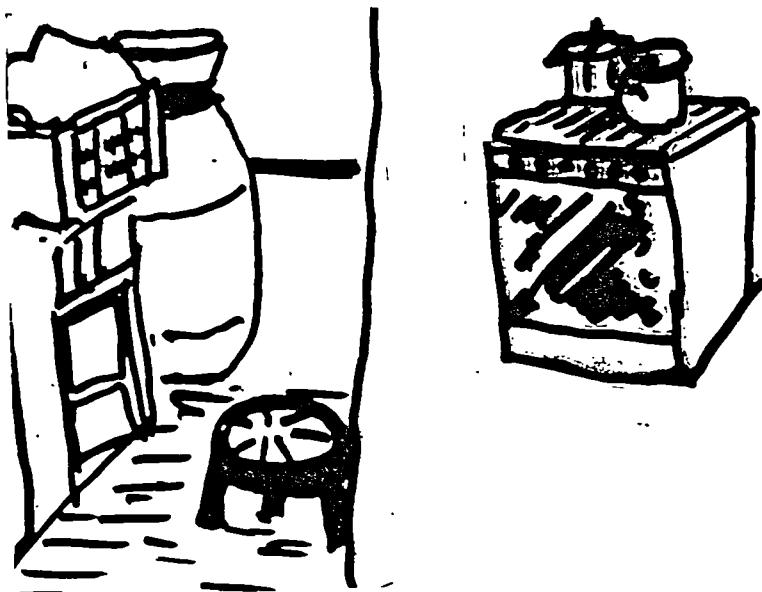
The availability of a washing basin in the loggias of the Ain Allah estate flats (see fig 7.13c) explains the fact that 78% of the 33 respondents on that estate used the loggia for their washing up as well as for their laundry. Some even placed their washing machine in the loggia, which facilitated the transfer of the laundry directly to the washing lines without crossing any other spaces. The kitchen's loggia was the only available private external space for all the flats in this estate. Some housewives complained about its size (3 sqm) as being too small. Those who did not want to use the windows for drying their washing, explained that they had to do the washing every day so that it did not store up and become impossible to dry in the loggia. The orientation of the loggias was also criticised by some housewives as they explained that the loggias were not getting enough of the sun's rays.

It seems that, apart from the Garidi estate, drying the washing is an important problem for the majority of the households and this is not only because of the sizes of the loggias but also because of their design quality and their orientation. The tendency of some architects to screen the loggia for more privacy or for preventing the housewives from drying the washing on the facade clearly causes a problem for the residents.

#### **7.4.2. Storage**

Storage was found to be one of the main uses of the loggias in the four estates. The lack of a storage space within the dwelling resulted in a lot of rarely needed items being stored in the kitchen loggia. However, as mentioned by one housewife, "things that are usually stored in the loggia are things that are complementary to the kitchen" such as the rubbish bin, the items necessary for cleaning, the spare bottles as well as other items needed for cooking such as vegetables, a spare bottle of gas and sometimes a traditional cooker called 'Taboona'(see fig 7.14a). When water was not available during the whole day, it was also stored in the loggia. In both the Ain Nadja and the Bab Ezzouar estates cases were observed where storage spaces had been built in the loggia and this was very helpful for the housewives to keep the loggia tidy. This suggests that some of the storage spaces should be designed within the loggias in future projects.

Figure 7.14 : Use of both the "modern" cooker in the kitchen and the traditional "taboona" in the loggia



### 7.4.3. Other Activities Held in the Loggias

Other different activities being carried out in the loggia were mentioned but in small frequencies. Most of them are traditional activities which are usually believed to be declining in importance and thus are not really taken into account in the design process of the dwellings.

#### *a. Cooking in the loggia*

Cooking meals was mentioned only by 5% of the 128 respondents in the four estates as taking place sometimes in the loggia. As stated previously, a traditional cooker was sometimes found in the loggia (see fig 7.14) and was used for preparing traditional dishes. Nine per cent of the 128 housewives reported preparing bread in the loggia using the 'taboona'. They explained that it was more comfortable to do this in the loggia because of the heat released by the traditional cooker.

#### *b. Washing carpets and wool*

It is frequently the case that housewives carry out an extensive cleaning of their flats during the summer. This usually includes washing carpets and blankets as well as washing the wool used for filling mattresses. Although housewives were not specifically asked about these activities, a few of them mentioned using their loggia for such purposes, especially when a water evacuation system was available within the loggia. However, for the majority, this activity was very difficult to carry out because of the lack of space. Some respondents in the Bab Ezzouar estate reported using the staircase landing for washing their carpets and cleaning the staircase afterwards. Those living on the ground floor mentioned using the external spaces adjacent to the block to wash and dry blankets and carpets. During site visits, different uses of the external spaces adjacent to the blocks were observed such as drying carpets as seen in the Ain Allah estate, and drying wool as seen in the Ain Nadja estate (see fig 7.15a,b).

#### *c. Drying couscous*

'Couscous' is a traditional North African dish based on semolina. Although it is manufactured and sold in shops, the majority of households prefer to prepare it at home. Its preparation requires large quantities of semolina, to which flour and water are added. The mixture is then rolled with the hands to form small grains,

**Figure 7.15 : Washing and drying the traditional carpets and the wool filling the mattresses**



a. Drying of the traditional carpet being carried out on the window



b. Drying of the mattresses' wool being carried out in the adjacent external spaces

which are passed through a certain number of sieves to control the size of the grains. The grains are then cooked several times with steam and are exposed to the sun to dry. The final dried product is stored in large quantities and is used weekly to prepare the couscous. The whole operation requires a lot of time and is usually carried out during the summer when drying is quicker. The drying operation requires large spaces on which the grains are exposed to the sun on large sheets. Because of the small size of the loggias, few respondents used them for drying their couscous. In some of the visited flats, couscous was found drying in an emptied room where the windows were kept open. In the Bab Ezzouar estate couscous was observed to be drying on the external spaces near the block entrances despite the dust and the need for watching it constantly.

*d. Slaughtering the sheep during the Aid celebration*

Another activity which was reported by two respondents in the Ain Nadja estate as being carried out in the loggia was the slaughter of the sheep during the Aid celebration. This religious ritual takes place once a year and consists of buying a sheep, for those who can afford it, and having it slaughtered on the 'Aid' day. Although the majority tend to carry out this operation in the external spaces adjacent to the blocks of flats, some use their loggias for the purpose, despite the difficulties involved. During the few days before the Aid day, sheep can be seen taken up to the fourth or fifth storey of the blocks of flats and kept in the loggias.

## **7.5. THE BATHROOM**

Despite the fact that all bathrooms in the four estates have a floor area around 3 sqm, Ain Allah was the only estate where respondents did not complain about the size and the design of their bathroom. Eighty one per cent of the 128 respondents reported using their bathroom for washing blankets and large items (see Appendix E, tab E.7). Those who did not have a washing machine said that they spent a considerable amount of time in their bathroom doing the washing and that it would have been more comfortable to have a window in the bathroom. Some respondents in the Bab Ezzouar estate went as far as to complain about the discomfort caused by the artificial light in the bathroom while they were doing their washing.

As mentioned in the previous Chapter, the lack of a window in the WC was heavily criticised. In the four estates both the bathroom and the WC were located



next to the kitchen for the convenience of bringing services together. It seems that a satisfactory arrangement would be to have both the bathroom and the WC openings onto the kitchen's loggia. As the bathroom was usually found to be used for the washing, having a direct access from the bathroom to the loggia would be very helpful for transferring the washing and ventilating the bathroom.

## **7.6. THE BEDROOMS**

### **7.6.1. Size Perception**

Only a third of the respondents in the four estates (34%) perceived the size of their bedrooms as being satisfactory (see tab 7.5a). The majority of them were mainly from the Ain Nadja and the Ain Allah estates, where the floor areas of the main bedrooms are about 12 to 13 sqm. Nearly half the 128 respondents (48%) perceived the size of their bedrooms as either small or very small. The smallest bedroom size was found in both the Bab Ezzouar and the Garidi estates, where at least one of the bedrooms did not exceed 10.6 sqm in area (see fig 7.16).

### **7.6.2. Shape and Furniture**

All the parents' bedrooms tended to be furnished in the same way (see fig 7.17). The standard 'modern' bedroom suite was found in the majority of the visited flats and consisted of a large double bed, a dressing table, two side tables and a large wardrobe. A baby cot was also found in some cases. The main bedroom suite is usually the first purchase of a young couple. As for the living room suite, a strong tendency was observed among respondents to have the same type of furniture items within their main bedrooms.

More than two thirds of the 128 visited housewives (77%), said that it was difficult to arrange the main bedroom furniture items and virtually impossible to have proper furniture items in the children's bedroom(s) (see tab 7.5b). Respondents complained about the difficulties encountered in placing the large wardrobe and some of them stressed the fact that they wanted to buy an "eight unit" wardrobe but could not because of the lack of space for it. The furnishing difficulties of the main bedrooms were mainly due to their small size, resulting in a very limited amount of circulation space in the room.

In the children's bedrooms it was the high occupancy rate which caused problems with furnishing. As expressed by some housewives, it was impossible to

**Table 7.5 : Respondents' perception of the bedrooms's size and shape convenience**

a. Bedrooms' size perception by estate

	ESTATE								row total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
SIZE										
Right size.....	2	6%	15	45%	7	23%	20	63%	44	34%
Only one is small.....	6	18%	1	3%	12	40%	3	9%	22	17%
Small.....	14	42%	17	52%	10	33%	8	25%	49	38%
Very Small.....	11	33%	0	0%	1	3%	1	3%	13	10%
column total.....	33	100%	33	100%	30	100%	32	100%	128	100%

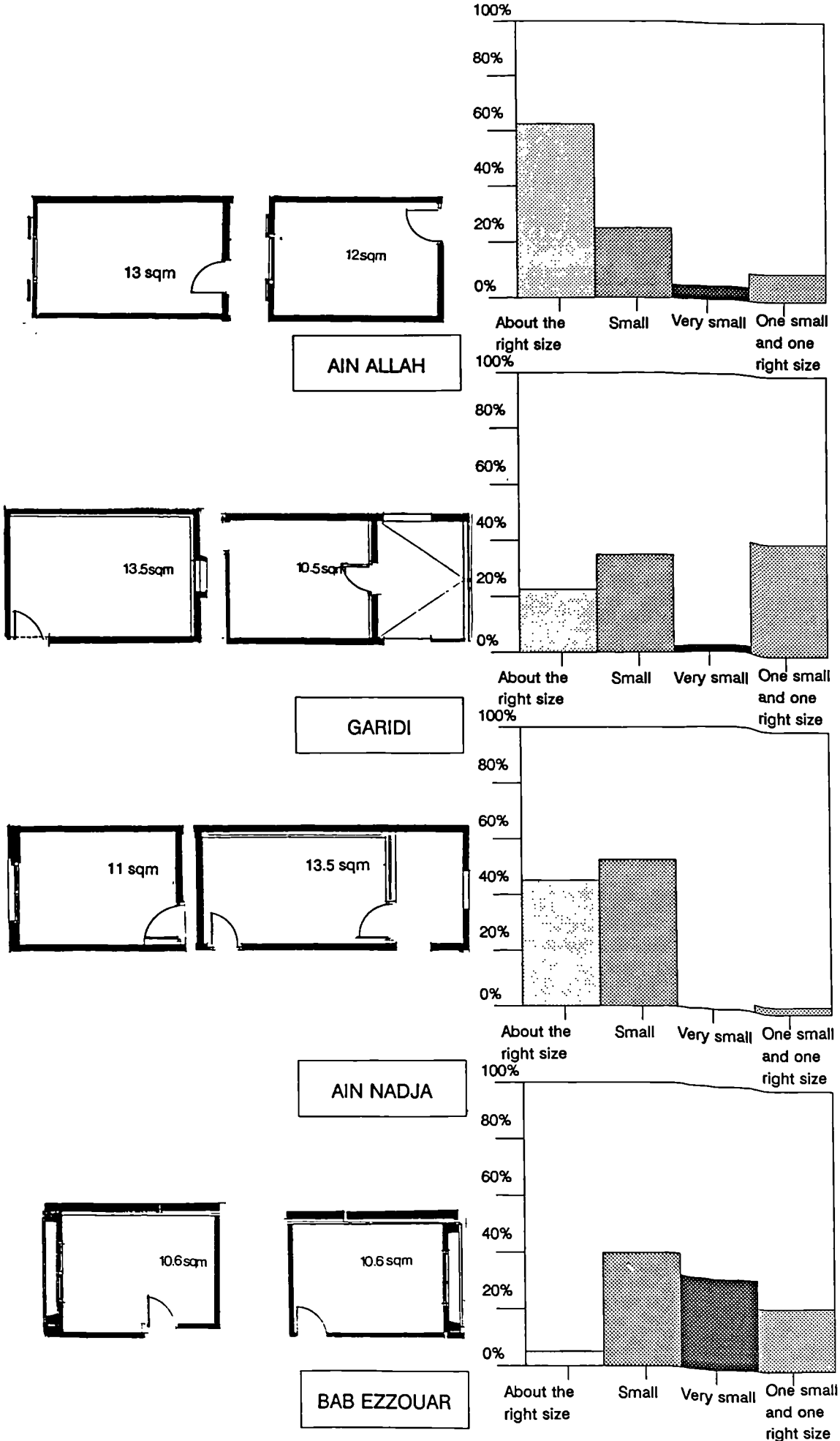
Category counts and column percents based on estates samples

b. Can you arrange the furniture in the bedrooms the way you want ?

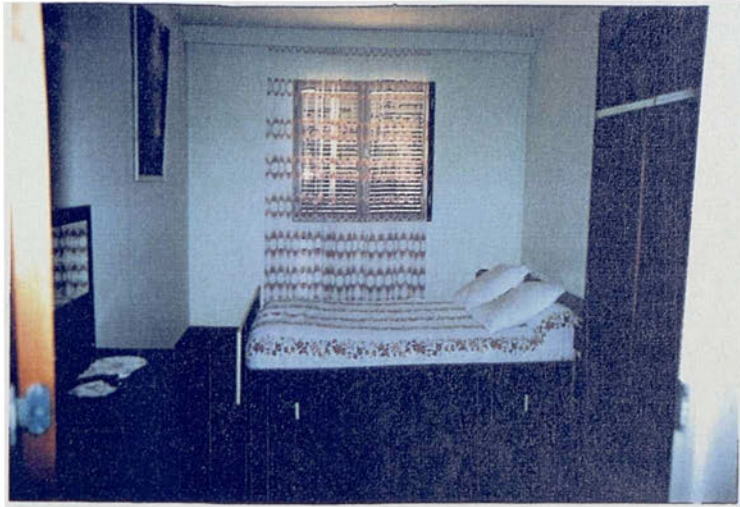
	ESTATE								row total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
FURNITURE ARRANGEMENT										
NO.....	30	91%	23	70%	28	93%	18	56%	99	77%
YES.....	3	9%	10	30%	2	7%	14	44%	29	23%
column total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category count and column percents based on estates samples

**Figure 7.16 : Perceived size of the bedrooms in the four estates**



**Figure 7.17 : The bedrooms' furnishing**



**a. Parent's bedroom  
in the Ain Allah  
estate:  
Such stereotyped  
furniture items have  
been found in almost  
all households**



**b. Children's bedroom  
in the Ain Allah estate:  
An occupancy  
example in a small  
household**

have a bed for each child because of the lack of space and the large number of children. This resulted in the living room being used for sleeping for almost half the sample (45%). In extreme cases, the children's bedroom furnishing was limited to a number of mattresses piled up in a corner of the bedroom.

In several cases, housewives complained about the rectangular shape and the narrowness of their bedrooms. It seems that more care should be taken when deciding on the proportions and shape of the bedrooms and that a floor area of 12 to 13 sqm is more likely to be satisfactory if the shape is close to a square.

### **7.7. ACTIVITIES DIFFICULT TO BE CARRIED OUT**

When respondents were asked whether there were any activities that were difficult to carry out because of the lack of space, the most frequently stated response was the difficulty of arranging certain items of furniture (see tab 7.6). Twenty seven per cent of the housewives expressed a high degree of frustration because they could not have the proper furnishing in the living room and/or the children bedroom(s). This was mainly due to the large size of the household, the limited number of bedrooms and the resulting high occupancy rate. The next most frequently stated activities were those which were originally easily carried out in the traditional courtyard, such as drying couscous as well as washing wool and carpets. Other respondents complained about the fact that they could not make any alterations, such as building wardrobes or extending their living room or even their kitchen or bathroom. Others would have liked to be able to extend their flat by adding to it an extra room, which would be used as a study room or a guests' room.

### **7.8. FLAT SIZE AND FLAT OCCUPANCY**

The size of the flats was found to be a major source of complaint in the four estates, as well as the most frequently mentioned reason for there being an intention to move.

Three roomed dwellings (two bedrooms and a living room) have been fixed by the Ministry of Housing as the standard size for the vast majority of the flats in the ZHUN estates (MUCH, 1979). The size of the dwellings is determined on the basis of an average household size of seven people. If the living room is included in the calculation of the occupancy rate per room, the theoretical occupancy rate would be slightly more than two people per room, which means that one of the

**Table 7.6 : Tasks difficult to carry out because of the lack of space**

	ESTATES								row total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
THINGS NOT ABLE TO DO NONE.....	5	15%	18	55%	12	40%	18	56%	53	41%
CONCEPTION ALTERATION:build wardrobes,extend the living room.....	4	12%	1	3%	4	13%	3	9%	12	9%
FURNISHING: cannot furnish the flat as wanted.....	15	45%	8	24%	6	20%	5	16%	34	27%
SPECIFIC ACTIVITIES:drying couscous,washing wool and carpets.....	7	21%	2	6%	2	7%	4	13%	15	12%
DECORATION: piercing walls	0	0%	0	0%	0	0%	2	6%	2	2%
HAVE AN EXTRA ROOM:study or guests room.....	2	6%	2	6%	6	20%	0	0%	10	8%
HAVE ITS OWN FLAT.....	0	0%	2	6%	0	0%	0	0%	2	2%
column total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents based on estates samples

rooms would have a real occupancy of three people. If it is not, the theoretical occupancy would be slightly more than three people per room which implies an occupancy of four people in one of the rooms. Whatever the theoretical occupancy, the real occupancy of at least one of the rooms will be greater than the actual figure.

### **7.8.1. Occupancy Rate per room in the Four Estates**

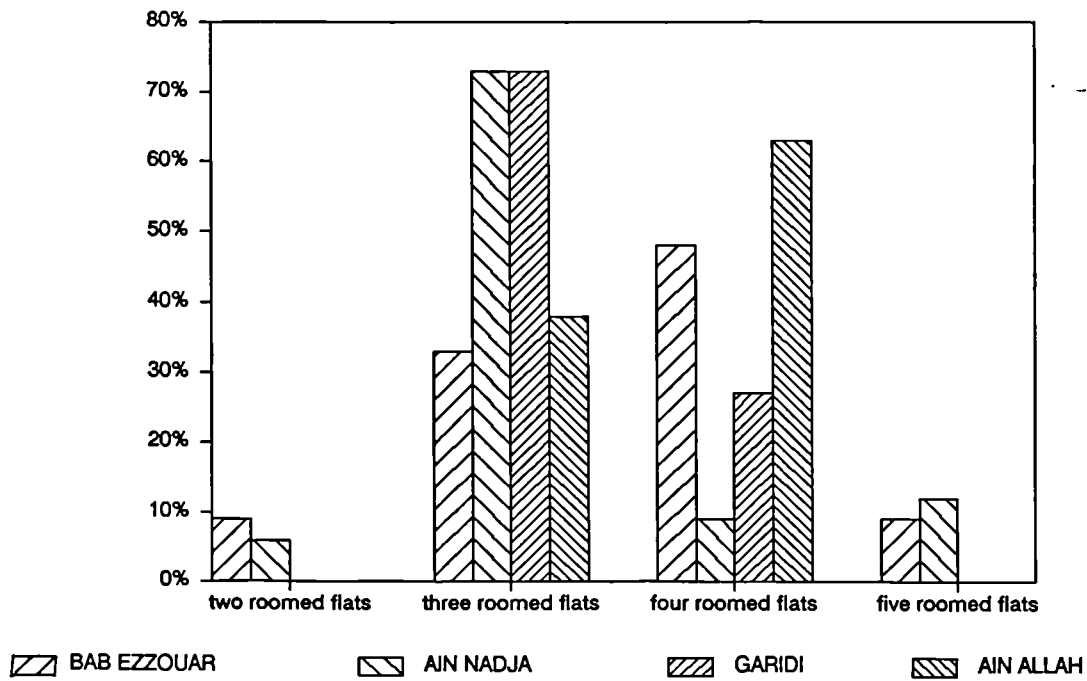
More than half the 128 studied dwellings (54%) consisted of three roomed flats (see fig 7.18b). However, a large proportion of the dwellings visited in both the Ain Allah and the Bab Ezzouar estates (63% and 48% respectively, see fig 7.18a,b) were of the four roomed type.

Only a quarter of the visited households consisted of small households of one to four people, for whom the standard size of the dwellings might be appropriate (see fig 7.19b). The majority, however, consisted of large households of five to nine people (45%) and ten to fifteen people (30%). This results in an occupancy rate of more than two people per room for half the sample and an occupancy of more than three people per room for 17% of the households in the whole sample (see fig 7.20). However, as explained above, the real occupancy figures are usually worse as the parents' bedroom cannot have an occupancy of more than two people unless there is a baby and girls and boys are generally separated when they are reaching maturity. The real occupancy of households of different sizes has been recorded by asking the housewives about the space use pattern for sleeping in the different rooms. Examples of the dwelling occupancy are presented in the end of the present Chapter (see figs 7.22-7.27). The difference between theoretical and real occupancy is very clear in the space use pattern layouts as large numbers are occasionally to be found sleeping in one room.

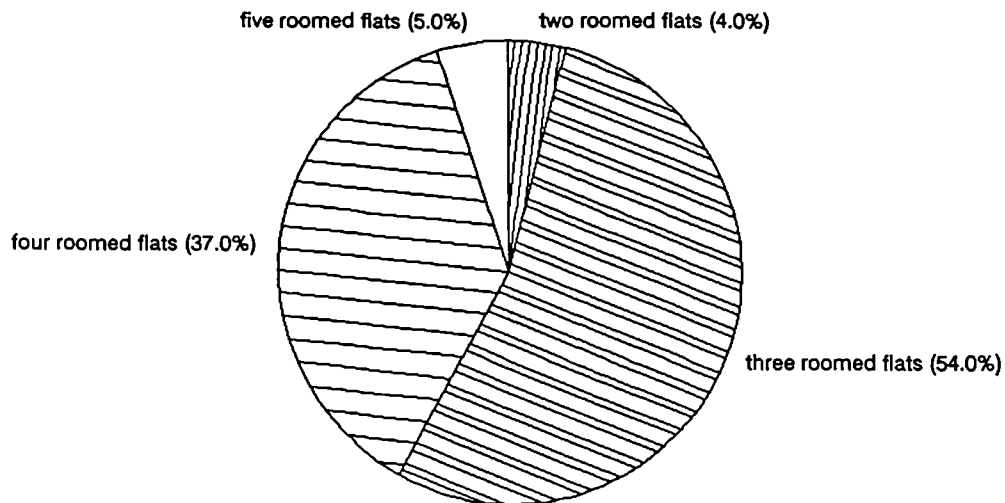
It seems reasonable to suggest that, for an average household of seven people, a typical three roomed flat is far from being the ideal size (see fig 7.23). Considering that the parents would use one bedroom and the children the other one, on reaching a certain age the children will need more space since the girls would be separated from boys. As there is no possibility for extending the flat, the living room is usually used as a sleeping area during the night. As mentioned previously, 45% of the 128 respondents reported using their living room for sleeping. In addition to the main bedroom, there should be at least two other bedrooms where families with numbers of children are being housed.

**Figure 7.18 : Dwelling size in the four estates**

**a. SIZES OF THE VISITED FLATS IN EACH ESTATE**



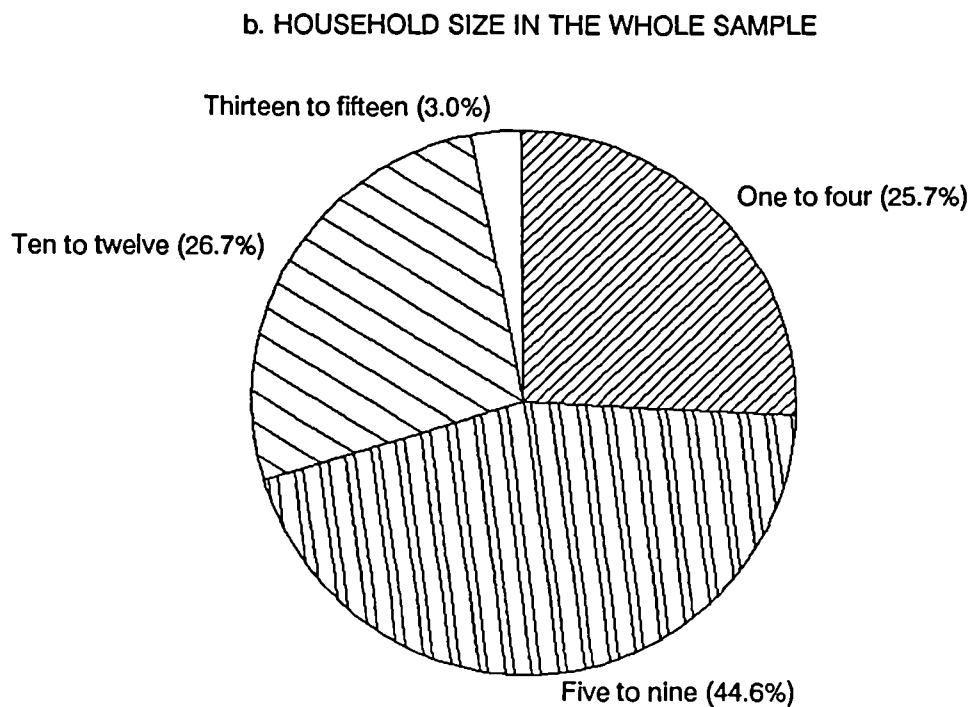
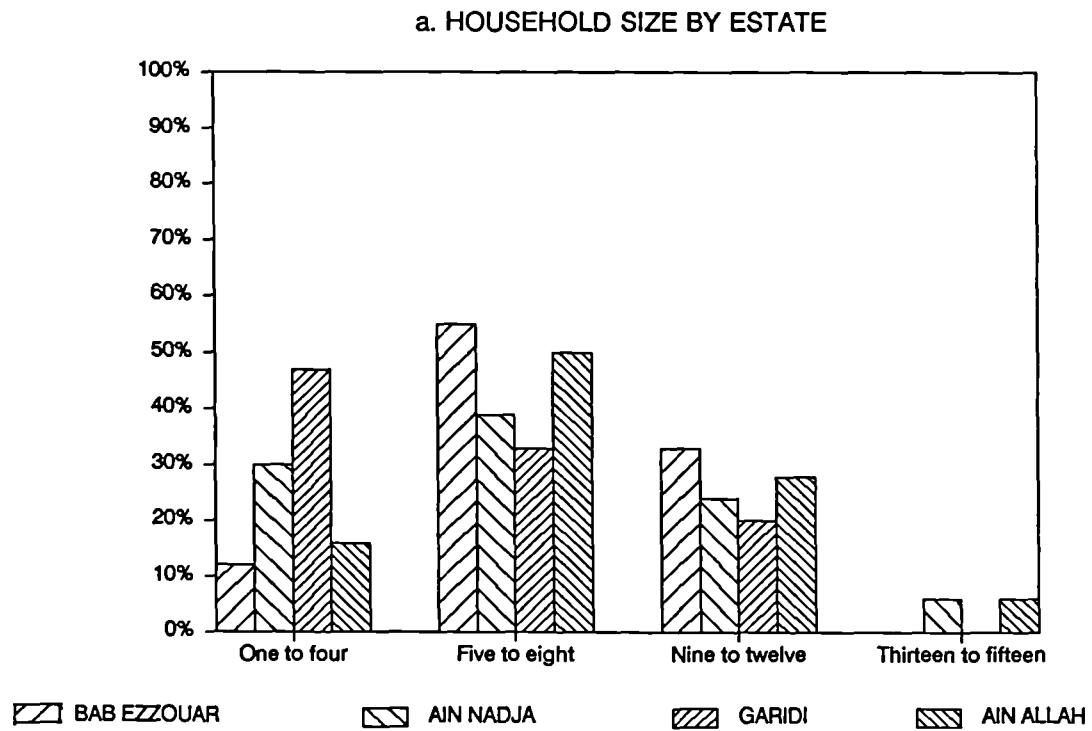
**b. SIZES OF THE VISITED FLATS IN THE WHOLE SAMPLE**



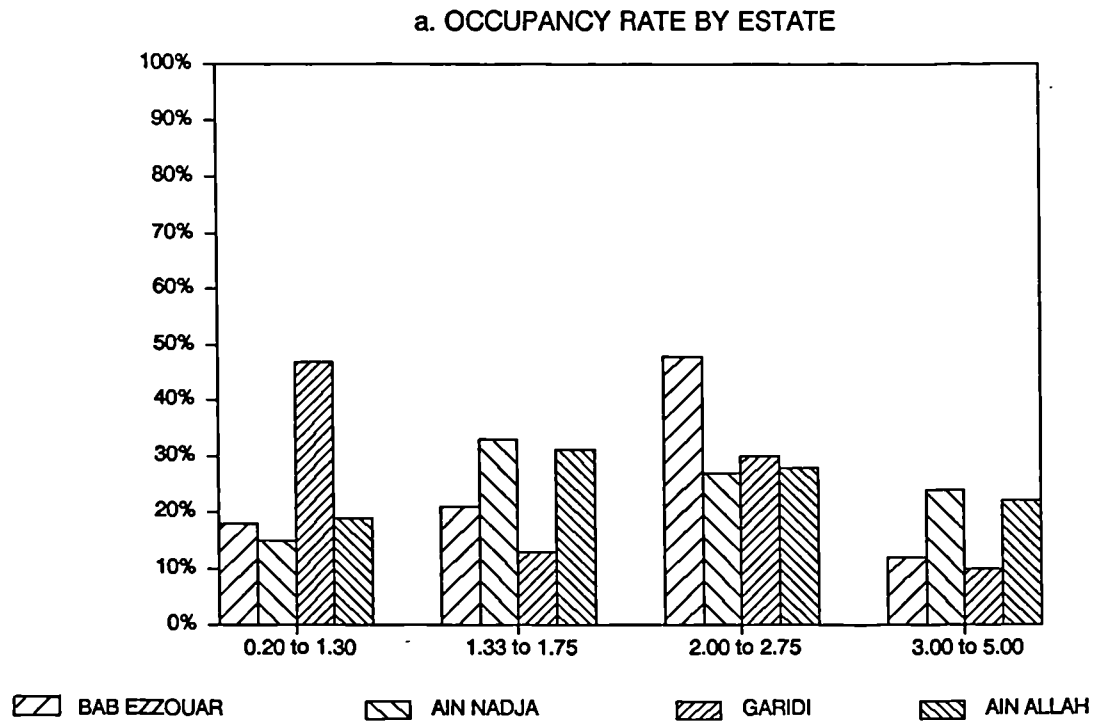
■ The living room is included in the number of rooms, for example, a three roomed flat is a flat with a living room and two bedrooms



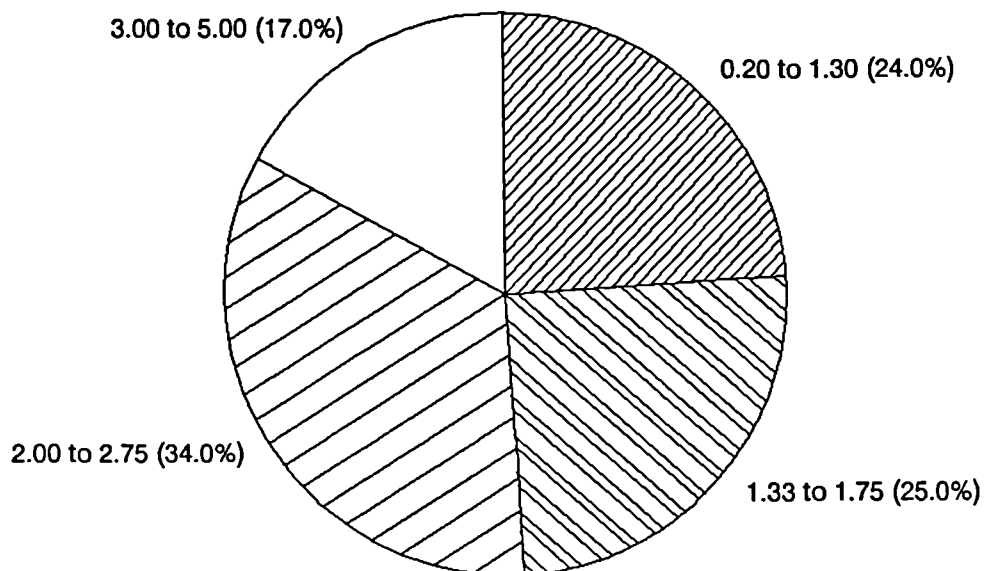
**Figure 7.19 : Size of the interviewed households**



**Figure 7.20 : Occupancy rate per room in the visited dwellings**



b. OCCUPANCY RATE IN THE WHOLE SAMPLE



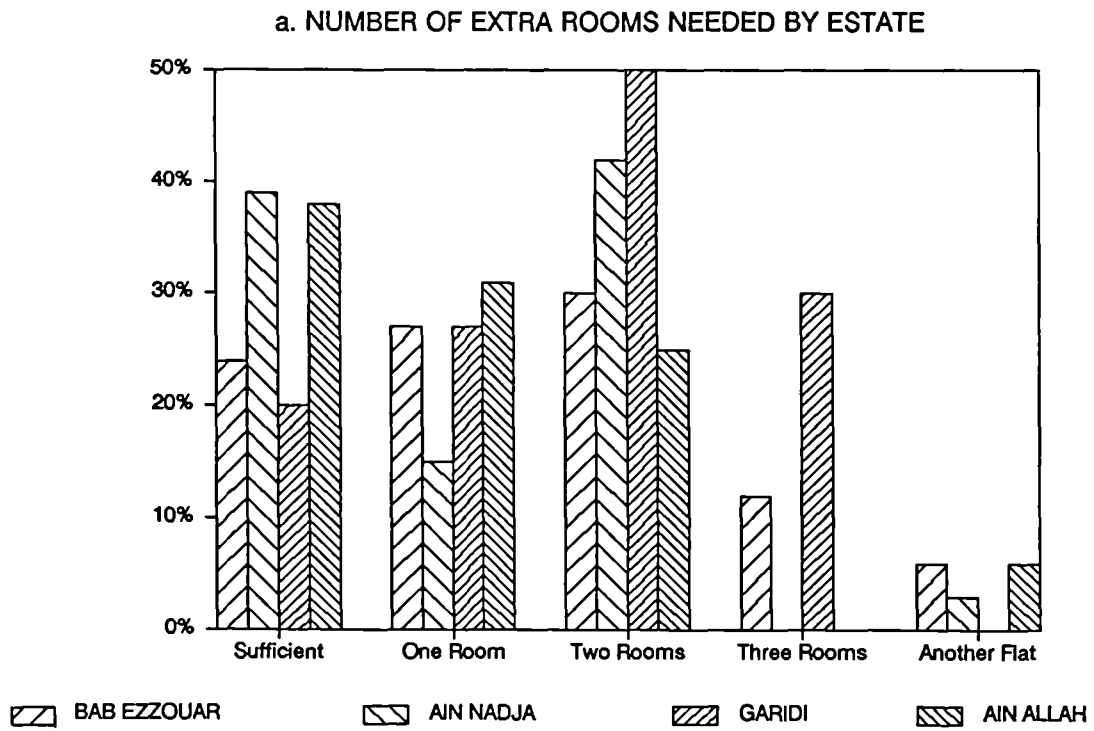
### **7.8.2. Number of Extra Rooms Needed**

In order to assess their perception of their dwelling size, the housewives were asked about the number of extra bedrooms they would need to feel comfortable. Only a third of the respondents said that their existing flat size was sufficient, whereas more than half the sample (62%) expressed the need for one or two extra bedrooms (see fig 7.21). Some respondents even stated that they needed another flat as they were sharing their present flat with a related household or couple. The expressed needs for extra bedrooms were not considered to be exaggerated but seemed rather realistic, as they were found to be significantly associated with the occupancy rate per room as well as with the flat size.

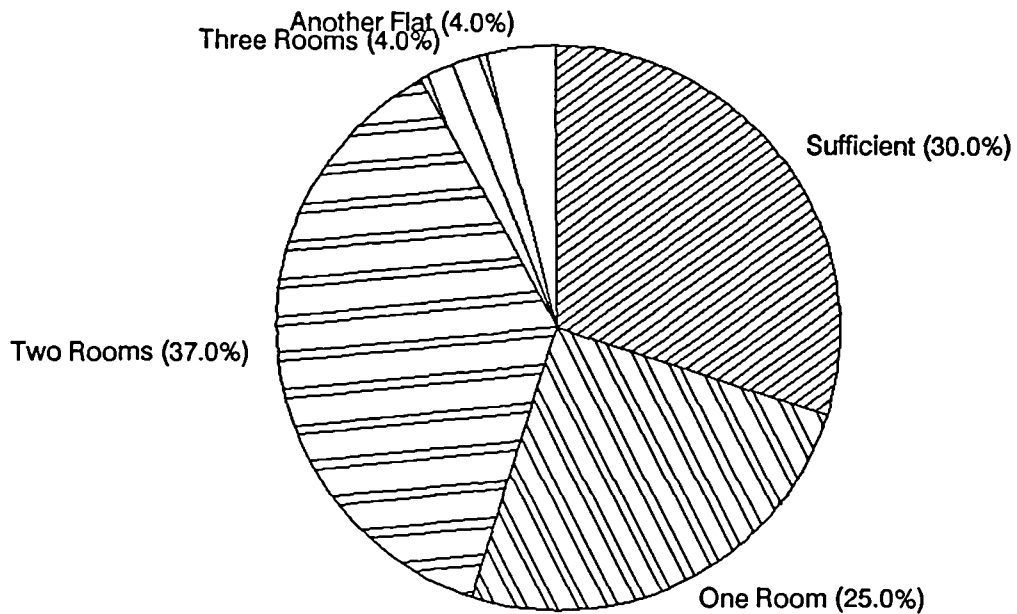
When considering the flat size in relation to the number of extra bedrooms needed, it appeared that 48% of the respondents would feel comfortable in a five room flat whereas almost a third of them would feel comfortable in a four room flat. Only 14 % were or would be satisfied with a three room flat. It seems reasonable to propose that three room flats should not be the size of the majority of the dwellings, as even a household of four people would need a third room to separate a son and a daughter when they reached a certain age. A five roomed dwelling seems to be more acceptable, though this would probably not be possible to provide for the majority of the households.

Bearing in mind that housing mobility is very restricted for the majority of households and that the housing shortage is worsening, it is important to find architectural solutions for mass housing dwellings that are more adaptive to the size and the changing conditions of the households. It seems appropriate to suggest that the majority of the dwellings should have at least three bedrooms and/or the possibility of extending the flat for a period of time by closing an available private external space. Although this might mean a higher cost for the urban mass housing dwelling, such arrangements would avoid problems in the future caused by a quick deterioration of the recently built housing stock. In fact, the desperate need for space for the majority of the households may result in the future in major alterations to the original design of the dwellings, as was pointed out in the previous Chapter. Moreover, the worsening acute shortage of housing may result in the near future in a significant proportion of the dwellings being occupied by extended households, as can be seen in fig 7.25. The impossibility of the marrying sons finding a flat results in their co-habitation with their parents, even if they have to occupy a kitchen which has been converted into a bedroom. This possibility was particularly mentioned by some respondents in the Garidi

**Figure 7.21 : Number of extra rooms needed by the households**



b. NUMBER OF EXTRA ROOMS NEEDED IN THE WHOLE SAMPLE



estate, where such changes of function were possible because of the floor areas of both the kitchens and the loggias. It seems that the small size of the dwellings as compared with the size of the households, combined with a growing shortage of housing, will result in a much higher need for space leading to a significant deterioration in the housing conditions of the majority of the households.

## **7.9. CONCLUSION**

Respondents' evaluation of the space provided in the main living areas of their dwellings, as well as the uses occurring in the different rooms, revealed the need for more space as well as the need for design improvement of the different parts of the dwellings. Responses showed that housewives were able to offer coherent and detailed criticism of the internal arrangements of their homes and that design faults tended to lower their opinion about their flats. A summary of the main findings is presented in table 7.7.

The evaluation of living room design showed that even a floor area of 20 sqm was considered as small by the majority of the respondents. The size perception of the living room was not only influenced by its actual size but also by the shape, the furnishing intended to be placed within it and the availability of a balcony. The analysis of the responses revealed that rectangular shapes where the difference between the width and the length was quite large tended to be disliked and that irregular shapes with several corners were mostly criticised because of the resulting difficulties involved in the placing of the furniture. Although the availability of a private external space adjacent to the living room was perceived as important for sitting out and having fresh air, the observed use of such spaces revealed that the need for space resulted in most of the balconies being closed off and used as an extension of the living room.

The examination of the way the living rooms and the bedrooms were furnished confirmed the hypothesis that there is a conflict between the tendency of residents to conform with modern ideas by using stereotyped modern furniture arrangements and the persistence of traditional space use patterns which were found in, for example, the childrens' bedroom. This room was frequently found to be also used as a living room with double purpose furnishing (see fig 7.23). The original living room was often found to be used as a reception area where the best furniture items were exhibited to impress guests and to claim a certain social status. Consequently, the living room was in some cases being under-used, despite

**Table 7.7 : Respondents' evaluation of the main living spaces within their dwellings -Main findings-**

Aspects investigated		Bab Ezzouar	Ain Nadja	Garidi	Ain Allah	Comments
THE LIVING ROOM	Size perception of the living room • Small • Too small	17.8 sqm 97%	21/17.5 sqm 85 %	18.5 sqm 83 %	20 sqm 44% 50 %	Most residents perceived the size of their living room as either small or too small even with a living room floor area of 21 sqm.
	Furniture arrangement • Difficult	76 %	48 %	43 %	47%	
	Sleeping in the living room • Yes	58%	45%	37 %	41%	A significant proportion of the respondents had their living room used for sleeping.
THE KITCHEN	Size perception of the kitchen • Right size • Small or too small	8.6 sqm 97%	7.8 sqm 55% 45%	12 sqm 100%	12 sqm 100%	It seems that a floor area of 12 sqm is the right size for a kitchen. Almost all residents reported having their meals in the kitchen. However, an important proportion reported not being able to sit all together and have their meals at the same time.
	Having meals in the kitchen • Yes	79%	70%	93%	97%	
	Sitting all together in the kitchen • Yes	45%	76%	83%	69%	
THE LOGGIA	Activities held in the loggia • Drying the washing • Storage • Laundry or washing up	42% 88% 15%	76% 67% 15%	80% 80% 7%	81% 69% 78%	The main uses of the kitchen's loggia is found to be storage and drying the laundry
THE BATHROOM	Bath used for laundry and washing blankets • yes	94%	91%	80%	59%	Respondents reported spending a significant proportion of their time in the bathroom washing clothes and blankets.

**Table 7.7 : Respondents' evaluation of the main living spaces within their dwellings -Main findings (cont.)-**

Aspects investigated		Bab Ezzouar	Ain Nadja	Garidi	Ain Allah	Comments
THE BEDROOMS	Size perception of the bedrooms	10.5 sqm	13.5/11 sqm	13.5/10.5 sqm	13/12 sqm	It seems that a satisfactory bedroom floor area is 12 to 13 sqm.  Most respondents complained about the difficulty in fitting the standardised furniture in the bedrooms
	<ul style="list-style-type: none"> <li>• Right one</li> <li>• Only one of the bedrooms is small</li> <li>• Small or very small</li> </ul>	75%	45%	23%	63%	
	Furniture arrangement					
	<ul style="list-style-type: none"> <li>• Difficult</li> </ul>	91%	70%	93%	56%	
FLAT SIZE	Flat size					The expressed need for extra bedrooms was found related to the size of the households
	<ul style="list-style-type: none"> <li>• Two rooms</li> <li>• Three rooms</li> <li>• Four rooms</li> <li>• Five rooms</li> </ul>	9%	6%			
		33%	73%	73%	38%	
		48%	9%	27%	62%	
		9%	12%			
	Extra room needed					
	<ul style="list-style-type: none"> <li>• Sufficient</li> <li>• One room</li> <li>• Two rooms</li> </ul>	24%	39%	20%	38%	
		27%	15%	27%	31%	
		30%	42%	50%	25%	
ACTIVITIES	Activities difficult to be carried out because of the lack of space					Traditional activities include making couscous, washing wool and carpets organising parties. Most of these activities used to be carried out either in the traditional living room or on the terrace
	<ul style="list-style-type: none"> <li>• Furnishing the flat properly</li> <li>• Traditional activities</li> </ul>	45%	24%	20%	16%	
		21%	6%	7%	13%	

the very high occupancy rate of five to six people in one of the bedrooms (see fig 7.27).

Responses with regard to the size of the kitchen revealed that a 12sqm floor area seems to be a satisfactory size. Responses also revealed that, if the shape of the kitchen has to be rectangular, the difference between the width and the length should not be too great and that the working surface should preferably be placed along the width of the kitchen rather than along its length. A kitchen shape that is closer to a square seems to be more satisfactory than a narrow rectangular shape.

The availability of a loggia adjacent to the kitchen seems to be most desirable as not only was it found to be complementary to the kitchen but it allowed, though with difficulties, the carrying out of certain types of activities that were originally carried out in the traditional courtyard. The availability of a wash basin as well as the possibility of having a storage space within the loggia seemed to be much appreciated by the residents. There seemed to be contradicting needs in relation to the degree of openness of the loggia. Whereas a certain degree of privacy was required for the housewife standing in loggia, the need for a good exposition of the laundry to the sun's rays seemed to be more important, as a significant number of complaints were raised regarding this matter. It is evident that more care should be taken in designing the loggias and that privacy should not be achieved at the expense of a good ventilation and a good exposition to the sun's rays. When considering the size of the loggias, it appears that a floor area of 3 sqm was perceived as too small whereas a floor area of 4.5 sqm was not subject to criticism. When considering the shape and location of the loggias, it seems that a long rectangular shape that allows a greater exposition of the washing to the sun's rays would be preferable and that the possibility of a direct access to the loggia from the bathroom would be extremely helpful, not only for a direct transfer of the washing to the drying lines but also for good ventilation of the bathroom thus ensuring a higher degree of comfort for the housewife while doing the laundry. In addition to such recommendations related to the design of the kitchen's loggia, there should also be a planned storage space available within the loggia itself.

The comments with regard to the size and shape of the bedrooms revealed that almost all households faced difficulties with furnishing the bedrooms because of their small size. Whereas most visited parents' bedrooms contained stereotyped furniture items that left very limited circulation space, the children's bedroom could not contain a bed for every child in several cases and a number of



mattresses were found piled up during the day and laid on the floor during the night (see fig 7.26). When comparing respondents' perception of the size of the bedrooms and their objective size, it appears that a floor area of 12 to 13 sqm is likely to be satisfactory. However, the number of bedrooms available within the dwellings (two bedrooms mainly) was found insufficient and an extra one or two bedrooms were desperately needed by the vast majority of the respondents. The need to separate mature boys and girls and to provide privacy for the couple would dictate three bedrooms as a desirable minimum, since households rarely move from one dwelling to another as their circumstances change.

Moreover, when a household is at the stage where the children are grown up, the children will frequently be still living at home. There might be either

- Reduction in household size due to children marrying and moving away

or

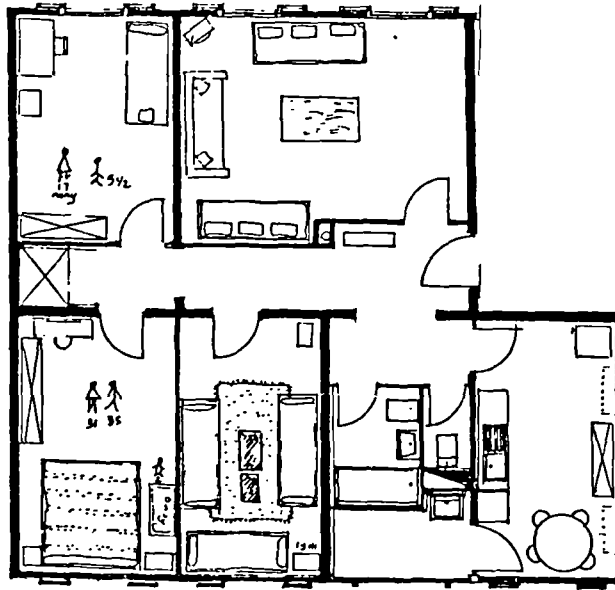
- An increase in the number of extended family households (see fig 7.25), as the parents may house a married son because of the housing crisis which results in difficulty for young couples in finding a flat.

If multi-occupancy after children marry is to be discouraged, alternative accommodation must be more easily available than at present.

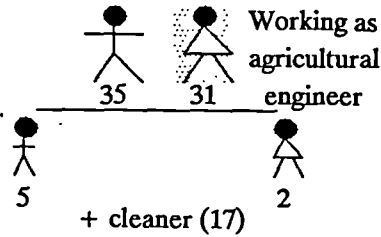
The main findings presented in this Chapter as well as those presented in the two previous Chapters, are re-examined in the concluding Chapter in order to make recommendations for the design of future housing projects. In order to find out which aspects of the investigated housing environments should be given priority for improvement, the next Chapter will investigate the relationship between residents' satisfaction and their perception of both physical and non-physical features of their housing environment. The priority should be given to those aspects that are most likely to promote a higher residential satisfaction.

**Figure 7.22 : Dwelling occupancy and space use by small households with working housewife**

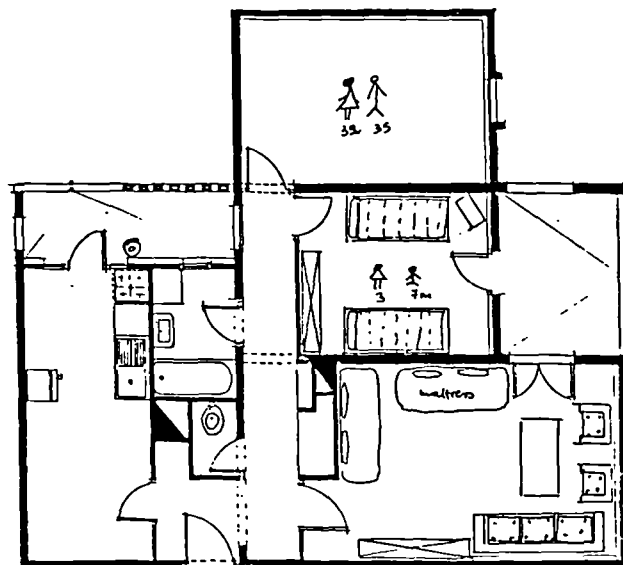
In the Ain Allah estate



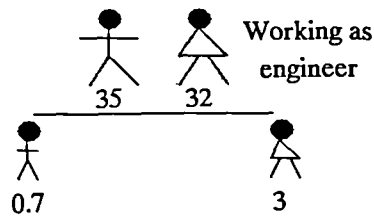
- Satisfaction: Fairly satisfied
- Likes the fact that the flat is modern
- Dislikes the apparent services on the wall
- Complaints: Cannot arrange the furniture the way she wants.
- Would have preferred square bedrooms and living room
- Cannot make alterations because of the prefabricated construction
- The loggia is too small and there is a feeling of suffocation inside the flat
- Comment: Despite the fact that the household is of a 'modern' type, the separation between the living space and the living room is traditional
- Aspiration : Villa



In the Garidi estate

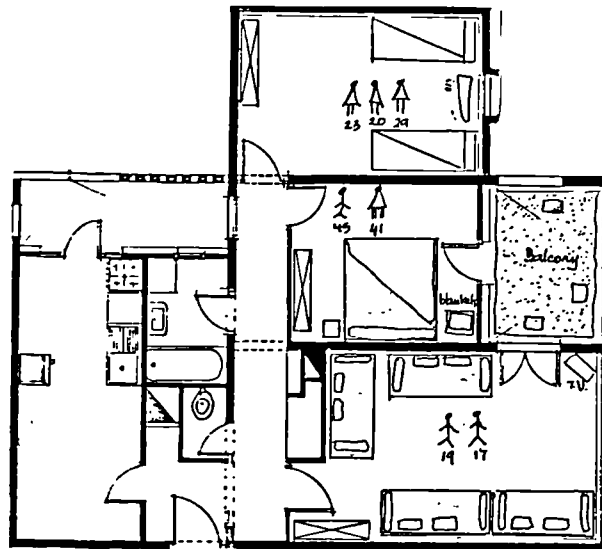


- Satisfaction : Fairly satisfied
- Likes : The availability of storage
- Dislikes : the size of the flat
- Complaints: The kitchen is too narrow and the bedroom too small
- Has enough storage space only because of the built-in wardrobes
- Would like an extra room
- Would have liked having a balcony for each room to expose blankets and sheets to the sun
- Alteration: Intend to close off the balcony
- Cannot have a second living room, traditionally furnished, because of the lack of space
- Aspiration: Small villa

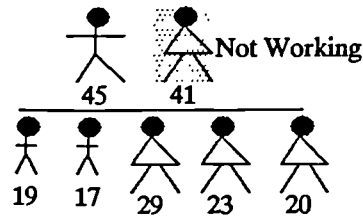


**Figure 7.23 : Dwelling occupancy and space use by households of seven people (Average size for Algerian households)**

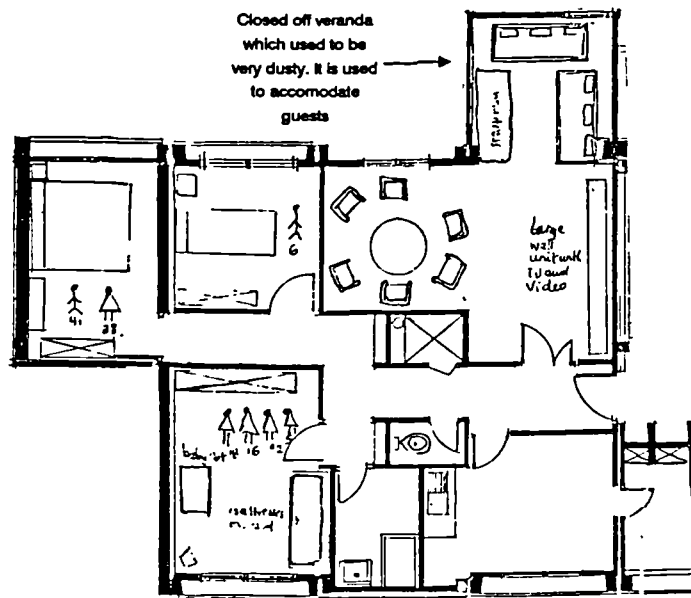
In the Garidi estate



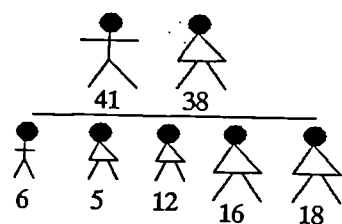
- Satisfaction: Fairly dissatisfied
- Likes : Nothing
- Dislikes : Flat size
- Complained about a lack of a bedroom for her sons and a lack of space for study
- Would like an extra room
- Intend to use the kitchen as a bedroom for her sons and use the loggia as a kitchen
- Intention to use the balcony as a dining area
- Finds the built-in storage space very useful for storing blankets
- Finds the bathroom too small
- Aspiration : Villa



In the Bab Ezzouar estate

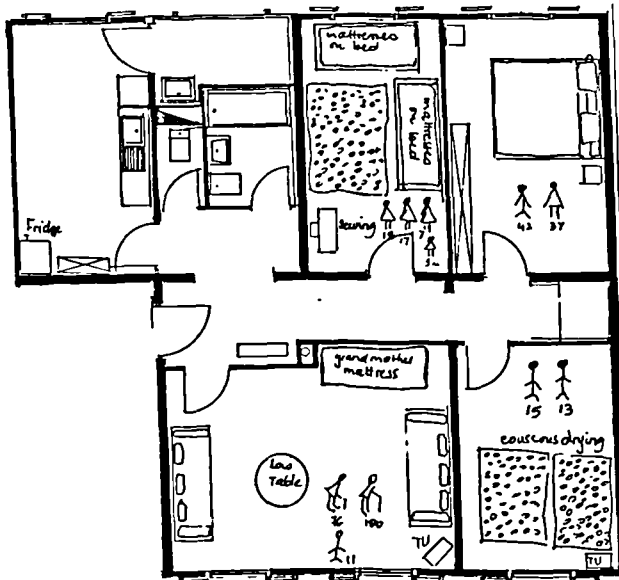


- Satisfaction : Fairly dissatisfied
- Likes : Nearness to husband's work
- Dislikes : The flat is too hot in summer and too cold in winter
- Complaints: Small loggia
- Prepares home-made bread in the loggia
- Removed the washing machine from the loggia because it flooded it
- Alterations: has built storage space in the loggia, closed off the living room veranda and is intending to change the fragile plastic doors
- Aspiration: Villa

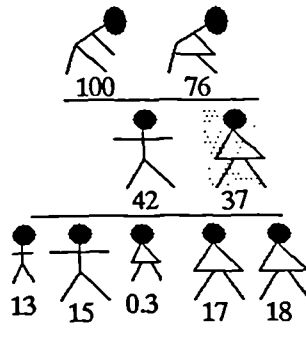


**Figure 7.24 : Dwelling occupancy and space use by households of nine people**

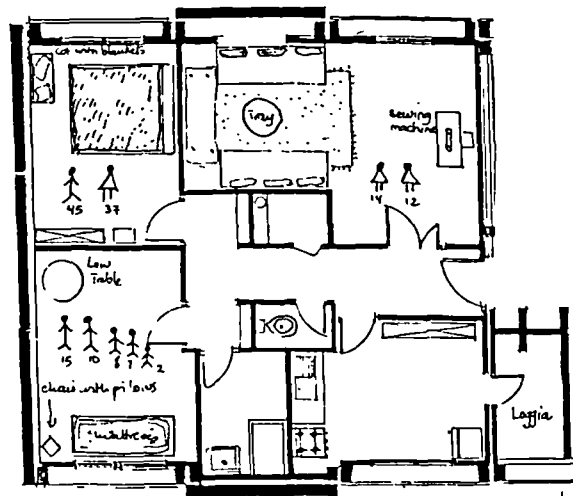
In the Ain Allah estate



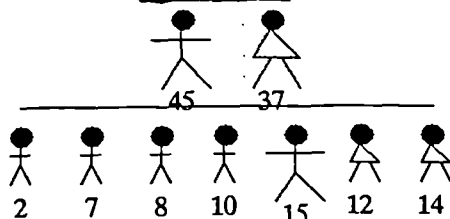
- Satisfaction: Very satisfied
- Used to live in the Casbah
- Likes : everything
- Complaints: lack of enough space in the loggia. Dries the washing on the windows
- Activities being carried out at the time of the visit: drying couscous in bedrooms and washing carpet in the loggia
- Aspiration : Same type of flat
- Comment: traditional furnishing, mostly matresses and carpets



In the Bab Ezzouar estate

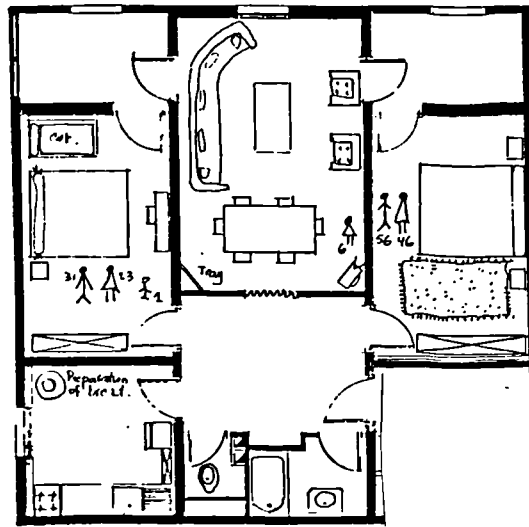


- Satisfaction : Fairly satisfied
- Likes : the kitchen and the large windows
- Dislikes: the size of the flat and the plastic material used for floor tiling
- would like an extra bedroom
- Complaints about not having the space for nice furniture items
- The adults have their meals in the living room using the traditional tray and the children have their meals in the kitchen
- The loggia is used for drying the washing only during winter
- Aspiration: Villa but limited financial means

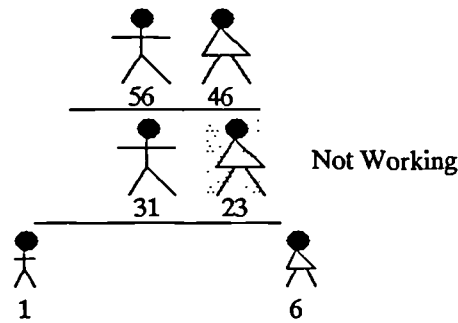


**Figure 7.25 : Multi occupancy in some of the visited flats**

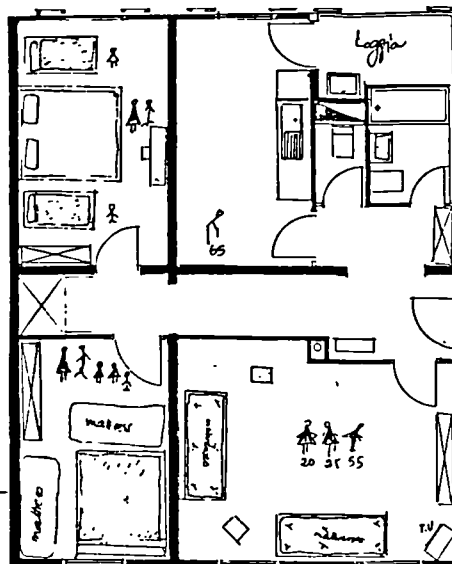
In the Ain Nadja estate



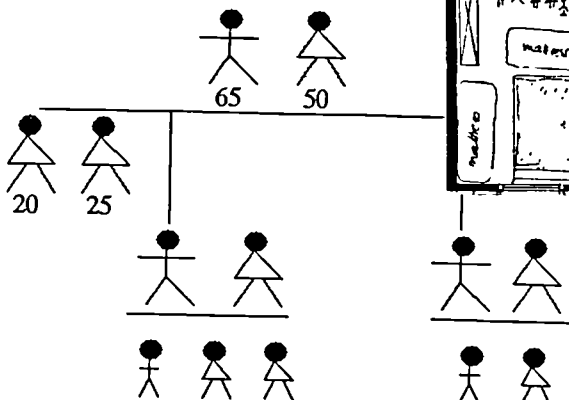
- Satisfaction: Fairly dissatisfied
- Likes : Nothing
- Dislikes : Lack of space
- Wants to build storage spaces in the balconies
- Complained about not being able to have a large wall unit in the living room
- Need for two extra bedrooms
- Wants to move because of lack of space



In the Ain Allah estate



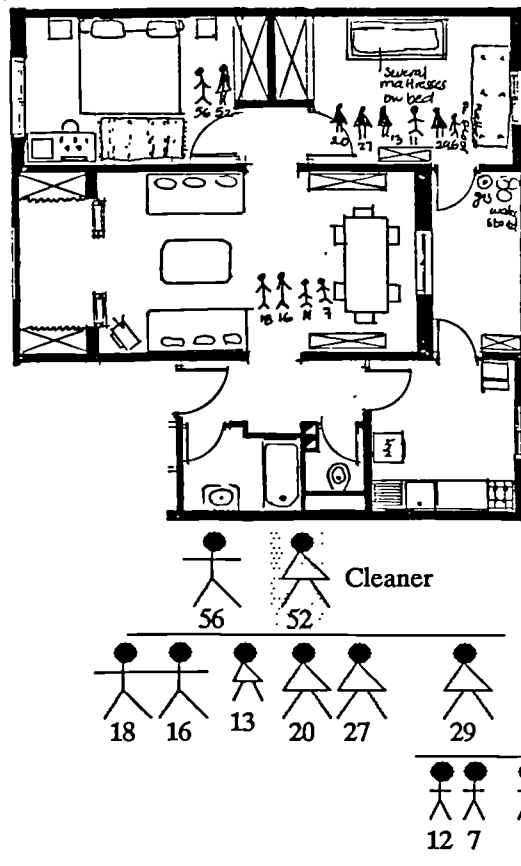
- Satisfaction : Fairly satisfied
- Likes : Tranquility and good neighbours
- Dislikes : Flat size
- Major problem: lack of space
- Aspiration: a large apartment
- Need for two extra bedrooms
- Wants to move because of lack of space



← The mother and her daughters sleep in the living room. The father sleeps in the kitchen

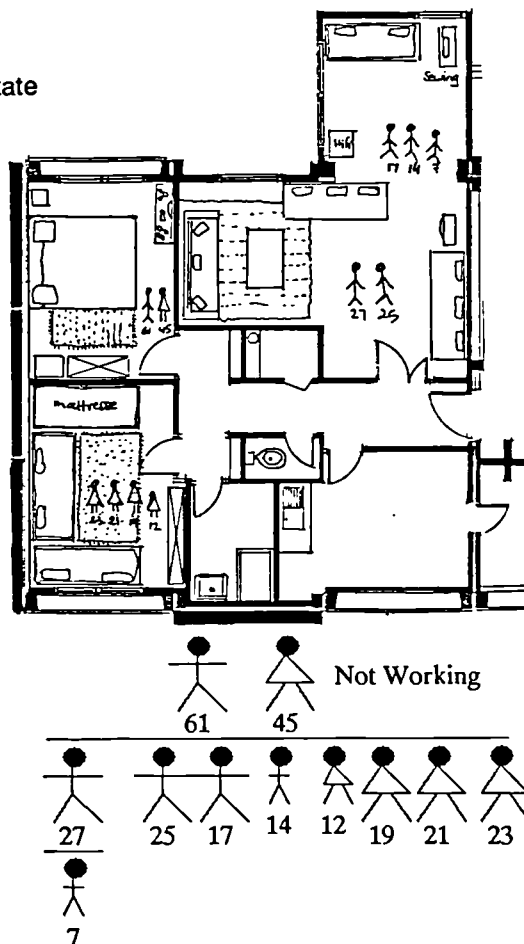
**Figure 7.26 : Dwelling occupancy and space use by large households (11 to 12 people)**

In the Ain Nadja estate



- Satisfaction: Fairly dissatisfied
- Likes: better than the previous flat
- Dislikes: The position of the living room
- Complaints: Bad neighbours, she was used to a better neighbourhood
- Had to separate the two parts of their living room's wall unit because they could not fit it in one space
- The bathroom is too small and lacking a window
- Do the laundry in the loggia
- Finds the availability of the built-in storage space very helpful
- Cannot prepare home made couscous
- Cannot make alterations to the flat because has no financial

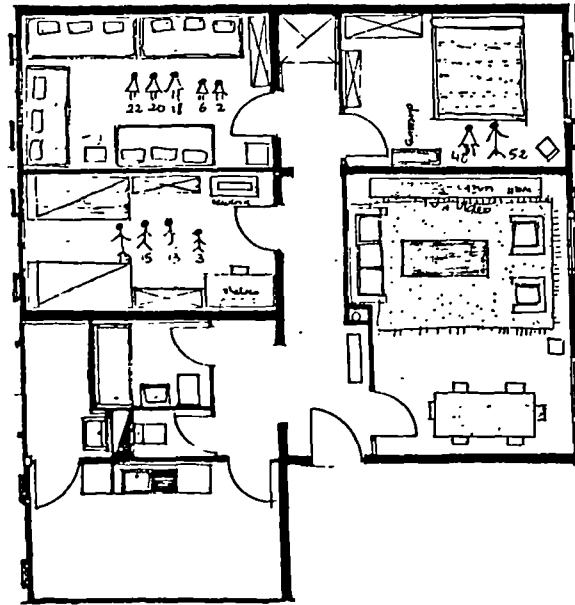
In the Bab Ezzouar estate



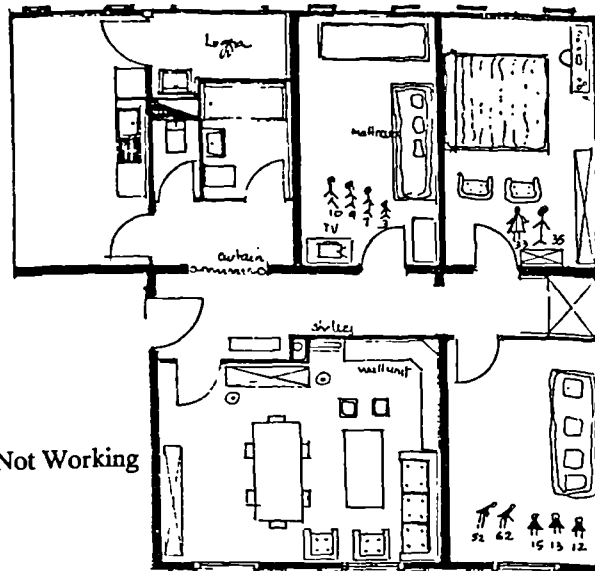
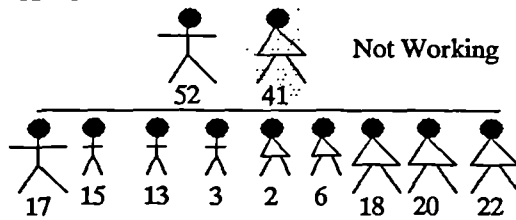
- Satisfaction : Mixed feelings
- Likes : Better than previous one
- Dislikes : The plastic material used for finishes and the small size of the flat
- Complaints: Poor fire security
- Can only have small furniture items because of the lack of space
- Alteration: Have closed off the veranda and used it as an extra bedroom which is too cold in winter
- Will change the plastic floor tiling
- Would like to have a loggia adjacent to the bathroom
- Aspiration: A larger house
- Would need two extra bedrooms for marrying eldest sons

**Figure 7.27 : Dwelling occupancy and space use by large households (11 people)**

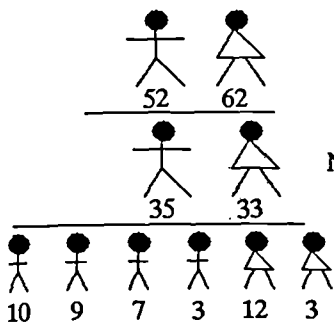
In the Ain Allah estate



- Satisfaction: Mixed feelings
- Likes : Better than nothing
- Dislikes : The prefabricated construction
- Complaints: Cannot arrange the furniture the way she wants.
- She would have liked two extra bedrooms
- Cannot have their meals all together in the kitchen. They have them in shifts
- Cannot do "big tasks" like drying carpets or drying couscous
- Comment: The living room is not used for sleeping despite the high occupancy in the bedrooms
- A clear separation is made between the 'modern' guests' room and the traditional multipurpose room used as living room during the day and a bedroom during the night
- Aspiration : Villa



- Satisfaction : Fairly Dissatisfied
- Likes : The spaciousness of the flat
- Dislikes : The small loggia and would have preferred a large balcony
- The washing machine has been placed in the loggia.
- Prefers to have the working counter placed on the width of the kitchen rather than on the length
- Cannot eat all together in the kitchen
- Comment: The flat has been furnished by the husband who was studying in Belgium
- Aspiration: Cannot find a larger and better flat than this



## Chapter 8 :INTERPRETING RESIDENTS' SATISFACTION IN THE FOUR ESTATES

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## **8.1. INTRODUCTION**

A descriptive evaluation of respondents' assessment of various attributes of their housing environment has been presented in the three previous Chapters. In the present Chapter an investigation is carried out to determine which of the several environmental aspects appear more likely to contribute in the promotion of the residents' satisfaction with their dwellings. The previously examined data were subject to a further analysis, which examined the relationship between two records of respondents' satisfaction and the variables measuring their perception of both physical and non-physical attributes of their housing environment (see Appendix F). Objective quantifiable features of both neighbourhood and dwellings which may be alterable through private or public effort and which seem strongly associated with residential satisfaction are thus identified.

## **8.2. RESIDENTS' SATISFACTION IN THE FOUR ESTATES**

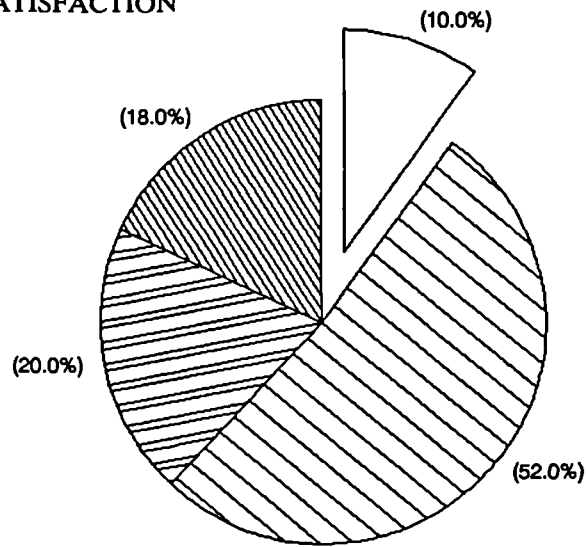
In order to evaluate the residents' degree of satisfaction with their dwellings, all the 128 respondents in the four selected estates were asked how satisfied they were with their present accommodation. Because any response to a question about satisfaction is bound to depend on the context in which the question is asked, including the question which immediately precedes it in the interview, the same question was asked twice, on different occasions in the interview, so that a more accurate record of the respondents' expressed satisfaction could be made. The first record of the respondents' satisfaction was made in the early stages of the questionnaire, after the respondents had answered general questions. The second record was made towards the end of the questionnaire after the respondents had assessed various detailed aspects of both their housing environment and their dwellings.

Despite the number of deficiencies in the design of both the external environment and the dwellings themselves that have been identified in the three previous Chapters, the overall recorded satisfaction from the two questions in the four selected estates was rather positive, as almost two-thirds of the sample, 62% of the 128 respondents, were either fairly satisfied or very satisfied with their dwellings (see fig 8.1).

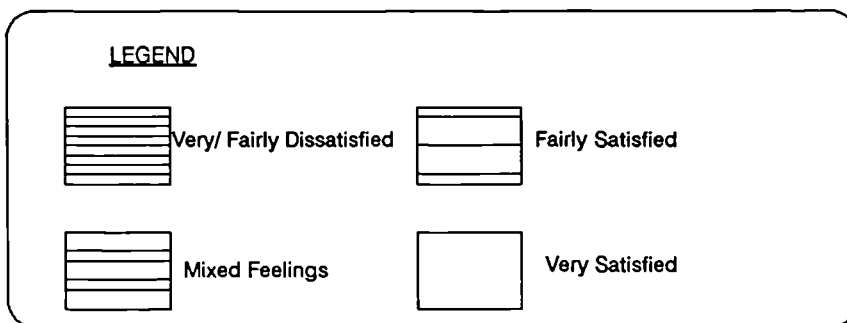
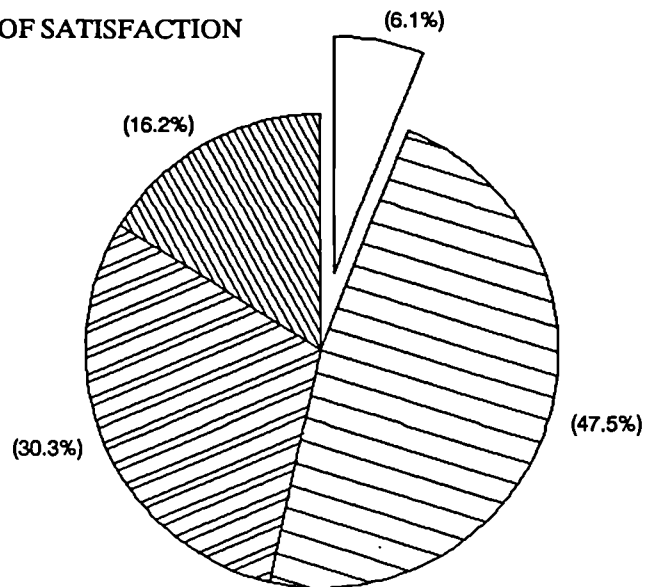
This somewhat unexpected result may partially be explained by the fact that other nonphysical factors may have a stronger influence on the residents' satisfaction than the physical characteristics of the dwellings. Among those non-physical factors may be the residents' awareness of the local housing crisis and

**Figure 8.1 : Degree of satisfaction among respondents in the whole sample**

**FIRST RECORD OF SATISFACTION**



**SECOND RECORD OF SATISFACTION**



their low expectations resulting from their experience of what might be available in the local housing market.

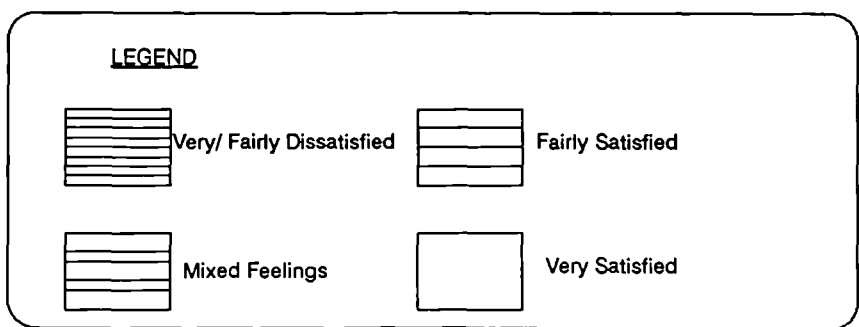
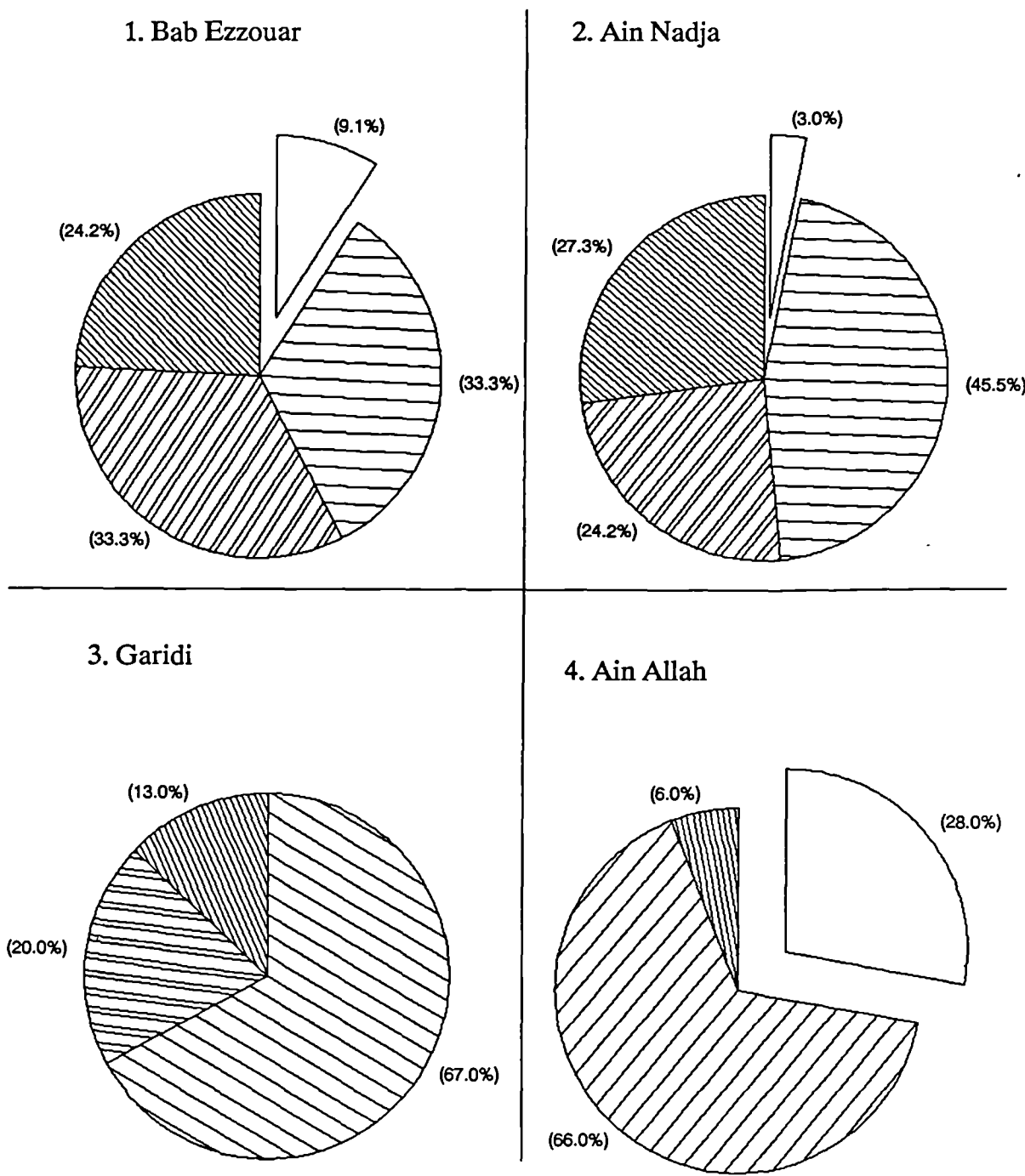
Marcuse (1971) suggested that "A person may express satisfaction with an incongruent situation out of a sense of fatalism and powerlessness to alter the situation". He explains that fatalistic resignation results in lower aspirations, higher tolerance and hence higher satisfaction. Rapoport (1985, p278) argues that people tend to express satisfaction with their home environment, and "misfits" may be "solved" via some of the other mechanisms and strategies such as modifying the home environment, changing life style and behaviour or changing expectations.

However, satisfaction was found to vary a great deal from estate to estate (see Appendix F, Tab F1,F2). Both records of residents' satisfaction show that the Bab Ezzouar and the Ain Nadja estates had a significant proportion of dissatisfied respondents, as more than half the 33 respondents in each estate had mixed feelings or were either fairly dissatisfied or very dissatisfied. The Ain Allah and the Garidi estates had a much higher proportion of satisfied residents with more than two thirds of the respondents being either very satisfied or fairly satisfied (see fig 8.2 for first record of satisfaction and fig 8.3 for the second record of satisfaction).

Differences between the two records of the 128 respondents' satisfaction were relatively small, the overall mean of the second record of satisfaction being slightly higher than the mean of the first (see fig 8.4), showing that respondents tended to be slightly less satisfied after they had answered all the questions. The reason for this may well be that some deficiencies in the environment become apparent or bothersome when they were pointed out. However, in the Bab Ezzouar estate respondents tended to be slightly less dissatisfied by the end of the questionnaire. It seems that the views were slightly less extreme in the second satisfaction record than in the first (see fig 8.4 and tab 8.1).

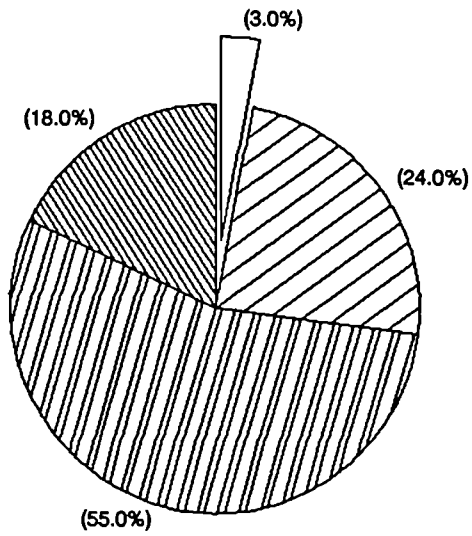
The two records of respondents' satisfaction were considered in relation to housewives' attitude and perception of the various attributes of their housing environment, with the aim being to attempt to identify the contribution of the various physical features of the dwellings to residents' satisfaction. It is appropriate to present first the main theoretical issues related to the interpretation of residential satisfaction before presenting the results of the data analysis.

**Figure 8.2 : First record of satisfaction in the four estates**

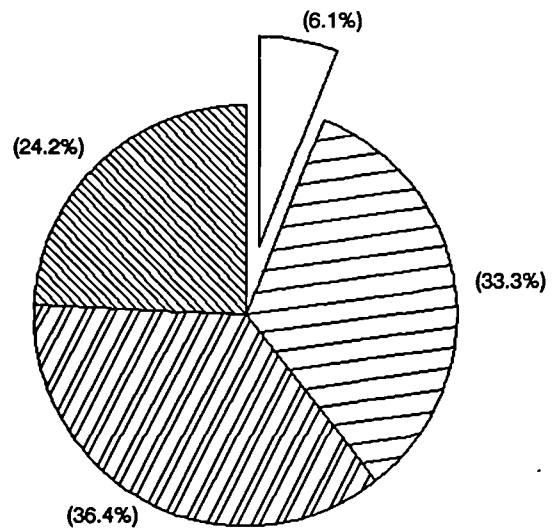


**Figure 8.3 : Second record of satisfaction in the four estates**

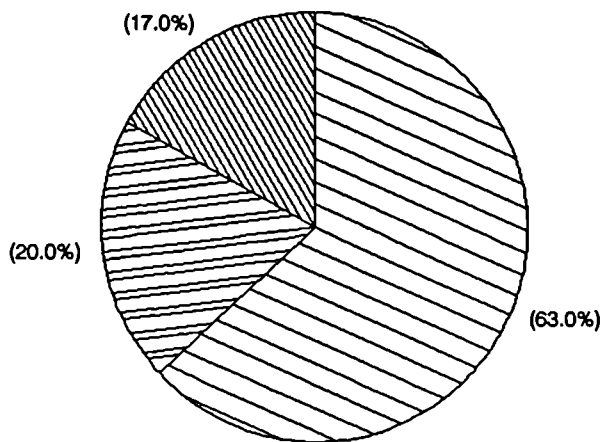
**1. Bab Ezzouar**



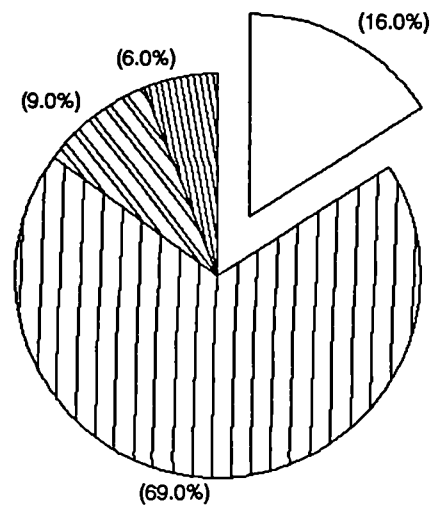
**2. Ain Nadja**



**3. Garidi**



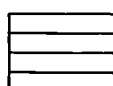
**4. Ain Allah**



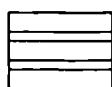
**LEGEND**



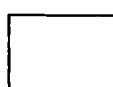
Very/ Fairly Dissatisfied



Fairly Satisfied

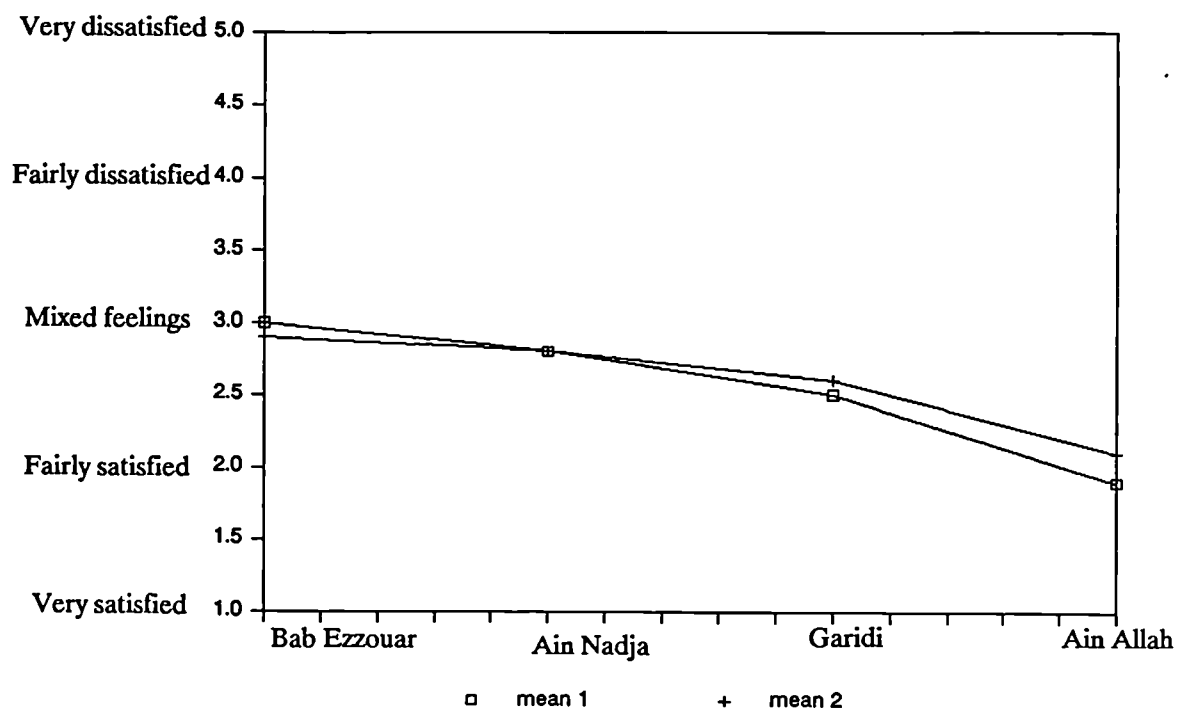


Mixed Feelings



Very Satisfied

**Figure 8.4 : Mean scores of the two records of satisfaction in the four estates**



**Table 8.1 : Degree of association between the two records of satisfaction**

	SECOND DEGREE OF SATISFACTION								Row Total	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELINGS		FAIRLY/VERY DISSATISFIED			
<b>FIRST DEGREE OF SATISFACTION</b>										
VERY SATISFIED.....	5	63%	5	8%	2	5%	1	5%	13	10%
FAIRLY SATISFIED.....	3	38%	46	77%	16	41%	2	10%	67	52%
MIXED FEELINGS.....	0	0%	6	10%	16	41%	3	14%	25	20%
FAIRLY/VERY DISSATISFIED..	0	0%	3	5%	5	13%	15	71%	23	18%
Column Total.....	8	100%	60	100%	39	100%	21	100%	128	100%

Category counts and column percents

### 8.3. INTERPRETING RESIDENTS' SATISFACTION

#### 8.3.1. Theoretical Issues

Residential satisfaction may be considered as the response of residents to their residential environment, the positive or negative feeling that the occupants have for where they live. It is the amount of contentment experienced by individuals relative to their current housing situation. As such, it is a representation of the affective response of people to the social-physical environment which they inhabit.

Previous studies on satisfaction (such as Francescato et al, 1979) suggest that there is a consensus that residential satisfaction is related to three sets of factors:

1. objective characteristics of the housing environment
2. objective characteristics of the residents (such as age, gender, previous housing experience)
3. the subjective beliefs of the residents, their perceptions and aspirations.

The precise nature of linkages between those three components is, however difficult to define (Weidemann and Anderson, 1985). Different users assign different priorities to various properties. It is not clear to what degree the variations in subjective response are a function of personality, cultural or social variables among users. There is still no general agreement on what features of the built form produce which degree of satisfaction or dissatisfaction among which sub-cultural group.

The theoretical notions about the interaction between man and the built environment are still somewhat primitive. The fact that the mechanisms by which the environment influences people are by no means precisely known means that investigators have to take at face value residents' statements of satisfaction. The physical environment is part of a vast interacting system of social and physical components, none of which is pure cause or pure effect. The position may be taken that the relation between the physical environment and satisfaction is not direct but mediated by various processes (Rapoport, 1977).

Theoretical models have been proposed in order to understand the relationship between the three components of residential satisfaction and the



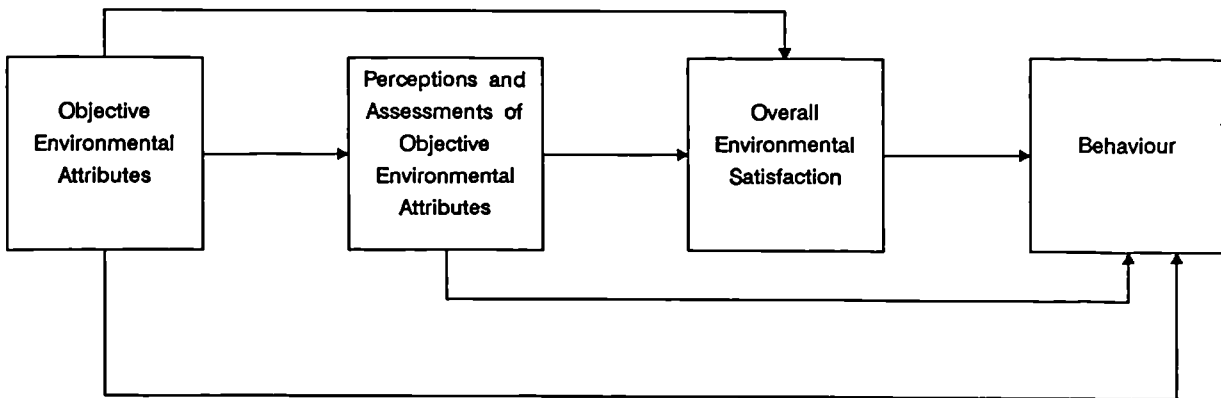
scored satisfaction. Weidemann and Anderson (1985) presented an interesting review of the different proposed models for interpreting residents' satisfaction. Marans and Spreckelmeyer (1981) proposed a model that indicates causal linkage between the different components (see fig 8.5). In fact, most theoretical and empirical research postulates such causal relationships. However, various authors have been suggesting that these relationships may indeed be more complex and reciprocal than previously thought. In the approach taken by Altman (1973) as well as others, it is thought to be likely that any variable can influence any other variable. Therefore the conceptual model in fig 8.6 is shown with lines (rather than arrows) linking the various components. This model shows an explicit linkage of affective attitudes (satisfaction in this case) to behaviour via behavioural intentions. The behaviour or behavioural intentions that are associated with satisfaction are either altering the dwelling or moving from it. The model also shows that characteristics of the respondents are an important component and these characteristics include both personality and socio-demographic characteristics. The extension of this model (see fig 8.7) shows that within each of the levels of the physical environment (room unit, block, neighbourhood, community) there are social relationships.

It is important to note that the bulk of the current empirical and theoretical approaches still reflect a general sense of causality when moving from left to right in this diagram. The process of overall residential satisfaction may be modelled with presumed causal paths emanating from objective independent variables passing (sometimes) through subjective independent variables and ultimately having an impact on the dependent variable measuring satisfaction. There is little reason to expect that only a few types of objective attributes or beliefs will sufficiently explain the complex human response of residential satisfaction. Research examining more components at one time can provide a better test of the explanatory power of the model.

### **8.3.2. Analytic Techniques**

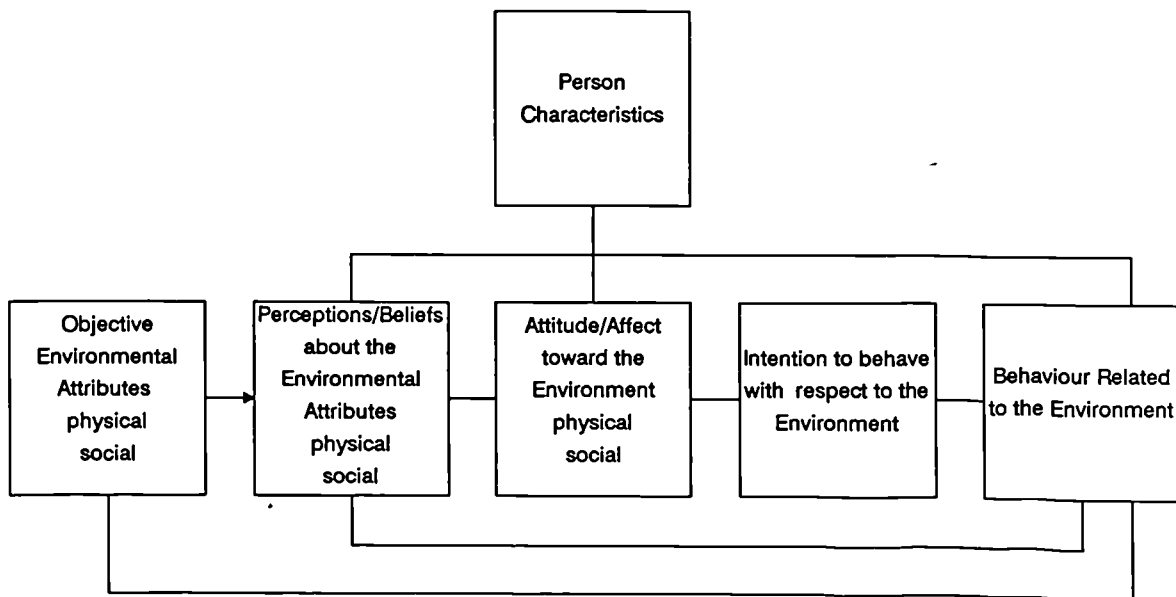
Bearing in mind the complexity of the relationship between residential satisfaction and the residents' perception of the various features of their housing environment, the exploratory nature of the present study does not allow the use of very advanced statistical procedures in order to test the complex relationships between satisfaction and more than one variable at a time. Taking into consideration the extended conceptual model in fig 8.7, the present study concentrates mainly on the two last levels of the model, that is satisfaction with

**Figure 8.5 : Basic conceptual model of residential satisfaction**



Source: Marans and Spreckelmeyer (1981)

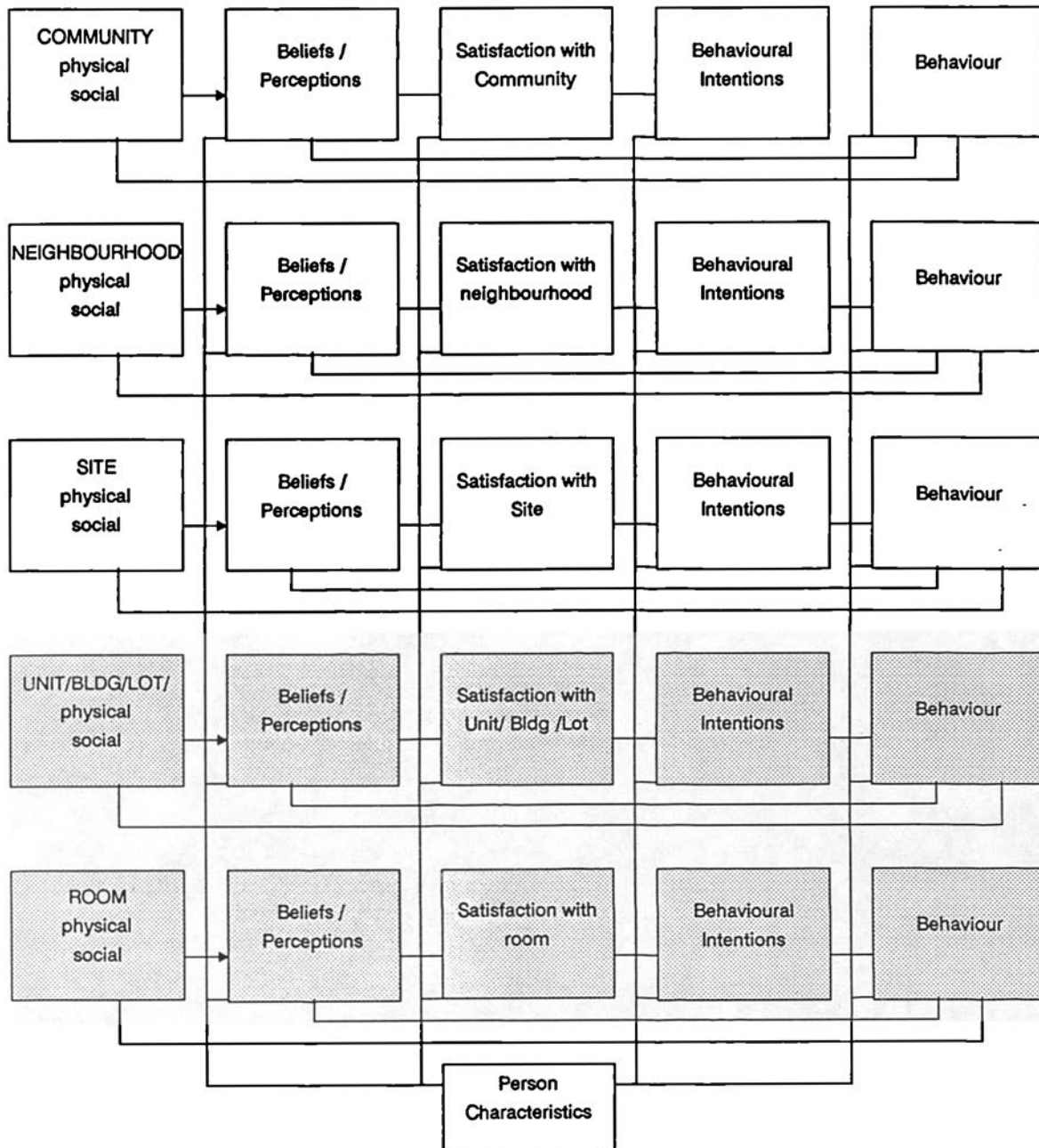
**Figure 8.6: Integrated conceptual model**



Source: Weidemann and Anderson (1985)

**Figure 8.7: Extended conceptual model of satisfaction**

(Includes levels of scale, and social components of the residential environment)



Source: Weidemann and Anderson (1985)



MAIN LEVELS EXAMINED IN THIS WORK

the dwelling unit and the different spaces within the dwelling. Data analysis has been used to explore the relationship between 45 variables and residents' satisfaction with their dwellings by crossing each of the 45 variables with the two records of satisfaction.

The data analysis was carried out using the PC version of the SPSS statistical package (SPSS, 1988) available in the Computing Services of Sheffield University.

The respondents' satisfaction was treated as a criterion variable in the conceptual model in fig 8.7, where variables measuring physical, social and contextual attributes of the residential environment, as well as the characteristics of the respondents, are used as predictors of satisfaction. Various hypotheses in the models are tested to examine empirically which of the attributes of the residential environment have either direct, indirect or no relationship with satisfaction.

*a. Test of statistical significance: Chi Square*

After having produced a considerable number of contingency tables and selected the ones that appeared to show a pattern of relationship between satisfaction and the variable being tested, an important question remained, which is whether the pattern that emerged was due to chance fluctuation or whether it could be considered as a reliable finding. Chi Square is a way to measure the significance of an association between two variables. It tests whether the null hypothesis is true or false, that is whether the two variables examined in a contingency table are independent of each other in the population. If the null hypothesis is in fact not true, then the sample association reflects some actual degree of association in the population. From the Chi square value a 'p value' is worked out in order to estimate whether the relationship between two variables is statistically significant or not. It is the generally accepted convention that a null hypothesis is not rejected unless there is less than 5% chance that it is in fact true, that is  $p < 0.05$ . The significance level  $p$  varies from 0.10 to 0.001. In the present study the null hypothesis is rejected at  $p$  value smaller than 5%. Another way of saying this is that a null hypothesis will not be rejected unless there is at least 95% chance that it is false.

However, a relationship between two variables can be significant in statistical terms without being either strong or important. Chi Square is not useful as a measure of the magnitude of an association. A significant result means only that

the relationship in the population is unlikely to be zero. For nominal and ordinal data, coefficients measuring the strength of an association between two variables are derived from the Chi Square value. The measure of association used in the present study is described below.

*b. The Contingency coefficient*

The contingency coefficient  $C$  is a long established and widely used index of relationship where larger than  $2 \times 2$  tables are involved.

The contingency coefficient  $C$  is derived from the Chi square and measures the strength of an association in two variables. Its value ranges between 0 and 1 but can never reach the value of 1. The nearer to 1 is the  $C$  coefficient, the closer is the association between the two considered variables.

After a lengthy process of testing, examination and re-testing, a small number of tables was finally selected for discussion. The selection was made on the basis of the significance level ( $p < 0.05$ ) as well as the magnitude of the relationship ( $C$  Value) between the variable measuring one of the attributes of the housing environment and the two records of the expressed satisfaction that have been described in section 8.2.

The variables that have been found related to respondents' satisfaction are presented in the next sections according to whether they have been found associated with both records of dwelling satisfaction or only one of the two records as well as according to the strength of their relationship to satisfaction. The results are summarised in tables 8.2, 8.3, 8.4 and a comparison of the results with some findings from other studies are presented in section 8.6.

#### **8.4. FACTORS RELATED TO BOTH RECORDS OF SATISFACTION**

##### **8.4.1. Factors Fairly Closely Related to Both Records of Satisfaction ( $.40 < C < .50$ )**

*a. Opinion about the estate*

The respondents' opinion about their estate was one of the most strongly related factor to both records of residents' satisfaction with their dwellings ( $p < 0.01$ ,  $C = .44$ ). Those who had a positive opinion about their estate had a higher dwelling satisfaction than those who had negative opinions about their estate in

**Table 8.2 : Factors related to both records of satisfaction**

Aspects Related	Significance p	Contingency C	Interpretation
<b>FAIRLY CLOSELY RELATED</b>			
Childhood residence	p1 < .01 p2 < .01	C1 = .42 C2 = .41	Respondents from a rural background tended to be more satisfied than those from an urban one.
Opinion about the estate	p1 < .01 p2 < .01	C1 = .44 C2 = .41	Those who expressed a positive opinion about their dwelling had a high dwelling satisfaction
<b>RELATED</b>			
Moving Intention	p1 < .01 p2 < .01	C1 = .33 C2 = .33	Dissatisfaction with the dwelling unit was also expressed by respondents' intention to move
Likes about the flat	p1 < .01 p2 < .05	C1 = .33 C2 = .38	Liking specific features of the dwellings contributed to a higher satisfaction
Kitchen's size perception	p1 < .01 p2 < .01	C1 = .31 C2 = .37	Perceiving the size of the kitchen as the "right size" contributed to a higher dwelling satisfaction
<b>SLIGHTLY RELATED</b>			
Security	p1 < .05 p2 < .05	C1 = .25 C2 = .25	Whether the residents took extra security measures or not seems to influence their satisfaction
Neighbours' organisation	p1 < .05 p2 < .05	C1 = .25 C2 = .24	The fact that neighbours were able to get organised for maintaining communal spaces contributed to a higher satisfaction
Preference for a central organisation	p1 < .05 p2 < .05	C1 = .25 C2 = .27	Those who were dissatisfied tended to express their preference for other organisations more than those who were satisfied

**Table 8.3 : Factors related to both records of satisfaction with different magnitudes**

Aspects Related	Significance p	Contingency C	Interpretation
<p><b>CLOSELY RELATED TO S1, RELATED TO S2</b></p> <p>Perceived Hygiene</p>	<p>p1 &lt; .01 p2 &lt; .01</p>	<p>C1 = .44 C2 = .34</p>	<p>Perceived cleanliness of the shared stairways affected respondents' satisfaction</p>
<p><b>RELATED TO S2, SLIGHTLY RELATED TO S1</b></p> <p>Intention to alter the flat</p>	<p>p1 &lt; .01 p2 &lt; .05</p>	<p>C1 = .32 C2 = .28</p>	<p>Those who were dissatisfied with their flat expressed the intention to make some alterations</p>

**Table 8.4 : Factors related to one of the records of satisfaction only**

Aspects Related	Significance p	Contingency C	Interpretation
<p><b>RELATED TO S1 ONLY</b></p> <p>Opinion about dwelling layout</p> <p>Housing aspiration</p> <p>Length of tenure</p>	<p>p1 &lt; .01  p1 &lt; .05  p1 &lt; .05</p>	<p>C1 = .35  C1 = .26  C1 = .31</p>	<p>Those who expressed a positive opinion about their dwelling layout tended to be more satisfied than those who did not</p> <p>Those who had a low degree of satisfaction expressed high housing aspirations</p> <p>The most dissatisfied respondents were from the older estates</p>
<p><b>RELATED TO S2 ONLY</b></p> <p>Bedroom size</p> <p>Friends in the same block</p> <p>Estate appearance</p> <p>Not being able to carry out certain activities</p>	<p>p2 &lt; .05  p2 &lt; .05  p2 &lt; .01  p2 &lt; .01</p>	<p>C2 = .33  C2 = .30  C2 = .31  C2 = .35</p>	<p>A bedroom size of around 12 to 13 sqm seems to contribute to a higher dwelling satisfaction</p> <p>Friendly neighbours contribute to a higher dwelling satisfaction</p> <p>Attractiveness of the estate in terms of physical appearance and general upkeep contributes to a higher dwelling satisfaction</p> <p>Not being able to carry out traditional activities because of the lack of space contributed to a lower dwelling satisfaction</p>

general (see Appendix F, Tab F3,F4). The highest proportion of satisfied respondents, as mentioned previously, was from the Ain Allah and the Garidi estates, where respondents perceived their estate as "better than other estates" (see Chapter 5).

*b. Childhood residence*

Whereas most of those who used to live in a rural house were very or fairly satisfied, most of those who were very or fairly dissatisfied (86%) used to live in an urban environment (see Appendix F, Tab F5,F6). Half of those who mentioned that they used to live in a 'villa' expressed a low degree of satisfaction with their present dwelling. Whether the present dwelling represented an improvement over the housewives' childhood residence seemed to influence residents' satisfaction with their dwelling. Although detailed descriptions of the childhood residence were not given by the respondents, the results show clearly that those who had a rural background tended to be more satisfied, possibly because their childhood residence had a lower standard of comfort than their present accommodation and or that living in an urban environment represented for them a symbol of social promotion. Some of those who used to live in apartment blocks which were built and occupied by the French during colonisation and were situated in or near the city centre tended to be rather dissatisfied, as they considered their childhood residence have positive features which their present dwelling lacked. Those features included the larger size of the dwellings, the availability of a greater number of balconies, the accessibility to the terrace as well as the nearness to various facilities.

**8.4.2. Aspects Related to Both Records of Satisfaction (.30 < C < .40)**

*a. Likes about the flat*

It was no surprise to find that whereas 76% of those who were very satisfied mentioned liking some design features or non-physical features related to their dwellings, 71% of those who were either fairly or very dissatisfied reported not liking anything in their flat.

*b. Moving intention*

Respondents' hypothetical intention to move was found to be significantly related to their satisfaction with their dwellings ( $p < .01$ ,  $C = .33$ ). It was also



found to be related to both the respondents' length of tenure as well as their opinion about their estate. Respondents in the oldest estates, that is the Bab Ezzouar and the Ain Nadja estates, tended to have a lower opinion about their estate as well as a lower degree of satisfaction than those living in the more recently built estates (see Appendix F, Tab F7,F8).

*c. Perceived size of the kitchen*

The size of the kitchen seems to be almost the only physical feature of the dwelling which has been found to be significantly associated with both records of satisfaction ( $p < .01$ ) and with the same magnitude in both records ( $C1 = .31$  ;  $C2 = .37$ ). As mentioned in Chapter 8 , it was found that a 12sqm floor area for a kitchen was perceived by the respondents as being about the right size. The vast majority of the housewives with a 12sqm kitchen were either very or fairly satisfied. Aspects that are depending on the size of the kitchen, such as having enough space for storage within the kitchen and being able to sit all together in the kitchen to have meals, were also found to be related to respondents' satisfaction with their dwellings (see Appendix F, Tab F9,F10,F11,F12).

**8.4.3. Aspects Slightly Related to Both Records of Satisfaction (  $.20 < C < .30$  )**

*a. Security*

Whether respondents reported taking some security measures or not, as well as the type of security measures taken, was found to be significantly related to dwelling satisfaction. Whereas over 60% of those respondents who were very satisfied did not take any additional security measures, more than half of those who were either fairly or very dissatisfied took important security measures such as inserting an additional metal door and/or metal grids to their windows (see Appendix F, Tab F13,F14). The residents' perception of the security of their estate, particularly in terms of the chances of being burgled, seems to have some impact on their residential satisfaction. Although the relationship between security and dwelling satisfaction was found to be statistically significant, the magnitude of the relationship was found to be a moderate one ( $C = .25$ ) rather than being particularly strong.

*b. Organisation of neighbours*

The fact that neighbours in some blocks were able to get organised in order to clean and maintain the communal spaces, such as the shared stairway, contributed to a somewhat higher dwelling satisfaction among respondents in those blocks. (see Appendix F, tab F15,F16). Whereas the majority of those who recorded the highest level of satisfaction reported the existence of some degree of agreement among residents living in the same block, those who recorded the lowest degree of satisfaction complained about the impossibility for the residents' living in the same block to come to an agreement in order to share the price of necessary maintenance work.

*c. Preference for a central organisation*

A moderate relation was found between respondents' preference for a central space in the flat layout instead of a corridor and their satisfaction with their dwellings. Most of those who had mixed feelings or were dissatisfied would have preferred a dwelling organisation with a central space instead of a corridor (see Appendix F, tab F17,F18). However, it seems that almost any other organisation suggested would have appeared more attractive to the dissatisfied respondents. In fact, as mentioned in Chapter 7, the reasons given by the respondents for their preference for other organisations dealt mainly with the compensation for the deficiencies of their present dwelling rather than with the specific advantages of the suggested alternative internal organisations.

**8.4.4. Factors Related to Both Records of Satisfaction but with Different Magnitudes (see tab 8.3)**

*a. Perceived cleanliness of the communal spaces*

Perceived cleanliness of the shared stairway was found to be significantly related to both records of satisfaction but with different magnitudes (see Appendix F, tab F19, F20). It was found to be fairly closely related to the first record of satisfaction ( $C = .44$ ) and related to the second record of satisfaction ( $C = .34$ ). It was also found strongly related to whether or not the neighbours living in the same block of flats got organised to maintain the communal spaces, as was mentioned earlier.

*b. Intention to make alterations to the flat*

The majority of those respondents who felt the necessity to make some alterations expressed a low degree of satisfaction (see Appendix F, tab F21,F22). However, it was not possible to test whether those who did actually carry out the alterations had a higher degree of satisfaction than those who did not. It is clear that the fact that residents had or desired to make some changes inside their dwellings, either to alter the design according to their needs or to improve the quality of the finishes, contributed to reducing their satisfaction, particularly when their financial situation did not allow them to carry out the alterations at an early date.

**8.5. FACTORS RELATED TO ONE OF THE RECORDS OF SATISFACTION  
(SEE TAB 8.4)**

**8.5.1. Factors Related to the First Record**

*a. Length of tenure*

Respondents' length of residence in their present dwelling was found to be significantly associated with their dwelling satisfaction (see Appendix F, tab F23). The association was found to be a moderate one ( $C = .31$ ). However, differences in length of residence within the same estate were not found to affect residents' satisfaction as there was not an important variation in length of residence between respondents living in the same estate. The most dissatisfied respondents were found in the Bab Ezzouar estate, where residents had the longest tenure longevity. Almost half of those who expressed mixed feelings in relation to their dwellings have been living in their flats for five to eight years, whereas 69% of those who were very satisfied had been living in their flats for three to four years.

*b. Housing aspiration*

A somewhat weak relationship was found between respondents' housing aspirations and their satisfaction with their present dwelling ( $C = .26$ ). Most of those who expressed a low degree of satisfaction aspired to a villa whereas more than half of those who were fairly satisfied had lower aspirations, in the main a larger flat. However, 69% of the very satisfied respondents aspired to a villa as well. This might be explained by the fact that aspirations affected satisfaction depending on the upward residential mobility of the residents. Those who aspired to a villa and expressed a high level of satisfaction with their present dwelling

might feel more able to achieve their housing aspiration than those who said they would like to move to a villa but were aware of the impossibility of achieving such an aspiration. In fact some respondents mentioned that they were in the process of building their own house. However, this type of information was not directly within the scope of the questionnaire and was recorded for only a few of the respondents during informal discussions.

*c. Opinion about dwelling layout*

When respondents were asked what they thought about the internal organisation of their dwellings, it appeared that those who expressed positive opinions tended to have a higher dwelling satisfaction than those who expressed negative opinions (see Appendix F, tab F25). As mentioned in the previous Chapter, the dwelling layout was perceived as being a real problem in the Ain Nadja estate, where more than half the respondents expressed a low level of dwelling satisfaction because of the position of the living room. The relationship between respondents' perception of the internal organisation of their dwellings and their satisfaction was found to be a relatively strong and highly significant relationship ( $p < 0.01$ ,  $C = .35$ ).

### **8.5.2. Factors Related to the Second Record**

*a. Estate appearance*

The respondents' perception of the appearance of their estate was found associated with their second record of satisfaction ( $p < .01$ ,  $C = .31$ ). Those who perceived the appearance of their estate as either attractive or quite attractive tended to have a higher level of satisfaction than those who did not (see Appendix F, tab F26).

*b. Perceived size of the bedrooms*

Respondents' perception of the size of the bedrooms within their dwelling was found to be related to the second record of satisfaction only (see Appendix F, tab F27). The association is, however, only a moderate one.

*c. Being able to carry out specific activities*

The vast majority of those who had mixed feelings or were either fairly or very dissatisfied reported not being able to carry out a certain number of important tasks because of the lack of space within their dwellings (see Appendix F, tab F28). Those tasks have been identified in the previous Chapter and include having a satisfactory furnishing arrangement and carrying out traditional activities such as preparing the couscous, washing carpets and mattresses as well as organising parties. The relationship between not being able to carry out those activities and the expressed satisfaction was found to be highly significant ( $p < .001$ ) and relatively strong ( $C = .35$ ).

*d. Number of neighbours considered as friends*

Respondents' perception of their neighbours' friendliness seems to affect their satisfaction with their dwelling. Whereas almost half of those respondents who did not have any friendly relationship with at least one of their neighbours living in the same block expressed a low degree of satisfaction with their dwellings, more than half the respondents who were either very or fairly satisfied reported considering one to three of their neighbours as friends (see Appendix F, tab F29).

## **8.6. DISCUSSION AND COMPARISON OF THE RESULTS WITH FINDINGS FROM OTHER STUDIES**

Having presented the various factors found related to dwelling satisfaction, according to the strength of their relationship to both records of satisfaction or to one of the records only, this section discusses the results according to whether those factors are alterable physical features or non-physical and whether the results of previous studies confirm or contradict the results obtained in the present work.

The comparability of the results of previous studies on residential satisfaction with the results of the present one is limited by a number of factors. The relationship between people and settings in which they live represents a theme running through much environment-behaviour research. Thus the housing environment has been studied from a variety of theoretical and methodological perspectives and at differing scales and within different cultures. One of the difficulties with dealing with literature evaluating the quality of residential environments is the looseness with which the term satisfaction has been used as

well as the difference in scale of the various aspects of the housing environments that have been considered in relation to satisfaction. In addition to that, most of the research that has been conducted often included variables intended to measure mainly social characteristics and they rarely provide information about the physical features of the housing environments being evaluated. This obviously limits the comparability of the influence of physical factors on residents' dwelling satisfaction.

### **8.6.1. Non-Physical Factors Related to Dwelling Satisfaction (see fig 8.8, 8.9, 8.10)**

#### *a. Estate perception*

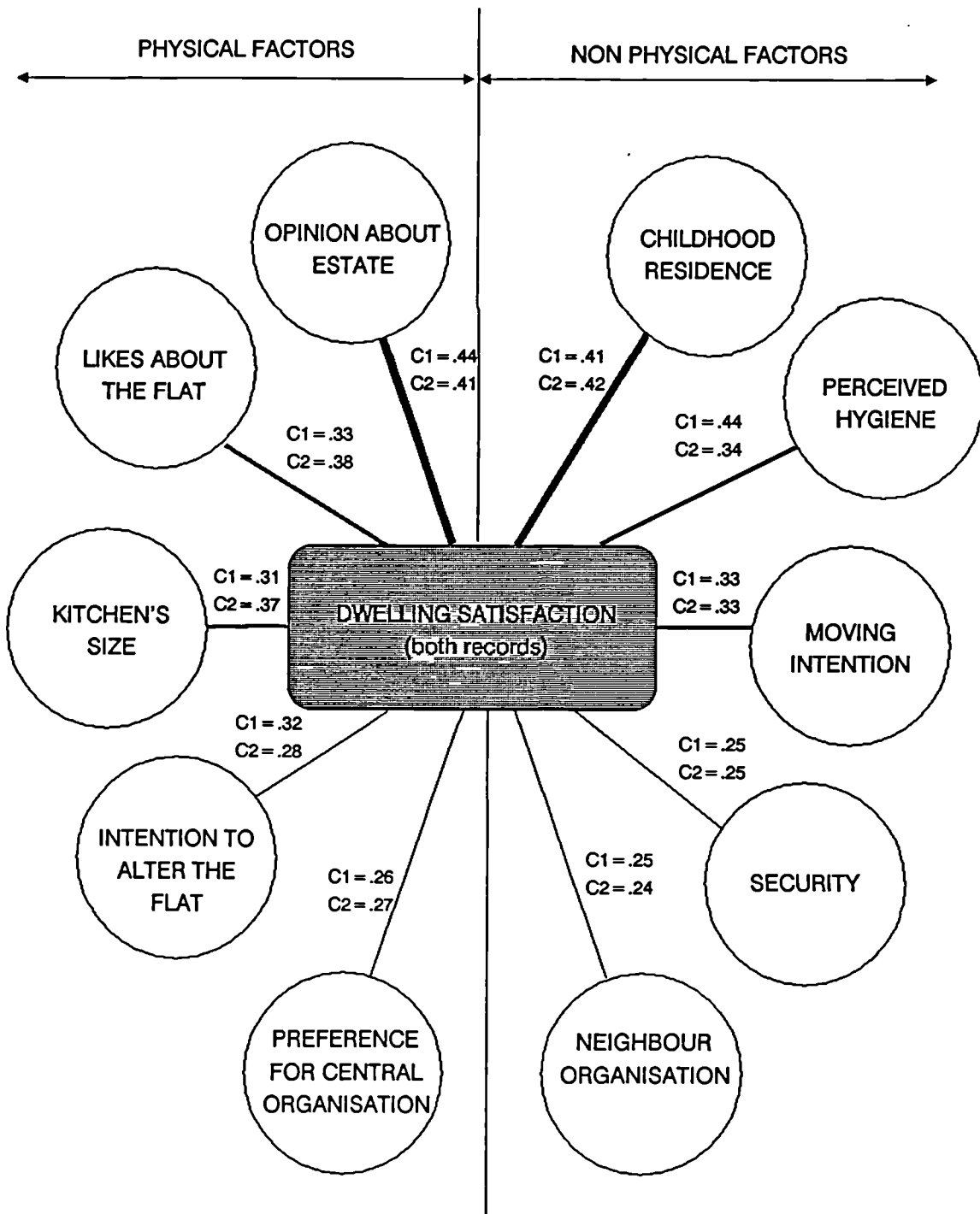
Although the residents' overall perception of their estate includes their assessment of physical factors such as appearance and site layout, most of the criteria by which the respondents in the present research evaluated their estates were non physical features such as their relation with their neighbours and the general cleanliness and standard of maintenance of their housing environment. The significant relationship between residents' perception of their estate and their satisfaction with their dwelling found in the present study confirms that satisfaction with the dwelling is not independent of residents' general opinion about their estate. The findings of Ellis and MacCormac (1977) and Darke (1982) involved the same conclusion, as satisfaction with the dwelling was found to be the most strongly correlated variable with estate satisfaction.

#### *b. Perception of neighbours*

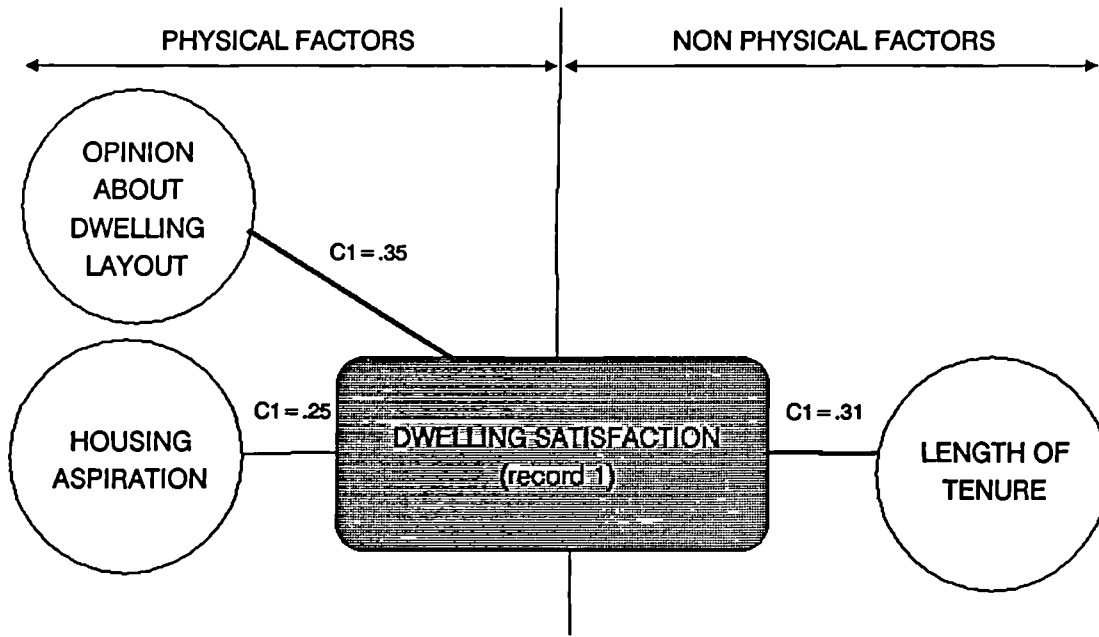
Respondents' perception of their neighbours was measured through their assessment of the number of neighbours considered as friends as well as the ability of the neighbours to get organised in order to solve common problems related to the upkeep and maintenance of the shared communal spaces. Respondents' opinion about their neighbours was found significantly related to respondents' dwelling satisfaction.

Findings from previous post occupancy evaluation studies suggest that the compatibility of residents' is likely to promote satisfaction and that this relates in particular to the relationship between neighbours being perceived as friendly (Lansing et al, 1970, p130; Sanoff and Sawheney, 1972; Cooper, 1975; Ellis and MacCormac; 1977; Francescato et al, 1979). Satisfaction with the neighbours has

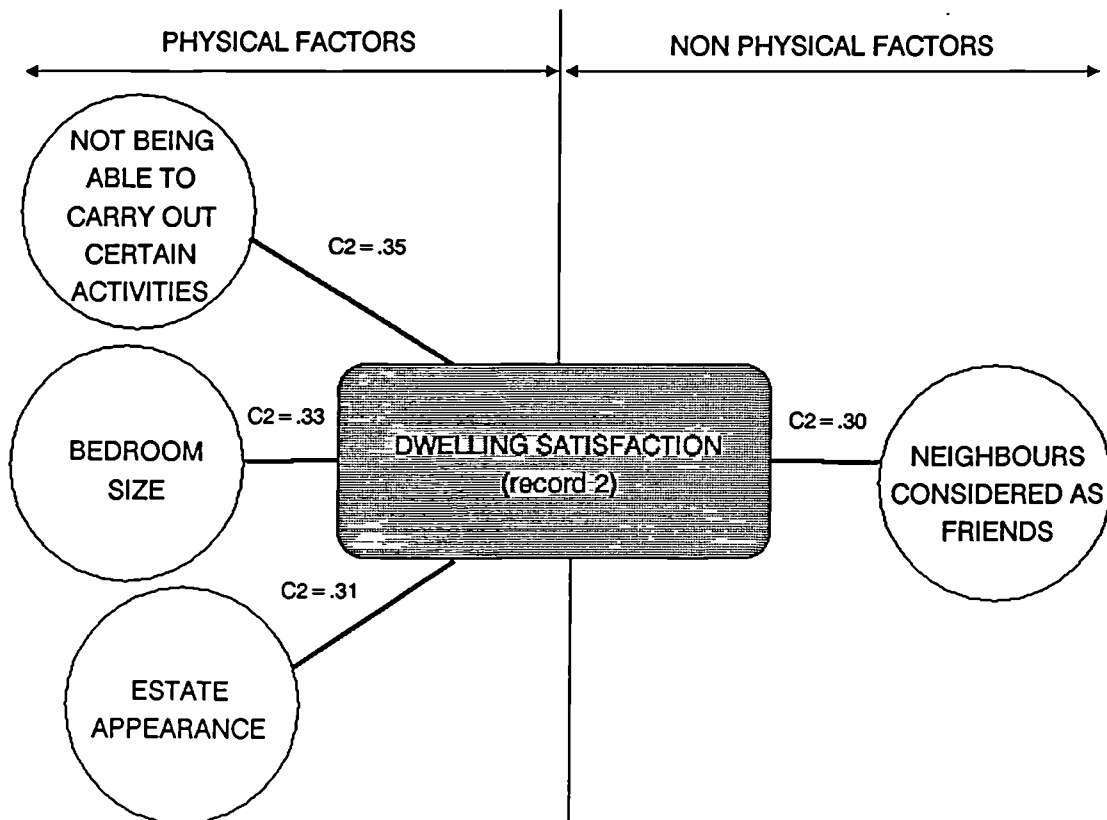
**Figure 8.8 : Factors related to both records of satisfaction**



**Figure 8.9 : Factors related to the first record of satisfaction**



**Figure 8.10 : Factors related to the second record of satisfaction**





been noted as an important determinant of dwelling satisfaction, to the extent that residents' may overlook extensive inadequacies in the dwelling when they are satisfied with their neighbours (Morris and Winter, 1978; Rent and Rent, 1978). In a survey of 7000 residents of government housing, Yeh (1974) indicated that satisfaction with housing was a consequence of social relations with neighbours, size of the flat and perception of change in life situation. The impact of the physical setting increased when relations with neighbours were viewed as unimportant.

Findings from studies carried out in different countries came to the same conclusion in relation to the contribution that perception of neighbours makes to residential satisfaction. Evidence from Onibokun's (1976) study on public housing in Canada warns that people who are very far apart in their socio-economic status do not coexist mutually and happily in the same micro-neighbourhood. Aydemir's (1990) study of residents' evaluation of mass housing layout in Turkey found that good neighbourly contact, such as having a good relation with neighbours, influenced respondents' feeling of satisfaction. Another study carried out in Malaysia (Sulaiman and Yahaya, 1987) showed that satisfaction with neighbours contributed the most to respondents' overall degree of satisfaction.

### *c. Maintenance and management*

Perceived cleanliness of the communal spaces was found significantly associated with dwelling satisfaction in the present study. In previous studies, upkeep of housing estates has been recognised as a very important factor influencing satisfaction with the housing environment (Lansing et al, 1970, p130; DOE 1972). It appears that the maintenance of the communal spaces is one of the areas of housing management that should be given special attention because of its contribution in promoting higher residential satisfaction.

Whereas almost all respondents in the present study reported having carried out some repair work within their dwellings, the type of repair work, as well as who was responsible for the repair seem to influence residents' satisfaction with their dwelling, although the relationship has not been found statistically significant. In the Ain Allah estate, where the most satisfied respondents were found, it was frequently reported that necessary repairs concerning plumbing and floor tiling were frequent but were carried out quickly by a maintenance team available on site. This was far from being the case for the three other estates

where residents were the only ones responsible for getting and paying for the repairs.

Thus it is not the frequency of equipment breakdown that seems to matter so much but the speed of repair. It appears that management, especially with regard to attention to necessary repairs within the housing unit and the upkeep of the communal spaces, could increase the relative satisfaction of tenants in public housing. Francescato et al (1979) and Onibokun (1976) came to the same conclusion concerning these two matters.

*d. Housing history, mobility and aspiration*

Respondents' childhood experience, their intention to move from their flat as well as their housing aspirations have all been found related to dwelling satisfaction.

It seems that respondents with a rural background in the present study tended to be more satisfied than those with an urban one. Some approaches to residential satisfaction have focused on the discrepancy between the present accommodation and past residence. Research suggests that when people perceive their new environment as an improvement over their previous one, it may reconcile them to deficiencies in other aspects of the physical environment (Yeh, 1974; Francescato et al, 1977, Al Noori, 1987). Galster (1987) argues that those who have not lived in single family homes are more likely to be satisfied with their current accommodation.

Although the questionnaire in the present study dealt with respondents' childhood residence rather than with their previous residence, the findings confirm the idea that when residents' present accommodation represents an improvement over their childhood residence, particularly in terms of its association with a higher social status, they tend to express a relatively high degree of satisfaction with the dwelling despite the possible inadequacies of the physical environment.

It was no surprise to find that respondents' moving intentions were significantly related to their dwelling satisfaction. Nathason et al (1976) and Michelson (1977 b.) viewed mobility as a behavioural index of satisfaction. They found that satisfaction with the dwelling was one of the most important variables in explaining moving plans. However, in the context of the present study, reported moving intentions were hypothetical as residential mobility is very restricted or

almost impossible for the majority of the respondents due to the acute housing shortage in Algeria.

A moderate relationship was found between respondents' housing aspirations and their dwelling satisfaction. Those with lower aspirations tended to be more satisfied than those with higher aspirations. Galster (1987) argues that the extent to which there is a gap between perceived actual environmental quality and the aspired to environment provides a measure of the degree of dissatisfaction. However, as suggested by Michelson (1977b.), those who feel able to progress towards their ideal housing and neighbourhood will be able to say they are very satisfied with their current conditions. Expectation and aspiration therefore affect housing satisfaction on the basis of residents' upward mobility.

*e. Length of residence*

Length of residence was found slightly related to one of the records of dwelling satisfaction. The most dissatisfied respondents were from the Bab Ezzouar estate where residents had the longest tenure longevity in comparison with the residents' in the three other estates. The most satisfied were from the newest, that is the Ain Allah estate. This can be interpreted either by the fact that the newest estates tend to be better than the older ones or that, as Onibokun (1976) found in his study, the longer the respondents stayed in public housing the more dissatisfied they tended to become. Dissatisfaction may be caused by change occurring through the years of residence, such as an increase in the number of children, the need for more space for growing children and a degradation of the physical environment as a consequence of poor management and maintenance.

### **8.6.2. Physical Factors Related to Satisfaction**

*a. Dwelling layout*

Both residents' likes about their flats and their opinion about its general organisation were found to be significantly associated with their dwelling satisfaction. The adequacy of the internal spaces as well as the facilities available seem to be crucial in determining the level of satisfaction of the residents with their dwellings. Those who recorded a low degree of satisfaction tended to prefer other internal organisations suggested during the interview. They perceived the interviewer's suggestions as possible design solutions which would compensate for the deficiencies in their present dwelling (see Chapter 7).

Johnson and Abernathy (1983) found that satisfaction with various attributes of the home, such as layout and room size, were predictors of dwelling satisfaction but the bivariate associations were generally not large.

*b. Perceived spaciousness*

The perceived size of the kitchen was found to be related to both records of dwelling satisfaction and the perceived size of the bedrooms was found related to the second record of dwelling satisfaction (see fig 8.8 and 8.10). These results confirm the findings of Tognoli's (1985) study which suggested that small room size is one of the features of the dwelling likely to be associated with a low degree of satisfaction among high rise dwellers.

*c. Intention to make alterations to the flat*

Dissatisfaction with the dwelling design was frequently expressed by respondents' intentions to make some alterations. Alterations were due either to the lack of space resulting from internal factor changes, such as separating boys from girls or making room for a marrying son, or to the inadequacy of the internal layout, as was found to be the case in the Ain Nadja estate (see previous Chapter). Alterations to the physical environment may be considered as one of the behavioural responses resulting from a low degree of dwelling satisfaction.

*d. Household activities*

The ability of the dwelling size and organisation to permit certain household activities to be performed seems to be related to dwelling satisfaction. Residential satisfaction should be considered not only in terms of perception of the different physical features of the environment but also in terms of the degree of adequacy of the physical environment in facilitating specific activities. In the present study, the difficulties encountered by some residents in carrying out specific traditional activities, for which no appropriate space was available, tended to lower their satisfaction.

*e. Perceived appearance of the estate*

Attractiveness of the estate is one of the frequent factors found related to housing satisfaction in various researches (DOE, 1972, Darke, 1982). The DOE report 'The Estate Outside the Dwelling' found that overall appearance of the

estate and the way it was kept and looked after was the most important determinant of satisfaction with the six different estates studied. Darke's (1982) study confirms that liking the appearance was among the factors most strongly associated with estate satisfaction and dwelling satisfaction. In the present work, perceived appearance of the estates was found to be significantly related to the second record of dwelling satisfaction.

### **8.6.3. Non-Physical Factors not Found Related to Dwelling Satisfaction**

An important number of factors which were expected to be related to dwelling satisfaction did not turn out to be so. This is due either to the small variation in responses in relation to the factor examined or the actual lack of a relationship between the variables being examined and dwelling satisfaction.

#### *a. Respondents' characteristics*

Previous research suggested that older respondents are more likely to appear satisfied with any residential context because, being in an older stage of their life cycle, they tend to have lower aspirations and higher tolerance for deficiencies (Campbell et al, 1976; El Saati 1987).

In the present study respondents' characteristics were not found to be related to dwelling satisfaction. There was no significant relationship between the respondents' age, their household type and whether they were working housewives or not. This may well be due to the small variation in respondents' characteristics in the present study sample.

#### *b. Stage in the life cycle*

Stage in the life cycle was measured in the present study by the age of the respondents' children. Both the age of the oldest child and the age of the youngest child have been recorded. However, there was no apparent pattern between respondents' satisfaction and the variables measuring their stage in the life cycle.

Michelson (1977b, 1980) criticises those evaluations of residential environments which only examine the residents and their homes at one point in time. Subjective responses such as satisfaction are highly unstable over time, he suggests, presumably because these responses are not influenced by the environment only. Satisfaction with housing is geared to the stage of the family life cycle. It seems sensible to believe that families with differently aged children

will have variable needs and hence receive variable satisfaction from their housing.

On interpreting the results caution is necessary as the sample may have lacked variation in demographic characteristics.

#### **8.6.4. Physical Factors not Related to Satisfaction**

Contrary to what would have been expected neither the size of the dwelling nor the size of the living room were found to be significantly associated statistically with dwelling satisfaction.

##### *a. Flat size*

Whereas flat size might be expected to be positively related to dwelling satisfaction, it did not turn out to be so. Galster (1987) argues that absolute measures of the several quantitative aspects of the dwelling are not likely to have a relationship with dwelling satisfaction because they alone do not express the household's demand for space. A relative measure of available dwelling or room space vis a vis the total number of people in the household is preferable. However, neither the occupancy rate per room (measured by dividing the number of people living together by the number of bedrooms available) nor the number of extra bedrooms needed were found significantly related to dwelling satisfaction. This was also found to be the case in the El Saati (1987) and Sulaiman and Yahaya (1987) studies, where the space variable was not significant despite overcrowded conditions in some cases, indicating that other variables may be operating such as cultural norms to counteract satisfaction with the high internal crowding found within the dwellings studied.

##### *b. Floor level*

Whereas the ground floor flats appeared to be unpopular for the reasons mentioned in Chapter six, no significant relationship was found between floor level and dwelling satisfaction.

##### *c. Privacy within the flat*

Despite the number of complaints recorded about overlooking and poor sound insulation, those aspects were not found related to dwelling satisfaction,

possibly because lack of privacy was experienced by the majority of the respondents in the four estates resulting, in a small variation in responses.

*d. Private external spaces*

In previous research residents' level of satisfaction with their dwellings was found to be affected by the open spaces immediately outside the dwelling, such as the garden, the patio, the balcony and the access (Rainwater, 1966; Cooper and Sarkissian, 1986). Whereas all the respondents reported that the availability of a balcony was extremely important and those who did not have one complained about its lack, no significant relationship was found between the availability or not of a balcony and dwelling satisfaction. In fact the most satisfied respondents were from the Ain Allah estate, where all the flats lacked a proper balcony. The influence of this deficiency on dwelling satisfaction might have been covered by other more influential variables.

## **8.7. CONCLUSION**

Whereas dwelling satisfaction among the 128 respondents was rather positive, it was found to vary a great deal from estate to estate. The highest proportion of satisfied respondents were found in the Ain Allah and the Garidi estates whereas the highest proportion of dissatisfied respondents were found in the Bab Ezzouar and the Ain Nadja estates.

Results from the present study show that both physical and non-physical attributes of the housing environment contributed to respondents' satisfaction with their dwellings. The examination of the relationship between 45 variables and the two records of dwelling satisfaction allowed the identification of different variables related to one or both records of dwelling satisfaction.

Among the physical variables found strongly associated with both records of satisfaction ( $C1 = .33$ ,  $C2 = .37$ ) and at a very high level of significance ( $p < 0.01$ ) was the perceived size of the kitchen. A floor area of 12 sqm was perceived as being the right size and this seems to contribute in promoting a high degree of satisfaction among housewives. The adequacy of the internal organisation of the dwellings was also found related to residents' satisfaction. The necessity felt by some respondents to make some alterations to the internal organisation of their dwellings reduced their satisfaction significantly.

Another physical feature of the dwelling that was found related to one of the records of dwelling satisfaction concerned the perceived size of the bedrooms (see fig 8.10). According to the results presented in the previous Chapter, it seems that a floor area of between 12 sqm and 13 sqm for the bedrooms would promote a higher degree of dwelling satisfaction.

Contrary to what would have been expected neither the overall size of the dwelling nor the degree of crowding within the dwelling unit were found significantly related to the respondents' satisfaction.

The most strongly associated factor of dwelling satisfaction was not associated directly to one of the features of the dwellings themselves but concerned the respondents' perception of their estate (see fig 8.8). Those who had negative opinions recorded the lowest levels of satisfaction. It is interesting to note that opinions were based mainly on the respondents' evaluation of both physical factors such as the construction quality of the buildings and the site layout, and non-physical features of the external environment such as the neighbours and the maintenance of the external spaces (see Chapter 5). Whether the estate was perceived as attractive or not was also found significantly associated with the second record of respondents' satisfaction (see fig 8.10).

Whereas all the physical factors found related to satisfaction can be altered in future housing projects, some of the non-physical factors which have been found related to dwelling satisfaction in the present study are not within the scope of architecture itself. Among those factors are the respondents' childhood residence, their moving intentions and their length of residence in their present dwelling (see fig 8.8 and 8.9).

Other non-physical features of the housing environment which might be alterable have been found related to respondents' satisfaction and confirm the findings from previous studies. Such factors include the type of relationship that exists between neighbours, the degree of upkeep of the estate and the perceived degree of security. It appears that some effort should be made in the housing allocation policy to ensure a higher social homogeneity within the blocks of flats.

However small the impact of the built environment may be in promoting residential satisfaction, it is after all, the area in which the architect has some control. On the other hand, concentrating on improving dwelling quality alone may have little impact on overall residential satisfaction. It is likely that the kinds of findings shown in this study are not confined to the four selected estates.



Further research on these lines could contribute significantly in the practical usefulness of residential satisfaction research, particularly in terms of cultural differences.

## CHAPTER 9: CONCLUSION

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## **9.1. INTRODUCTION**

Because the five storey walk up apartments have been a response to a situation of urgent housing needs rather than the result of a long process of adaptation of dwelling design to the local conditions and to the specific needs of Algerian households, and because the mass housing programmes have been established without consulting the people that might be occupying the resulting estates, various features in the design of these housing environments are likely to be unrelated to a number of aspects dealing with the lifestyle of the residents. Housing mobility is most unlikely for a significant proportion of the residents living in the mass housing estates. Since the impact of the design quality of such housing environments on the life of the residents' is likely to be quite significant, it is considered that feedback from the residents themselves is desirable in order to recommend improvements in the design, the management and the allocation policy of such estates. Such improvements do not always imply a higher dwelling cost and would certainly help in providing what the residents in Algeria might regard as a more acceptable housing quality.

A number of issues have been raised in the present thesis with regard to residents' perception of the quality of their housing environment in general and the quality of their dwelling design in particular. The collection of detailed data in the present work about residents' reactions to various aspects of their housing environment makes it possible to identify a number of areas where future improvements should be directed. A summary of the main research results is presented in this last Chapter, and recommendations are made for the design of future similar housing projects in Algeria.

## **9.2. ISSUES RAISED AND ASPECTS INVESTIGATED IN THIS THESIS**

The main issues that have been raised in the present research work are as follows:

1. To what extent the size and the internal organisation of mass housing dwelling in Algeria are responsive to their residents' needs.

This aspect has been investigated through residents' responses to a set of questions dealing with the use of their dwellings' main living areas and their perception of the spaciousness of each of those areas. The information gathered through verbal responses were completed by the analysis of furniture layouts made for a significant proportion of the visited dwellings.

2. What type of adaptive changes (if any) the residents in the mass housing estates make to their dwelling in order to make it more responsive to their needs.

This aspect has been investigated through records of physical alterations already made to some of the visited dwellings and verbal reports of intended alterations made by the housewives in response to specific questions.

3. To what extent traditional space use patterns and traditional activities are still carried out within the 'modern' urban dwelling and to what degree traditional housing arrangements are regarded by the respondents as preferable to their present dwelling's organisation.

This aspect has been investigated in order to test the respondents' degree of acceptance of the 'modern' dwelling and to identify specific needs linked to traditional activities which have not been considered in the design of the urban mass housing dwelling.

4. What are residents' preferences for different locations of private external spaces and what are their perception and use of the existing private external spaces within their dwellings and the public external spaces adjacent to the blocks of flats.

The investigation of these aspects was aimed at assessing how important (or otherwise) is the availability of private external spaces within the mass housing dwellings. A significant amount of information concerning the use of the external spaces adjacent to the dwellings has been gathered during site visits through observation and photographic records of physical traces (see Chapter 6) and detailed descriptions of the uses of the existing balconies and loggias were given by the residents as a response to various questions (see Chapter 7).

5. How do the residents perceive their housing environment in terms of appearance, maintenance, upkeep, security and social relationship between neighbours living in the same block of flats.

Respondents' perception of their dwellings depends also on their perception of physical and social features of their housing environment. Open ended questions concerning these matters revealed a number of important aspects.

6. How satisfied the residents' living in the five storey walk-up dwellings are and what physical and non-physical features of their

housing environment are likely to promote a higher degree of dwelling satisfaction (see Chapter 8).

The relationship between residents' satisfaction with their dwellings and a large number of variables measuring residents' perception of both physical and non-physical features of their housing environment has been considered in order to rank suggested changes in terms of their contribution in promoting a higher degree of satisfaction.

The research methodology followed in the present work was based on the methodology of previous post occupancy evaluation studies and a combination of different data collection procedures has been used (see Chapter 3). The field study consisted of four large scale prefabricated mass housing estates in the suburbs of Algiers (see Chapter 4) within which a sample of 128 housewives has been interviewed. The research findings are relevant to a qualitative understanding of people's reaction to their residential environments rather than allowing a set of quantitative predictions to be made.

### **9.3. MAJOR FINDINGS**

It seems that with an awareness of the housing crisis and the limited options available on the housing market, there is a general acceptance among respondents that flats are where the majority of people will have to live. Respondents' preference for suggested dwelling organisations that are traditional or close to the traditional house was justified by the functional problems they encountered in their present accommodation rather than from an exact knowledge or previous experience of the suggested traditional dwelling organisations (see sections 6.6 and 6.7). In fact the vast majority of the respondents aspired to a larger apartment or a 'modern villa' rather than to a house with a traditional courtyard or a covered central space (see section 6.8).

One of the major findings of the present research was that the mass housing dwellings are not necessarily unsatisfactory, as the overall recorded satisfaction in the four estates was rather positive with almost two thirds of the 128 respondents being either fairly or very satisfied, and this, despite a number of deficiencies that have been identified in the design of both the external environment and the dwellings themselves. This result shows that non-physical features of the evaluated housing environments might have a stronger impact on residents' satisfaction than the physical features of the dwellings. For instance, the symbolic value of the mass

housing dwelling, which results from its association with 'modernity' and social promotion seems, to have a stronger impact on residents' aspirations and satisfaction than the functional deficiencies in the dwellings' design which have been identified in the present study. Moreover, residents' satisfaction with their present dwelling was found significantly associated with their childhood housing experience, as respondents with a rural background appeared to be more satisfied than those with an urban one.

The statistical examination of the relationship between 45 variables measuring physical and non-physical features of the selected estates and the two records of residents' satisfaction with their dwelling allowed the identification of various factors found significantly related to one or both records of satisfaction (see Chapter 8). However, the conclusions drawn in this chapter concern only those factors that have been found *significantly* related to *both* records of residents' satisfaction.

The most strongly related factor to dwelling satisfaction was the respondents' overall opinion about their estate. Responses to open ended questions revealed that such overall opinions were not only shaped by physical features of the environment, such as the general appearance of the estate and the design quality of the external spaces separating the different buildings, but also by non-physical features of the environment such as the general maintenance and upkeep of the estate and the type of relationship that exists between neighbours living in the same block. This last factor has itself been found significantly related to both records of satisfaction, particularly with regard to the degree of agreement between neighbours to share the price of cleaning and maintenance projects within their block of flats. Such agreements, which resulted in a higher level of upkeep of the communal spaces, appeared to be possible only where a certain degree of social homogeneity was found among residents living in the same block of flats.

Among the large number of physical features of the dwellings that have been considered in relation to residents' satisfaction only the perceived size of the kitchen and the perceived overall organisation of the dwellings have been found significantly associated with both records of housewives' satisfaction. The differences in dwelling layouts and sizes between the four studied estates made the identification of preferred space sizes and preferred arrangements possible (see Chapter 7). Dwelling layout in both the Ain Allah and the Garidi estates appeared to be more satisfactory than in the two other estates (see Chapter 6).

Various aspects of the mass housing dwellings appeared to be rather less than satisfactory but were not found to be statistically associated with respondents' satisfaction or dissatisfaction. For example, the perceived size of the dwellings was not found statistically related to residents' satisfaction despite the fact that the objective average size of the dwellings (two bedrooms and a living room) was found to be a major problem in itself, as it was inadequate for the size of a significant proportion of the studied households (see section 7.8). The shortage of space within the dwelling units resulted in many cases in various types of physical alterations made to the dwellings by the residents (see Chapter 6). The size of the dwellings was also found to be the major reason for residents' hypothetical moving intentions.

In addition to the size aspect, the constructional quality of the evaluated dwellings was subject to heavy criticism in almost all the estates and was a major source of dislike. The finishes quality of the dwellings particularly with regard to the floor tiling, the wall tiling in the kitchen, the bathroom and WC, as well as the walls appeared to lower residents' opinion about their dwellings. The case of the Bab Ezzouar estate is a perfect example, illustrating the inappropriate use of plastic material particularly with regard to the floor tiling and the doors, which could not withstand the heavy usage in the households with a large number of children. The Ain Allah estate was the only one where residents were satisfied with the internal finishes of their dwellings. However, the prefabricated appearance of the blocks in the Ain Allah estate caused more concern among the residents than in the other estates, as respondents tended to express worries about the life-span of their blocks of flats.

In addition to the size and the constructional quality of the dwellings, the spaces left between the blocks of flats appeared to be one of the detrimental aspects common to all the estates. The lack of any space hierarchy and landscape as well as the lack of maintenance of those spaces resulted in a poor quality of the external environment which tended to affect residents' perception of their estate and lower their satisfaction with their dwellings. Whereas some efforts had been made in parts of the Garidi and the Ain Nadja estates to landscape the external spaces, and were very much appreciated by the residents, such efforts remained very rare. However, residents' claim for the spaces adjacent to their blocks and their initiative to landscape those spaces appear to be an alternative which should be encouraged (see Chapter 5).

While the comparison of the residents' responses in the four estates allowed common problems to be identified, specific problems in each estate were also identified. In the Bab Ezzouar estate one of the major problems was caused by the fact that the whole estate had been built on what was originally wet land and this affected considerably the general hygiene of the external environment (see section 5.2.1). In the Ain Nadja estate, the major problem was caused by the position of the living room within the dwellings (see 6.3.2). In the Garidi estate, the major problem was the size of the second bedroom as compared with the size of the adjacent balcony (see section 7.6.1), while in the Ain Allah estate it was the possible life-span of the buildings which raised concern among the residents. A number of recommendations can be drawn from the analysis of the various aspects that have been considered in Chapter 5, 6, 7 and 8. However, in order to draw appropriate conclusions from the interpretation of the data analysis, it is important to keep in mind the limitations of the study which produced the data, and the limitation of such research in general.

#### **9.4. LIMITATIONS**

The impossibility of knowing the extent to which the findings that have been obtained from the data collected in the four studied estates are also true for other similar housing estates is the first limitation of the present study. This is due in particular to the limitations in time and resources available to carry out the study on a much larger number of estates.

The second limitation is due to the exploratory nature of the present work, which did not allow direct research efforts aimed at specific problematic aspects in the design of the dwellings to be made, since those aspects have not been identified by previous similar research in Algeria. This resulted in the consideration of a large number of variables. However, it did make possible the identification of a number of areas where future research is needed.

The third limitation is linked to the use of standardised questionnaires which may well mean that the more subtle and less easy measurable aspects of responses to the housing environment have been ignored. However, the use of standardised questionnaires has allowed a fairly precise comparison of residents' responses in the four estates to be made while the information gained through observing and recording physical traces has allowed the researcher to validate or contradict some of the verbal responses of the interviewed housewives.



The fourth limitation concerns the interpretation of residents' satisfaction. It is difficult to know whether the reported satisfaction is a valid reflection of the satisfaction that residents feel with their dwellings. Campbell et al (1976) have discussed this problem extensively and have pointed out the general tendency of human subjects to use positive ratings more frequently than negative ones regardless of the phenomenon being rated. They have concluded that, while satisfaction report may have an edge of positive bias, this edge is probably not very large. The consideration of two records of satisfaction in the present work allowed the researcher to have a more precise measure.

The fifth limitation is related to the lack of a significant variation in respondents' characteristics in terms of age, occupation and social background. For example, it was not possible in the present study to draw any conclusion about the differences between working and non-working housewives with regard to their satisfaction and perception of the different features of their dwellings.

Another factor which should be taken into consideration is that all the respondents have been housewives. While this has been an advantage for the evaluation of the internal organisation of the dwelling, it might have limited the amount of information gained about the external environment and the estate in general.

The last limitation is that all the studied estate are located within the suburb of Algiers. This means that the findings of the present research might not be relevant to other parts of the country where the characteristics of the households and their space use patterns might be different.

The limitations presented above do not mean that at the present stage of research, there are no applicable findings. However, application of the findings should be carried out in an experimental mode. This means that every attempt at application should be accompanied by an evaluative component aimed at testing the result of that application.

## **9.5. RECOMMENDATIONS**

The research findings suggest a number of recommendations which are directly applicable to the programming and the design of future mass housing estates in Algeria. It must be emphasised that a degree of uncertainty remains when dealing with recommendations. This means that the recommendations

should be implemented initially within an experimental context and be evaluated at that stage before the recommendations are applied on a larger scale.

### **9.5.1. The Public External Spaces Adjacent to the Blocks of Flats**

The first items that should be subject to change in the four evaluated estates, as well as in other existing mass housing estates in Algeria, are the public external spaces adjacent to the blocks of flats. Not only is the alteration of these spaces very likely to increase residents' satisfaction with their dwellings by changing their opinion about their housing environment, it also provides the residents with a number of benefits.

One of the findings of the present research is that residents living on different floors of the five storey walk-up dwellings may be prompted to invest in fencing and personalising the public external spaces adjacent to their blocks (see section 5.4.2a). It is highly recommended that those spaces should be legally allocated to the residents because of the large number of benefits that such allocation can provide. These benefits are as follows:

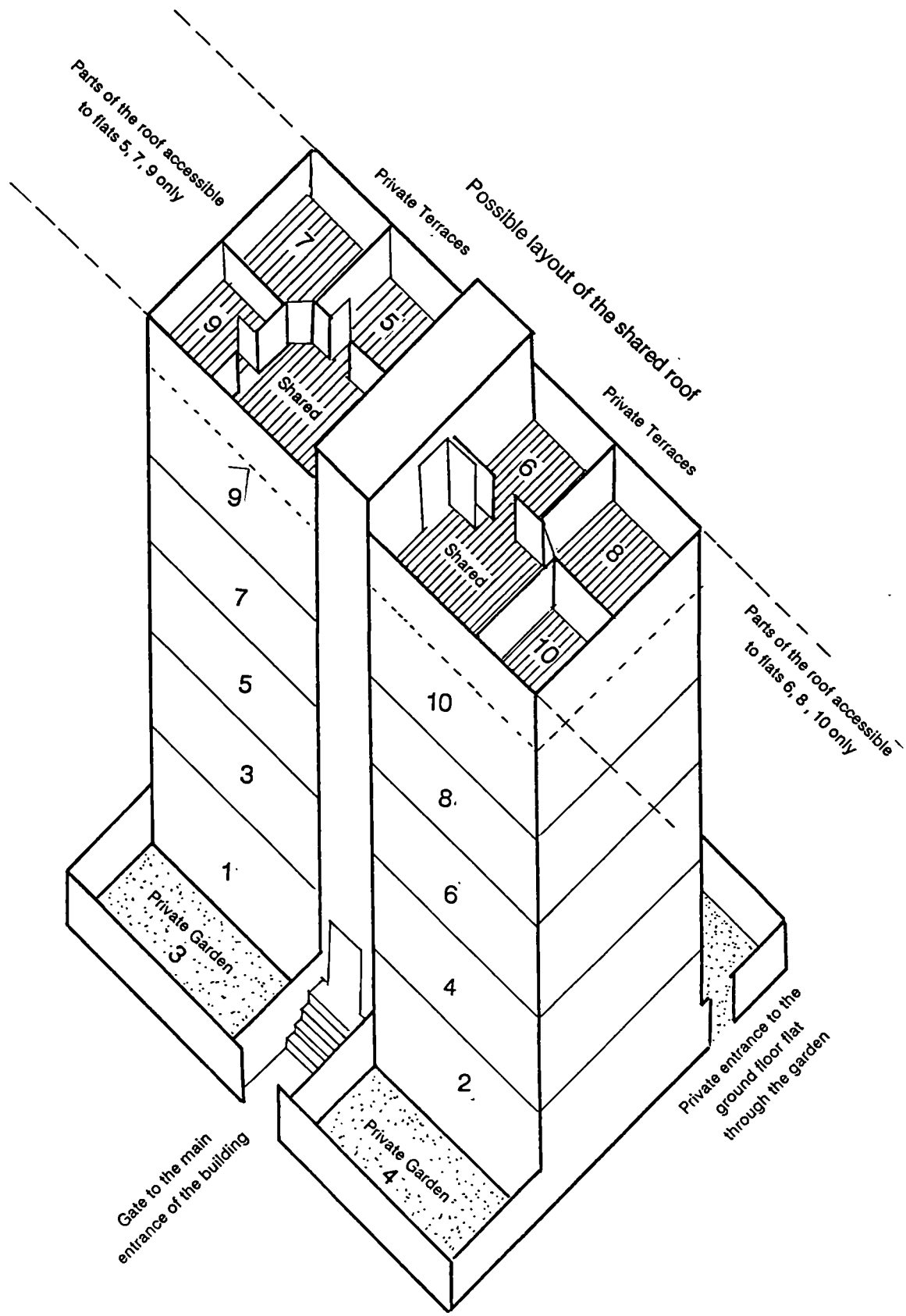
- Compensation for the small size of the dwellings by allowing a certain number of activities to be carried out in the external spaces (those activities have been identified in sections 7.4.1 and 7.4.3.) and by ensuring that housewives have access to fresh air and sunlight
- An increase in the privacy and security of the ground floor flats, which in turn should increase their popularity
- Achieving a better definition and hierarchy in the external spaces
- Reducing the spaces that need to be maintained by the local council. Because the local authorities cannot generally afford to water and nurture large public green spaces, their maximum privatisation would result in a more pleasant overall environment with more greenery and more shade.
- Enhancing the visual quality of the environment. The use of the spaces adjacent to the blocks as private gardens would increase the amount of greenery, creating during the summer period a gentle micro climate. Furthermore, the greenery would also provide the ground floor dwellings with visual buffers and more pleasant views.

- Facilitating the upkeep of both the dwellings and the shared stairways by reducing the amount of dust in the external environment

Such benefits depend obviously on the willingness of the residents to maintain and landscape the external spaces, which in its turn depends partially on the size and the accessibility of them. How to divide the external spaces adjacent to the dwellings and how to allocate them to the residents without raising conflicts between neighbours, as well as how to ensure that the spaces are not used for purposes other than gardens or yards, remains an important area of the design of multi-family housing which would benefit from future investigation and experimentation.

However, a number of suggestions can be made at this stage of the research. It seems reasonable to believe that residents would use the spaces only if they had some degree of control over them. Such control would obviously not be possible if the residents did not have an easy visual and physical access to them. For these reasons it is suggested that the spaces adjacent to the blocks should be allocated in the main, to the residents living on the ground and first floors of the blocks. Each of these flats would be able to have a well defined fenced area. The ground floor flats should preferably be allocated the spaces immediately adjacent to them and might well have independent entrances from such spaces. An arrangement of this sort would not only provide the ground floor flats with a much greater degree of privacy and independence from the main entrance of the building but would also eliminate the notion of unused spaces around the perimeter of the buildings. Moreover, if the ground floor flats were allocated to households with a large number of children, number of children using the main entrance of the building and the stairways would be considerably reduced. This would have a significant impact on the required level of maintenance and upkeep of these spaces. Some of the space adjacent to the blocks might be allocated to the residents living on the first floor flats (see fig 9.1). This means that some of the windows on the ground floor flats might open directly on the gardens belonging to the first floor flats. While this did not seem to cause problems for the cases observed during site visits, it is possible that such an arrangement would cause inconvenience for the residents living on the ground floor flats. However, it would still be a significant improvement for the ground floor flats to have their windows opening on their neighbour's garden rather than on noisy public spaces. Design solutions might possibly be found where some of the inconveniences caused by such arrangements could be eliminated. A number of other suggestions can be made

**Figure 9.1 :** Possible allocation of private external spaces to five storey walk-up dwellings



with regard to the possible uses of the external spaces. Such suggestions include the availability of a water supply with a proper drainage system, the provision of a paved or hard surface for washing carpets and similar tasks, and a pergola or a lattice system to prevent the gardens from being overlooked. However, further research is needed in order to determine in more precise terms the floor areas of the external spaces that are to be allocated as well as the type of services that should be provided. In addition to design considerations, the legal and financial frameworks within which such spaces allocations are to be made also need investigation.

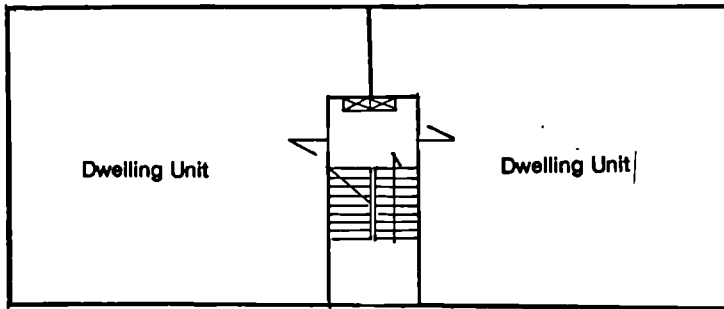
The creation of private gardens around the blocks of flats would have a number of implications on the site planning of the mass housing estates. While it is very tempting at the present stage to go into design details, it is not within the scope of the present work to do so. However, sketches of design principles are made to illustrate the design recommendations (see figs 9.1, 9.2, 9.3).

While the flats on the ground and the first floors would be allocated the spaces adjacent to the buildings, the flats located on the second, third and fourth floors might be given more control of private external spaces located on the flat roof of the building.

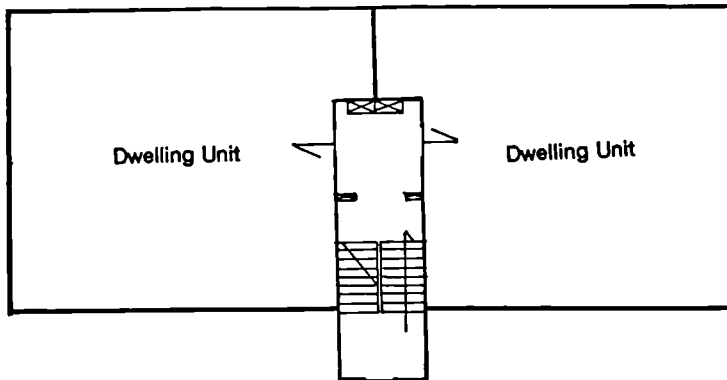
### **9.5.2. The Blocks' Roof**

The results presented in section 6.9.5 reveal that a significant proportion of the residents were in favour of an accessible roof in order to carry out a number of activities such as washing and drying large items for which there is generally no space in the loggias. The allocated spaces on the top of the building should be designed as far as possible, so as to allow the same activity that are carried out in the gardens to take place. The roof could be divided into private fenced spaces and each space might have its own water supply and drainage. The accessibility to the roof should be limited to the residents living in the upper floor flats (see fig 9.1). The size of the private external spaces would obviously depend on the size of the roof and the number of households sharing it. The less the number of people sharing the roof, the less noise and problems would occur. Reducing the number of households sharing the same roof means that there is more chance for the various neighbours to come to an agreement in setting their own "rules" for preventing noise disturbances and the occurrence of problems.

**Figure 9.2 : Transitional Space Between the Stairs and the Entrances to the Flats**

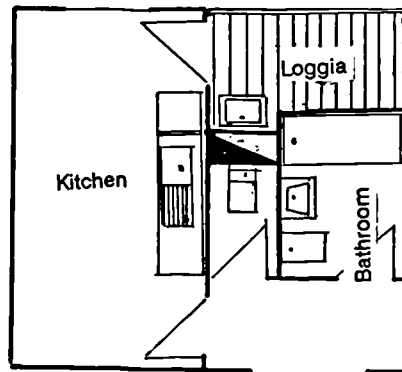


The case of the Bab  
Ezzouar Estate

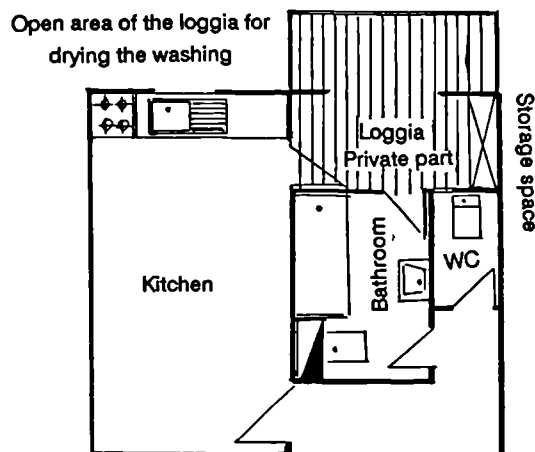


Possible arrangement  
providing more privacy  
and better definition of  
territory

**Figure 9.3 : Possible arrangement of the kitchen, bathroom, WC and the loggia**



Existing arrangement in the Ain Allah estate



Possible satisfactory arrangement

Access from the bathroom to the loggia for a direct transfer of laundry

Natural lighting and ventilation of the bathroom and the WC

The recommendations stated above are more likely to be successful if a certain degree of social homogeneity within the blocks of flats is achieved. The adoption of a particular housing allocation policy appears to be a factor in the running of future similar housing estates which is very likely to promote a higher degree of residential satisfaction (see section 8.4.3b).

### **9.5.3. The Housing Allocation Policy**

A sensible allocation policy regarding those living in the same block of flats would seem to be one which respects the following guidelines:

- Ensures that households with reasonably similar backgrounds dwell within the same blocks of flats
- Ensures that large households are allocated the ground and the first floor dwellings
- Avoids the concentration of a large number of children within the blocks of flats. A low child density within the different blocks would reduce the noise generated by the children and would facilitate the maintenance and upkeep of the communal spaces.
- Ensures that the largest households are allocated the largest flats within the estate. The field study showed that this was not the case on several occasions.

A degree of social homogeneity of neighbours living in the same block of flats was found to be significantly related to a higher level of maintenance and upkeep of the shared stairways (see section 5.4.1a), which in its turn was found significantly related to residents' satisfaction with their dwelling.

### **9.5.4. Maintenance and Upkeep**

A key element in the design of multi-family housing estates is their capacity to be easily managed and easily maintained. Various types of repair work were found carried out within the flats in the four estates by a significant proportion of the respondents (81%%). Such repairs included plumbing, changing wall tiling or floor tiling as well as filling in cracks in the walls. The availability of a maintenance office located within the estates is highly recommended, as it should not only ensure the quick repair of faults but would also prevent a rapid degradation of the fabric of the mass housing dwellings. In addition to the repair



work, the maintenance office would also have a number of cleaners with clearly laid out responsibilities for cleaning the staircases of the different blocks. Each cleaner would be responsible for a limited number of blocks and should have access within each block to proper storage facilities as well as to a water supply. It is also highly recommended that the cleaners should be living on the estate where they work so as to ensure that the cleaning of the stairways occurs on a regular basis. The cleaners should be known by the residents, who should contribute in their payment. In addition to the frequent cleaning of the communal spaces, a number of other factors have been found related to the cleanliness of those spaces. These factors are:

- The number of households using the stairways
- The child density within the block of flats
- The degree of agreement between the neighbours living in the same block

As stated in the previous section, these factors could well be brought about through a more rational housing allocation policy. Other factors where design improvements might be made are:

- In the physical features of the communal stairways, in terms of their daylighting quality and the type and quality of the finishing materials, such as floor and stairs tiling and wall painting (see section 5.4.1)
- A restriction on the accessibility to the communal stairways in order to give the residents more control of and a responsible feeling towards the communal spaces.

In order to ensure an improvement in the maintenance and upkeep of the communal stairways, a careful choice of floor tiling and wall painting should be made. It is highly recommended that ceramic floor tiling, which stands heavy usage should be employed together with the use of bright and cheerful colours for the walls. In addition, the stairs should be provided with large screened openings to ensure a comfortable level of daylighting. Electric lighting should also be provided and should not be vulnerable to vandalism. The block's entrance should be kept closed at night and each flat should have its own key and own bell, located next to the main door of the block. The private external spaces adjacent to the block should provide a transitional space between the public spaces and the semi-

public stairways (see fig 9.1). This would prevent, to some extent, strangers' access to the stairways. The flats' entrances should *not* be located on the part of the landing immediately adjacent to the stairs ( this raised some complaints among the respondents) but should be placed within a semi private space extending from the landing (see fig 9.2). Such arrangements would provide the flats with a transitional space leading to the staircase and would ensure more privacy within the dwellings.

Whereas the recommendations stated in the above sections (9.5.1 to 9.5.4) are directly applicable to either existing or future mass housing projects and deal mainly with the housing environment *outside* the dwellings, the following recommendations are applicable to the design of the dwellings themselves.

#### **9.5.5. The dwelling**

A number of features in the design of the mass housing dwelling were criticised by the respondents in the four studied estates. The examination of the Bab Ezzouar and the Ain Nadja estates allowed the researcher to identify a number of aspects that tended to be strongly disliked by the majority of the respondents. On the other hand, the examination of dwelling design in the Garidi and the Ain Allah estates made the identification of positive features possible. Among the features of the dwellings found to be significantly related to residents' satisfaction was the size of the kitchen.

##### *a. the Kitchen*

The kitchen is one of the spaces in the dwelling that should undoubtedly be given priority in the design process. The results of the present study show that a floor area of 12 sqm is very likely to be satisfactory (see section 7.3.1). Bearing in mind that meals are usually taken in the kitchen by the majority of the residents, such a floor area would provide enough space for catering for reasonably large households. The results also show that shapes that are closer to a square rather than to a somewhat long and narrow rectangle are generally preferred by the residents and that irregular shapes tended to be disliked. The location of the kitchen and the loggia doors as well as the location of the window should allow enough free wall surface for hanging storage units and for placing the refrigerator. More wall surface could be made available if the sink and the working surface were placed under the window. If the shape of the kitchen is rectangular, the working surface should preferably be placed along the width rather than along the

length of the kitchen. Sufficient wall tiling should be provided next to the working surface and should not be limited to two rows only. The cooker should *not* be placed near the kitchen or the loggia doors. All the kitchens should have a direct access to the loggia, for the reasons to be described in the next section.

*b. The kitchen's loggia*

The kitchen's loggia appeared to be the most important private external space within the dwelling unit itself, primarily because of the number of activities found taking place there, in addition to storage and drying the laundry (see section 7.4.3). Most of these activities or tasks are complementary to those occurring in the kitchen. Whereas a certain degree of privacy is required for the housewife in the loggia, the architectural response to such a need, should not result in a complete closed aspect to what is a private *external* space as happened in the Ain Nadja estate (see section 7.4.1b). The need for good exposition of the laundry to the sunlight seems to be stronger than the need to have a high degree of privacy within the loggia. It appears to be preferable for the loggias to have two parts: one which would be open and used for drying the washing and a second which would be screened and could be used for washing and/or cooking (see fig 9.3). Another alternative would be a flexible design allowing the housewives to open or screen the loggia, depending on the activity taking place. The loggias should be provided with a number of facilities such as a sink and adequate water drainage as well as a built in storage space (see section 7.4.2). The loggias should *not* be orientated to the North and should have a floor area of at least 5 sqm.

*c. The internal organisation of the dwellings*

The organisation of the dwellings along a corridor was found to be generally accepted and perceived by some residents as providing more privacy than would a central space. The physical features of the dwellings in both the Garidi and the Ain Allah estates were mostly liked by their residents (see sections 6.4 and 6.5) whereas a large number of the physical features of the dwellings in the Ain Nadja and the Bab Ezzouar estates were disliked by the majority of the respondents (see sections 6.2 and 6.3). The case of those two estates allowed a number of design details that should be *avoided* in future dwelling design to be identified, as follows:

- a corridor which is too long, dark and narrow

- an entrance door leading directly onto the corridor without a proper entrance hall or an increase in the width of the corridor in the entrance area
- a living room door too close to the flats' entrance door
- a WC door facing the living room
- windows that have a fixed part in the middle, preventing residents from hanging blankets sheets and mattresses for airing.
- Window shutters that allow overlooking from facing blocks at night
- a living room divided by the circulation to the bedrooms
- a lack of natural lighting and ventilation in the bathroom and the WC.

This last aspect has been heavily criticised by the respondents in almost all the estates, suggesting that both the bathroom and the WC should have windows opening on the outside.

Two design details strongly appreciated by the residents in the Garidi and/or the Ain Allah estates and which should be considered in the design of future dwellings are:

- the availability of built in storage spaces within the corridor and/or the kitchen
- a clear separation between the circulation leading to the kitchen, the bathroom and the WC and the circulation leading to the bedrooms and the living room. The arrangement of the kitchen, the bathroom and the WC in the Ain Allah estate seems to be the most satisfactory when compared with the arrangements found in the three other estates (see fig 6.11).

#### *d. The Bathroom*

A floor area of 3 sqm was generally perceived by the residents as small for a bathroom. Because the bathroom was found used by the vast majority of the respondents for washing the laundry, using either a washing machine or the bath itself, it appears that a satisfactory arrangement would be to have a direct access from the bathroom to the loggia in order to ensure the direct transfer of the

washing to the laundry wires (see fig 9.3). The opening of the bathroom to the loggia would also ensure better ventilation and a comfortable level of daylighting within the bathroom. However, such an arrangement should not affect the privacy within the bathroom. The WC should also have a window opening directly onto the facade or on the loggia.

*e. The living room*

The vast majority of the residents perceived the size of their living room as small or too small, even when the floor area was 21 sqm. When space was available within the dwelling unit, a separation was made by the residents between a living room transferred to one of the bedrooms, where members of the household could watch television, and the guests' reception room (see section 7.2.3) which contained the best furniture items. However, such separation was not possible for the majority of the residents who, complained about the lack of space within their dwelling unit. The living room was found to contain a large number of furniture items as well as a dining area (see section 7.2.3) in most of the visited dwellings. An examination of the residents' reactions to the design of their living room in the four estates makes a number of recommendations possible:

- the living room should have a regular shape which is closer to a square than a long narrow rectangle. Too many corners should be avoided
- the size of the living room should be determined according to the type and size of the furniture items generally available on the local market and which tend to be used by the residents. Such items include a large wall unit and living room suite as well as a dining table and chairs (see sections 7.2.3 and 7.2.4). The dining area should be easily accessible from the kitchen.
- The positions of the doors and the window should allow a maximum of free wall surface.

The size of the living room could be increased if the space usually allocated to the balcony were to be added to the floor area of the living room.

*f. The living room balcony*

A strong tendency was observed among the residents to close off the private external spaces adjacent to the living room in order to increase the living room

floor area. While a number of purposes were stated for the use of the living room balcony, the actual observed uses were limited to drying the washing and storage (see section 7.2.5). The lack of a living room balcony within the dwelling units in the Ain Allah estate did not appear to cause the residents any dissatisfaction with their dwellings. It seems likely to be the case that a larger living room would be preferred to a small living room with a balcony. If the recommendations made in sections 9.5.1 and 9.5.2 are applied, at least some of the flats would be allocated larger private external spaces outside the dwelling and the need for a balcony adjacent to the living room would be less justified.

*g. The bedrooms*

Apart from the Ain Allah estate, the vast majority of the dwellings in the three other estates consists of two bedrooms and a living room. Both the number and the size of the bedrooms were heavily criticised by the respondents in the four estates.

The examination of residents' perception of the size of their bedrooms in section 7.6.1 shows that a floor area of 12 to 13 sqm for each bedroom is very likely to be satisfactory (see section 7.6.1). Again, as was the case for the living room and the kitchen, a rectangular bedroom with a large difference between the width and the length tended to be strongly disliked by the residents. The number of bedrooms was found insufficient for a significant proportion of the studied households as, 62% of the respondents expressed the need for an additional one or two bedrooms. The small number of bedrooms resulted in an occupancy of more than three people in both the children's bedroom and the living room which was often also used for sleeping. Although the dwellings have been conceived for an 'average' household of seven people with an occupancy rate of three people per room, the real occupancy is far worse than the theoretical occupancy. Whereas the two bedroom dwelling might be appropriate for small households with two to three children, this was found to be far from the case for a significant proportion of the studied large households.

The results presented in Chapters 6 and 7, show that flat size is one of the major problems residents face with their dwelling and is the major reason for closing off the private external spaces provided with the dwellings. The small number of available bedrooms is further aggravated by the worsening acute shortage of housing, resulting in a return to the extended family within the two bedroom dwelling, which may then be subject to either minor or major alterations

ranging from the closing off the balconies to the conversion of the kitchen into a bedroom and the conversion of the loggia into a kitchen. Such alterations have also been observed in similar housing projects in other countries such as Egypt (Steinberg, 1984) and Baghdad (Al Noori, 1987). The distress brought about by overcrowded housing conditions may provoke uncontrolled extensions and construction activities by the inhabitants. Such activities have been observed in similar mass housing estates in Egypt (Steinberg, 1984, Tipple et al 1985), where the shortage of housing is even worse than in Algeria.

Although the general tendency in the present housing construction policy is to reduce the size of the dwellings in order to produce a greater number of dwelling units, the results of the present work suggest that, in order to avoid problems in the future and in order to avoid a rapid degradation of the newly built housing stock, a larger proportion of three roomed flats should be provided within the mass housing estates and should be allocated to large households. Because of the limited degree of housing mobility available, adaptations and extensions should be conceived as part of the long term future of mass housing dwellings in order to allow for the changing needs of the residents. Extensions could be planned through either the closing off of available private external spaces or through actual extensions of the building structure. Recent changes in Algerian housing policy encourage the involvement of the private sector in solving the housing problems of middle class households. This means that low income households should have priority in the allocation policy of the subsidised mass housing dwellings. A better knowledge of the future residents of the mass housing dwellings and their involvement in a number of decisions concerning the design and the management of their housing environments is highly recommended.

It is likely that the findings of this study are not confined to the four selected estates. More studies are needed at a national level in order to improve the design of the mass housing dwellings in different parts of the country. Small scale experimental projects should be built where the present recommendations could be brought about in a variety of ways. These experimental projects should themselves be subject to further evaluative studies. Post occupancy evaluation should be carried out as a routine, on a cyclical basis with effective feedback mechanisms. Such mechanisms should permit the regular updating of design recommendations and the formation of databases necessary for the improved design of housing.

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## APPENDIX A : QUESTIONNAIRE

---

Address \_\_\_\_\_

Date : \_\_\_\_\_

Time : \_\_\_\_\_

Estate : \_\_\_\_\_

View took : \_\_\_\_\_

Floor : \_\_\_\_\_

Working Housewife ?

YES

NO

If yes, what is the occupation ?

	Relationship to head of household	Sex	Age (last birthday)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

\* Head of household : he is defined as the husband. In the absence of the husband, the head of household is the bread winner

\* Household : group of people who live regularly at the same address and who are all catered for by the same person. If other people living at the same address cater for themselves or are catered for by someone else, they form a separate household.

TENURE : Is this flat :

Owner occupied ?  Rented from council ?  Rented privately ?  Rent free ?

**TYPE OF ACCOMODATION (CONSTRUCTION) .**

Prefabricated

Conventional construction

**Construction of floor :**

**Construction of walls :**

**Construction of ceiling :**

QUESTIONNAIRE

THE ESTATE:

1. Can you tell me in general what you think of the estate?

2. Do you think some parts of the estate are better than others?

YES

No

3. If so which and why?

4. What do you think of the appearance of the estate?

Nice  Quite Nice  Don't Mind  Bad  Very bad  No resp

5. What facilities are available on the estate?

Shops  Bus Stops  school  Medical Centre  Kinder Garten

6. How far are most of the facilities?

10 M  100 M  200 M  400 M  More

RELATIONSHIP WITH NEIGHBOURS:

7. How many families in this building you have relationship with ?

8. How many of them would you regard as close friends ?

9. Why?

10. How many people on the estate you know and have relationship?

11. In a personal emergency , who would you contact if you were on your own?

LIVING ON OR OFF THE GROUND:

12. Which do you prefer living on the ground or living off the ground?

On The Ground  Off The Ground

13.why?

ACCESS FROM THE GROUND?

13. Have you any comments about

The Lift  The Staircase  relation between flat and staircase

SECURITY:

14. Has your home ever been broken into or burgled?

Yes  No

15. Has there been any attempted break in in this building?

Yes  No

16. Do you take measures for security purposes?

Yes  No

17. What are these measures?

MAINTENANCE:

18. Would you say you building is:

- Clean    Quite clean    dirty    very dirty

19. Do people in this building get organised to clean the staircases and maintain the building?

- Yes    No

20. How?

21. Have you had any repairs or maintenance done in your flat?

NOISE:

22. Living here do you find noise :

- A Great Problem    A Slight problem    Not a problem    Don't know    Missing response

23. What sort of noises are a problem?

- Children    Cars    Radio    T.V  
 Speaking of neighbours    Others...

THE FLAT:

24. What do you like about your flat?

25. What do you dislike about it?

26. How satisfied are you with your flat?

- Very satisfied       Fairly satisfied       Mixed feeling       Fairly dissatisfied  
 Very dissatisfied       Missing resp.

PRIVACY:

27. Do you find your flat:

- Overlooked       Not sound proof enough       Too cut off       Don,t know  
 Other :

SIZE OF THE FLAT:

28. How many rooms do you have?

- Living room       Bedroom(s)       Dining Area

29. What extra room would you like ?and how many?

FLAT ORGANISATION:

30. What do you think about your flat ?

31. Would you prefer a courtyard organisation?

- Yes       No

32. Why?

33. Would you prefer a central organisation with a central space instead of the corridor?

- Yes       No

34. Why?

VARIOUS ROOMS:

:

35. Now I want to ask you about the various rooms:

THE LIVING ROOMS:

36. Do you find it

Small    Too Small    About the right size

37. Do you find the shape convenient?

Yes    No

38. Do you think you can arrange your furniture in the way you want to ?

Yes    No

39. Do you have a balcony with your living room ?

Yes    No

40. Is the outlook from the living room important to you ?

Yes    No

41. What do you think of the actual outlook from your living room ?

42. What are the different activities held in your living room ?

Watching T.V    Receiving    Eating    Sleeping    Others



43. Do some members of your household sleep in the living room ?

Yes       No

Who ?

44. If a guest comes , where does he usually sleep?

45. Would you prefer to have a special room for guests?

Yes       No

46. Why?

THE KITCHEN:

47. Is the kitchen:

- Small     Too small     About the right size

48. Is there enough work space?

- Yes     No

49. Which of these items of equipment do you own?

- Cooker     Fridge     Washing machine     Freezer     None

50. For which of these items is there insufficient space in your kitchen?

- Fridge     Washing machine     Freezer     None

51. If you wanted to get any other items in the future, would there be enough space?

- Yes     No

52. Do you have enough space for storage in your kitchen?

- Yes     No

53. If No where do you store extra things?

54. Do you all have your meals in the kitchen?

- Yes     No

55. If No, where do you have your meals

- Lounge     Room

56. Normally , do you all sit together for meals?

Yes  No

57. Do you have a loggia with your kitchen?

Yes  No

58. What do you think about the fact of having a loggia with the kitchen ?

59. To what purpose do you (or would you) use the loggia?

60. Can you have contacts from the kitchen's loggia with your neighbours?

Yes  No

61. If No , would you like to have this opportunity?

Yes  No

62. Why?

63. Have you any other comments about your kitchen?

THE BATHROOM

64. What facilities are provided in the bathroom?

Bath  Shower  Bassin  W.C

65. Do you use the bathroom for washing clothes or blankets?

Yes  No

66. Where do you usually dry your clothes?

67. Do you have a water heater?

Yes  No

68. Do you have water during the whole day?

Yes  No

69. If No , where do you usually store the water?

THE BEDROOMS:

70. Now , thinking about the bedrooms , do you find them:

Big enough  Small  Toosmall

71. Can you arrange the furniture in the bedrooms in the way you want to?

Yes  No

72. How do the household share the bedrooms?

73. Apart from sleeping, are there other activities hold in the bedrooms ?

Yes  No

74. What are these activities?

75. When your children are at home , where do they usually stay?

- Room       Living room       Balcony       Corridor       Other

76. Do they usually play in their bedrooms?

- Yes       No

76. If No , Why?

77. Do the bedroom(s) have built in wardrobes?

- Yes       No

78. Do you (or would you )like this?

- Yes       No

79. Have you any other comments you would like to make about the bedrooms?

**BALCONY AND TERRASSE:**

80. Is it important for you to have a balcony?

- Yes       No

81. Where ? and Why?

82. Is it important for you to have a terrace?

Yes

No

83. Where ? and Why?

84. If you had to choose between a balcony or a terrace , what would you choose?

Balcony

Terrace

85. Are there any activities you would like to do in your home but cannot because there is not enough space ?

Yes

No

86. If Yes , what are those things?

TENANTS HISTORY AND FUTURE INTENTIONS:

87. How long have you been living in this address?

88. Do you want to move from this flat?

Yes

No

89. Why?

90. Would you like to make any alterations to your flat ?

Yes

No

91. What are these alterations ?

92. Do you think it is better to :

Be a council tenant    Buy the flat    Be owner occupier

93. Do you think your flat is expensive to rent?

Yes    No

94. How much is the rent ?

95. Have you any comments to make about your flat

Yes    No

96. Summing your feeling about the flat would you say you were :

Very satisfied    Fairly satisfied    Had mixed feelings  
 Fairly dissatisfied    Very dissatisfied    Missing response

97. Now going back to your childhood, the place you lived in must have been different from this place. Can you tell me what kind of accomodation it was ?

98. If you had to move , what kind of accomodation would you choose (If you had the choice of course)?

## **APPENDIX B : RESIDENTS' CHARACTERISTICS**



TAB B.1: FAMILY TYPE BY ESTATE

	ESTATES								Row Total	
	BAB EZZOJAR		AIN NADJA		GARIDI		AIN ALLAH			
TYPE OF FAMILY										
EXTENDED.....	6	18%	6	18%	7	23%	11	34%	30	23%
NUCLEAR.....	27	82%	27	82%	23	77%	21	66%	98	77%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

TAB B.2: WORKING HOUSEWIFE

	ESTATES								Row Total	
	BAB EZZOJAR		AIN NADJA		GARIDI		AIN ALLAH			
WORKING HOUSEWIFE										
NO.....	25	76%	25	76%	17	57%	22	69%	89	70%
YES.....	5	15%	7	21%	8	27%	8	25%	28	22%
PREVIOUSLY WORKING.....	3	9%	1	3%	5	17%	2	6%	11	9%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

TAB B.3: AGE OF THE INTERVIEWED HOUSEWIFE

	ESTATES								Row Total	
	BAB EZZOJAR		AIN NADJA		GARIDI		AIN ALLAH			
AGE OF THE RESPONDENT										
23 TO 35 year old.....	14	42%	21	64%	17	57%	16	50%	68	53%
36 TO 45 year old.....	14	42%	7	21%	10	33%	10	31%	41	32%
46 TO 65 year old.....	5	15%	5	15%	3	10%	6	19%	19	15%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

TAB B.4 : NUMBER OF CHILDREN PER HOUSEHOLD

	ESTATES								Row Total	
	BAB EZZOJAR		AIN NADJA		GARIDI		AIN ALLAH			
<b>NUMBER OF CHILDREN</b>										
NONE.....	0	0%	1	3%	2	7%	1	3%	4	3%
1 TO 3 children.....	12	36%	16	48%	13	43%	11	34%	52	41%
4 TO 5 children.....	7	21%	7	21%	7	23%	10	31%	31	24%
6 TO 8 children.....	10	30%	6	18%	7	23%	6	19%	29	23%
9 or more children.....	4	12%	3	9%	1	3%	4	13%	12	9%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

TAB B.5 : AGE OF THE OLDEST CHILD PER HOUSEHOLD

	ESTATES								Row Total	
	BAB EZZOJAR		AIN NADJA		GARIDI		AIN ALLAH			
<b>AGE OF OLDEST CHILD</b>										
5 year old or less.....	3	9%	6	19%	6	21%	8	25%	23	18%
6 TO 12 year old.....	7	21%	11	34%	9	32%	6	19%	33	26%
13 TO 20 year old.....	10	30%	4	13%	5	18%	12	38%	31	25%
21 year old or more.....	13	39%	11	34%	8	29%	6	19%	38	30%
Column Total.....	33	100%	32	100%	28	100%	32	100%	125	100%

Category counts and column percents

TAB B.6 : AGE OF THE YOUNGEST CHILD PER HOUSEHOLD

	ESTATES								Row Total	
	BAB EZZOJAR		AIN NADJA		GARIDI		AIN ALLAH			
<b>AGE OF YOUNGEST CHILD</b>										
5 year old or less.....	14	42%	19	61%	17	61%	17	53%	67	54%
6 TO 12 year old.....	15	45%	6	19%	6	21%	10	31%	37	30%
13 TO 20 year old.....	3	9%	4	13%	4	14%	5	16%	16	13%
21 to 35 year old.....	1	3%	2	6%	1	4%	0	0%	4	3%
Column Total.....	33	100%	31	100%	28	100%	32	100%	124	100%

Category counts and column percents

TAB B.7: HOUSEHOLD SIZE BY ESTATE

	ESTATE								Row Total	
	BAB EZZOUAR		AIN NAADJA		GARIDI		AIN ALLAH			
NUMBER OF PEOPLE										
One to four.....	4	12%	10	30%	14	47%	5	16%	33	26%
Five to nine.....	18	55%	13	39%	10	33%	16	50%	57	45%
Nine to twelve.....	11	33%	8	24%	6	20%	9	28%	34	27%
Thirteen to fifteen.	0	0%	2	6%	0	0%	2	6%	4	3%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

**APPENDIX C : RESIDENTS' EVALUATION OF THEIR  
HOUSING ENVIRONMENT**

**TAB C.1: PERCEIVED HYGIEN OF THE BUILDING**

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
PERCEIVED HYGIEN										
CLEAN.....	8	24%	2	6%	1	3%	23	72%	34	27%
QUITE CLEAN.....	7	21%	11	33%	15	50%	8	25%	41	32%
DIRTY.....	17	52%	19	58%	13	43%	1	3%	50	39%
VERY DIRTY.....	1	3%	1	3%	1	3%	0	0%	3	2%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

**TAB C.2: DO NEIGHBOURS IN THIS BUILDING GET ORGANISED TO CLEAN AND MAINTAIN THE STAIRCASE?**

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
NEIGHBOURS ORGANISATION										
NO.....	19	58%	22	67%	18	60%	5	16%	64	50%
YES.....	14	42%	11	33%	12	40%	27	84%	64	50%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

TAB C.3: WHAT DO YOU THINK OF THE APPEARANCE OF THE ESTATE?

	ESTATES								row percents	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
PERCEIVED APPEARANCE OF THE ESTATE										
NICE OR QUITE NICE.....	21	64%	28	85%	29	97%	26	81%	104	81%
BAD OR VERY BAD.....	12	36%	5	15%	1	3%	6	19%	24	19%
column percents.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

TAB C.4: IS THE OUTLOOK FROM YOUR LOUNGE IMPORTANT TO YOU?

	ESTATES								row percents	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
VIEW IMPORTANCE										
MISSING.....	1	3%	0	0%	0	0%	1	3%	2	2%
NO.....	11	33%	10	30%	7	23%	9	28%	37	29%
YES.....	21	64%	23	70%	23	77%	22	69%	89	70%
column percents.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

**TAB C.6 : RESPONDENT S APPEARANCE PERCEPTION BY THEIR AGE**

	AGE OF THE RESPONDENT						Row Total	
	23 TO 35 year old		36 TO 45 year old		46 TO 65 year old			
APPEARANCE								
NICE.....	20	29%	14	34%	4	21%	38	30%
QUITE NICE.....	35	51%	18	44%	13	68%	66	52%
DON T MIND.....	0	0%	1	2%	0	0%	1	1%
BAD.....	8	12%	6	15%	0	0%	14	11%
VERY BAD.....	5	7%	2	5%	2	11%	9	7%
Column Total.....	68	100%	41	100%	19	100%	128	100%

Category counts and column percents

**TAB C.5: WHAT DO YOU THINK ABOUT THE PRESENT OUTLOOK FROM YOUR LOUNGE ?**

	ESTATES								Row Total	
	BAB EZZOJAR		AIN NADJA		GARIDI		AIN ALLAH			
OUTLOOK FROM THE LOUNGE										
MISSING.....	56	170%	63	191%	63	210%	61	191%	243	190%
POSITIVE OPINION (1).....	8	24%	10	30%	6	20%	2	6%	26	20%
NEUTRAL OPINION (2).....	13	39%	7	21%	9	30%	6	19%	35	27%
NO PRIVACY.....	9	27%	17	52%	12	40%	22	69%	60	47%
NO GREENERY.....	7	21%	0	0%	0	0%	4	13%	11	9%
NEGATIVE OPINION (3).....	6	18%	2	6%	0	0%	1	3%	9	7%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents  
 based on the number of respondents per estate.  
 Percents add up to more than 100% as some respondents  
 gave more than one response category.

1. Such as good
2. Such as do not mind or nothing special
3. Such as very bad or dirty environment

**TAB C.7: HAS YOUR HOME EVER BEEN BROKEN INTO OR BURGLARED?**

	ESTATES								row percents	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
NO.....	28	85%	30	91%	28	93%	32	100%	118	92%
YES.....	5	15%	3	9%	2	7%	0	0%	10	8%
column percents.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

**TAB C.8: HAS THERE BEEN ANY ATTEMPT OF BURGLARY YOUR BLOCK OF FLATS**

	ESTATES								row percents	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
NO.....	24	73%	30	91%	22	73%	32	100%	108	84%
YES.....	9	27%	3	9%	8	27%	0	0%	20	16%
column percents.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

**TAB C.9: DO YOU TAKE SECURITY MEASURES?**

	ESTATES								row percents	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
SECURITY MEASURES										
NO.....	10	30%	6	18%	2	7%	18	56%	36	28%
YES.....	23	70%	27	82%	28	93%	14	44%	92	72%
column percents.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents



**TAB C.10: FLOOR LEVEL OF THE VISITED FLATS BY ESTATE**

	ESTATES								Row Total	
	BAB EZZOJAR		AIN NADJA		GARIDI		AIN ALLAH			
<b>FLOOR</b>										
GROUND FLOOR.....	7	21%	3	9%	5	17%	5	16%	20	16%
FIRST OR SECOND FLOOR.....	14	42%	15	45%	12	40%	16	50%	57	45%
THIRD OR FOURTH FLOOR.....	12	36%	15	45%	13	43%	11	34%	51	40%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

**TAB C.11: PREFERENCE TO LIVE ON OR OFF THE GROUND BY HOUSEHOLD SIZE**

	ON OR OFF THE GROUND						Row Total	
	DO NOT MIND		OFF THE GROUND		ON THE GROUND			
<b>NUMBER OF PEOPLE IN THE FLAT</b>								
ONE TO FOUR PEOPLE.....	3	27%	28	28%	2	11%	33	26%
FIVE TO SIX PEOPLE.....	2	18%	28	28%	5	28%	35	27%
SEVEN TO NINE PEOPLE.....	5	45%	24	24%	6	33%	35	27%
TEN OR MORE PEOPLE.....	1	9%	19	19%	5	28%	25	20%
Column Total.....	11	100%	99	100%	18	100%	128	100%

Category counts and column percents

**TAB C.12: HOUSEHOLD SIZE BY FLOOR LEVEL**

	FLOOR						Row Total	
	GROUND FLOOR		FIRST OR SECOND FLOOR		THIRD OR FOURTH FLOOR			
<b>NUMBER OF PEOPLE IN THE FLAT</b>								
ONE TO FOUR PEOPLE.....	4	12%	17	52%	12	36%	33	100%
FIVE TO SIX PEOPLE.....	5	14%	13	37%	17	49%	35	100%
SEVEN TO NINE PEOPLE.....	9	26%	14	40%	12	34%	35	100%
TEN OR MORE PEOPLE.....	2	8%	13	52%	10	40%	25	100%
Column Total.....	20	16%	57	45%	51	40%	128	100%

Category counts and column percents

TAB C.13: PREFERENCE TO LIVE ON OR OFF THE GROUND BY FLOOR LEVEL

	FLOOR						Row Total	
	GROUND FLOOR		FIRST OR SECOND FLOOR		THIRD OR FOURTH FLOOR			
ON OR OFF THE GROUND								
DO NOT MIND.....	4	20%	2	4%	5	10%	11	9%
OFF THE GROUND.....	10	50%	48	84%	41	80%	99	77%
ON THE GROUND.....	6	30%	7	12%	5	10%	18	14%
Column Total.....	20	100%	57	100%	51	100%	128	100%

Category counts and column percents

TAB C.14: LIVING HERE DO YOU FIND NOISE  
A GREAT, SLIGHT OR NOT A PROBLEM?

	ESTATES								row percents	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
NOISE PROBLEM										
MISSING.....	0	0%	1	3%	0	0%	0	0%	1	1%
A GREAT PROBLEM.....	14	42%	9	27%	6	20%	8	25%	37	29%
A SLIGHT PROBLEM.....	8	24%	9	27%	14	47%	8	25%	39	30%
NOT A PROBLEM.....	11	33%	13	39%	10	33%	16	50%	50	39%
GOT USED TO IT.....	0	0%	1	3%	0	0%	0	0%	1	1%
column percents.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

TAB C.15: WHAT KIND OF NOISE IS A PROBLEM ?

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
KIND OF NOISE										
MISSING.....	6	18%	11	33%	6	20%	9	28%	32	25%
CHILDREN NOISE.....	23	70%	14	42%	18	60%	8	25%	63	49%
CARS NOISE.....	15	45%	10	30%	11	37%	11	34%	47	37%
NEIGHBOURS RADIO.....	12	36%	5	15%	3	10%	8	25%	28	22%
NEIGHBOURS TV.....	1	3%	4	12%	2	7%	5	16%	12	9%
NEIGHBOURS SPEAKING.....	9	27%	11	33%	6	20%	4	13%	30	23%
OTHERS.....	4	12%	6	18%	3	10%	6	19%	19	15%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents  
based on the number of respondents per estate.  
Percents add up to more than 100% as some respondents  
gave more than one response category.

TAB C.16: HOW LONG HAVE YOU BEEN LIVING IN THIS ADDRESS?

	ESTATES								row percents	
	BAB EZZOJAR		AIN NADJA		GARIDI		AIN ALLAH			
TENURE LONGEVITY										
LESS THAN A YEAR.....	0	0%	2	6%	0	0%	2	6%	4	3%
ONE YEAR.....	0	0%	5	15%	2	7%	1	3%	8	6%
TWO YEARS.....	0	0%	5	15%	7	23%	5	16%	17	13%
THREE YEARS.....	0	0%	3	9%	7	23%	20	63%	30	23%
FOUR YEARS.....	3	9%	15	45%	9	30%	4	13%	31	24%
FIVE YEARS.....	0	0%	3	9%	5	17%	0	0%	8	6%
SIX YEARS.....	6	18%	0	0%	0	0%	0	0%	6	5%
SEVEN YEARS.....	17	52%	0	0%	0	0%	0	0%	17	13%
EIGHT YEARS.....	7	21%	0	0%	0	0%	0	0%	7	5%
column percents.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

TAB C.17: DO YOU INTEND TO MOVE FROM YOUR FLAT?

	ESTATES								row percents	
	BAB EZZOJAR		AIN NADJA		GARIDI		AIN ALLAH			
INTENTION TO MOVE										
.....	0	0%	0	0%	0	0%	1	3%	1	1%
NO.....	9	27%	6	18%	13	43%	14	44%	42	33%
YES.....	24	73%	27	82%	17	57%	17	53%	85	66%
column percents.....	33	100	33	100	30	100	32	100	128	100

Category counts and column percents

TAB C.18: WHY?

	ESTATES								row percents	
	BAB EZZOJAR		AIN NADJA		GARIDI		AIN ALLAH			
REASONS										
MISSING.....	0	0%	1	3%	1	3%	1	3%	3	2%
IF FOR A LARGER FLAT.....	12	36%	8	24%	12	40%	7	22%	39	30%
IF BETTER.....	7	21%	9	27%	2	7%	6	19%	24	19%
IF FOR A PRIVATE HOUSE.....	0	0%	5	15%	2	7%	3	9%	10	8%
HAVE NO CHOICE.....	3	9%	0	0%	1	3%	2	6%	6	5%
GOOD NEIGHBOURS.....	2	6%	1	3%	0	0%	2	6%	5	4%
GOT USED TO THE PLACE.....	4	12%	6	18%	12	40%	8	25%	30	23%
NO FIRE SECURITY.....	1	3%	0	0%	0	0%	0	0%	1	1%
DIRTY ENVIRONMENT.....	3	9%	0	0%	0	0%	0	0%	3	2%
NEAR TO WORK.....	1	3%	0	0%	0	0%	0	0%	1	1%
FAR FROM THE CITY AND NO TRANSPORT.....	0	0%	3	9%	0	0%	1	3%	4	3%
THE FLAT IS PRIVATELY OWNED...	0	0%	0	0%	0	0%	2	6%	2	2%
column percents.....	33	100	33	100	30	100	32	100	128	100

Category counts and column percents

**APPENDIX D : RESIDENTS' EVALUATION OF THE INTERNAL  
ORGANISATION OF THEIR DWELLINGS**

TAB D.1: WHAT DO YOU LIKE ABOUT YOUR FLAT?

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
LIKES										
GENERAL ORGANISATION.....	0	0%	2	6%	2	7%	17	53%	21	16%
SPECIFIC FEATURES.....	3	9%	6	18%	16	53%	13	41%	38	30%
NON PHYSICAL FEATURES.....	7	21%	5	15%	7	23%	11	34%	30	23%
BETTER THAN PREVIOUS/NO CHOICE	3	9%	8	24%	2	7%	5	16%	18	14%
NOTHING OR DO NOT KNOW.....	21	64%	13	39%	11	37%	3	9%	48	38%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

Column percents are based on total cases by estate

GENERAL ORGANISATION: Likes good layout or likes every thing

SPECIFIC FEATURES: such as large kitchen, large living room and two balconies

NON PHYSICAL FEATURES: such as good neighbours, water availability

Nearness to work and tranquility

BETTER THAN PREVIOUS /NO CHOICE: Improvement over the previous accommodation

Had no choice

TAB D.2: WHAT DO YOU LIKE ABOUT YOUR FLAT?

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
LIKES										
SUN EXPOSITION.....	0	0%	0	0%	0	0%	1	3%	1	1%
EVERY THING.....	0	0%	1	3%	0	0%	3	9%	4	3%
GOOD LAYOUT.....	0	0%	1	3%	2	7%	14	44%	17	13%
CENTRAL SPACE.....	0	0%	1	3%	0	0%	0	0%	1	1%
TWO BALCONIES.....	0	0%	0	0%	6	20%	0	0%	6	5%
LARGE KITCHEN.....	1	3%	0	0%	7	23%	3	9%	11	9%
FLAT SIZE.....	0	0%	5	15%	3	10%	8	25%	16	13%
LARGE LIVING ROOM.....	1	3%	0	0%	0	0%	1	3%	2	2%
LARGE WINDOWS.....	1	3%	0	0%	0	0%	0	0%	1	1%
GOOD NEIGHBOURS.....	3	9%	0	0%	0	0%	4	13%	7	5%
WATER AVAILABILITY.....	1	3%	2	6%	1	3%	4	13%	8	6%
TRANQUILITY.....	2	6%	3	9%	6	20%	3	9%	14	11%
NEARNESS TO WORK.....	1	3%	0	0%	0	0%	0	0%	1	1%
HAVE NO CHOICE.....	0	0%	5	15%	1	3%	1	3%	7	5%
BETTER THAN PREVIOUS ONE..	3	9%	3	9%	1	3%	4	13%	11	9%
NOTHING.....	21	64%	11	33%	7	23%	2	6%	41	32%
DO NOT KNOW.....	0	0%	2	6%	4	13%	1	3%	7	5%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

**TAB D.3: WHAT DO YOU DISLIKE ABOUT YOUR FLAT?**

	ESTATE								Row Total	
	BAB EZZOVAR		AIN NADJA		GARIDI		AIN ALLAH			
DISLIKES										
NOTHING.....	0	0%	2	7%	2	7%	12	38%	16	13%
FLAT SIZE.....	9	27%	5	17%	16	55%	1	3%	31	25%
DESIGN FEATURES.....	12	36%	16	53%	6	21%	6	19%	40	32%
CONSTRUCTION ASPECTS	19	58%	8	27%	13	45%	17	53%	57	46%
NON PHYSICAL										
FEATURES.....	13	39%	3	10%	1	3%	2	6%	19	15%
EVERYTHING.....	0	0%	10	33%	6	21%	1	3%	17	14%
Total Cases.....	33	100%	30	100%	29	100%	32	100%	124	100%

Column percents based on the number of cases by estate  
 DESIGN FEATURES : such as no balcony, no loggia and low ceiling  
 CONSTRUCTION ASPECTS : such as plastic material and bad finishes  
 NON PHYSICAL FEATURES : such as bad neighbours and dirty environment ;

**TAB D.4: WHAT DO YOU DISLIKE ABOUT YOUR FLAT?**

	ESTATE								Row Total	
	BAB EZZOVAR		AIN NADJA		GARIDI		AIN ALLAH			
DISLIKES										
DIRTY ENVIRONMENT...	13	39%	1	3%	1	3%	0	0%	15	12%
EVERY THING.....	0	0%	3	9%	1	3%	0	0%	4	3%
BAD FLAT.....	0	0%	7	21%	5	17%	1	3%	13	10%
NOTHING.....	0	0%	2	6%	2	7%	12	38%	16	13%
BAD NEIGHBOURS.....	0	0%	2	6%	0	0%	1	3%	3	2%
SMALL FLAT.....	9	27%	5	15%	16	53%	1	3%	31	24%
SMALL KITCHEN.....	1	3%	1	3%	0	0%	0	0%	2	2%
SMALL LIVING ROOM...	1	3%	0	0%	0	0%	0	0%	1	1%
BAD LIVING ROOM.....	0	0%	13	39%	1	3%	0	0%	14	11%
NO LOGGIA.....	1	3%	0	0%	0	0%	0	0%	1	1%
NO STORAGE SPACE....	1	3%	0	0%	0	0%	0	0%	1	1%
NO BALCONY.....	4	12%	0	0%	0	0%	2	6%	6	5%
BATHROOM.....	2	6%	1	3%	1	3%	0	0%	4	3%
WC.....	0	0%	0	0%	3	10%	0	0%	3	2%
LOW CEILING.....	1	3%	0	0%	0	0%	1	3%	2	2%
NO PRIVACY.....	1	3%	0	0%	0	0%	0	0%	1	1%
SMALL WINDOWS.....	0	0%	1	3%	0	0%	0	0%	1	1%
PLASTIC MATERIAL....	18	55%	0	0%	0	0%	0	0%	18	14%
WATER INFILTRATION..	1	3%	1	3%	0	0%	1	3%	3	2%
FRAGILE CONSTRUCTION	0	0%	0	0%	0	0%	14	44%	14	11%
BAD FINISHES.....	0	0%	7	21%	9	30%	0	0%	16	13%
BAD SUN ORIENTATION..	0	0%	0	0%	1	3%	0	0%	1	1%
FLOOR TILING.....	0	0%	0	0%	0	0%	2	6%	2	2%
LOW WATER PRESSURE..	0	0%	0	0%	0	0%	1	3%	1	1%
ROOM SHAPE.....	0	0%	0	0%	0	0%	3	9%	3	2%
WALL CRACKS.....	0	0%	0	0%	4	13%	0	0%	4	3%
MISSING.....	0	0%	3	9%	1	3%	0	0%	4	3%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents  
 Based on the number of cases by estate

TAB D.5 : WHAT DO YOU THINK ABOUT THE LAYOUT OF YOUR FLAT AS A WHOLE?

	ESTATES								Row Total	
	BAB EZZOJAR		AIN NADJA		GARIDI		AIN ALLAH			
OPINION ABOUT DWELLING LAYOUT										
+.SATISFACTORY - GOOD - VERY GOOD.....	19	63%	15	45%	22	73%	31	97%	87	70%
+.LIKES KITCHEN S SIZE AND POSITION.....	0	0%	0	0%	1	3%	1	3%	2	2%
-.TOO LONG CORRIDOR WITHOUT AN ENTRANCE HALL.....	5	17%	1	3%	0	0%	0	0%	6	5%
-.SMALL WC WITH BAD POSITION FACING THE LR.....	1	3%	2	6%	2	7%	1	3%	6	5%
-.BAD LIVING ROOM POSITION AND BAD LOGGIAS DESIGN.	2	7%	18	55%	0	0%	0	0%	20	16%
-.SMALL FLAT OR SMALL BEDROOMS.....	2	7%	1	3%	7	23%	0	0%	10	8%
-.NEGATIVE PERCEPTION :BAD OR VERY BAD.....	6	20%	4	12%	0	0%	0	0%	10	8%
Total Cases.....	30	100%	33	100%	30	100%	32	100%	125	100%

Column percents are based on total cases

+. Positive Opinion

-. Negative Opinion

TAB D.6 : ALTERATIONS MADE OR TO BE MADE TO THE FLAT

	V1								Row Total	
	BAB EZZOJAR		AIN NADJA		GARIDI		AIN ALLAH			
ALTERATIONS										
FINISHES ALTERATIONS.....	24	73%	6	18%	7	23%	2	6%	39	30%
EXTENSIONS BY ADDING LOGGIAS.....	6	18%	0	0%	4	13%	0	0%	10	8%
CONVERSIONS.....	2	6%	1	3%	14	47%	0	0%	17	13%
CONCEPTION CHANGES.....	3	9%	18	55%	1	3%	3	9%	25	20%
OPENINGS ON THE FACADE.....	2	6%	0	0%	0	0%	0	0%	2	2%
MISSING.....	3	9%	11	33%	7	23%	27	84%	48	38%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

FINISHES ALTERATIONS :such as changing the plastic material  
placing doors - wall tiling

EXTENSIONS BY ADDING LOGGIAS :such as adding the loggia to the living room  
adding the loggia to the kitchen

CONVERSIONS such as converting the loggia into a kitchen  
and the kitchen into a bedroom,

converting a balcony into a study room or a dining room

CONCEPTION CHANGES such as breaking through a wall separating two rooms  
or dividing the living room into two rooms

OPENINGS ON THE FACADE such as opening a window in the living room or in WC



TAB D.7: WOULD YOU PREFER A COURTYARD ORGANISATION? WHY?

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
COURTYARD PREFERENCE										
NO, BECAUSE OF DIFFERENT NEGATIVE ASPECTS*.....	1	3%	9	27%	10	33%	4	13%	24	19%
YES, TO GET FRESH AIR, SUN LIGHT AND GROW PLANTS..	18	55%	15	45%	12	40%	10	31%	55	43%
YES, FOR CHILDRENS PLAY AND SPECIFIC ACTIVITIES*..	15	45%	3	9%	5	17%	12	38%	35	27%
YES, NO NEIGHBOURS AND MORE PRIVACY.....	12	36%	9	27%	7	23%	6	19%	34	27%
YES, MORE SPACE AND BETTER CONSTRUCTION.....	5	15%	13	39%	6	20%	7	22%	31	24%
DO NOT KNOW.....	1	3%	3	9%	2	7%	4	13%	10	8%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

Column percents are based on total cases

\* NEGATIVE ASPECTS :Such as weather problems,space waste,  
not functional and  
inappropriate to a nuclear family

\* OTHER ACTIVITIES :Such as drying the laundry, washing  
wool and carpets, preparing couscous  
and organising parties

TAB D.8: WOULD YOU PREFER AN ORGANISATION WITH A CENTRAL SPACE  
INSTEAD OF THE CORRIDOR? WHY?

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
CENTRAL SPACE PREFERENCE										
NO, LOST SPACE, NO PRIVACY, NO NATURAL LIGHT.....	5	15%	8	24%	11	37%	11	34%	35	27%
YES, CAN USE THE CENTRAL SPACE*.....	24	73%	18	55%	7	23%	8	25%	57	45%
YES, WILL HAVE MORE SPACE.....	10	30%	9	27%	9	30%	5	16%	33	26%
DO NOT KNOW.....	0	0%	1	3%	4	13%	5	16%	10	8%
MISSING.....	3	9%	3	9%	1	3%	3	9%	10	8%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents based  
on number of cases per estate

\* CAN USE IT: As a second living room  
as a childrens play area  
as a dining room  
as a well decorated entrance hall.

TAB D.9: HOUSING ASPIRATION BY ESTATE

	ESTATE								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
RESIDENCE ASPIRED TO MISSING.....	0	0%	0	0%	0	0%	1	3%	1	1%
LARGER APPARTMENT...	12	38%	14	42%	14	47%	13	41%	53	42%
VILLA.....	20	63%	19	58%	15	50%	18	56%	72	57%
COURTYARD HOUSE.....	0	0%	0	0%	1	3%	0	0%	1	1%
Column Total.....	32	100%	33	100%	30	100%	32	100%	127	100%

Category counts and column percents

TAB D.10: BALCONY IMPORTANCE BY ESTATE

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
BALCONY IMPORTANCE N.....	1	3%	1	3%	0	0%	3	9%	5	4%
Y.....	32	97%	32	97%	30	100%	29	91%	123	96%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

TAB D.11: WHERE WOULD YOU LIKE TO HAVE A BALCONY?

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
BALCONY MISSING.....	1	3%	2	6%	1	3%	3	9%	7	5%
LIVING ROOM.....	24	73%	21	64%	21	70%	17	53%	83	65%
KITCHEN.....	11	33%	10	30%	11	37%	6	19%	38	30%
BEDROOM.....	11	33%	2	6%	7	23%	6	19%	26	20%
BATHROOM.....	1	3%	0	0%	0	0%	0	0%	1	1%
EVERY WHERE.....	2	6%	3	9%	3	10%	4	13%	12	9%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

TAB D.12: TERRACE IMPORTANCE BY ESTATE

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
TERRACE IMPORTANCE										
N.....	1	3%	6	18%	12	40%	9	28%	28	22%
Y.....	32	97%	27	82%	18	60%	23	72%	100	78%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

TAB D.13: WHERE WOULD YOU LIKE TO HAVE A TERRACE

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
BALCONY										
MISSING.....	1	3%	6	18%	13	43%	8	25%	28	22%
LIVING ROOM.....	10	30%	3	9%	3	10%	7	22%	23	18%
KITCHEN.....	7	21%	3	9%	0	0%	4	13%	14	11%
TOP OF THE BUILDING.....	18	55%	21	64%	14	47%	14	44%	67	52%
Total Cases.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

**APPENDIX E : SPACE USE PATTERNS AND  
SPACIOUSNESS PERCEPTION OF THE DIFFERENT ROOMS  
IN THE DWELLING**

**TAB E.1: ACTIVITIES HELD IN THE LIVING ROOM**

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
ACTIVITIES										
WATCHING TELEVISION.....	26	79%	27	82%	24	80%	29	91%	106	83%
RECEIVING GUESTS.....	33	100%	32	97%	29	97%	31	97%	125	98%
HAVING MEALS.....	13	39%	14	42%	5	17%	19	59%	51	40%
SLEEPING.....	9	27%	3	9%	6	20%	8	25%	26	20%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

**TAB E.2: DO SOME MEMBERS OF YOUR HOUSEHOLD  
USUALLY SLEEP IN THE LIVING ROOM?**

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
NO.....	14	42%	18	55%	19	63%	19	59%	70	55%
YES.....	19	58%	15	45%	11	37%	13	41%	58	45%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

**TAB E.3: WHERE DO YOU USUALLY ACCOMMODATE A GUEST?**

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
GUESTS ACCOMMODATED IN										
LIVING ROOM.....	25	76%	22	67%	22	73%	24	75%	93	73%
CHILDREN S ROOM.....	0	0%	1	3%	6	20%	0	0%	7	5%
VACATED ROOM.....	3	9%	6	18%	0	0%	4	13%	13	10%
GUESTS ROOM.....	5	15%	4	12%	2	7%	4	13%	15	12%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

**TAB E.4: WOULD YOU HAVE LIKED HAVING A SPECIAL GUESTS ROOM?**

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
EXISTS.....	5	15%	4	12%	2	7%	4	13%	15	12%
YES.....	28	85%	29	88%	28	93%	28	88%	113	88%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

**TAB E.5: WHY?**

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
MISSING.....	4	12%	3	9%	2	7%	6	19%	15	12%
WILL NOT DITURB ANYBOBY...	16	48%	10	30%	8	27%	15	47%	49	38%
WILL HAVE MORE SPACE.....	9	27%	19	58%	18	60%	8	25%	54	42%
WILL NOT DITURB THE RECEIVING AREA.....	2	6%	1	3%	0	0%	1	3%	4	3%
WILL RECEIVE WELL.....	2	6%	0	0%	2	7%	2	6%	6	5%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

**TAB E.6: WHERE DO YOU USUALLY DRY THE WASHING?**

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
DRYING THE WASHING										
IN THE KITCHEN LOGGIA.....	9	27%	19	58%	27	90%	32	100%	87	68%
IN THE LIVING ROOM BALCONY	5	15%	7	21%	12	40%	0	0%	24	19%
ON THE WINDOWS.....	25	76%	9	27%	0	0%	16	50%	50	39%
IN THE ADJACENT EXTERNAL										
SPACES.....	2	6%	3	9%	0	0%	0	0%	5	4%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

**TAB E.7: DO YOU USUALLY USE THE BATHROOM FOR WASHING BLANKETS**

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
NO.....	2	6%	3	9%	6	20%	13	41%	24	19%
YES.....	31	94%	30	91%	24	80%	19	59%	104	81%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

TAB E. 8: FLAT SIZE BY ESTATE

	ESTATE								Row Total	
	BAB EZZOJAR		AIN NAADJA		GARIDI		AIN ALLAH			
FLAT SIZE										
F2.....	3	9%	2	6%	0	0%	0	0%	5	4%
F3.....	11	33%	24	73%	22	73%	12	38%	69	54%
F4.....	16	48%	3	9%	8	27%	20	63%	47	37%
F5.....	3	9%	4	12%	0	0%	0	0%	7	5%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

TAB E. 9: NUMBER OF EXTRA ROOMS NEEDED BY ESTATE

	ESTATES								Row Total	
	BAB EZZOJAR		AIN NADJA		GARIDI		AIN ALLAH			
EXTRA ROOMS NEEDED										
Sufficient.....	8	24%	13	39%	6	20%	12	38%	39	30%
One Room.....	9	27%	5	15%	8	27%	10	31%	32	25%
Two Rooms.....	10	30%	14	42%	15	50%	8	25%	47	37%
Three Rooms....	4	12%	0	0%	1	3%	0	0%	5	4%
Another Flat...	2	6%	1	3%	0	0%	2	6%	5	4%
Column Total...	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents



**APPENDIX F : FACTORS RELATED TO RESIDENTS'  
SATISFACTION WITH THEIR DWELLINGS**

**TAB F.1: DEGREE OF SATISFACTION (record 1) BY ESTATE**

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
<b>FIRST DEGREE OF SATISFACTION</b>										
VERY SATISFIED.....	3	9%	1	3%	0	0%	9	28%	13	10%
FAIRLY SATISFIED.....	11	33%	15	45%	20	67%	21	66%	67	52%
MIXED FEELINGS.....	11	33%	8	24%	6	20%	0	0%	25	20%
FAIRLY/VERY DISSATISFIED..	8	24%	9	27%	4	13%	2	6%	23	18%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

**TAB F.2: DEGREE OF SATISFACTION (record 2) BY ESTATE**

	ESTATES								Row Total	
	BAB EZZOUAR		AIN NADJA		GARIDI		AIN ALLAH			
<b>SECOND DEGREE OF SATISFACTION</b>										
VERY SATISFIED.....	1	3%	2	6%	0	0%	5	16%	8	6%
FAIRLY SATISFIED.....	8	24%	11	33%	19	63%	22	69%	60	47%
MIXED FEELINGS.....	18	55%	12	36%	6	20%	3	9%	39	30%
FAIRLY/VERY DISSATISFIED..	6	18%	8	24%	5	17%	2	6%	21	16%
Column Total.....	33	100%	33	100%	30	100%	32	100%	128	100%

Category counts and column percents

TAB F.3: OPINION ABOUT THE ESTATE BY DEGREE OF SATISFACTION (1)

	DEGREE OF SATISFACTION (1)								row total	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELING		FAIRLY/VERY SATISFIED			
OPIN1										
POSITIVE GENERAL OPINION.....	6	46%	24	36%	2	8%	2	9%	34	27%
NEUTRAL OPINION.....	3	23%	28	42%	5	21%	4	18%	40	32%
NEGATIVE GENERAL OPINION ABOUT THE ESTATE (2).....	4	31%	15	22%	17	71%	16	73%	52	41%
column total.....	13	100%	67	100%	24	100%	22	100%	126	100%

Significance: .000  
 Contingency Coefficient = .44157 ; Cramer s v = .34801  
 Kendall s Tau c =.36716 ; Significance: .000

TAB F.4: OPINION ABOUT THE ESTATE BY DEGREE OF SATISFACTION (2)

	DEGREE OF SATISFACTION (2)								row total	
	1		2		3		4			
OPIN1										
POSITIVE GENERAL OPINION.....	5	63%	22	37%	4	10%	3	15%	34	27%
NEUTRAL OPINION.....	3	38%	22	37%	11	28%	4	20%	40	32%
NEGATIVE GENERAL OPINION ABOUT THE ESTATE (2).....	0	0%	15	25%	24	62%	13	65%	52	41%
column total.....	8	100%	59	100%	39	100%	20	100%	126	100%

Significance: .000  
 Contingency Coefficient = .41588 ; Cramer s v = .32336  
 Kendall s Tau c =.37755 ; Significance: .000

**TAB F.5: CHILDHOOD RESIDENCE BY DEGREE OF SATISFACTION1**

	DEGREE OF SATISFACTION (1)								row percents	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELINGS		FAIRLY/VERY DISSATISFIED			
PREVIOUS RESIDENCE										
RURAL HOUSE.....	6	46%	10	15%	2	8%	2	9%	20	16%
APPARTMENT IN A BLOCK OF FLATS.....	1	8%	2	3%	0	0%	4	17%	7	5%
URBAN GROUND FLOOR HOUSE..	4	31%	41	61%	11	44%	14	61%	70	55%
VILLA.....	2	15%	14	21%	12	48%	3	13%	31	24%
column percents.....	13	100%	67	100%	25	100%	23	100%	128	100%

Significance: .001 < .01  
Contingency Coefficient = .42329 ; Cramer s v = .26975

**TAB F.6: CHILDHOOD RESIDENCE BY DEGREE OF SATISFACTION2**

	DEGREE OF SATISFACTION (2)								row percents	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELINGS		FAIRLY/VERY DISSATISFIED			
PREVIOUS RESIDENCE										
RURAL HOUSE.....	4	50%	8	13%	8	21%	0	0%	20	16%
APPARTMENT IN A BLOCK OF FLATS.....	0	0%	1	2%	2	5%	4	19%	7	5%
URBAN GROUND FLOOR HOUSE..	3	38%	38	63%	15	38%	14	67%	70	55%
VILLA.....	1	13%	13	22%	14	36%	3	14%	31	24%
column percents.....	8	100%	60	100%	39	100%	21	100%	128	100%

Significance: .0016 < .01  
Contingency Coefficient = .41473 ; Cramer s v = .16314

**TAB F.7: MOVING INTENTION BY DEGREE OF SATISFACTION1**

	DEGREE OF SATISFACTION (1)								row percents	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELINGS		FAIRLY/VERY DISSATISFIED			
INTENTION TO MOVE										
NO.....	10	77%	23	34%	3	12%	7	30%	43	34%
YES.....	3	23%	44	66%	22	88%	16	70%	85	66%
column percents.....	13	100%	67	100%	25	100%	23	100%	128	100%

Significance: .001 < .01  
 Contingency Coefficient = .33596 ; Cramer s v = .33596

**TAB F.8: MOVING INTENTION BY DEGREE OF SATISFACTION2**

	DEGREE OF SATISFACTION (2)								row percents	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELINGS		FAIRLY/VERY DISSATISFIED			
INTENTION TO MOVE										
NO.....	7	88%	24	40%	8	21%	4	19%	43	34%
YES.....	1	13%	36	60%	31	79%	17	81%	85	66%
column percents.....	8	100%	60	100%	39	100%	21	100%	128	100%

Significance: .0009 < .01  
 Contingency Coefficient = .33799 ; Cramer s v = .33591

**TAB F.9: KITCHEN SIZE PERCEPTION BY DEGREE OF SATISFACTION(1)**

	DEGREE OF SATISFACTION (1)								Row Total	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELING		FAIRLY/VERY DISSATISFIED			
<b>KITCHEN SIZE</b>										
RIGHT SIZE.....	10	77%	49	73%	12	48%	10	43%	81	63%
SMALL/TOO SMALL.....	3	23%	18	27%	13	52%	13	57%	47	37%
Column Total.....	13	100%	67	100%	25	100%	23	100%	128	100%

Significance: .00167 < .05  
 Contingency Coefficient = .27210 ; Cramer s v = .2877  
 Kendall s Tau C = .27612 ; Significance : .0012

**TAB F.10: KITCHEN SIZE PERCEPTION BY DEGREE OF SATISFACTION(2)**

	DEGREE OF SATISFACTION (2)								Row Total	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELING		FAIRLY/VERY DISSATISFIED			
<b>KITCHEN SIZE</b>										
RIGHT SIZE.....	6	75%	49	82%	15	38%	11	52%	81	63%
SMALL/TOO SMALL.....	2	25%	11	18%	24	62%	10	48%	47	37%
Column Total.....	8	100%	60	100%	39	100%	21	100%	128	100%

Significance: .0001 < .01  
 Contingency Coefficient = .37253 ; Cramer s v = .40143  
 Kendall s Tau C = .33887 ; Significance : .0001

**TAB F.11: HAVING MEALS ALL TOGETHER BY DEGREE OF SATISFACTION1**

	DEGREE OF SATISFACTION (1)								Row Total	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELING		FAIRLY /VERY DISSATISFIED			
NO.....	0	0%	7	10%	8	32%	5	22%	20	16%
YES.....	13	100%	60	90%	17	68%	18	78%	108	84%
Column Total.....	13	100%	67	100%	25	100%	23	100%	128	100%

Significance: .0233 < .05  
 Contingency Coefficient = .26294 ; Cramer s v = .27252

**TAB F.12: STORAGE SPACE IN THE KITCHEN BY DEGREE OF SATISFACTION2**

	DEGREE OF SATISFACTION (2)								Row Total	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELING		FAIRLY /VERY DISSATISFIED			
STORAGE SPACE IN THE KITCHEN										
NO.....	2	25%	12	20%	19	49%	13	62%	46	36%
YES.....	6	75%	48	80%	20	51%	8	38%	82	64%
Column Total.....	8	100%	60	100%	39	100%	21	100%	128	100%

Significance: .0012 < .01  
 Contingency Coefficient = .3329 ; Cramer s v = .35303

**TAB F.13: TAKING SECURITY MEASURES BY DEGREE OF SATISFACTION1**

	DEGREE OF SATISFACTION (1)								row percents	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELINGS		FAIRLY/VERY DISSATISFIED			
SECURITY MEASURES										
NO.....	8	62%	16	24%	5	20%	7	30%	36	28%
YES.....	5	38%	51	76%	20	80%	16	70%	92	72%
column percents.....	13	100%	67	100%	25	100%	23	100%	128	100%

Significance: .0343 < .05  
 Contingency Coefficient = .25165 ; Cramer s v =25165

**TAB F.14: TAKING SECURITY MEASURES BY DEGREE OF SATISFACTION2**

	DEGREE OF SATISFACTION (2)								row percents	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELINGS		FAIRLY/VERY DISSATISFIED			
SECURITY MEASURES										
NO.....	5	63%	14	23%	8	21%	9	43%	36	28%
YES.....	3	38%	46	77%	31	79%	12	57%	92	72%
column percents.....	8	100%	60	100%	39	100%	21	100%	128	100%

Significance: .0331 < .05  
 Contingency Coefficient = .25269 ; Cramer s v =26116



**TAB F.15: NEIGHBOURS ORGANISATION BY DEGREE OF SATISFACTION**

	SATISFACTION(1)								Row Total	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELINGS		FAIRLY/VERY DISSATISFIED			
NEIGHBOURS ORGANISATION										
NO.....	2	5%	33	49%	16	64%	13	57%	64	50%
YES.....	11	85%	34	51%	9	36%	10	43%	64	50%
Total Cases.....	13	100%	67	100%	25	100%	23	100%	128	100%

Significance: .0352 < .05  
 Contingency Coefficient = .25087 ; Cramers v = .25916  
 Kendalls Tau c = .28253 ; Significance = .0001

**TAB F.16: NEIGHBOURS ORGANISATION BY DEGREE OF SATISFACTION**

	SATISFACTION(2)								Row Total	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELINGS		FAIRLY/VERY DISSATISFIED			
NEIGHBOURS ORGANISATION										
NO.....	2	25%	25	42%	22	56%	15	71%	64	50%
YES.....	6	75%	35	58%	17	44%	6	29%	64	50%
Total Cases.....	8	100%	60	100%	39	100%	21	100%	128	100%

Significance: .0427 < .05  
 Contingency Coefficient = .24487 ; Cramers v = .25256  
 Kendalls Tau c = .28253 ; Significance = .0001

**TAB F.17: PREFERENCE FOR A CENTRAL ORGANISATION  
BY DEGREE OF SATISFACTION1**

	DEGREE OF SATISFACTION (1)								Row Total	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELING		FAIRLY /VERY DISSATISFIED			
CENTRAL SPACE										
DO NOT KNOW.....	1	8%	3	4%	2	8%	0	0%	6	5%
NO.....	5	38%	30	45%	7	28%	3	13%	45	35%
YES.....	7	54%	34	51%	16	64%	20	87%	77	60%
Column Total.....	13	100%	67	100%	25	100%	23	100%	128	100%

Significance: .0308 < .05  
Contingency Coefficient = .26059 ; Cramer s v = .26992

**TAB F.18: PREFERENCE FOR A CENTRAL ORGANISATION  
BY DEGREE OF SATISFACTION2**

	DEGREE OF SATISFACTION (2)								Row Total	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELING		FAIRLY /VERY DISSATISFIED			
CENTRAL SPACE										
DO NOT KNOW.....	0	0%	3	5%	2	5%	1	5%	6	5%
NO.....	5	63%	27	45%	8	21%	5	24%	45	35%
YES.....	3	38%	30	50%	29	74%	15	71%	77	60%
Column Total.....	8	100%	60	100%	39	100%	21	100%	128	100%

Significance: .0198 < .05  
Contingency Coefficient = .27348 ; Cramer s v = .28431

**TAB F.19: PERCEIVED HYGIEN OF THE BUILDING BY DEGREE OF SATISFACTION 1**

	SATISFACTION(1)								Row Total	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELINGS		FAIRLY/VERY DISSATISFIED			
PERCEIVED HYGIEN										
CLEAN.....	10	77%	16	24%	2	8%	6	26%	34	27%
QUITE CLEAN.....	2	15%	27	40%	8	32%	4	17%	41	32%
DIRTY/VERY DIRTY.....	1	8%	24	36%	15	60%	13	57%	53	41%
Total Cases.....	13	100%	67	100%	25	100%	23	100%	128	100%

Significance: .0001<.01  
 Contingency Coefficient = .41966 ; Cramers v =.32693  
 Kendalls Tau c = .28253 ; Significance =.0001

**TAB F.20: PERCEIVED HYGIEN OF THE BUILDING BY DEGREE OF SATISFACTION 2**

	SATISFACTION(2)								Row Total	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELINGS		FAIRLY/VERY DISSATISFIED			
PERCEIVED HYGIEN										
CLEAN.....	6	75%	15	25%	10	26%	3	14%	34	27%
QUITE CLEAN.....	2	25%	24	40%	10	26%	5	24%	41	32%
DIRTY/VERY DIRTY.....	0	0%	21	35%	19	49%	13	62%	53	41%
Total Cases.....	8	100%	60	100%	39	100%	21	100%	128	100%

Significance: .008 <.01  
 Contingency Coefficient = .34347 ; Cramers v =.25861  
 Kendalls Tau c = .23859 ; Significance =.0010

**TAB F.21: INTENTION TO ALTER THE FLAT BY DEGREE OF SATISFACTION1**

	DEGREE OF SATISFACTION (1)								Row Total	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELING		FAIRLY /VERY DISSATISFIED			
<b>INTENTION TO ALTER THE FLAT</b>										
NO.....	8	62%	25	37%	4	16%	5	22%	42	33%
MISSING.....	0	0%	1	1%	0	0%	0	0%	1	1%
YES.....	5	38%	41	61%	21	84%	18	78%	85	66%
Column Total.....	13	100%	67	100%	25	100%	23	100%	128	100%

Significance: .0179 < .05  
 Contingency Coefficient = .27111 ; Cramer s v = .28165

**TAB F.22 INTENTION TO ALTER THE FLAT BY DEGREE OF SATISFACTION2**

	DEGREE OF SATISFACTION (2)								Row Total	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELING		FAIRLY /VERY DISSATISFIED			
<b>INTENTION TO ALTER THE FLAT</b>										
NO.....	3	38%	29	48%	8	21%	2	10%	42	33%
MISSING.....	0	0%	1	2%	0	0%	0	0%	1	1%
YES.....	5	63%	30	50%	31	79%	19	90%	85	66%
Column Total.....	8	100%	60	100%	39	100%	21	100%	128	100%

Significance: .0018 < .01  
 Contingency Coefficient = .32505 ; Cramer s v = .34372

**TAB F.23: LENGTH OF TENURE BY DEGREE OF SATISFACTION1**

	DEGREE OF SATISFACTION (1)								row percents	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELINGS		FAIRLY/VERY DISSATISFIED			
TENURE LONGEVITY										
TWO YEARS OR LESS.....	1	8%	15	22%	4	16%	9	39%	29	23%
THREE TO FOUR YEARS.....	9	69%	37	55%	9	36%	6	26%	61	48%
FIVE TO EIGHT YEARS.....	3	23%	15	22%	12	48%	8	35%	38	30%
column percents.....	13	100%	67	100%	25	100%	23	100%	128	100%

Significance: .0298 < .05  
 Contingency Coefficient = .31382 ; Cramer s v = .23371

**TAB F.24: HOUSING TYPE ASPIRED TO BY DEGREE OF SATISFACTION1**

	DEGREE OF SATISFACTION (1)								row percents	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELINGS		FAIRLY/VERY DISSATISFIED			
ASPIRED RESIDENCE										
LARGER APPARTMENT.....	4	31%	36	54%	5	20%	10	43%	55	43%
VILLA.....	9	69%	31	46%	20	80%	13	57%	73	57%
column percents.....	13	100%	67	100%	25	100%	23	100%	128	100%

Significance: .0251 < .05  
 Contingency Coefficient = .26079 ; Cramer s v = .27014

TAB F.25: OPINION ABOUT DWELLING LAYOUT BY DEGREE OF SATISFACTION1

	DEGREE OF SACTISFACTION (1)								Row Total	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELINGS		FAIRLY/VERY DISSATISFIED			
ORG1										
SATISFACTORY.....	13	100%	51	80%	11	46%	12	57%	87	71%
NEGATIVE PERCEPTION.....	0	0%	13	20%	13	54%	9	43%	35	29%
Total Cases.....	13	100%	64	100%	24	100%	21	100%	122	100%

Significance ; .0007 < .01  
 Contingency Coefficient = .35062 ; Cramer s v = .37439  
 Kendalls Tau c = .32814 ; Significance : .0001

TAB F.26: PERCEPTION OF THE ESTATE APPEARANCE BY DEGREE OF SATISFACTION2

	DEGREE OF SATISFACTION (2)								row percents	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELINGS		FAIRLY/VERY DISSATISFIED			
PERCEIVED APPEARANCE OF THE ESTATE										
NICE OR QUITE NICE.....	7	88%	53	88%	33	85%	11	52%	104	81%
BAD OR VERY BAD.....	1	13%	7	12%	6	15%	10	48%	24	19%
column percents.....	8	100%	60	100%	39	100%	21	100%	128	100%

Significance: .0030 <.01  
 Contingency Coefficient = .31358 ; Cramers v = .33024  
 Kendall s Tau c = .2119 ; Significance = .0022

TAB F.27: BEDROOM(S) SIZE PERCEPTION BY DEGREE OF SATISFACTION2

	V99								row total	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELING		FAIRLY/VERY DISSATISFIED			
SIZE										
RIGHT SIZE.....	3	38%	25	42%	9	23%	7	33%	44	34%
ONLY ONE IS SMALL.....	0	0%	16	27%	4	10%	2	10%	22	17%
SMALL/VERY SMALL.....	5	63%	19	32%	26	67%	12	57%	62	48%
column total.....	8	100%	60	100%	39	100%	21	100%	128	100%

Significance: .0164 < .05  
 Contingency Coefficient = .32903 ; Cramer s V = .24638  
 Kendall s Tau C = .16638 ; Significance : .0178

**TAB F.28: NOT BEING ABLE TO CARRY OUT SOME ACTIVITIES BY DEGREE OF SATISFACTION 2**

	DEGREE OF SATISFACTION (2)								row total	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELINGS		FAIRLY/VERY DISSATISFIED			
YES or NO										
N.....	0	0%	31	52%	18	46%	2	10%	51	40%
O.....	0	0%	1	2%	0	0%	0	0%	1	1%
Y.....	8	100%	28	47%	21	54%	19	90%	76	59%
column total.....	8	100%	60	100%	39	100%	21	100%	128	100%

Significance: .0005  
 Contingency Coefficient = .35163 ; Cramer s v = .37562

**TAB F.29 NUMBER OF FRIENDS IN THE SAME BLOCK BY DEGREE OF SATISFACTION2**

	DEGREE OF SATISFACTION (2)								Row Total	
	VERY SATISFIED		FAIRLY SATISFIED		MIXED FEELINGS		FAIRLY/VERY DISSATISFIED			
THOSE CONSIDERED AS FRIENDS										
NOBODY.....	0	0%	20	33%	16	41%	9	43%	45	35%
1 TO 3.....	4	50%	31	52%	11	28%	10	48%	56	44%
MORE THAN 4.....	4	50%	9	15%	12	31%	2	10%	27	21%
Total Cases.....	8	100%	60	100%	39	100%	21	100%	128	100%

Significance: .0291 <.05  
 Contingency Coefficient = .31451 ; Cramer s v =.23428  
 Kendall a Tau c = -.11792 ; Significance : .0620