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**POST-OCCUPANCY ADAPTATION
OF AFFORDABLE SINGLE-FAMILY
HOUSING IN MONTREAL**

A Thesis Submitted
to the Faculty of Graduate Studies and Research
in Partial Fulfilment of the Requirement
for the Degree of Master of Architecture

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August 1995

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ABSTRACT

Home builders are supplying mass housing projects which are designed without taking into consideration the specific needs and expectations of residents. As well, houses are not produced with enough flexibility to enable homeowners to perform easy adaptations that would express their own choices and accommodate their particular requirements. On the other hand, due to economic constraints, most first-time home buyers usually cannot afford the professional services of architects in order to have a house specifically designed to suit their needs and aspirations.

This research explores the different types of modifications that occupants of affordable single-family housing in Montreal make to their residences upon occupancy. As well, it documents theories about the motivations for post-occupancy adaptations, studies related to housing modifications made by residents, and varied projects and approaches designed as strategies to allow for housing adaptation and user intervention. In order to examine how residents adapt their living spaces (types of modifications) a residential survey was conducted. As well, interviews were carried out to gain a clearer idea of households' housing attitudes and preferences, and to obtain a direct observation of the distinct modifications performed by the owners.

The survey revealed a high level of user intervention - 93.6% of the residents made the modifications by themselves. This demonstrates that residents fully engage in housing adaptations when they are given the opportunity to do so, as is the case in the researched houses which offered some type of flexibility in the form of an open and unfinished basement. 108 of the 141 households took advantage of the originally unfinished basement by finishing it and adapting it to their needs and desires.

Therefore, the author concludes that a house should be adaptable and flexible enough to respond to residents' demands, allowing them to adapt their living spaces according to their personal choices and requirements, as well as to personalise it. As well, the author, convinced that houses do not need to be entirely finished since residents will modify them in any event, suggests certain guidelines and provides recommendations on how affordable single-family houses in Montreal can best be designed to allow for post-occupancy adaptation and user intervention.

RÉSUMÉ

Les constructeurs d'habitation réalisent de grands projets domiciliaires dont la conception ne tient pas compte des besoins et des attentes spécifiques de leurs occupants. Par ailleurs, les maisons ne sont pas construites avec suffisamment de flexibilité pour permettre aux propriétaires d'y apporter facilement les adaptations correspondant à leurs préférences et à leurs besoins particuliers. En revanche, en raison de la conjoncture économique, la plupart des accédants à la propriété ne peuvent s'offrir les services professionnels d'architectes pour se faire construire une maison adaptée à leurs besoins et à leurs aspirations.

Cette recherche examine les divers types de modifications que les occupants de maisons unifamiliales abordables montréalais apportent à leur résidence lorsqu'ils y emménagent. La recherche documente également les théories sur les raisons qui motivent de telles modifications, les études relatives aux modifications apportées par les résidents et les divers projets et approches conçus en tant que stratégies visant à permettre l'adaptation des maisons et l'intervention de l'occupant. Un sondage a été réalisé auprès des résidents afin de déterminer comment ces derniers adaptent leur cadre de vie (types de modifications). On a également réalisé des interviews afin de préciser les attitudes et préférences des ménages en matière de logement et d'observer directement les diverses modifications apportées par les propriétaires.

Le sondage a révélé un niveau élevé d'intervention des occupants - 93.6% des résidents ont apporté les modifications eux-mêmes. Cela prouve que les résidents s'engagent à fond dans des travaux d'adaptation lorsqu'ils en ont la possibilité, comme en témoignent les cas étudiés dans cette recherche, où le sous-sol non aménagé offrait une certaine forme de flexibilité. 108 des 141 foyers ont profité du sous-sol non fini à l'origine en le finissant et en l'adaptant à leurs besoins et à leurs désirs.

C'est pourquoi l'auteur en déduit qu'une maison devrait être suffisamment adaptable et flexible pour satisfaire aux exigences de ceux qui l'habiteront et permettre à ces derniers de personnaliser leur cadre de vie et de l'adapter en fonction de leurs préférences et besoins personnels. Convaincu qu'il n'est donc pas nécessaire que les maisons soient entièrement finies, puisque les résidents les modifieront de toute façon, l'auteur propose certaines lignes directrices et formule certaines recommandations sur la meilleure façon de concevoir, en vue d'une adaptation ultérieure et d'une intervention du propriétaire, les maisons unifamiliales abordables construites à Montréal.

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CHAPTER ONE

INTRODUCTION

This research documents how all households or families have particular residential needs and expectations which cannot be satisfied through standardized mass housing projects. People often make physical modifications to their homes as a response to their needs and desires, as well as a means of personalization.¹ When a house does not fulfil the household's space needs and expectations, the result is dissatisfaction which leads the household to undertake housing adaptations to make their home fit their own priorities (Morris & Winter, 1978). Teasdale & Wexler (1993) point out that life events occurring during the family life cycle and other factors such as changes in styles or tastes, narrowing the gap between the present and the "ideal" home, upgrading, self-actualization and other causes result in a need for the family to make adjustments in the house.

The objective of this research is to document post-occupancy adaptation of affordable single-family houses in Montreal in order to propose design strategies that will enable occupants to modify the spaces they acquire according to their family, social or space needs and desires, and to motivate user intervention.² This introductory chapter is intended to provide the reader with a general idea of what the study involves. After

¹ Becker et al. (1977) defines *personalization* "as any modification or change or additions to any environment by or for that environment's occupants, made in order to reflect or reinforce the occupant's own sense of identity, as well as express it to others and as a way of demonstrating to others that the space is occupied by a particular person."

² "Post-occupancy adaptation" refers to the spatial/physical or functional modifications that occupants make to their homes after they have moved in. In this study, the author has selected projects that were occupied in 1991 and 1992. "User intervention" refers to the engagement of users in the physical adaptations, development and personalization of their own living environment.

presenting the rationale for the study, the author states the research question, the research's objectives and the scope of the study. Finally, the methodology used to develop this research is presented.

1.1 RATIONALE FOR THE STUDY

Due to economic constraints, most first-time home buyers generally cannot afford the professional services of architects. In addition, home builders supply mass housing projects which are designed without taking into consideration the specific priorities and personal expectations of each home buyer. As well, the houses are not produced with enough flexibility to enable homeowners to perform easy adaptations that would express their personal choices and accommodate their particular requirements (Friedman, 1991).

Mass housing projects offer an example of the lack of contact between architects and users. In a "closed system", architects or designers generally do not take into account end users (Fig. 1.1).³ The author maintains (based on the research findings) that as well as not being taken into consideration in the design process, users have a strong tendency to adapt their living environments. It does not matter which house they are able to buy: users will eventually adapt it.

Furthermore, the current unstable economic situation has motivated many homeowners to perform residential adaptations to their houses rather than purchase

³ Roberts (1970) describes the housing production process as a "closed system". The closed system is a cycle of major decision-making events which begins with the builder's decision to build. This is followed by the start of construction, the completion of the home, and ends with the unit's occupancy. New sales figures generated after each cycle influence the next decision to build.

different homes. For example, Teasdale & Wexler (1993) note that when some residents are faced with the certainty that no affordable alternative houses exist, they will make changes or adjustments in their own homes.

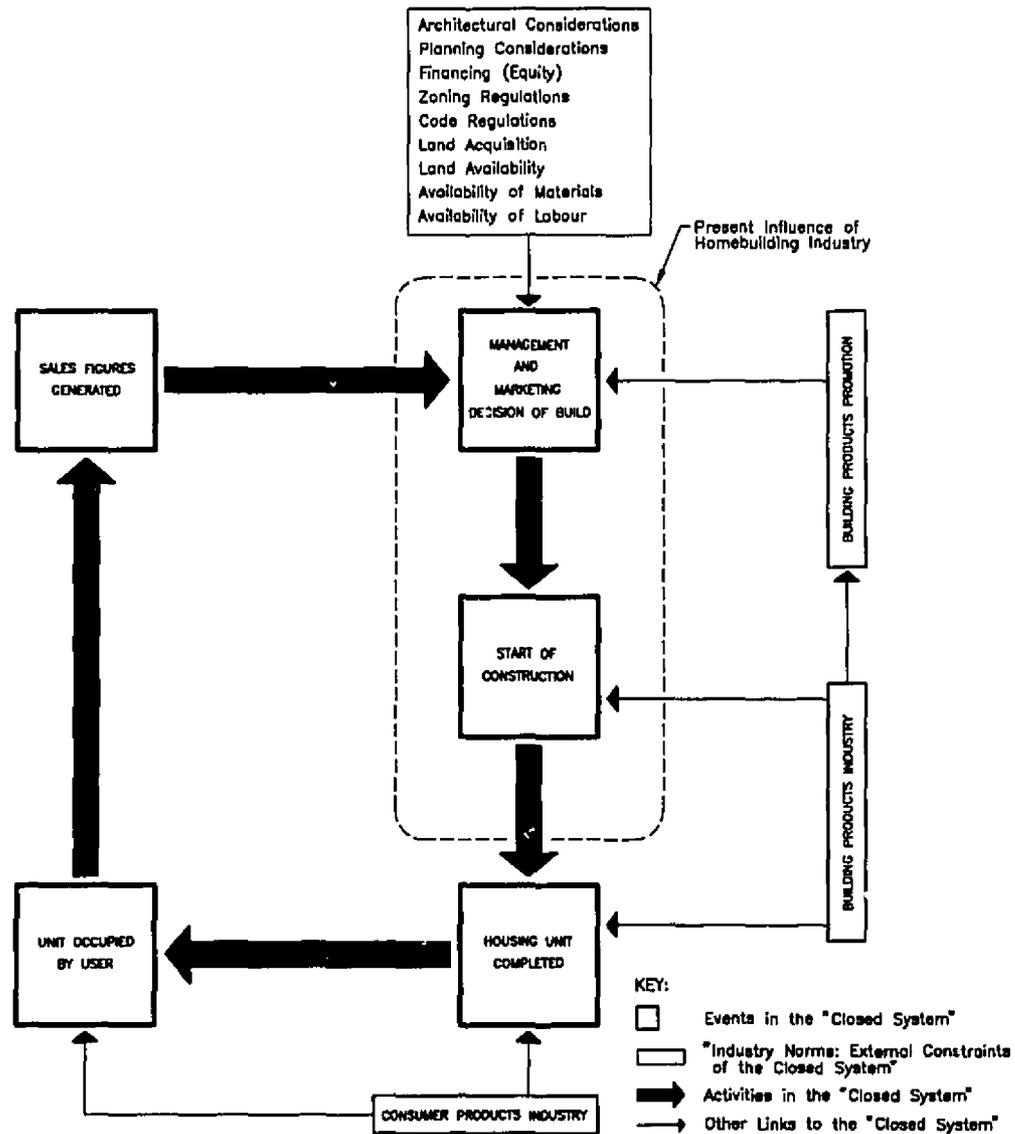


Fig. 1.1 The "Closed System" of Decision-Making Events Occurring in the Homebuilding Industry (Source: Roberts, 1970)

Several important socio-demographic changes have taken place recently in Canada: life expectancy at birth is increasing, birthrates are declining, more people are

living together outside marriage, the incidence of divorce is rising, young adults are leaving home earlier, more mothers are working for pay, the proportion of single-parent families (mostly mother-led) has been rising, and the household structure is becoming smaller due to an increase in the number of two-person families (Vanier Institute of the Family, 1994a & 1994b). The so-called traditional family (breadwinner father, homemaker mother and their children) now represents only a minority of Canadian families and the dual-earner family has become the norm (CMHC, 1993a). These socio-demographic changes have brought to the market non-traditional families (e.g. childless couples, young singles, single person living alone, unrelated adults co-habiting and single-parent families) who need different and particular living arrangements (CMHC, 1993a) (Fig. 1.2).

Canada Mortgage and Housing Corporation (1993b) indicates, based on present household trends, that over the next decade there will be more elderly widows and couples, middle-aged single-parents and childless couples who will need non-traditional units, and fewer young singles and couples with children. These diversified family types present different lifestyles which in turn create an increased demand for unit adaptation opportunities. In addition, because of an increase in life expectancy and the aging of the "baby boom" generation, the population aged 65 and over will increase to 15.1 percent of the population by 2011 (in 1986 they represented 10.7 percent) (CMHC, 1991). These elderly people will generate a greater demand for residential adaptation to their lifestyles and space needs.

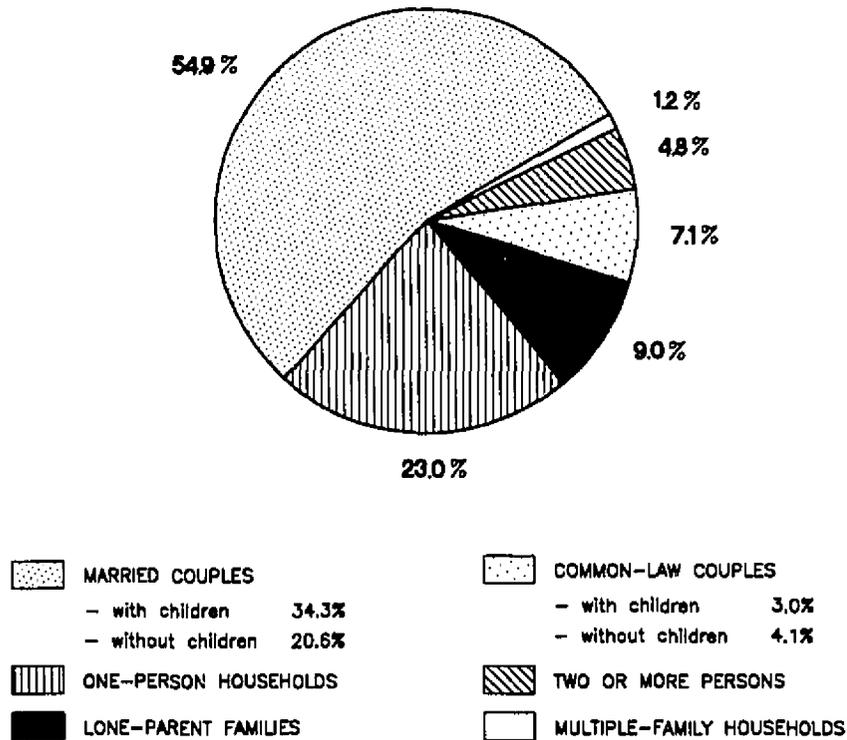


Fig. 1.2 Household Structure in Canada
(Source: Mandell & Duffy, 1995)

Canada Mortgage and Housing Corporation (1993b) notes that in recent years housing has become less affordable for low-income households.⁴ CMHC also points out that affordability depends on the relationship between household income and housing cost. Real incomes are declining; this decline in real income has been general among different types and ages of families. Single-parent females and single-income married couples with children have experienced the most considerable decline (11 and 8% respectively since 1989), while the elderly have not experienced any change. Income is

⁴ According to Canada Mortgage and Housing Corporation (1993b) households experience affordability problems if they have to spend 30% or more of their total income on shelter.

only one part of the affordability equation, according to CMHC; predictions of slow income growth, high unemployment, and economic doubt may also influence housing affordability (CMHC, 1993b). Because of declining real income in recent years and the increase in housing cost, there is growing consumer interest in smaller and more affordable housing (CMHC, 1993b).

Adaptation is a means to low housing cost. Providing unfinished houses with more open spaces that allow opportunities for adaptation can reduce housing cost and make houses more affordable. Furthermore, in the industrial market today (i.e. supply for the renovation industry) there are many products that people can use to make their own adaptations: it makes the process easier and more affordable.

The author's hypothesis is that builders do not need to finish houses entirely because people will make modifications anyway. The intention of the study is to find out what the physical changes are that occupants make immediately after they move in. In order to explore this notion, the author concentrated on the initial period following occupancy (three years).

The author assumes that designing unfinished houses will provide the flexibility that will allow occupants to arrange their houses as they wish and that it will also motivate user intervention. Designing unfinished houses spares occupants from spending money on changing a feature for which they had already paid when they bought the house. It could also reduce the cost of the house, making it more affordable.

1.2 RESEARCH QUESTION

The research can be summarized in the following question:

WHAT TYPE OF MODIFICATIONS DO OCCUPANTS OF AFFORDABLE HOUSING IN MONTREAL MAKE TO THEIR RESIDENCES UPON OCCUPANCY? ⁵

This question generates the following sub-question:

HOW CAN AFFORDABLE SINGLE-FAMILY HOUSES IN MONTREAL BEST BE DESIGNED TO ALLOW FOR POST-OCCUPANCY MODIFICATIONS AND USER INTERVENTION?

1.3 OBJECTIVES

The specific objectives of the research are the following:

- * Research and understand the theories about motivations for post-occupancy adaptation.
- * Investigate past projects that were designed with strategies that allow for user intervention within their living spaces.
- * Survey post-occupancy modifications of affordable single-family housing undertaken by users in Montreal.
- * Propose parameters to improve housing design in order to produce solutions with more opportunities for adaptation and user intervention.

⁵ By "modifications" the author refers to every physical alteration of space or component within this space that was changed by the occupant himself/herself or by a hired trade, as well as a change of function in the use of the space. It does not comprise maintenance and repair activities. By "affordable housing" the author refers to dwellings where the households do not have to spend more than 30% of their income on shelter expenses (CMHC, 1993b). The term "upon occupancy" refers to a period of three years after the occupants have moved in.

1.4 SCOPE OF THE STUDY

The scope of the research is limited to the investigation of two projects of affordable, single-family rowhouses based on the Grow Home concept which are situated in Pointe-aux-Trembles in Montreal. The Grow Home is a 4.3 metre (14'-0") wide rowhouse with 1000 square feet of living space on two floors which was developed in order to contribute to housing affordability (Fig. 1.3).

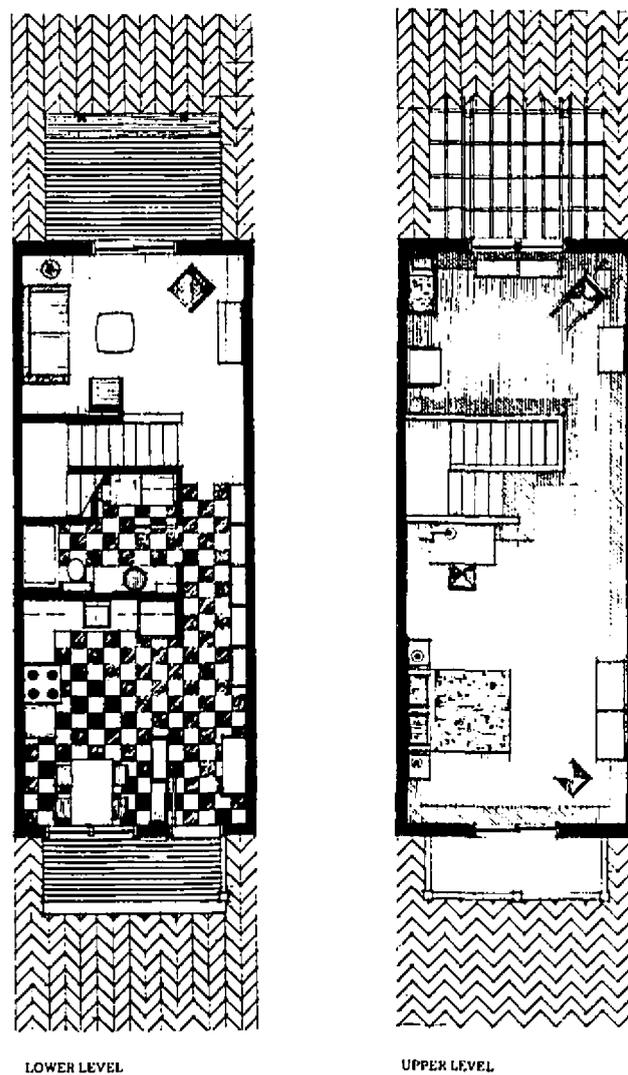


Fig. 1.3 Grow Home Layouts
(Source: Rybczynski, Friedman & Ross, 1990)

The concept was proposed in an effort to reduce cost and allow owners to finish the house at their own convenience.⁶ This house, which employed simple and effective cost-saving strategies, was conceived to be partially finished with the intention that certain components could be finished by the homeowners and some spaces left open to be completed in the future. The ground floor is comprised of a kitchen/eating area, bathroom (with space for washer and dryer) and a sitting room. Kitchen cabinets and storage closets were to be provided by the owner. The upper floor, which can be used as a loft/bedroom, is unpartitioned and the floor is unpainted plywood (Rybczynski, Friedman & Ross, 1990). The author has documented physical changes made inside and outside the houses, relating to spaces and materials.

1.5 METHODOLOGY

The research has been carried out in three stages. In the first stage, the author derived part of the data required from related literature in order to obtain a broader knowledge of adaptability and user intervention. Works by Teasdale & Wexler (1993), Zeisel (1981), Friedman & Cammalleri (1992), and Morris & Winter (1978, 1975) are some examples of this relevant literature. In the second stage, the author collected the data required through fieldwork. A questionnaire was developed as a survey instrument,

⁶ The Grow Home was based on six basic principles: a *14-foot wide rowhouse* whose small structural span decreases construction costs and allows flexibility in internal partitions; a *small house* which because it is small is less expensive to heat, and cheaper and easier to maintain; an *unpartitioned second floor* which the owners can adapt to their individual needs and priorities; a *traditional design* avoiding complexity; the use of *cost-effective materials*; and *prefabrication* of whole wall sections, with roofs, floors and interior finished on-site to reduce construction costs (Rybczynski, Friedman & Ross, 1990).

in order to document the post-occupancy changes that people make to their residences and the degree of flexibility that these houses present (the survey methodology is fully explained in Chapter Four). As well, 24 interviews were conducted in order to gain a better understanding of households' housing attitudes and preferences and to obtain a direct observation of the modifications performed by the owners. In the third stage, after the information-gathering process was completed, an analysis of data was presented and general conclusions and recommendations based on post-occupancy modifications and user intervention were formulated.

1.6 OUTLINE OF THE THESIS RESEARCH

This report is organized into five chapters. In Chapter One (INTRODUCTION), the author introduces the subject of the research and provides a rationale for the study. As well, the research question, scope and the objectives of the study are formulated. Finally, the methodology used to develop this research is presented.

Chapter Two (DESIGN FOR FLEXIBILITY AND USER INTERVENTION) describes different approaches to housing flexibility and projects which were designed to provide flexibility in housing and to encourage adaptations and user intervention. As well, this chapter establishes what flexibility and user intervention involve, and their implications in housing.

Chapter Three (POST-OCCUPANCY ADAPTATION: CONCEPTS AND THEORIES) examines issues from other research findings that might be of significance to post-occupancy adaptations. This chapter also describes theories about motivations

that inspire residents to undertake modifications to their houses. A description of how families use and prefer their spaces is also presented.

Chapter Four (DESCRIPTION AND ANALYSIS OF POST-OCCUPANCY ADAPTATION SURVEY FINDINGS) thoroughly outlines and analyzes the survey findings. It also provides a profile of the studied projects, its units and residents.

Chapter Five (CONCLUSIONS AND RECOMMENDATIONS) is the final chapter. The author presents conclusions based on post-occupancy adaptations and outlines recommendations on how houses can be best designed to allow for easy modifications and to encourage user intervention.

CHAPTER TWO

DESIGN FOR FLEXIBILITY AND USER INTERVENTION

2.1 INTRODUCTION

Homes have generally been a vehicle of self-expression and their residents have felt the need to adapt and personalize their spaces (Habraken et al., 1976). In order to provide people with the opportunity to adapt their living spaces according to their particular requirements and desires through user intervention, design for flexibility emerges as a mechanism that allows this process to take place. Hamdi (1991) points out that flexibility "expresses freedom to choose among options or devise programs that fit individual needs and aspirations, whether for building, finance, ownership, or management." As well, Hamdi maintains that for architects flexibility describes the capacity designed into buildings, building programs or building technologies to guarantee an initial effective fit and to enable them to respond to future change. For the Dutch architect John Habraken flexibility is "a quality by which to measure the capacity of physical settings to be easily modified, which could undergo a series of incremental transformations in order to ensure good fit through time" (Hamdi, 1991).

Nowadays, when most users are no longer part of this home building process, flexibility is observed "as a means proposed to bring the user back to active participation in the housing process, and to provide him with manageable tools to accommodate changing needs in whatever place he chooses to live" (Oxman, 1984, in Friedman, 1987). Warshaw (1974) states that the user only participates marginally as "consumer"

and that he can intervene in distinct aspects of his home according to different scenarios. The author believes that a house designed for flexibility will not only allow people to shape and personalize their living environments to their individual priorities and expectations, but it will give them the opportunity to adapt their spaces by themselves.

The main purpose of this chapter is to provide a clear understanding of what flexibility and user intervention involve and their implication in housing, presenting different approaches and projects which have been designed to provide flexibility in housing and to promote user intervention.

2.2 DIFFERENT APPROACHES AND PROJECTS PROVIDING HOUSING FLEXIBILITY AND ALLOWING USER INTERVENTION

In the 1960s, flexibility became a popular subject of architectural investigation in response to contemporary housing demands rising out of changes in family size, composition, structure, and in expectation of comfort and efficiency, all of which advanced an expanded claim for greater participation in housing (Hamdi, 1991). Flexibility systems have had relative success in Western Europe since that time: governments have played an active role in establishing national competitions and subsidizing projects; a lower rate of residential mobility has encouraged occupant intervention in their dwellings; dimensional constraints have made accommodation of needs more efficient; exchange of information between countries has increased; and politically motivated reasons to promote user intervention in the housing process have presented themselves (Friedman, 1987).

One of the first attempts to provide flexible space in Modern Architecture occurred in 1927 at the Weissenhofsiedlung exhibition at Stuttgart in Germany where Mies Van der Rohe introduced in his apartment house movable inner walls which could be accommodated in any fashion that residents desired (Rabeneck, Sheppard & Town, 1973).¹ Many attempts to produce flexibility in housing (through different technical approaches, levels of flexibility and user intervention) where people were able to adapt their own homes as they wished and needed and to take control over their living environment have since been carried out, particularly after the Second World War period. Some of these attempts will presently be described.

In 1955 the Arsène-Henri brothers, French architects, attempted to provide flexibility by using movable partitions positioned over a continuous floor finish in a public housing project of 720 units in Rheims, France. From this project they learned that in order to advance in the study of flexibility, the shell of the building had to be considered as well (Rabeneck, Sheppard & Town, 1973). Their work in flexibility is based on their belief that the originality and unique character of each individual cannot be ignored. Based on this central belief, they stated three principles:

First, everyone should be able to fit out his home as he wishes, including the right to make mistakes as part of that freedom. Second, each person ought to be able to express himself as a function of his choices. His home should be personalizable. Third, each person should be able, in his home, to make a creative act by organizing his space, based on the context within which he finds himself. Even being a co-author brings a measure of satisfaction (Rabeneck, Sheppard & Town, 1973).

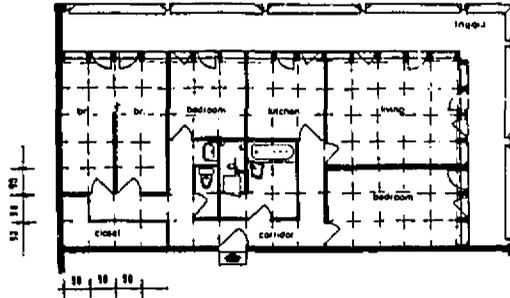
¹ As well, in the same exhibition, Adolf Rading designed a house with the interior as a single living space which could be divided by sliding folding partitions running on tracks in the ceiling and floor (Rabeneck, Sheppard & Town, 1973).

As well, the Arsène-Henri brothers built a 36-unit apartment building as an experiment in adaptable housing at Montereau where the plans and elevations could be chosen by the tenants. The goal of this experiment was to observe how the families would arrange their accommodation and how it would change over a period of time. The floor slabs were supported on a minimum number of supports (a central core, party walls between apartments, technical ducts in each apartment, and the perimeter by concrete posts at 90 cm centre) on a 90-cm grid to allow maximum freedom in the arrangement of internal movable partitions (Martel & Ignazi, 1974) (Fig. 2.1).

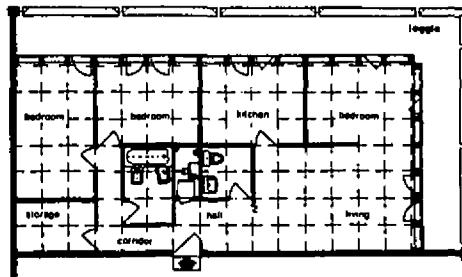
The experimental building was designed to provide the occupants with the satisfaction of living in a personalized home (modified according to their tastes, and to their family or social needs) and where the residents should not need to move to solve problems associated with family development. Regarding the users' reaction to flexibility, it was observed that the families made plans that were not only adapted to their requirements but also to their personalities. On this point, the experiment was a success since the freedom available to the occupants was exercised. However, the experiment was affected by the mismatch between the tenants and the kind of dwelling involved in the project, where the social status of most of the residents did not correspond with the social objective of the project (Martel & Ignazi, 1974). Martel & Ignazi (1974) remark that "the higher than average turn-over of tenants did not allow a proper judgement of the value of flexibility to be made, because of the lack of a stable sample and because of the lack of a longer time scale."



PLAN n°3



PLAN n°16 et n°20



PLAN n°17

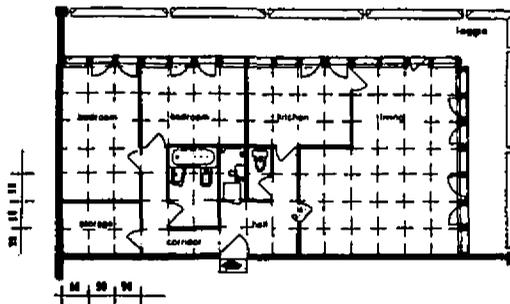


Fig. 2.1 Several Plans as Built at Montereau
(Source: Martel & Ignazi, 1974)

The French GEAI system, designed by Lods, Depondt and Beauclair in 1962, is a high-technology building system whose main idea was to adapt office building technology and planning to housing with a maximum proportion of off-site work and adaptability, and it was implemented for the first time in 1966 at the ZUP of Grand'Mare at Rouen (500 units) (Fig. 2.2).² This system uses steel space frame floor units, 3.6m x 2.4m, supported on vertical lattice columns, and partition walls are chipboard (two thicknesses of 90mm) with a 300mm airspace (Rabeneck, Sheppard & Town, 1973). The space frame floor simplified adaptability of the mechanical sub-system (Friedman, 1987). It is important to point out that although occupants of the GEAI buildings felt they had little control over the initial layout (since there was no pre-planning by occupants), they could modify it if they desired, and this satisfied them (Rabeneck, Sheppard & Town, 1973).

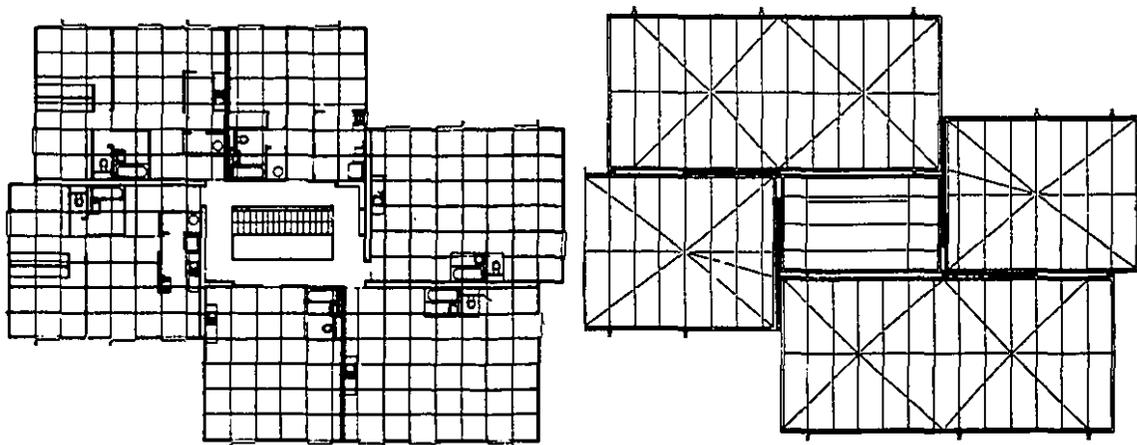


Fig. 2.2 The GEAI System - Typical Floor and Framing
(Source: Harlap, 1977)

² The GEAI was also implemented in Chicago (490 units) and New York (230 units) in the U.S. (Rabeneck, Sheppard & Town, 1973), and in Israel (60 units) (Harlap, 1977, in Friedman, 1987).

In 1964, in Holland, the S.A.R. (Stichting Architecten Research, translated as Architects Research Foundation) was established in order to investigate effective ways to manage problems in the design and construction of mass housing projects where the user no longer had a role in the decision making process.³ Habraken (as Director of Research of S.A.R.), interested in re-establishing the user as an active participant in the housing process, created a methodology in 1965 which provided flexibility and allowed for user intervention. The S.A.R. methodology was based on a system of "zones and margins" used to define possibilities for the layout of "detachable units" (described as movable elements such as partitions, external walls, kitchen equipment, and bathrooms, all under the control of the user) within "support" structures (described as the building structure in which the user has no individual control). In the S.A.R. system the units are divided into parallel zones (living areas) separated by margins in which services would be located (Habraken et al., 1976) (Fig. 2.3). The contribution of this system of detachable units to housing is that it allowed residents to personalize and adapt their homes according to their own choices, requirements and budgets.

After the emergence of the S.A.R. methodology, certain projects adopted its principles of structure and adaptable infills. In 1971 in Hollabrunn, Austria, a government project called "Dwelling of Tomorrow" applied this methodology in order to offer maximum choice and scope for user participation. A tartan grid of 10/20 cm was employed for the placement of materials and spaces, and slab and column were

³ Mass housing projects were the result of a government effort to fight the housing shortage (caused by World War II and the ensuing population increase), which resulted in the production of large urban areas of unvarying buildings where the individual dweller became an inactive participant in the housing process (Habraken, 1976).

utilized in a module of 510/960 cm. It was observed that the openness of the support structure was efficiently utilized by the user, where most occupants were completely able to design their own dwelling in response to their own needs and desires, leading to a remarkable variety of plans and elevations (Dirisamer et al., 1976).

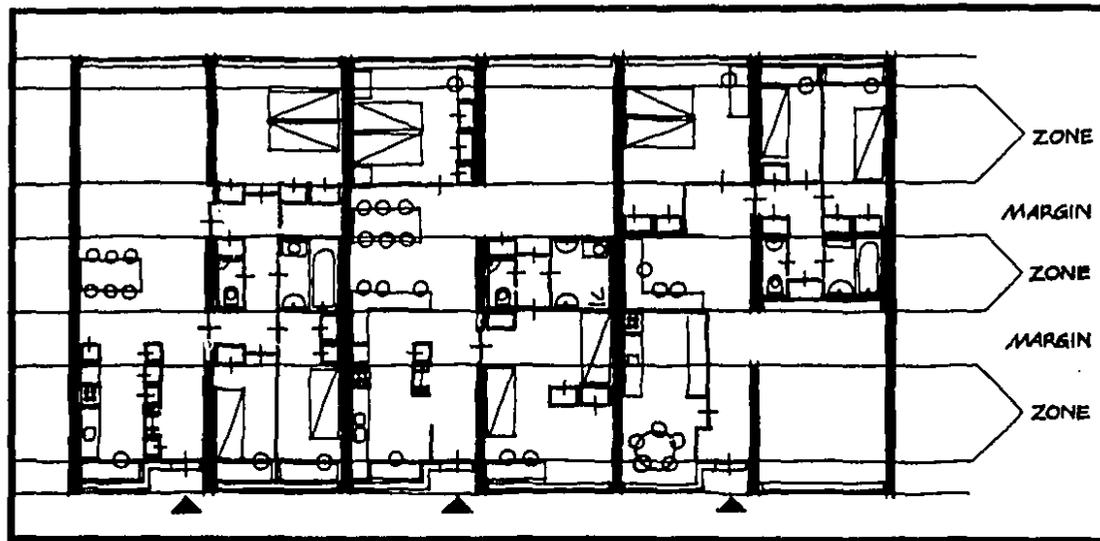


Fig. 2.3 Zone Distribution, S.A.R. Methodology
(Source: Habraken, 1972)

In 1972, another project called Elementa was built in Hardtberg, near Bonn in Germany. It used prefabricated components within the S.A.R. preferred dimensions and grid in order to provide for adaptability. Two special zones were included within the zoning principle: (1) an "exterior" zone (α zone) which allows for external spaces such as gardens, galleries, stairs, extension to or subtraction from the dwelling, and (2) a "wet" zone (β zone) which contains piping and connections which allow for changes of level (Fig. 2.4). Although future tenants were not able to participate in the design and

construction of the project, they profit from the freedom to modify some of the components of their dwelling, thanks to the flexibility concept offered in the project which encourages modifications and self-renewal within the building (Froyen, 1976).

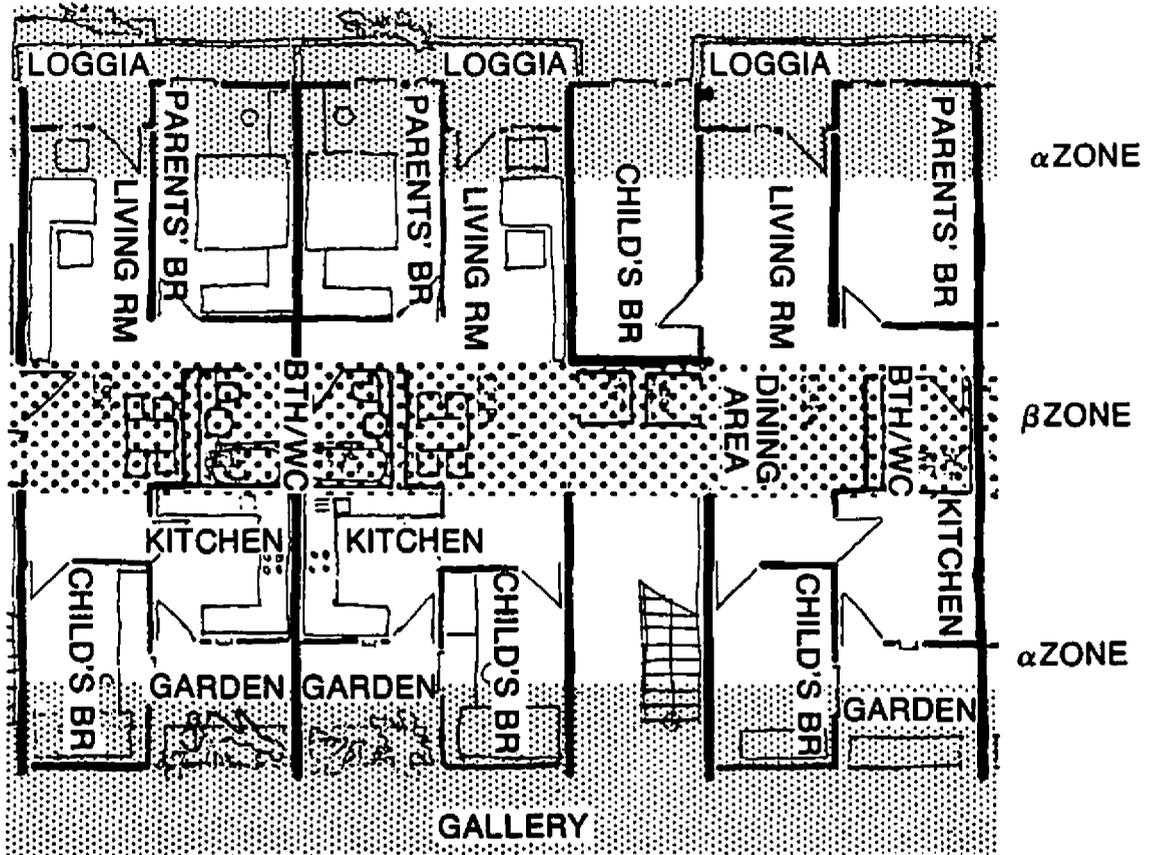


Fig. 2.4 Zoning System in Elementa Project
(Source: Froyen, 1976)

The Primary Support Structure and Housing Assembly Kits (PSSHAK) was developed in 1970 by Nabil Hamdi and Nicholas Wilkinson.⁴ It is "an approach to housing which sets out to provide both the occupant and the housing authority with

⁴ The support structure relates to the basic structure of the building and is made for the local authority or public housing corporation. The assembly kits are products (a combination of bathroom, storage components and dividing units) made for the private sector and utilized by dwellers who can make their own decision about their use and can have control over the form of the dwelling (*RIBA Journal*, 1971).

maximum adaptability, using current construction methods" (*RIBA Journal*, 1971). One scheme to be developed by the PSSHAK method was built in 1971 in Stamford Hill, England. A system of zones and margins based on the S.A.R. methodology was applied in the project. The structural system utilized was based on 300mm multiples between walls and 300mm-thick structural concrete walls (Friedman, 1987). The objectives of the scheme were: (1) to allow users to choose a plan layout before moving in, (2) to allow the layout to be adapted to a family's changing needs, and to future users, and (3) to provide longer-term adaptation of the structure to a distinct mix of unit sizes in order to allow for future increases in space standards and family sizes (Rabeneck, Sheppard & Town, 1973). The project was an economic and architectural manifestation of user intervention at all stages of a project and user life (Friedman, 1987).

In 1964, in Diset, Uppsala, in Sweden, another project addressed to provide flexibility in housing and user intervention was developed by architect Axel Grape. The project used the Skarve system of large-panel concrete construction, with loadbearing external walls and crosswalls with an intermediate row of columns providing an open-floor area to each flat. The columns served as space-defining elements and as "anchors" for movable cupboards and casework (Rabeneck, Sheppard & Town, 1973). In two years of occupancy, 12 of the 16 tenants had changed their partition layouts and three of them had changed them more than once. The principal advantages are the variations of number, sizes, shapes, positions, connections between and demarcations between rooms. The potential for adaptation provided by movable walls and fixtures was popular with the occupants, and their knowledge that the units' layout could be modified had a positive

effect on residents' satisfaction with their dwellings (Rabeneck, Sheppard & Town, 1973).

Extendable housing is an example of another attempt to allow people to adapt their living spaces to their needs and expectations. Add-in and add-on emerged as possible responses to adaptation. Add-on exists as a way of making more space available without having to move. Add-in is a means of gaining usable floor space without increasing the ground area occupied by the house; its most popular form is the loft conversion (Rabeneck, Sheppard & Town, 1974a). An example of extendable houses (add-on) is the Milton Keynes' Tinker's Bridge project at Simpson with an initial over-provision in the party wall and demountable external infill wall, where the floor/wall ratio remains the same as the house grows (Rabeneck, Sheppard & Town, 1974a). Although an extendable house promises extra space as a family grows, and a young couple may afford a mortgage on the first plan, factors related to their future economic resources may place extension out of reach, leaving the family with minimum space or in need of moving.⁵ The add-in approach presents some advantages over the add-on approach since infrastructure and land costs are written down in the original investment and the envelope of the house is built to adjust to the ensuing density of the area (Rabeneck, Sheppard & Town, 1974a).⁶

⁵ Factors which can place extension out of reach are: demands of feeding and clothing children, increasing interest rates, escalating building costs, alteration of lending policies, owners committed to other borrowing (Rabeneck, Sheppard & Town, 1974a).

⁶ In the add-on approach the land, infrastructure, kitchen, bathrooms and basic services are paid in the first increment, which makes the home expensive in cost/area terms; the value of the initial investment is only perceived once the house is extended (Rabeneck, Sheppard & Town, 1974a).

Another attempt to allow users to take control over their living environment was the adaptable approach proposed by Rabeneck, Sheppard and Town, which was based on considered variations in room sizes, the relationship between rooms, a slightly generous usable floor area, generous openings between areas, and minimal open expression of room function (Fig. 2.5).

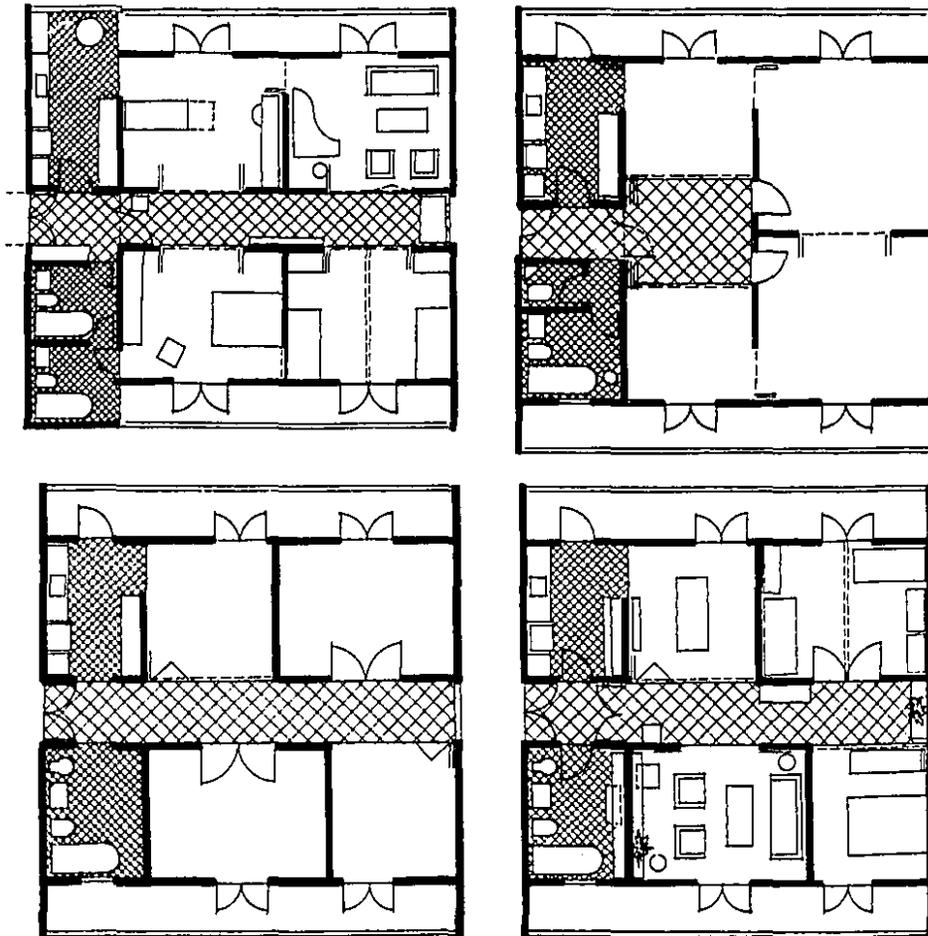


Fig. 2.5 One Interpretation of Adaptable Housing. Important features of this layout are a generous hall space for display, shared family storage, and service spaces large enough to house extra domestic appliances and/or second bathrooms.

(Source: Rabeneck, Sheppard, & Town, 1974b)

The adaptable approach emphasizes planning and layout rather than constructional technique and services distribution. The main idea was to allow "occupant choice

through ambiguity." The conceivers of this approach point out that "the unit is designed in such a way that there is a minimum predetermination of the patterns of use to which it will be put. Layout is designed to allow as wide a range of interpretations as possible." (Rabeneck, Sheppard & Town, 1974b).

The adjustable house, known as Flexabilt Home, represents another attempt to provide opportunity for adaptation. It was built in 1952 in San Antonio, Texas, by the builder Frank Robertson and its focus is on adding (and subtracting) rooms within the fixed perimeter of the original house (Fig. 2.6). This single-family house with movable closets and retractable walls permitted 72 variations on one floor plan, allowing occupants to change their spaces according to their needs throughout the family life cycle. These mobile walls and closets, defined as space dividers, consisted of 4'-wide, 2'-deep storage elements that could be adjusted to fit from floor to ceiling; a set of 3'-wide wall panels that could be unstacked and pivoted into place to form a partition; 4'-wide "stub" wall panels that could be set in place to span smaller gaps; and book-case-wall-shelf units. All these components could be easily placed by the residents without carpentry. Robertson felt that his system was flexible enough to meet the changing needs experienced by a family from the newlywed stage to old age (*Home & House*, 1952).

With a similar objective of planning a house which would meet the varying space requirements of a typical family as it progressed from the initial stages to the period of old age, and conscious of the need to contribute to housing flexibility, the architect/builder Haydn Phillips developed a flexible house in 1950 in New York (Fig. 2.7).

The principal features of the flexible floor plans were three fixed elements (bathroom facilities, kitchen equipment, and two short partitions), and the movable

storage units (modular closets) and folding partition walls. These could be adapted to meet the demands of the family as the family grew (*Architectural Forum*, 1950).

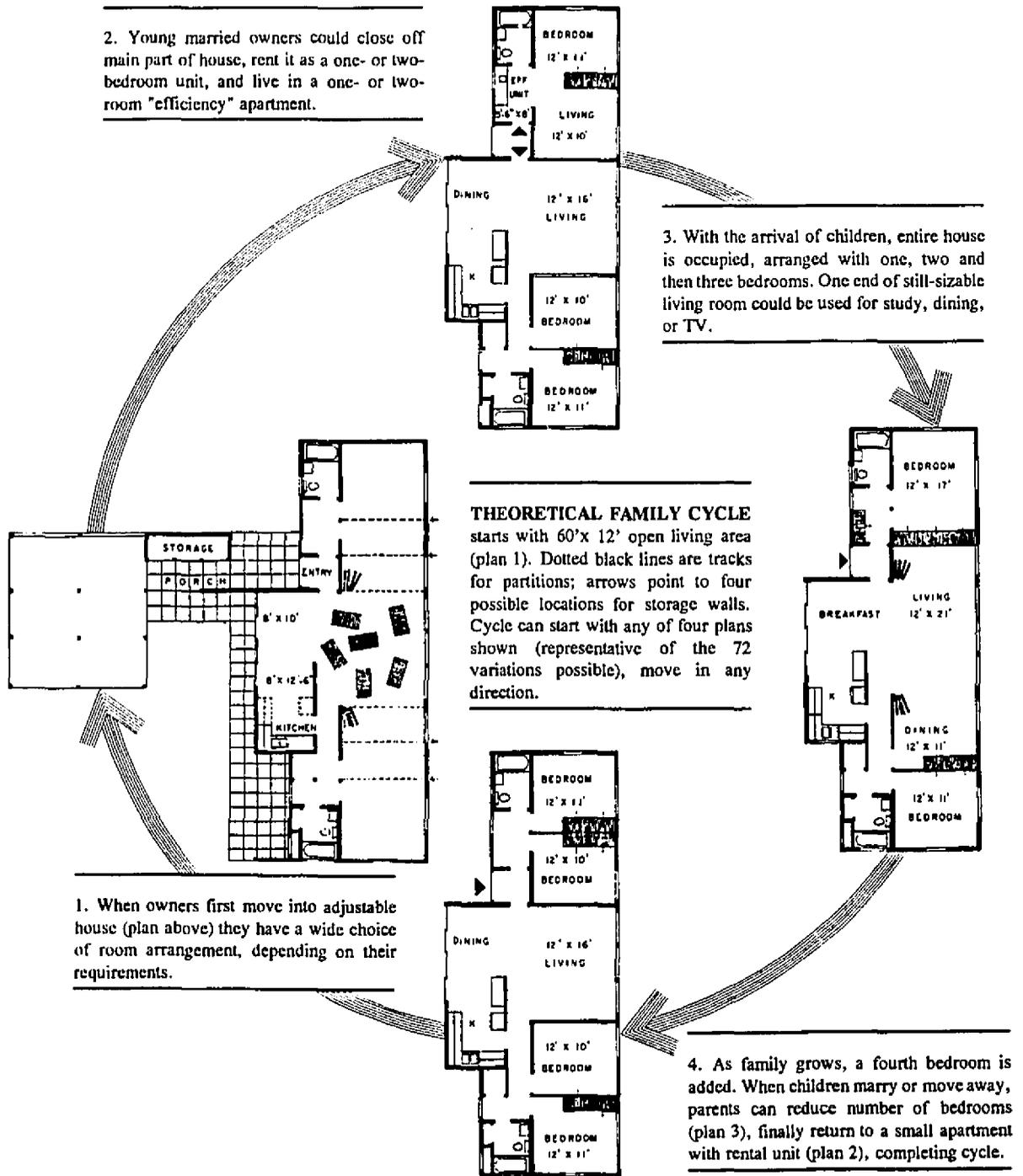


Fig. 2.6 Flexibilit Home, Changes Throughout the Family Life Cycle
(Source: *Home & House*, 1952)

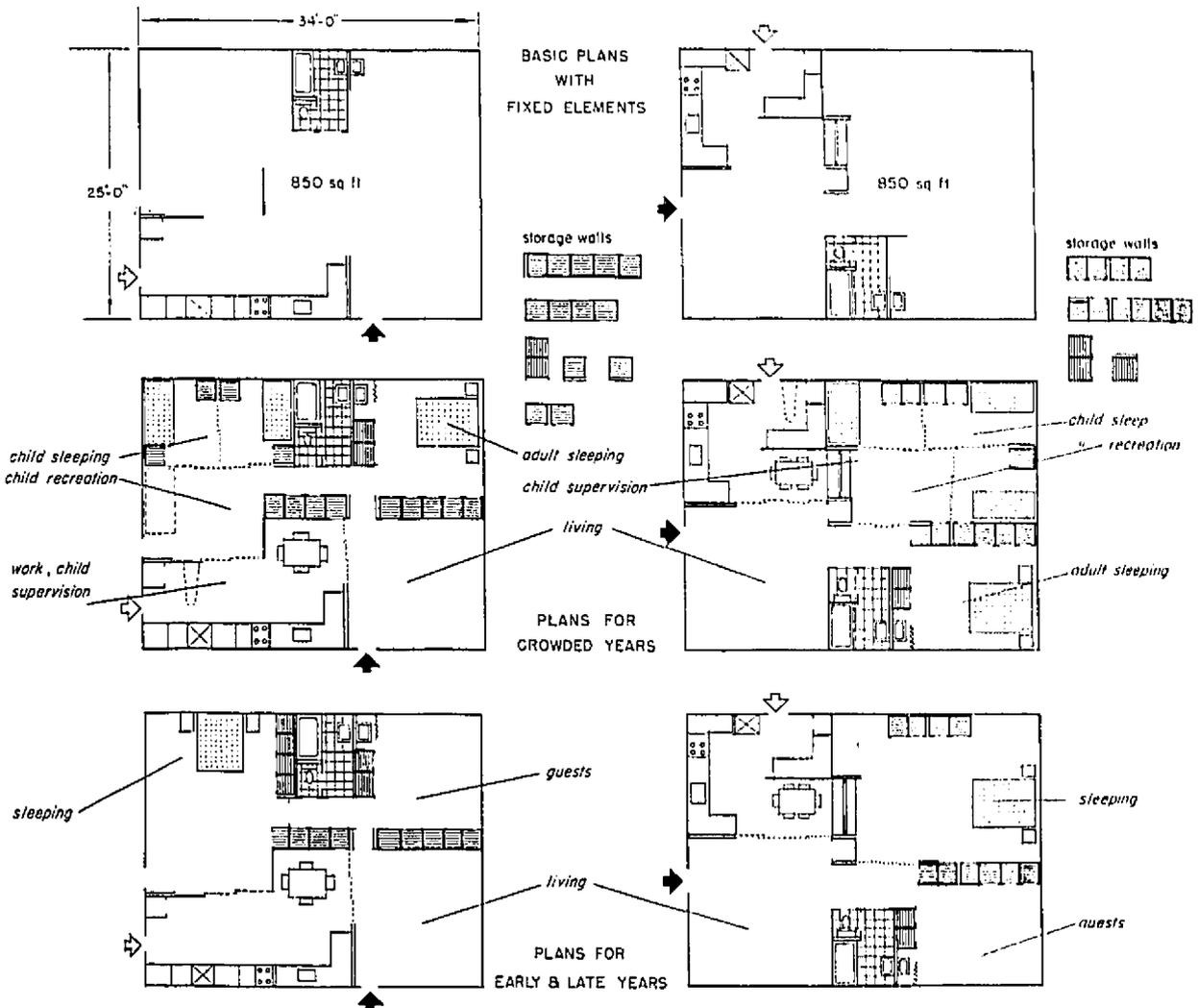
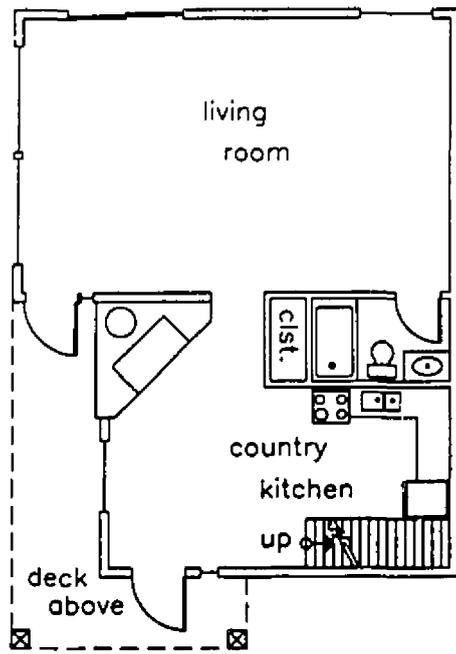
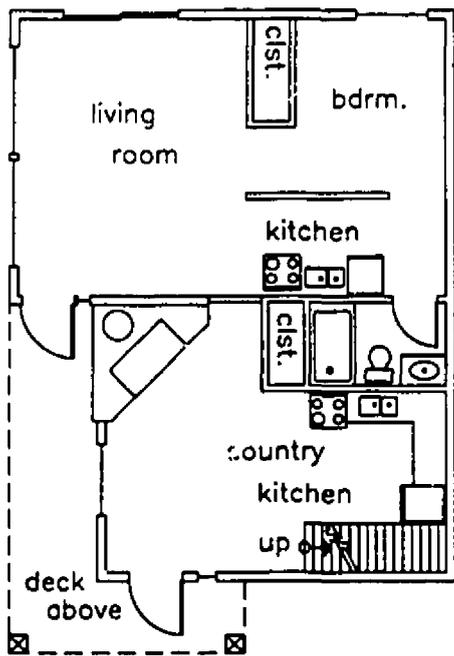


Fig. 2.7 Plan of the Flexible House by Haydn Phillips
 (Source: *Architectural Forum*, 1950)

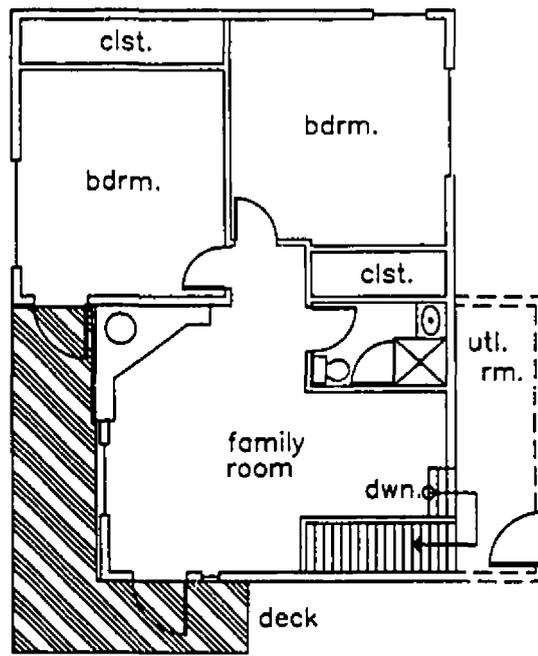
Accessory apartments ("Flexible House"), as a concept of flexible housing, can also be considered as just one of many different alternatives of providing opportunity for adaptation. This approach has been used in existing houses where homeowners convert extra spaces into separate dwelling units called "accessory apartments" (Howe, 1990) (Fig. 2.8).



A



B



C

Fig. 2.8 Floor Plans for a Flexible House. A-ground floor, original layout. B-ground floor converted into an accessory apartment (closet and partition are movable). C-upper level. In a conversion, the upstairs family room would serve as the living room of the primary dwelling.

(Source: Howe, 1990)

Conversion potential is designed into the house and minor alterations are needed to create or remove an accessory apartment. With this approach, the owners have the option of adapting the house to their particular financial and personal needs (Howe, 1990). A house designed in this way affords its owners adaptability to changing conditions. For example, a young couple can use rental income to counterbalance mortgage payments. As their income and family expand, they can remove the apartment and use the space for their family. When the children leave home, the apartment can be re-established to obtain extra retirement income. The owner can then live in the apartment and rent out the main part of the house (Howe, 1990).

According to Howe (1990), the accessory apartment can be used by community and housing planners as a vehicle for providing affordable housing and for promoting community acceptance of housing alternatives to housing demands originating in current socio-demographic changes. As well, she remarks that this approach is addressed to the actual problem of making existing and new housing stock more flexible without essentially transforming present ways of life.

Another strategy is the "Open Building" approach which was conceived as a means to accomplish flexible and adaptable housing schemes (Kendall, 1994). Open building is an approach to housing processes and technology in which a residential "base building" (known also as a "shell") is built and then fitted out to meet rather than anticipate user requirements. This is achieved by the off-site preparation and on-site installation of prefabricated "fit-out" packages (known also as "infill") for each individual dwelling (Fig. 2.9). These fit-out packages are independent and make future alteration unobtrusive since drain pipes and ductwork serving one unit are not situated in the ceiling

of the dwelling below, and the wiring is not spread throughout all walls and floors (Kendall, 1993). At the fit-out level each dweller may make decisions and is individually responsible. A base building consists of loadbearing elements, shared spaces and common mechanical systems (Kendall, 1994). It is a configuration of components which, when it is changed, automatically requires a change of infill. It contains the "fixed" portion of the system: the floors, roof, bearing walls, and in most cases a tight envelope.⁷ An infill element is one that can change without requiring the shell to change. Infill elements consist of partitions; drainage, waste, venting (DWV); water supply; heating systems; electrical, data and communications systems; equipment, fixtures and cabinets; wall, floor, and ceiling finishes (Kendall, 1990).⁸

An example of infill systems was developed by a partnership of Habraken, Age van Randen, F.J.M. de Vries, and J. van Vonderen (Matura Nederland B.V. company). This Matura Infill System, as it is known, which offers individualization and adaptability, allows the quick installation of partitioning walls, central heating, kitchen and bathroom equipment with all the piping and wiring related to such equipment (Habraken, 1992) (Fig. 2.10).

⁷ Fixing these components of the shell does not mean that it cannot be changed during design, construction or later. Changes such as a window position or size, upgrading of insulation rating on the envelope, enlarging the shell in a specific direction, and so on, can be performed depending on the party's willingness to organise and pay for these changes (Kendall, 1990).

⁸ Infill elements are independent of the shell, but follow it in construction sequence and are connected to it (e.g. infill wiring must connect to shell wiring; infill walls must attach to shell floors and walls, and so on) (Kendall, 1990).

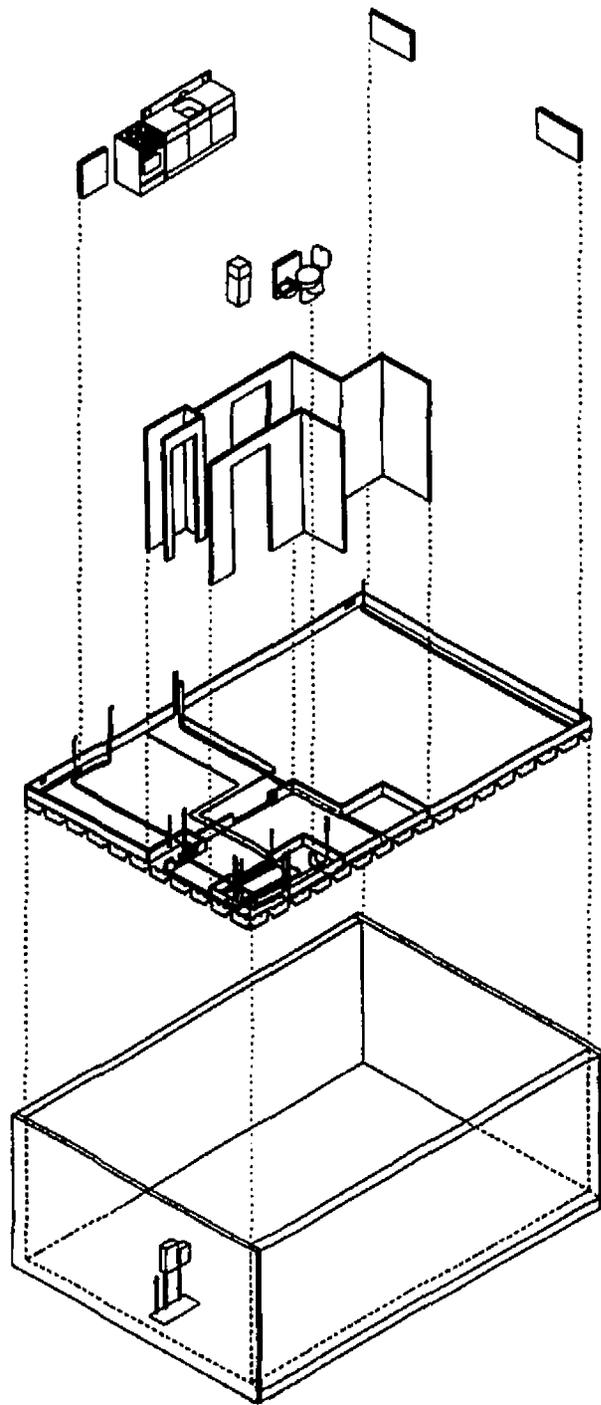


Fig. 2.9 A Diagram of a Dwelling Organized on the Concept of Base Building/Fit-out
(Source: Kendal, 1993)

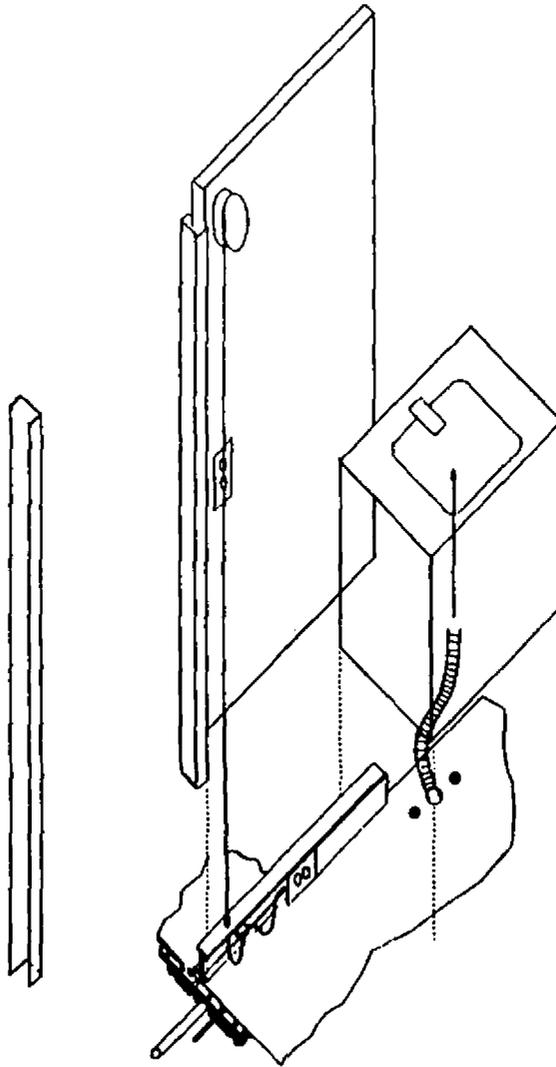


Fig. 2.10 Organization of the Matura Infill System
(Source: Habraken, 1992)

The Matura Infill System is composed of a lower and an upper system. The lower system is composed of two new hardware components invented in order to organize the distribution of the conduits and minimize the interference between subsystems. These components are the "Matrix Tile" which holds conduits for water, central heating, and sewage, and is laid on the loadbearing floor and covered with a

floorboard, and the "Base Profile" which holds all the electricity and electronics. The elements of the upper system which are partition walls and wall finishes, door frame and doors, and kitchen and bathroom equipment, are connected to the conduits of the lower system (Habraken, 1992).

Kendall (1993) remarks that combining interior construction, furniture, finishes and equipment represents a "major evolution of single-source control and responsibility and of efficient customatization." As well, he points out that fit-out packages solve problems associated with traditional practice (e.g. damage of material and equipment during transportation; too much supervision demanded), since parts of each unit are small enough to go through a door, they come in containers, and are loaded directly into the dwelling to be installed. Kendall (1990) mentions some other advantages of utilizing this strategy such as: making the work of constructing many houses easier, more manageable, more rapid and less expensive (simplified shell construction and rapid infill installation save time and money), which leads to higher quality. As well, this concept makes future adaptations easier to accomplish. However, Kendall (1990) suggests that changes in design methods, construction phasing, contracting and marketing are needed to enable the concept to be implemented with greater efficiency and quality. This approach is extremely valuable since architects and builders can give form and space to occupants who then have the freedom to take these given forms and use them in their own changing ways (Kendall, 1994).

One recent example of open building application is the Keyenburg Open Building project designed by van der Werf and built in 1987 in Rotterdam, The Netherlands, with 152 units, each with a different plan layout (Fig. 2.11). Its cost was 10% less than a

similar building with the same units built by traditional practice, and the residents reported high satisfaction (Kendall, 1993). As well, in 1989 this concept was applied in Voorburg, The Netherlands, in a project consisting of three five-storey blocks containing 130 walk-up flats and enclosed by thirteen staircase halls. This 30-year-old housing complex was renovated with the participation of the residents using the infill system supplied and installed by Matura Netherland B.V. company (Cuperus & Kapteijns, 1993) (Fig. 2.12).

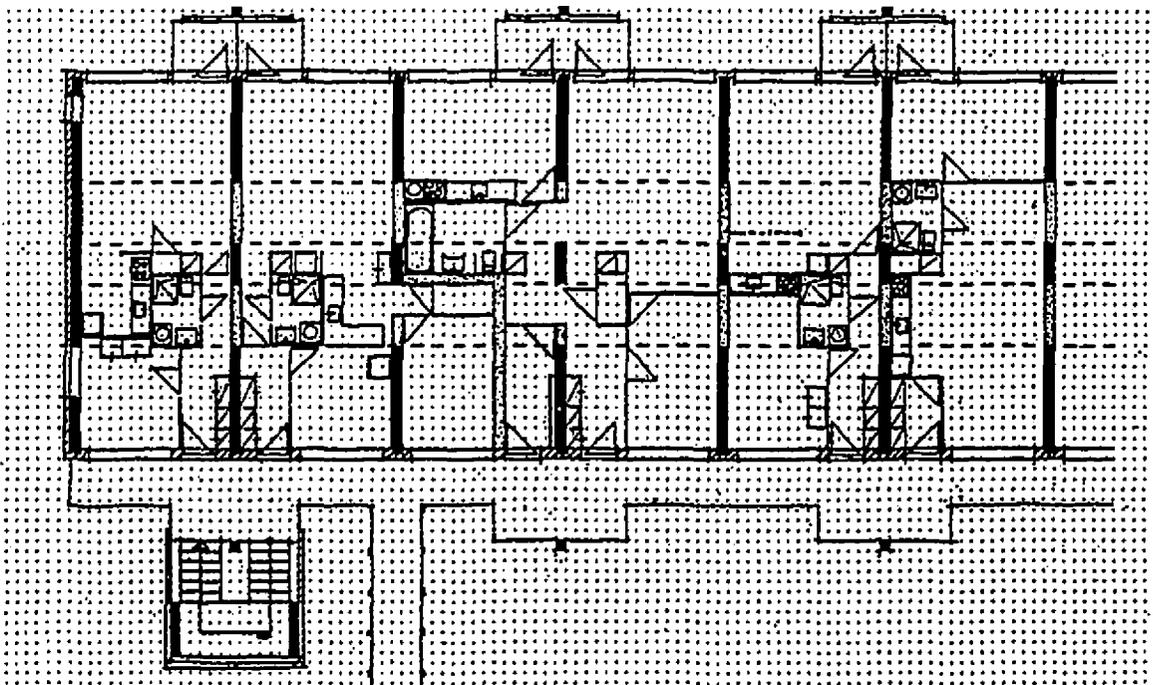
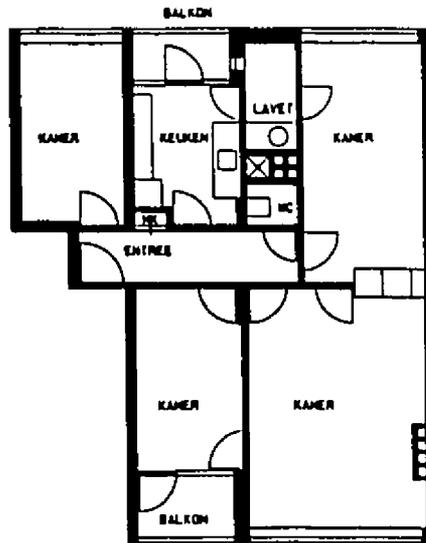
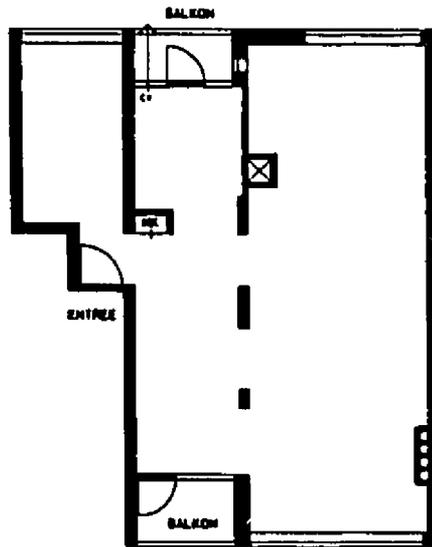


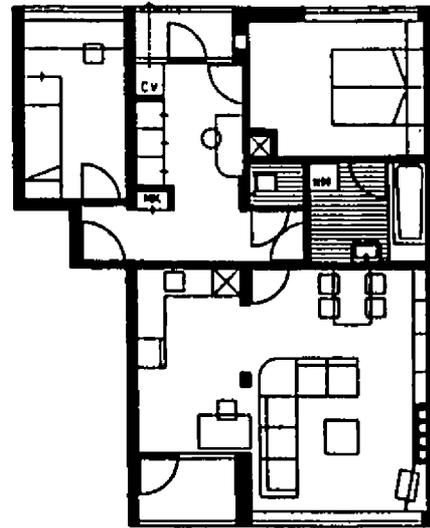
Fig. 2.11 Plan of the Keyenburg Open Building Project
(Source: Kendall, 1993)



The Old Layout



The Stripped Plan



One Infill Option

Fig. 2.12 Original and New Layouts in Voorburg Project
(Source: Cuperus & Kapteijns, 1993)

All of these different approaches and projects which have been created to provide users with greater opportunities for housing adaptability and user intervention have demonstrated the interest of professionals in taking into consideration the various needs and desires of users and in contributing to effective housing solutions.

2.3 CONCLUSIONS

Mass housing projects were the consequence of European government effort to counter the housing shortage caused by World War II and the ensuing population growth, which resulted in the production of extensive urban areas of unvarying buildings where the individual dweller became an inactive participant in the housing process (Habraken, 1976).

Since then, different technical approaches designed for flexibility and user intervention have been developed in order to re-admit the user to active participation in the housing process. The term "flexibility" emerged as a mechanism in response to housing demands which required greater opportunities for adaptations where occupants could shape a home which would reflect something of their own necessities and values.

The most representative approaches to housing flexibility have been: the GEAI system, S.A.R methodology, PSSHAK method, flexible housing, adaptable housing, extendable housing, adjustable housing, accessory apartments, and the open building approach. The most typical elements and components used in these different approaches are movable walls, detachable units, movable closets, movable storage units, retractable walls, folding partition walls, and fit-out packages (infill systems).

These different approaches are extremely valuable since they give users the opportunity to decide on their living conditions in their own homes. Even if users are not taken into consideration at the moment of the design process, the fact that they can take control of their living environment at any moment they desire is highly important and appreciated by them.

The need to provide housing where residents have the opportunity to adapt their living spaces according to their own choices and requirements has been recognized by all those professionals who, through the different approaches and projects presented in this chapter, have made a contribution to housing flexibility. These different attempts to provide housing flexibility prove once again that when users are given the opportunity to make decisions and to assume responsibilities for their living environments, they take complete advantage of this resource and fully engage in the arrangement of their homes. Housing designed to offer a measure of flexibility and to allow for user intervention is of great benefit to the family who can stay in one house for most of its life. Such housing allows for easier and more effective adaptation to changing general needs and expectations.

CHAPTER THREE

POST-OCCUPANCY ADAPTATION: CONCEPTS AND THEORIES

3.1 INTRODUCTION

Families make use of their economic, social and physical resources to overcome the gap between the housing they have and the housing they feel they should have, which they solve through housing adjustment and adaptation. Families are not passive in their interaction with their own housing (Morris & Winter, 1978).

Many post-occupancy evaluations have been conducted in the past in order to obtain greater knowledge of user housing behavior and also user residential satisfaction. However, not much research has been carried out concerning the type of modifications occupants make immediately after they have moved into their new housing unit. The main purpose of this chapter is to examine from other research findings issues that could be important to post-occupancy adaptation, as well as to gain a greater understanding of the motives that induce residents to engage in housing modifications.

This chapter is composed of five sections. The first section introduces the subject of the chapter. In the second section, the author describes theories about motivations that inspire people to carry out modifications to their residences. The third section is a description of some past post-occupancy adaptation studies in which the author remarks on their relevance to this research. In the fourth section the correlation between family and spaces is described, followed by the conclusion in the last section.

3.2 THEORIES ABOUT MOTIVATIONS FOR POST-OCCUPANCY ADAPTATION

It is difficult to gain a thorough understanding of post-occupancy adaptation without mentioning the theories about motivations that inspire residents to carry out modifications to their houses. When a house does not meet family needs or expectations, residential adaptations result as a housing adjustment mechanism. Morris & Winter (1975, 1978) maintain that when a house does not meet the norms, then normative deficits exist.¹ They also remark that the appearance of normative deficits in a house results in residential dissatisfaction. When this dissatisfaction becomes strong enough, the family tends to make housing adjustments as a means of eliminating housing deficits. The behavioral patterns which respond to a need for housing adjustments are residential mobility, residential adaptation or family adaptation.² Residential adaptation, one of the behavioral patterns of housing adjustment, refers to the various activities householders can undertake to make the house fit their needs. They include any kind of physical/spatial or functional changes such as additions, remodelling, and changing the use of the space. Residential adaptations are usually performed by owners of single-family dwellings and basically are carried out to remedy housing deficits in space and

¹ Morris & Winter (1978) consider "normative deficits" as a gap between actual conditions and those prescribed by norms. Families judge their own houses and those of others using culturally derived criteria known as norms.

² Morris & Winter (1978) consider "residential mobility" as moving to a different dwelling within the local area. They consider "family adaptation" to be actions a family takes to change its composition to suit the actual housing, actions having to do with childbearing (e.g. postponing the birth of additional children because of space deficits), and actions having to do with the entrance into and departure from the household of other members.

quality. This kind of behavioral response, in the housing adjustment process, is the one which the author addresses in this research.

As well, Becker (1977) in Teasdale & Wexler (1993) points out that when there exists a gap between the current housing situation and the ideal home, the residents have three different means of action: modify or adjust the house (personalization), modify their attitude, for example, concentrating on positive aspects (focusing), or moving.

Morris & Winter (1978) also present the motivations that make people undertake housing adjustments. They are: the stage of the family life cycle, socio-economic status, normative deficits and residential satisfaction. For example, Bross (1975) in Morris & Winter (1978) found that families with children and younger families tend to make residential adaptations in order to obtain greater space. Older families make residential adaptations to upgrade spaces, to create more usable space or to add comfort to the house. He suggest that households who are satisfied with their housing conditions engage in adaptations.

Morris & Winter (1978) remark that, in relation to socio-economic status, rising income results in a quality deficit because it produces rising quality norms. They point out that middle-income families tend to engage in improvements and maintenance activities to eliminate deficits and to maintain the value of the property. Upper-income families perform some improvements and maintenance, but they choose to move in order to overcome deficits. Lower-income owners delay improvements and maintenance until they expect to move.

Morris & Winter (1975, 1978) report residential satisfaction as the primary motive that makes people engage in residential adaptations. Occupants, both highly

satisfied and highly dissatisfied, make alterations, but the motivations for these alterations are various. Users who are not satisfied with their house make home improvements in order to overcome deficits and to upgrade the resale value so that they can move. In contrast, people who are completely satisfied with their living environment appreciate and enjoy their houses so that they want to stay and continue to upgrade them. Elderly and disabled people also engage in housing adjustment; the housing needs in both cases are similar. When disability derives from an accident, sickness or a birth defect, deficits appear in the living environment as a consequence of changes in the physiological condition of the person. For this reason, disabled people are more inclined to embark on residential adaptations in order to adjust the house to meet their specific needs. In contrast, elderly people who have decreased independence or mobility choose to move to eliminate deficits. They prefer to move to where medical and community centres are more accessible.

People often make adjustments to their residences over the course of the family life cycle. According to Teasdale & Wexler (1993) there are two classes of life events which occur during the family life cycle. The first type corresponds to developmental stages and is experienced by all households. It is comprised of birth, passage from pre-school to childhood, passage from childhood to adolescence and passage from adolescence to early adulthood, departure of children, preparing for the empty nest, and caring for aged parents. The second type of life event is not necessarily part of all households' life histories. It includes divorce or widowhood, family fusion, women's entry or return to the paid labour force or to school, and unemployment. They also note other factors, with no explicit reference to life events, such as changes in styles or tastes,

narrowing the gap between the present and the "ideal" home, upgrading, maintenance, self-actualization, and change of life style, any one of which may result in a need for the family to make adjustments to the house.

Seek (1983) remarks that the final choice to carry out a housing adjustment is the result of a two-part decision-making process. The first is the decision to adjust housing consumption, and the next is the choice between the option of moving or improving, or a combination of both. Some factors that influence housing adjustment are changes in the household's socio-economic status, changes in tastes and preferences, changes in housing attributes and changes in housing prices, and external factors such as a public decision on land use or transportation. For example, a family that does not experience housing deficits but has raised its income may engage in residential modifications because the family norms have become more demanding. Seek also points out that residential adaptation is chosen as the primary alternative of housing adjustment. Because of the high financial and psychological cost of moving, users tend to stay in the same residence for a long time and to modify it as their housing needs appear according to their life cycle. Housing modifications are carried out mainly to meet family demands for more and better housing as opposed to improving deterioration or defective features.

Lodl & Combs (1989) view housing adjustment as a form of behavior that is adopted to accommodate demands for better housing or to overtake normative housing deficits. They remark that characteristics of the household members (occupation, age, education, income) and housing characteristics (age of structure, value of the house, number of bedrooms) are variables to be related to the housing adjustment choice. The

housing adjustment behavior that people adopt are: remodel, move, move and remodel, and make no change.

Parrott (1988) points out that household characteristics such as stage in the family life cycle, length of marriage, education, occupation and hours of employment are strongly related to housing modifications. Households at early stages of the family life cycle engage more in housing modifications than older households. Larger-size households and households at expanding or growing stages tend to remodel personal-care spaces such as the bathroom. Smaller households, like one-person households, tend to remodel garages, perhaps because they buy smaller houses without enough garage space. Parrott, who also investigated the Do-It-Yourself (DIY) activities, notices that the longer couples are married, the less likely they are to be involved in DIY activities. Multiple-income households are more likely to be involved in DIY activities and consult professional assistance before engaging in modifications than retired households. She observes that DIY activities and remodelling garages are very much associated with younger stages in the family life cycle, lower educational levels, and lower occupational status. Households with skilled labor occupations do more remodelling jobs.

Parrott & Lodl (1991) suggest that residential adaptation is a form of housing adjustment. They remark that the key factors related to residential adaptation are norms, housing satisfaction, household characteristics and housing characteristics. They also maintain that people make housing adaptations to meet housing aspirations rather than to correct housing deficits. Housing satisfaction is described as a process by which people compare the house they would like to possess with their present housing.

Households who are already satisfied with their homes perform modifications to adapt their housing.

3.3 EXAMPLES OF POST-OCCUPANCY ADAPTATION STUDIES

Post-occupancy adaptation studies are conducted to document how occupants use their spaces and make modifications according to their needs and desires. Post-occupancy evaluations which generate new knowledge are extremely important in understanding the nature of residential modifications, the relationship between family and changes, and the correlation between family and space which contribute to increase the quality of the housing product, improving in this way the quality of life. All the valuable information compiled through a post-occupancy evaluation is used as a method in developing recommendations in order to provide solutions with more opportunities for adaptation.

A post-occupancy study was carried out by Teasdale & Wexler in 1986 in Montreal, in single-family units (bungalow, cottage, split-level) and plexes that had been occupied for 17 years. The purpose was to investigate the relationship between life events occurring during the family life cycle and the changes in the use of the space, or physical modifications that occupants made to the house to adjust it to their needs (Fig. 3.1). Some of the changes, related to life cycle events, described in their study were: creating or rearranging space for newborn and young children, the conversion of the basement areas into the domain of adolescent and young adult children, recovery of space vacated by departing children, redefining space at home when the wife (or husband)

returns to work or study, and others. They also described modifications with no explicit reference to life events such as updating or modifying the kitchen, changing the location of the basement stairs or its railing/balustrade, decorating the basement play/family room with brick, stucco or wood, adding woodwork, changing furniture style and adding a room.

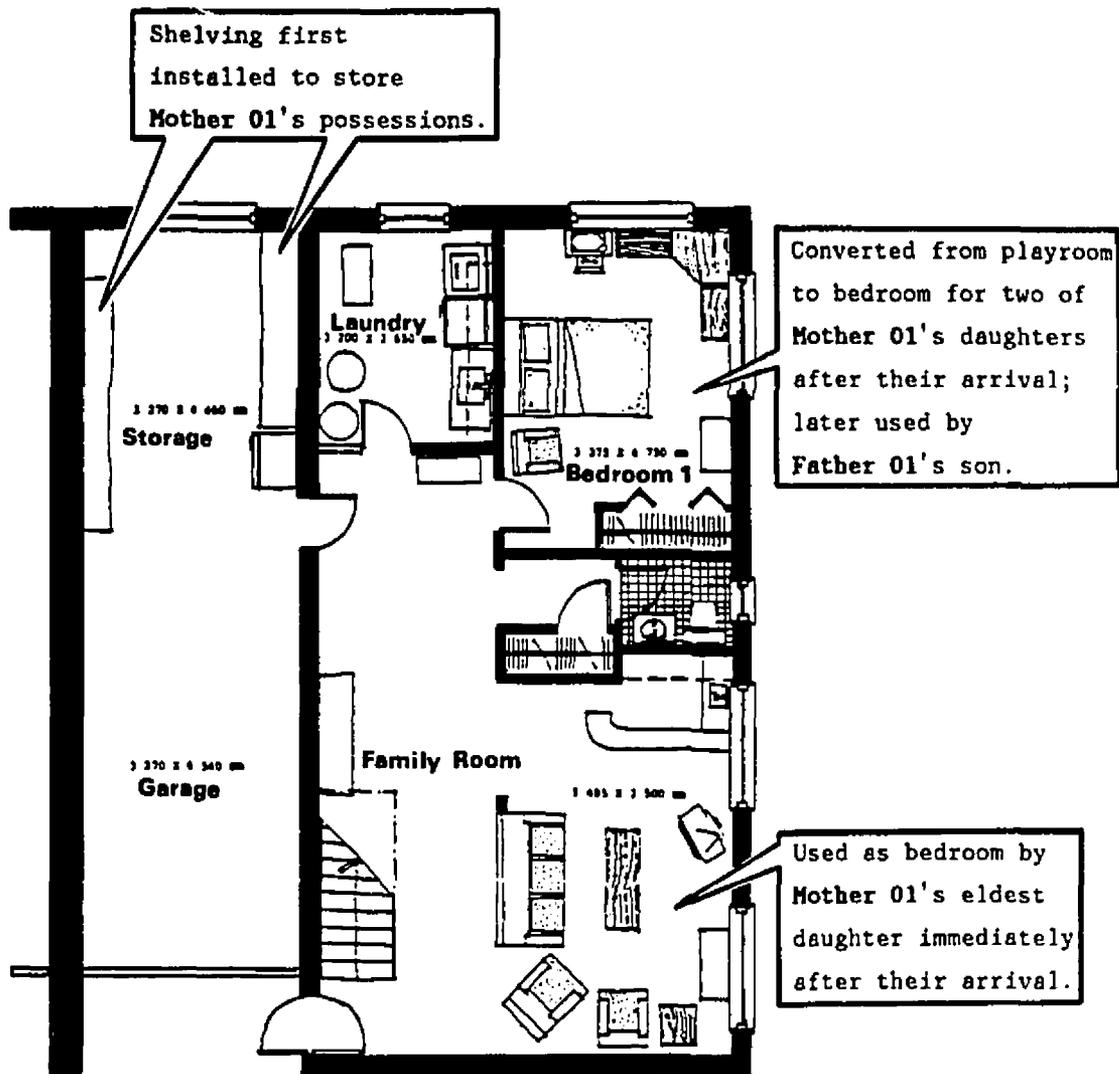


Fig. 3.1 Example of How One Resident Adapted the Basement
(Source: Teasdale & Wexler, 1993)

With regard to physical changes, they concluded that in all cases the basement, which was originally unfinished (as is the case in the researched houses), was finished and proved to be the most multi-functional space in the house. Basements provided an environment for personal and identity-reinforcing activities which could not have been accommodated elsewhere in the house.

In their conclusion, based on their findings, Teasdale & Wexler provide parameters to architects, builders, regulatory officials, realtors, and the public concerning the internal design of houses that are adaptable to long-term occupancy. This study demonstrates the importance, for example, that unfinished basements have in accommodating family needs. It also shows how dwellers can adapt unfinished spaces to their needs. These findings underline the author's hypothesis that houses need not be completely finished in order to provide opportunity for adaptation and to motivate user intervention.

Other research that has implications for this study has been carried out by Pantelopoulos (1993). She visited 22 wartime houses in Montreal in order to document post-occupancy adaptation. These houses, no larger than 1000 ft², were built as temporary shelters for workers in the World War II industries. However, public demand for affordable housing forced the authorities to allow workers and veterans to purchase the units.

The purpose of Pantelopoulos' study was to document how people managed to meet their housing needs in these small houses that were not expanded. The study demonstrates that spaces such as the kitchen, bedrooms and storage areas play a principal role in accommodating occupants' changing needs. It was found that the interior layout

of these houses was modified primarily because of the need for more storage and larger work areas (Fig. 3.2). Pantelopoulos concludes that solutions achieved in the use of spaces by residents can be used as parameters for architects in designing small living spaces.

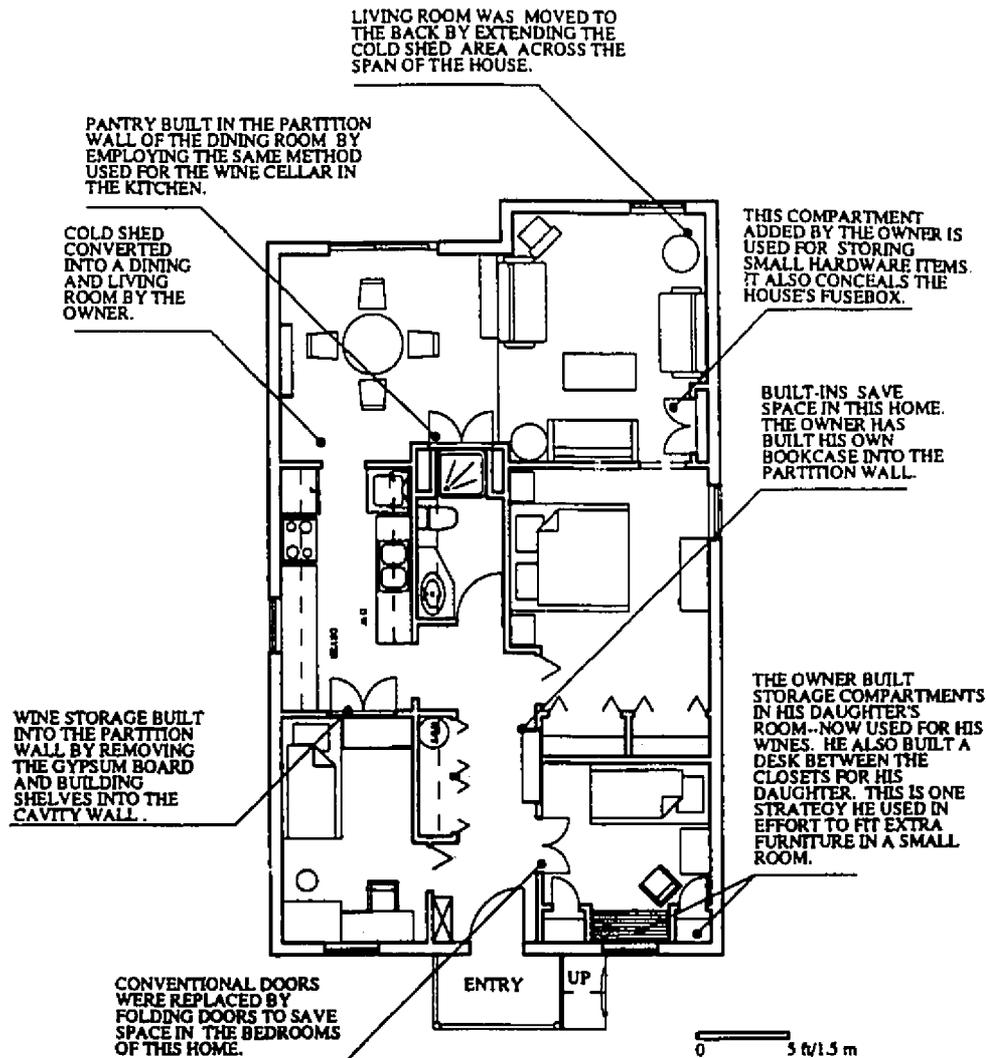


Fig. 3.2 Example of One of the Wartime Houses Researched, Describing the Different Changes Made by the Owners (Source: Pantelopoulos, 1993)

Pantelopoulos' study has demonstrated the owners' originality in the use of their spaces in such small houses without extending their floor area considerably, as well as

the willingness of people to compromise in order to own an affordable house. It shows that people will adapt their living environment regardless of limitations. People are willing to perform changes in their homes by themselves in order to fulfil their needs and expectations. For this reason, the author's belief is again confirmed that houses must be designed to allow for adaptability and user intervention.

An evaluation of affordable housing projects based on the Grow Home concept was carried out by Friedman and Cammalleri in 1992 in Montreal. The purpose of the study was to evaluate the potential of narrow-front rowhousing to respond to Canada's affordability challenge. As well, this evaluation was made to assess the sociological, architectural and financial characteristics of the project users and to document which aspect of the design concept was the most acceptable to buyers and builders. In order to accomplish these goals, six areas were explored: demographic composition, shopping for the home and buying experience, buyers' preferences, occupants' satisfaction, improvements over former dwellings, and required adjustments for occupants after they moved in.

In relation to the adjustments required for occupants, the evaluation found that after only six months of occupancy, 39% of occupants had already performed some changes, all of them in the basement (Table 3.1). The most common change was drywall installation to finish the exposed structure ceiling. Some minor changes were made on the first and second floors (Table 3.2). In addition, 83.8% of the surveyed residents were planning to make modifications to their homes. The largest changes planned were for the basement (addition of a playroom, den, toilet, laundry, or

bedroom). For the upper floor, they were planning to upgrade the finishes and to re-plan the kitchen.

WORK DONE IN BASEMENT	
SINCE OCCUPANCY	(%)
Drywall or Plasterwork	15.3
Electrical Fixtures	14.2
Partitions	14.2
Floor Finishes (wood, carpet, etc.)	12.9
Wall Finishes (paint, wallpaper)	11.6
Electrical Wiring	7.7
Wood Finishes (trims, baseboards, etc.)	6.1
Insulation	4.5
Rough Plumbing	3.9
Kitchen/Bathroom Cupboards	3.2
Plumbing Fixtures	1.9
Others	4.5

Table 3.1 Work Done in Basement Since Occupancy
(Source: Friedman & Cammalleri, 1992)

FIRST FLOOR (by total number of respondents)

Partition/1

Drywall/1

Wall Finishes/11

Floor Finishes/1

Wood Finishes/2

Cupboards/5

Electrical Wiring/1

Electrical Fixtures/3

Rough Plumbing/1

Others/9

Others: Wall to wall carpet (1); door knobs changed (1); add mirrors in dining room and on closet doors (1); glass block wall (1); changed kitchen layout (1); air exchanger (1); changed 1 door (1); more shelves (1); microwave oven installation (1).

SECOND FLOOR (by total number of respondents)

Wall Finishes/3

Wood Finishes/1

Electrical Fixtures/1

Others/5

Others: More storage space (1); shower door installed (1); changed door knobs (1); air exchanger (1); stair ramp (1).

Table 3.2 Work Done in First and Second Floor Since Occupancy
(Source: Friedman & Cammalleri, 1992)

Friedman and Cammalleri remark in the conclusions that the magnitude of work performed by the users on the houses was considerable, taking into consideration the short period of residency. This study demonstrates how occupants make modifications to their residences immediately upon moving in.

Mautz & Kaplan conducted a study in a university-owned housing complex of about 400 dwelling units in Michigan. It was undertaken in 1974, and most of the units were two-level townhouses. The survey consisted of student families with young children. The purpose of this study was to understand the causes of modifications, especially the changes made to the exterior. With relation to physical changes, gardens were the site of the most frequent changes performed in the housing complex. As well, high wood fences were erected to separate patios from a busy walk, trees were planted to keep intruders out of sight, and play spaces were provided for toddlers. A great number of attempts to make each of the 400 doorways different from the others were carried out. Mautz & Kaplan concluded that no matter how well designed and landscaped the housing projects were, the residents themselves still significantly valued the opportunity to modify their environment in order to fulfil their distinct needs and interests. The different attempts to give some kind of individuality to the house demonstrate the interest of occupants in exercising personal choices. This study also proves once again the inclination of users to actively intervene in the arrangement of their homes.

A study in ten New York State counties (Clinton, Delaware, Madison, Monroe, Montgomery, Putnam, Rockland, Saratoga, Seneca, and Wayne) was conducted by Laquatra & Ichimune in 1991. The purpose of the research was to examine

relationships between the information needs of households and the home remodelling process. 92% of survey respondents were homeowners and 79% of the respondents lived in single-family detached houses. 110 (82%) of the 135 survey respondents included in the study indicated that they had remodelled their houses after moving into them.

In relation to residential alterations, Laquatra & Ichimune found that the type of modifications performed included remodelling kitchens and bathrooms, replacement of heating and cooling equipment, re-roofing, insulating, painting, and replacement of draperies and carpeting. They had also added screened porches, sunspaces, decks, garages, and utility rooms, and replaced electrical and plumbing systems and siding. In addition, they described reasons given for these residential adjustments such as old or run-down looking homes, worn-out or broken fixtures and appliances, the desire for greater comfort or convenience, the need to increase energy efficiency, and changes in family size or composition. They also described how occupants, in order to make modifications to their homes, use different information sources such as friends and relatives, architects, building contractors, interior designers, home shows, and real estate agents; even so, other occupants consulted no one. Laquatra & Ichimune concluded that housing information needs vary by household type, age and occupation. From their study, it is possible to note that people often engage in residential alteration and that they look for different sources of information in order to perform changes in their living environment to overcome their housing needs.

Another study has been carried out by the School of Architecture of Newcastle University in Britain as a combined project with fourth-year architecture students and a

group of overseas postgraduate Housing Studies students. The major purpose of this study was the attempt to raise student awareness of the expectations and needs of housing users. They documented changes made over a 15-20-year period to three housing estates and the residents' attitudes to and aspirations for their homes. The three housing estates are Kenton Bar, Kingston Park, and Washington New Town. The most common changes registered in Washington New Town were electric heating replaced by gas, generous areas for storage removed to make larger living rooms and bedrooms, refitting of kitchen and bathrooms, and some replacement of windows (Fig. 3.3).

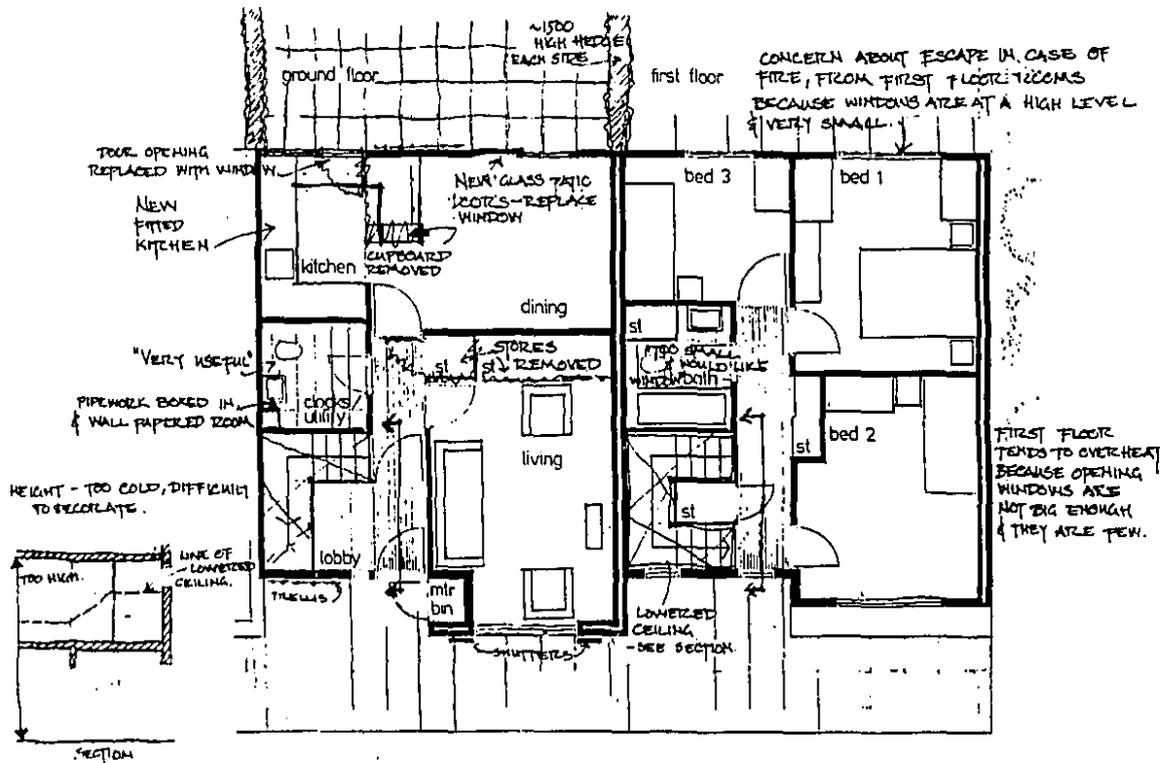


Fig. 3.3 Washington New Town: An Example of Survey Data of One Resident (Source: Kellett & Higdon, 1991)

In Kenton Bar, the shared open space in front of residences was generally enclosed by different kinds of fences and hedges. Changes to the entrances, door and

lobby were a common feature. The Kingston Park housing, which was the least documented of the three housing estates, did not present residential alterations. The principal reason seems to be that none of their occupants were local people, and they did not stay long (Kellett & Higdon, 1991).

Bunting & Kesik-Delfgaauw conducted a study of renovation practices in single family housing in the city of Kitchener, Ontario. The purpose of this study was to provide a clear picture of trends in residential renovation. This study was undertaken in 1989 and was composed of four phases. The first consisted of a chronological analysis of home improvement activity during 1976 and 1986. The second investigated home renovation activities of recent movers in the inner-city and suburban area. The third phase was addressed to households who had undertaken major renovation projects (greater than \$5,000) and who had an average length of residence of 16 years. The surveyed residents were asked about their renovation activities over the five preceding years. The last phase was addressed to the producer or supply side of home improvement activity.

The types of renovation work they identified were painting, interior decoration, plumbing, electrical wiring, insulating, carpeting, basement improvement, fireplace. In the exterior of the house were found activities such as painting, window replacements, fencing, refacing of siding, driveway, sidewalks, patio, landscaping, garage, roof, chimney and pools. With regard to major renovation activities, they found that the most frequent types of work were additions of bedrooms, bathrooms, kitchen and family rooms.

They observed that major renovators do more in terms of remodelling or improving the exterior of the house and are more likely to use professional renovation services, in contrast to recently purchasing households whose home improvement activity was modest and who undertook the work by themselves using their own, unpaid labour.

They concluded that major renovations were primarily undertaken to provide additional space for children and family activities, and that for most of the residents, renovation activity represented a determination to improve rather than move, and that preferences and constraint factors were weighed in the decision-making process. As well, they found a strong correlation between a household's spending on home improvement activity and its socio-economic and family status.

3.4 THE FAMILY AND ITS SPATIAL NEEDS

The amount of space a house should have in order to be regarded as suitable depends on family size and composition (age, gender, and relationships among the household members).³ According to Morris & Winter (1978), criteria of space deficits (crowding) have evolved by determining the relation between a quantity of space and the number of occupants of that space. Because the spatial norms of a house depend on the sex, age and role of each family member, there are many changes that a family experiences throughout its life cycle.

³ According to the Canada Mortgage and Housing Corporation (1993), a dwelling is suitable if it meets the national occupancy standards, i.e. has enough separate bedrooms so that no bedroom need contain more than two persons, children aged five to seventeen or older of the opposite sex need not share a bedroom, and each single parent or husband-and-wife couple and each other household member aged eighteen or older has a separate bedroom.

Morris & Winter (1978) maintain that when a young couple sets out in life, before the birth of their first child, an apartment or small house with a bedroom, living-dining room and kitchen, or a kitchen-dining and living room provide enough space to accommodate them satisfactorily. However, the birth of the first child necessitates a sudden change in their spatial needs. Children are supposed to have a sleeping area separate from the parents. The young child can share the parental bedroom but before the age of five should have his or her own bedroom; an extra bedroom is then required and the family experiences a spatial deficit. With the birth of the second and subsequent children, a family experiences different needs. At this stage, gender and age are decisive factors.⁴

The other spaces of the home also undergo changes over the family life cycle. When the children become adolescents, many families feel the need for extra space in order to entertain their friends without disturbing the other family members. In this case, the family may investigate different options such as a large living-dining room to accommodate many activities at once, a family room, or a recreation room. Teasdale & Wexler (1993) remark that owners of houses with a basement use this space as an outlet where "new demands of adolescents and young adults requiring space and privacy are most often accommodated."

⁴ According to Morris & Winter (1978), if the children are close in age and young, gender is not important, so that they can share a bedroom. There is no need for extra space at the moment. But if there is a difference of, for example, four years between the first child and the second, then another bedroom could be required. When the children reach pre-puberty, the genders of the children demand changes. A family that has two bedrooms, one for the parents and the other for two children of opposite sex, may now feel a space deficit. Even families with children of the same sex require an extra room as the oldest child becomes a teenager.

The need for space that single-parent families experience over the different stages of the family life cycle are similar to those that families with both parents experience. However, because of economic factors, a single-parent family may have a more difficult time obtaining the space required, experiencing in this way greater constraints. Spatial needs for a childless couple are similar to those experienced by a couple before the birth of their first child. A single household experiences less need for space. He or she requires a sleeping area, living area and cooking area which can be combined into a single space. Single households tend to share the dwelling with another person of similar age, but as they grow older they desire a dwelling of their own (Morris & Winter, 1978). According to the Research Division of the Regional Group (1990), empty nesters prefer spacious single-detached dwelling units with more space in order to host family members.

After a brief description of the relation between different family types and spaces throughout the family life cycle, it is important to give an account of some findings related to families and their spaces in the home. Zeisel (1981) points out that residents in their homes tend to maintain separate areas for formal activities where they exhibit their "best side," along with an informal area for casual activities. Residents prefer to have a living area which they can treat as a "showcase" living room and keep separate from the children's play area and the rest of the house. In this area, residents express their personality and identity through decoration. As well, many residents do not like to have the main entrance of their house lead directly into the living room, especially when it is used for formal activities. Most families also need a small eating area in the kitchen. Eat-in kitchens fulfil the need for food preparation and eating, especially in larger families where the members eat in shifts. The eat-in kitchen saves time, facilitates

parental supervision of small children, and can also be used for study or for informal activities such as watching TV, children's play, and teenagers' entertaining.

Zeisel (1981) maintains that American and British studies suggest a larger kitchen/eating space in order to use it as a second social area in the house. With children present and the dining room used as a den, it is preferable to have the dining room joined to the kitchen. Adults living alone prefer to have separate living and dining rooms, but they desire a eat-in kitchen too. Bedrooms are used by the children as a multi-purpose area for sleeping, playing, studying, dressing and storage. The need for a storage area for shoes, hats, coats and umbrellas located adjacent to the formal and informal entries is undisputed, as well as the need for space for washer and dryer and bulk storage. If a house does not meet these requirements, residents may sometimes satisfy these utilitarian needs, thereby creating hazardous situations. Residents usually feel that they need more space as they and their possessions grow. Basements often satisfy these needs for many householders.

Sauer & Marshall (1972) point out different needs for size, location and use of spaces in the main living areas of the house. Most residents prefer a kitchen in the rear, visually separated from the living area. Pantry, storage space, counter space, and cabinet storage are also required. Some people prefer washer/dryer in kitchen, but others like to have some other place in the home for them. Eating areas separate from the living room are preferred. Most families entertain around the kitchen table and prefer eating in the kitchen. Some residents use the eating table as a kitchen work place because of the lack of counter space or because they enjoy working sitting down. Most occupants prefer larger living rooms for TV and entertaining friends but others prefer

smaller rooms for TV even if it means a smaller living area for entertaining. People like to have space for the car in front of the house but others use shared parking. Private back yards are preferred over a front porch for sitting in privacy and for children to play safely. Many smaller bedrooms are preferred rather than fewer larger ones. Basement rooms for children's indoor play are frequently required.

3.5 CONCLUSIONS

The intention of this chapter has been to provide research data from other studies on the distinct changes undertaken by occupants in their homes, to examine the motives for engaging in residential modifications, as well as to describe the relationship between the family and spaces. In this literary review the author hopes to have provided a clearer idea of what post-occupancy adaptation involves.

Events occurring during the family life cycle, residential satisfaction, socio-economic status and normative deficits are factors that strongly influence the decision of occupants to carry out housing adjustments. These housing adjustments are residential mobility, family adaptation or residential adaptation. When a house does not meet the family's needs and expectations, when there exists a gap between the current housing situation and the ideal home, residential adaptations result as a housing adjustment mechanism. Owners then engage in residential modifications in order to overcome these deficits.

In the post-occupancy adaptation studies described above, one notes the positive attitude of the occupants in deciding upon residential changes in order to improve their

living environment. The relationship between spaces and the family is clearly demonstrated during the family life cycle. As well, the relationship between housing, family and society is distinctly defined.

Post-occupancy adaptation studies are significant since they generate new knowledge to understand the nature of residential modifications, the relationship between family and changes, and the correlation between family and space, which contribute to improving the quality of life.

CHAPTER FOUR

DESCRIPTION AND ANALYSIS OF POST-OCCUPANCY ADAPTATION SURVEY FINDINGS

4.1 INTRODUCTION

The undertaking of residential adaptations is a natural activity of homeowners as a means to make their houses fit their needs and aspirations, as well as a means of expressing their own values and individuality (personalization)¹. Becker (1977) remarks that the freedom that residents have to manipulate their living space seemed to be important for several reasons: "functional requirements, need for change and variety, the ability to express individuality, and the desire to feel that one has the power to control a piece of the world." In order to investigate these residential adaptations, a survey was conducted of post-occupancy modifications made by users of affordable single-family housing in Montreal. The main reason to survey these housing changes was to obtain a clearer understanding of the type of physical and functional changes residents make to their living environments; this knowledge will assist in the formulation of parameters to improve housing design and to propose solutions offering a wide range of opportunities for future adaptations and user intervention. The purpose of this chapter is to provide a profile of the selected project, its units and residents, as well as to thoroughly outline and analyze the survey results.

¹ Becker (1977) notes that some of the reasons residents engage in personalization are that "it makes manifest individual and group differences and reinforces one's sense of individual or group identity; it increases the complexity of the environment and fulfils the need for exploratory stimulation; and it facilitates the development of a sense of competence and mastery, which is important to personal growth."

4.1.1 Project Selection and Data Gathering

The project which was selected for the survey is composed of two phases and is located in Pointe-aux-Trembles in east-end Montreal. The main criterion was to select a representative example of one of the projects based on the Grow Home concept that have been built in and around Montreal.

The houses in the projects were originally designed with an unfinished basement to allow for post-occupancy adaptations. The units selected for the study were chosen since they all had the same dimensions and almost identical layout: 176 households were considered suitable for the study. All of the 176 households were visited by the author, and the residents were asked to complete a questionnaire. The author told residents that she would return in two weeks to collect the questionnaires. After two weeks, when the author was gathering the questionnaires, she asked residents for their telephone numbers in order to call them back to set up an interview, and to arrange with the residents who had not yet filled out the questionnaire a convenient time to return for it. After repeated visits the author collected a total of 141 questionnaires, representing an 80% response rate. Twenty-nine households refused to participate in the survey and six households were impossible to contact despite multiple visits (the scope of the survey is in Table 4.1).

The questionnaire for the survey was specifically developed to take into consideration all types of housing modifications, demographic profiles, and all the necessary information required for an accurate examination of post-occupancy adaptation. In addition to the questionnaires, 24 interviews were conducted. Residents who

demonstrated (through the questionnaires) the most interesting modifications were asked for an in-depth interview in order to gather a comprehensive picture of those modifications. During the interviews, photographs were taken and drawings were made to highlight the various changes performed by the occupants. A description of changes performed by the interviewed residents is presented in Appendix A, and an example of the questionnaire and the survey data are in Appendixes B & C, respectively.

	PHASE 1	PHASE 2	TOTAL
UNITS SUITABLE FOR THE STUDY	87	89	176
HOUSEHOLDS VISITED	87	89	176
HOUSEHOLDS IMPOSSIBLE TO CONTACT	1	5	6
REFUSALS	15	14	29
QUESTIONNAIRES COMPLETED	71	70	141
RATE OF RESPONSE (%)	82	79	80

Table 4.1 Response Rates of Occupant Survey

4.1.2 Unit Characteristics

The 141 researched units are 14 feet wide (4.27m) with a floor area of 47.18 m² for the ground-floor, 46.84 m² for the upper-floor and 47.18 m² for the basement. They

are attached in grouped units of 3, 4, 6, 7, and 8. The project site plans, general views, and unit layouts are illustrated in Figures 4.1 to 4.7.

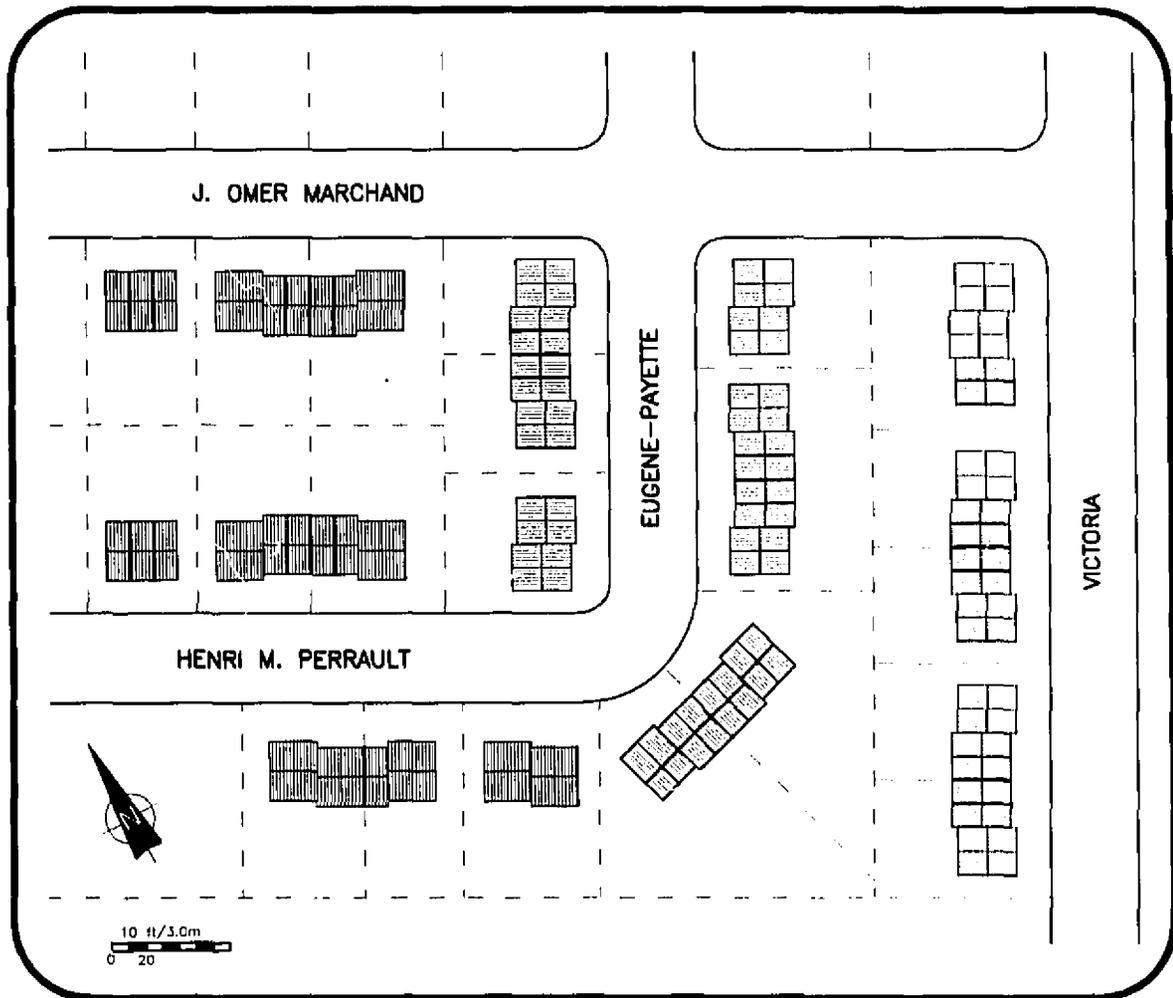


Fig. 4.1 Project Site Plan (Phase I)

Each unit is composed of an entrance, living room, dining room, kitchen, ground-floor bathroom (powder room), upper-floor bathroom (main bathroom), master bedroom, second bedroom, stairs, a basement which was originally unfinished, front yard and backyard.

The parking in the researched projects is restricted to the street. Some residents have reduced their backyards in order to park their cars. Others have paved their front yard to have a parking space. As well, some of them park in the existing space between the groups of houses, but the majority of the residents park their cars in the street.

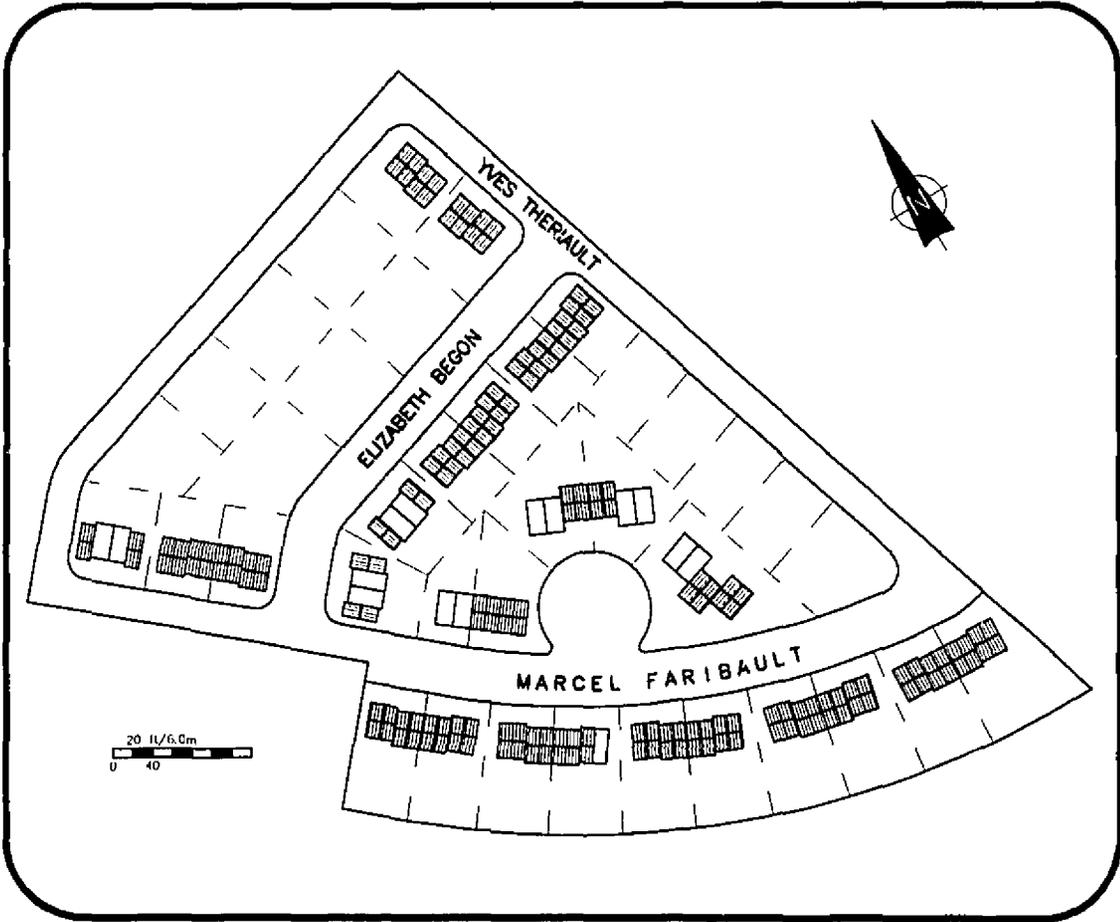


Fig. 4.2 Project Site Plan (Phase II)

Since the builder of the project offered the owners optional floor designs, some of the houses present differences in design, but they all maintain the same size and

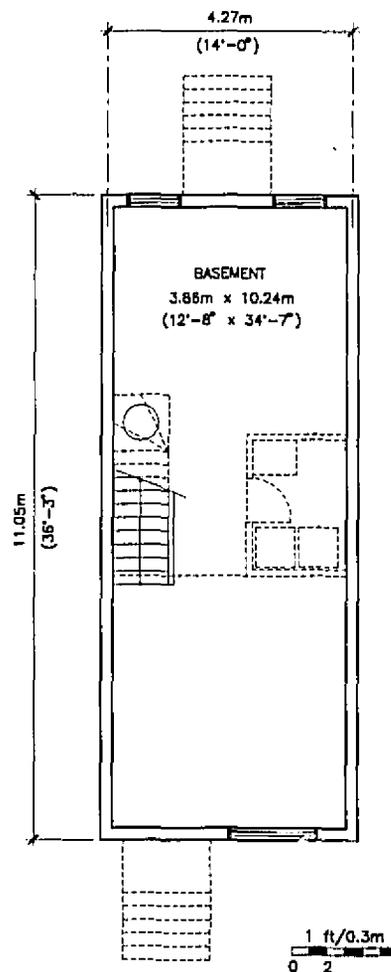


Fig. 4.3 General View of the Researched Project (Phase I)



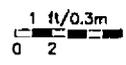
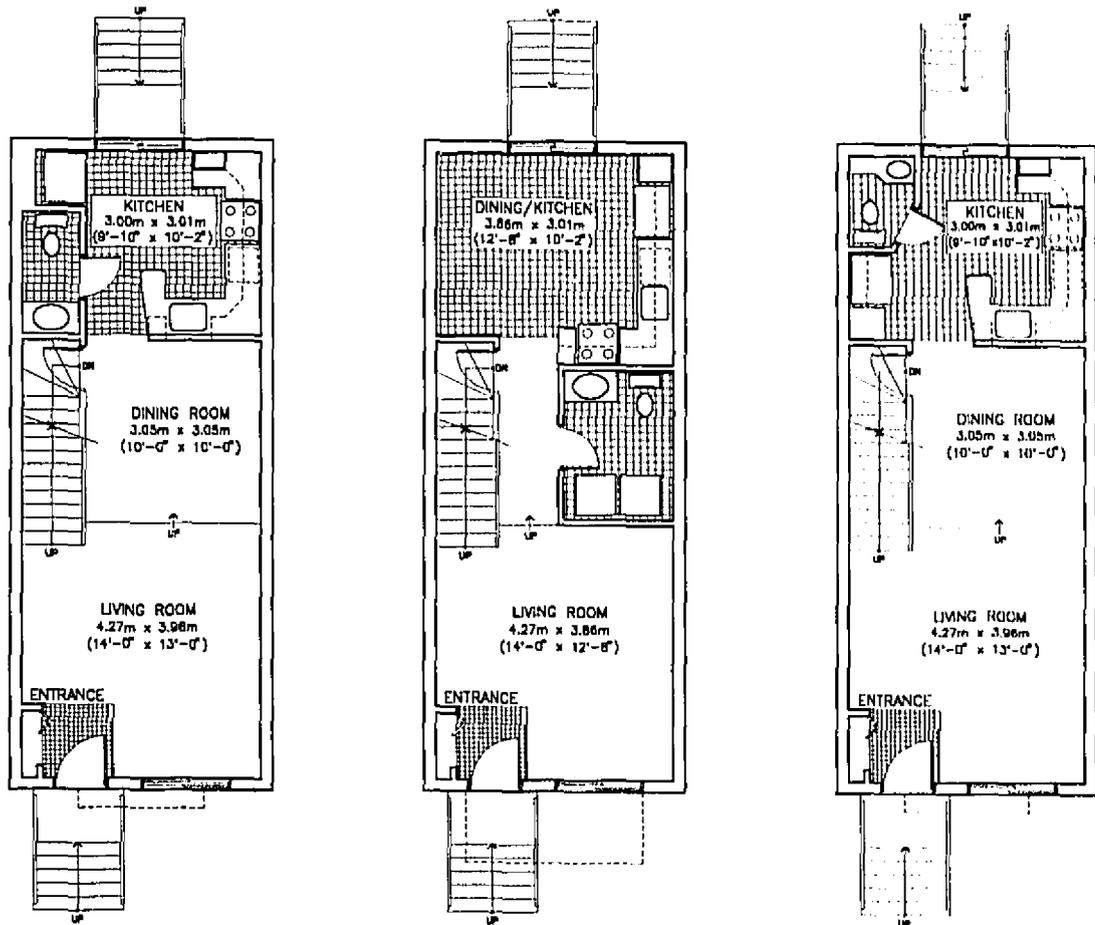
Fig. 4.4 General View of the Researched Project (Phase II)

exterior appearance. It was observed (through the interviews) that most residents had chosen more option 1 floor designs than option 2 which was observed more frequently on the second floor than on the ground floor. As well, most of the occupants had chosen the basement without the laundry room that was offered as an optional layout when they bought their houses.



PHASE 1 & 2

Fig. 4.5 Basement Layout of the Researched Houses



OPTION 1
(PHASE 1)

OPTION 2
(PHASE 1)

OPTION 1
(PHASE 2)

Fig. 4.6 Ground Floor Layouts of the Researched Houses

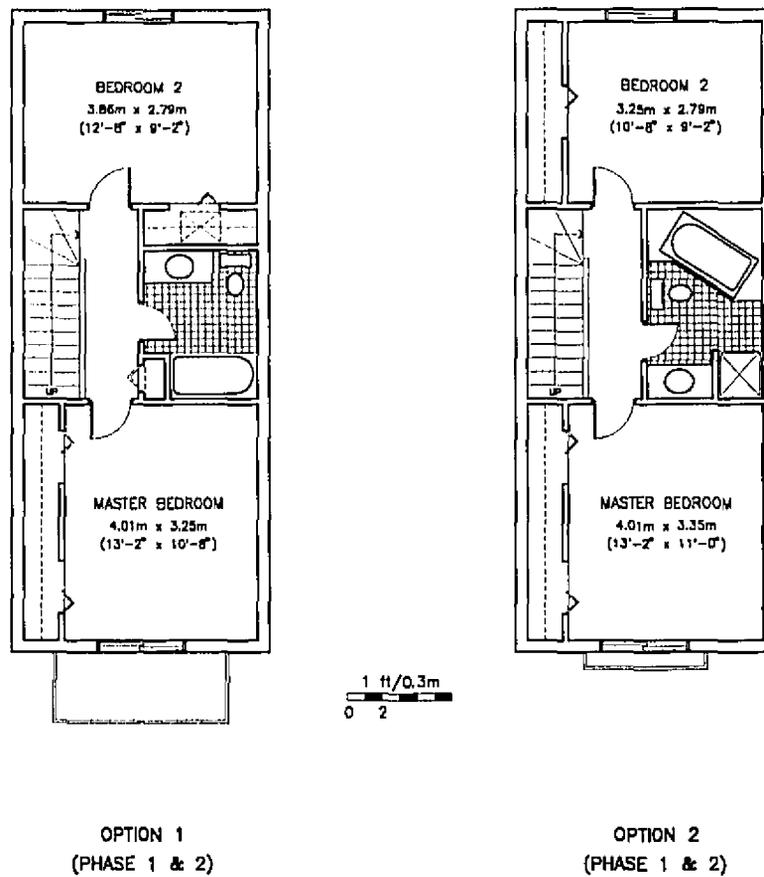


Fig. 4.7 Upper Floor Layouts of the Researched Houses

4.1.3 Demographic Profile

One significant issue in the study was to establish a demographic profile of the households in order to determine the relationship between family type and the type of modifications (Fig. 4.8). Several correlations concerning these two variables were established in order to achieve more comprehensive information.

Residents encountered specific obstacles which prevented them from making modifications to their homes. These obstacles were correlated with family type in order to determine which family type encounters more obstacles and what these obstacles are, as well as to recognize which family type performs the greater number of modifications and what those modifications are. The intention to move and family type is another correlation that was established in order to identify which family type is more likely to move and, more importantly, what their reasons for moving are.

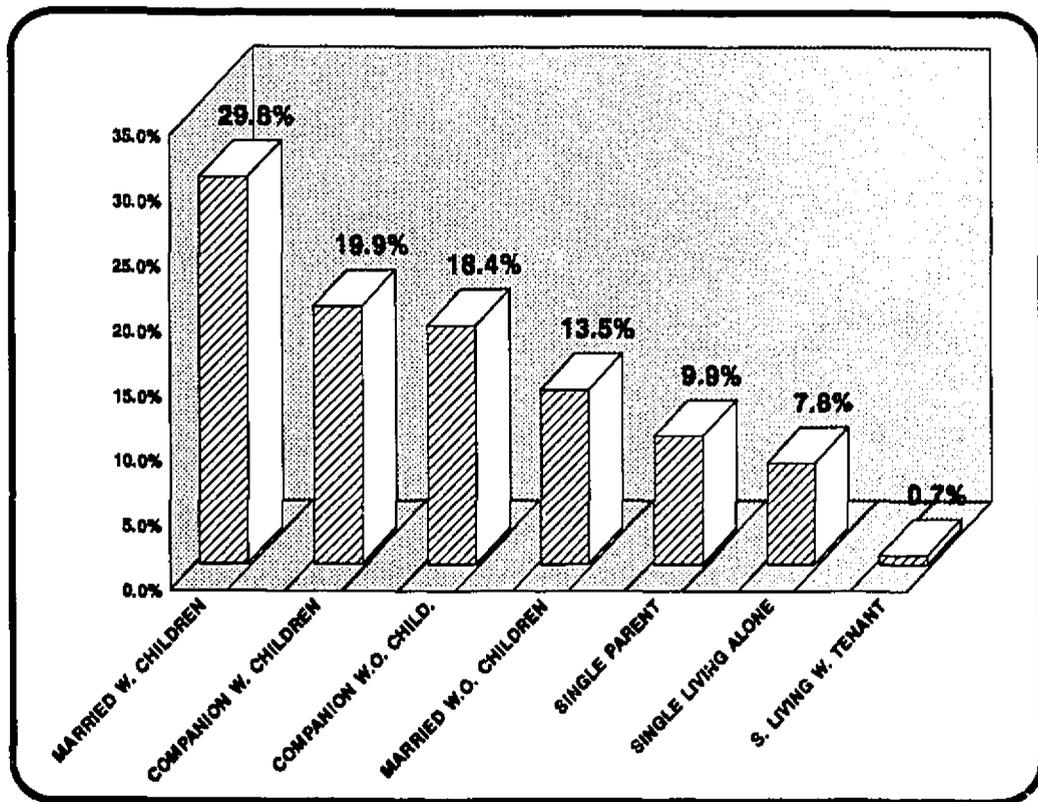


Fig. 4.8 Family Type

The demographic profile of users in the study area can be considered as a representative example of the demographic changes in society as a whole (previously

presented in Chapter One). Although married-with-children represents the leading number of family type (29.8%), non-traditional families accounted for the majority of the households (56.7%). This latter figure illustrates the decline in traditional families from 20 years ago.

Children play an important role in the decision to modify, contributing to the economic and family constraints at the time of making modifications. In the study, the number of households with children (married-with-children, companion-with-children, single parents) is larger (59.6%) than those without children (40.4%).

Most of the households had previously been tenants (86.5%); they had the means and motivation to become homeowners after many years as renters. Homeowners are the group that make modifications to their houses, not renters. According to Morris & Winter (1978), renters rarely invest money in a residence that belongs to someone else. They add that only some renters who have been long-term tenants in the same dwelling or in the same neighbourhood undertake residential alterations to a significant degree. As well, renters are not allowed to make modifications in some rented dwellings. All these observations may suggest that people who come from rented dwellings do not have much experience in housing modifications. However, all of the households who came from rented dwellings made changes to their homes, once they became owners, which demonstrates that people are willing to intervene in the arrangement of their living environments when and if they are given the opportunity.

The primary age group in the researched projects were young people (25-34 years), representing 45.4% of the total, followed by the 35-44 age group (34.7%) (Table 4.2). Young families experience family growth, which means that they must, at certain

points in their lives, adapt their houses to their immediate needs. Bross (1975) in Morris & Winter (1978) remarks that younger families remodel or make additions to obtain more space, while older families use alterations to create more usable space or to add comfort to the house. The most frequent household size in the researched projects was composed of three people (comprising 36.9% of the total), representing the average family size in Quebec of three persons per family (Statistics Canada, 1993a).

HOUSEHOLD SIZE	(%)	HOUSEHOLD AGE	(%)
One Person	7.8	18 to 24 years old	0.7
Two Persons	36.2	25 to 34 years old	45.4
Three Persons	36.9	35 to 44 years old	34.7
Four Persons	18.4	45 to 54 years old	15.6
Five Persons	0.7	Over 55 years old	3.6
		HOUSEHOLD INCOME	(%)
		Below \$20,000	0.7
		\$20,000 to \$29,999	14.9
		\$30,000 to \$39,999	22.0
		\$40,000 to \$49,999	32.6
		Over \$50,000	15.6
		Confidential	14.2

Table 4.2 Household Characteristics

The most common annual household income registered in the range between \$40,000 and \$49,000, representing 32.6% of all households, followed by those between \$30,000 and \$39,000 (22.0%). The family income ranges between \$40,000 and \$49,000, and \$30,000 and \$39,000 represent the most common family income in Montreal, at 13.9% and 14.3% respectively (Statistics Canada, 1993b).

4.2 PLANNED MODIFICATIONS PRIOR TO OCCUPANCY

This section covers the types of modifications that owners had already planned to make when they bought the house. The data indicate that many people had plans before they moved in. The ample majority of households (85.8%) intended to make modifications prior to occupancy, demonstrating that residents bought their houses with the idea that they could adapt them later on. This may indicate that first-time buyers visualize their potential work and their own physical intervention as a part of their affordability strategy.

4.2.1 Types of Planned Modifications

The types of work that most residents planned to make to their homes were landscaping (21.1%) and wall treatments (18.7%), which indicate that people are initially concerned with aesthetics. In landscaping, their main plans had to do with fences which were not provided by the builder (28.4%) and greenery (28.1%). Fences represent an important feature for newcomers, since they define territoriality and fulfil immediate privacy needs which are key motives in buying single family houses. The type of work planned for walls was primarily painting (40.8%). Greenery and painting are simple changes which do not require a great deal of experience (Fig. 4.9).

The area of the house where most households planned to make modifications was in the basement (12.3%). It offers the easiest opportunities for adaptation since it was

originally unfinished and was an open space where residents could create the spaces they needed.

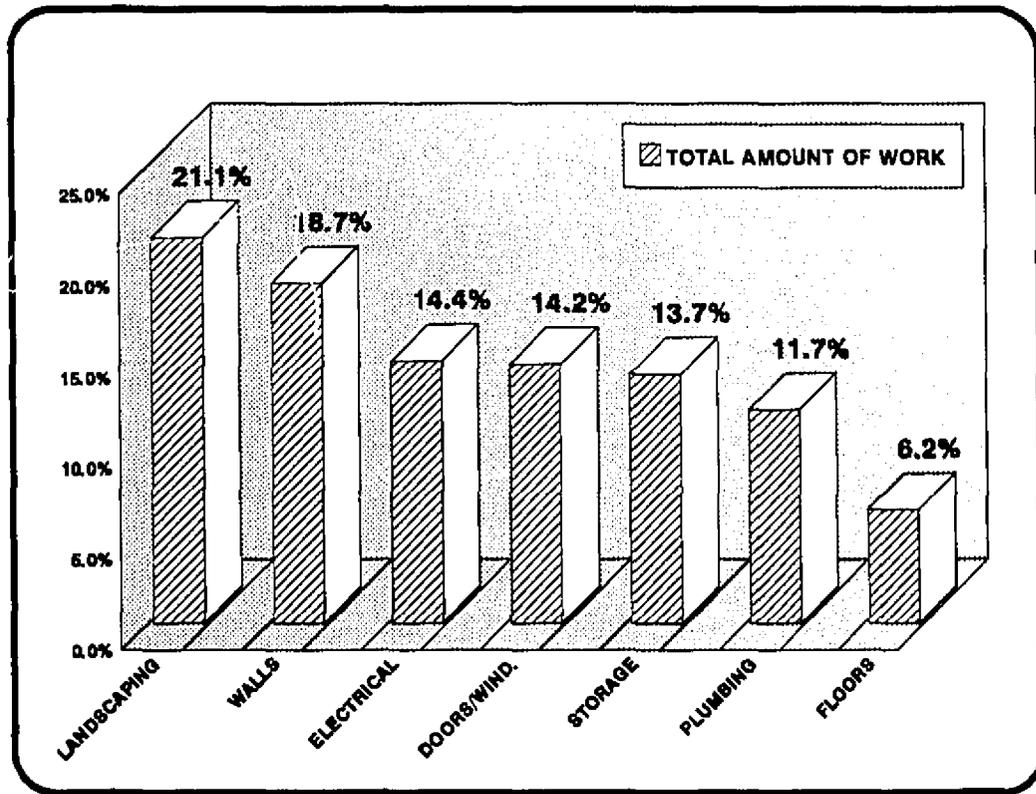


Fig. 4.9 Planned Modifications Prior to Occupancy, by Features

In addition, homeowners planned to make changes in the entrance (11.3%) and master bedroom (10.7%) (Fig. 4.10). The entrance represents the first part of the house to be shown to outsiders, and the master bedroom is the private space of the house where occupants appreciate feeling comfortable. These features make these areas potential locations for modifications. Families with children (58.7%) were the main group who planned to make modifications prior to occupancy. On the other hand, the single person living alone (6.6%) and the single person living with a tenant (0.83%) registered as

planning the fewest modifications prior to occupancy. Families who expect to grow plan more modifications than those who do not expect to grow.

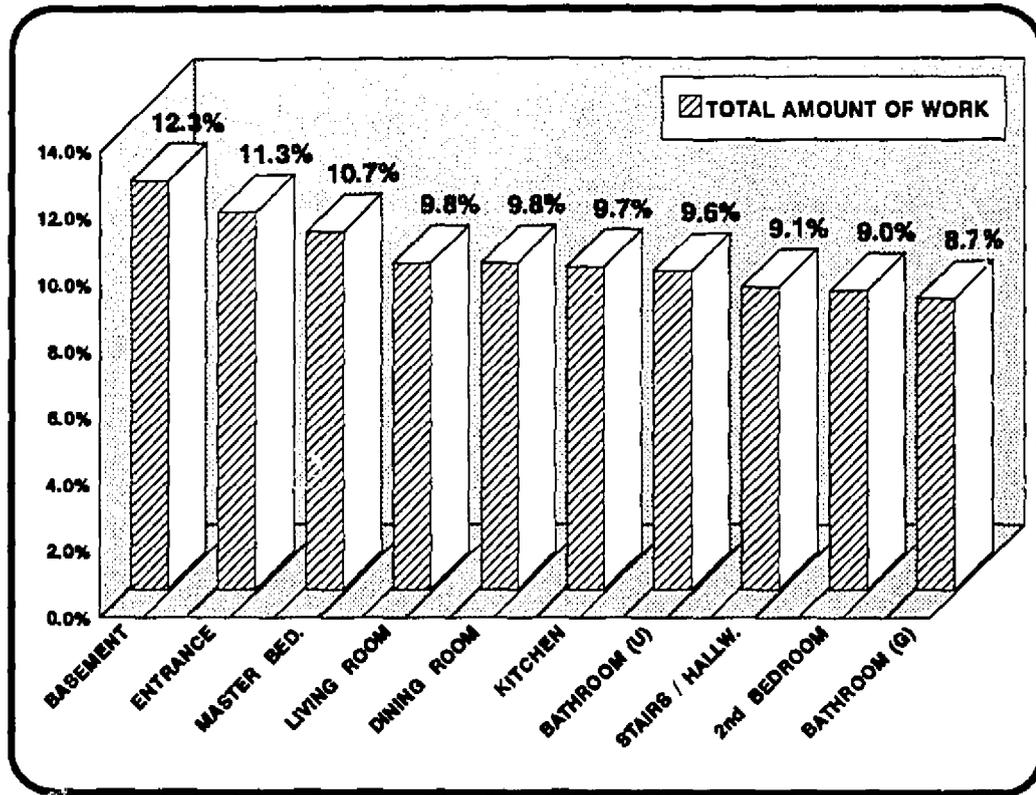


Fig. 4.10 Planned Modifications Prior to Occupancy, by Rooms

4.2.2 Planned New Spaces in the Basement

A great majority of households planned to create new functions in the basement (124/141). The results indicate that the need for space is immediate. 59.7% of the residents who planned before occupancy to create new spaces in the basement were families with children. A family room was the space planned most frequently in the basement (26.8%) (Fig. 4.11).

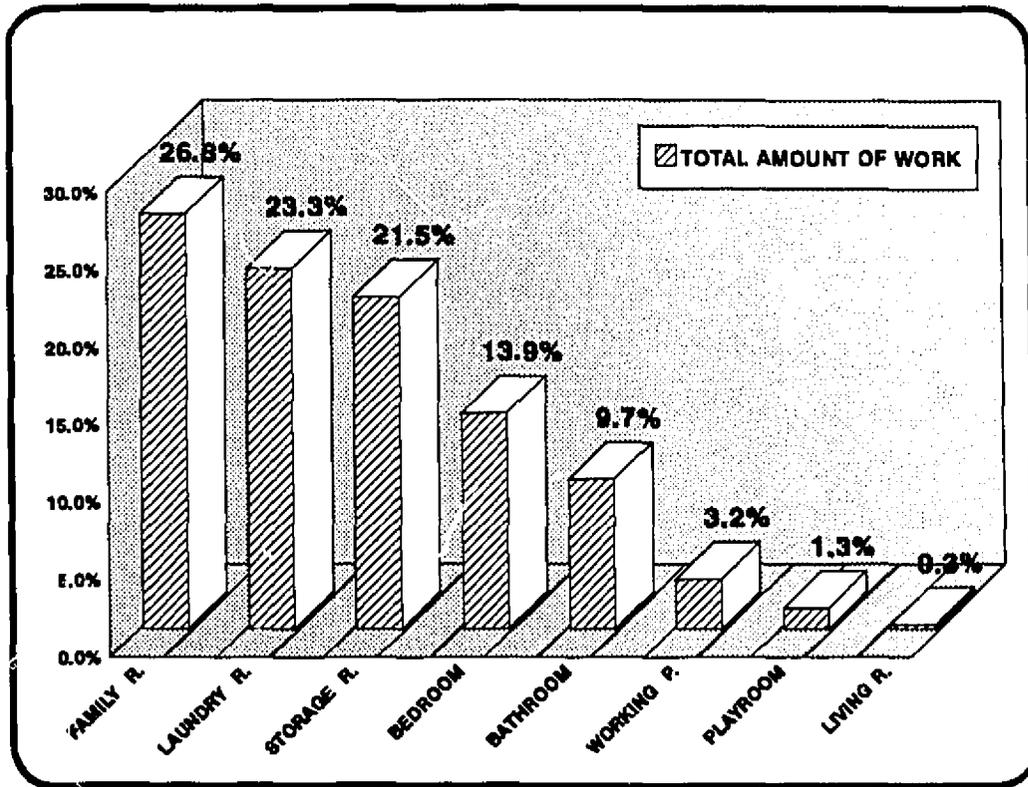


Fig. 4.11 Planned New Spaces in the Basement

People enjoy having a family room as a place for informal activities such as watching TV and listening to music, where children can play at the same time, reserving the living room as the formal place in the house for important visitors. Zeisel (1981) remarks that research reveals a need for two separate living areas: an informal "sitting room" den and a formal "parlor living room." The choice of a family room in the basement is traditional. Teasdale & Wexler (1993) observe that most households used at least part of their basement as a family or play room. The creation of a family room is simple, involving only surface treatment, does not require a substantial investment of money, work or time, and does not cause a major disturbance in everyday life on the

upper floors. 59% of the residents who planned before occupancy to create a family room were families with children.

Residents also planned to make a laundry room (23.3%) and storage room (21.5%) in their houses. People who move to small houses consider that they will need additional storage space as their possessions increase. The plan for making a laundry room in the basement is quite obvious since the plumbing connection for a laundry room already existed there.

4.3 POST-OCCUPANCY MODIFICATIONS

Post-occupancy modifications refer to the type of modifications that owners have made to their houses. Teasdale & Wexler (1993) point out that there are three ways adopted by residents of modifying or adapting one's dwelling:

Personalizing one's dwelling, i.e., decorating one's unit in order to qualify it symbolically and aesthetically; improving one's dwelling, i.e., making changes to render it more functional or to improve the construction quality; maintenance, i.e., keeping one's dwelling in good condition.

This study is focused mainly on the personalization and improvement of the house rather than on maintenance which is not applicable since the houses are practically new (they were occupied between 1991 and 1992) and have not yet required major maintenance work.

Although 56% of the residents have not sacrificed items like vacations, a new car, or new furniture to make modifications, it is still important for them to adapt their homes. 86.5% of the households registered that is important for them to modify their

houses to their needs and desires. People obviously wish to add the signature of their own personalities to their houses.

4.3.1 Types of Post-Occupancy Modifications

The most popular type of work that occupants have made to their homes has been on walls (17.5%) (Fig. 4.12). In changing the appearance of walls (painting, wallpaper, woodwork, mirror, and others), residents differentiated their own houses from the others, providing some kind of originality and personalization to the house.

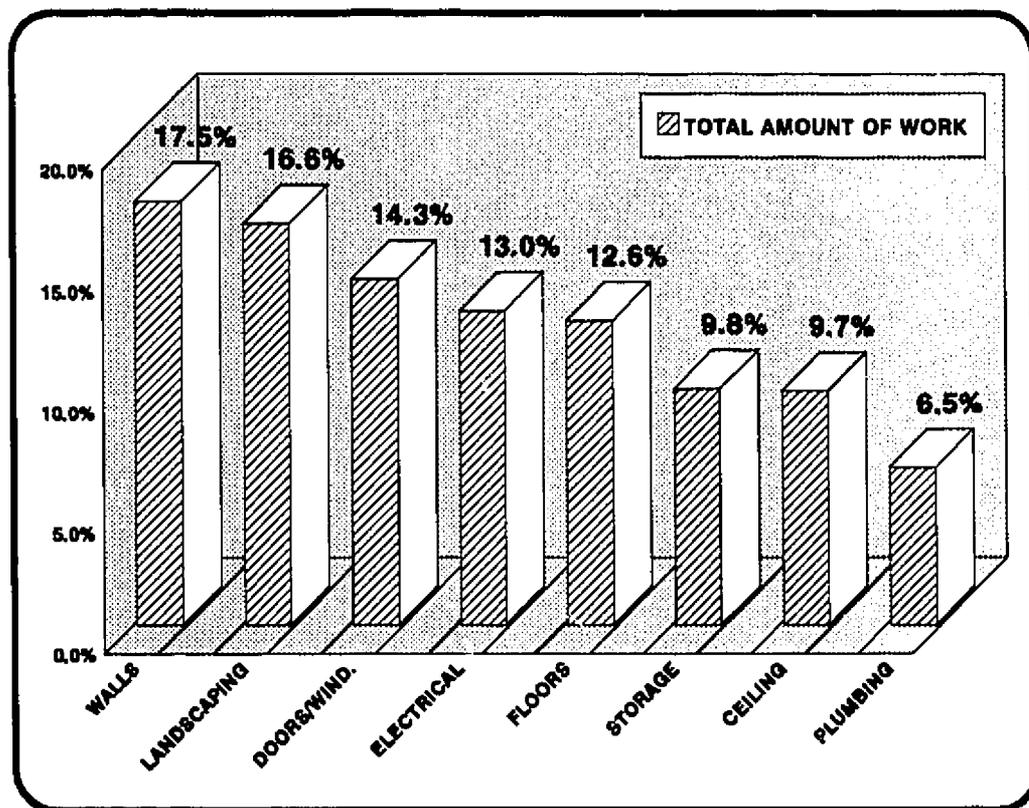


Fig. 4.12 Post-Occupancy Modifications, by Features

As well, changing the color of the walls, making openings and demolishing walls were ways that some residents found to make their houses look larger. Painting (27.8% of all wall modifications), which is a simple change and the cheapest, quickest way of adding the signature of their own personalities and making the house appear different, represented the type of work performed most frequently on walls (Fig. 4.13).

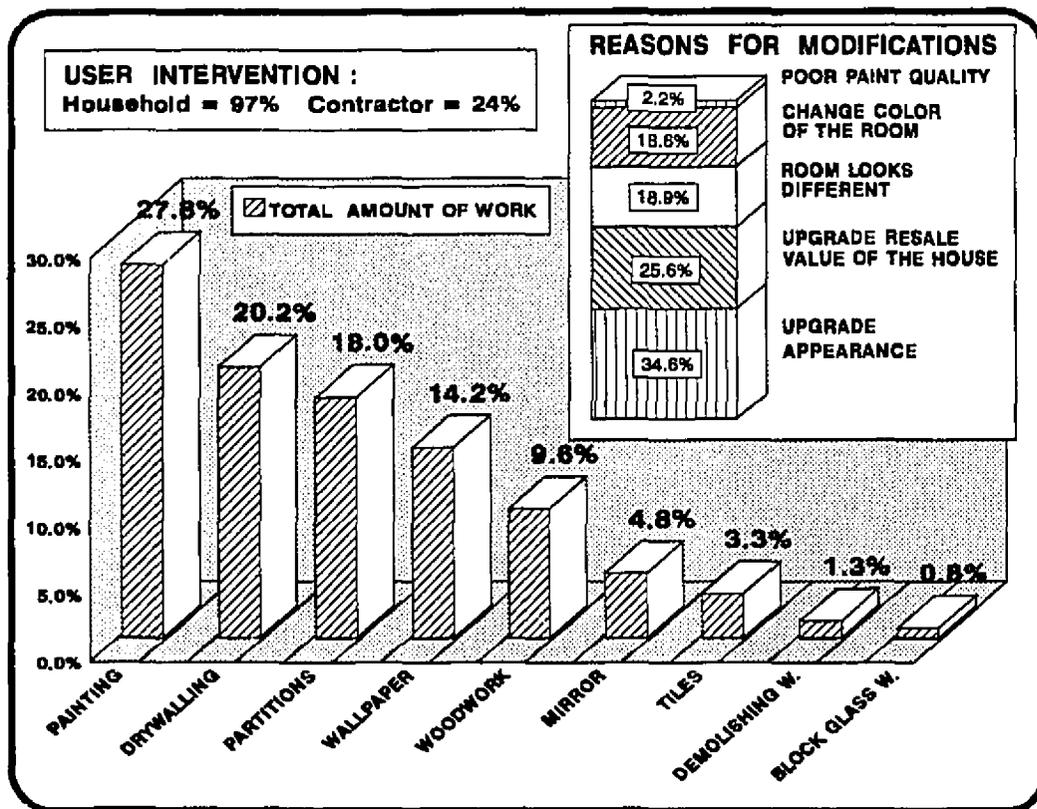


Fig. 4.13 Types of Modifications on Walls

The features on which most residents planned to work prior to occupancy and which they performed after they moved in were landscaping (23.8%) and walls (22.4%); this may be because they were the simplest changes to undertake. Changes in floors

(4.9%) and plumbing features (7.1%) were the planned modifications least undertaken because they are difficult features to change.

A high number of the households (88.7%) made their first modifications during the first year of occupancy, indicating that the process of post-occupancy adaptation begins immediately. Walls (33.1%), electrical features (17.7%) and landscaping (17.4%) were the first types of work that most residents made. Painting was the most popular modification undertaken first, followed by drywalling and partitions which were registered mainly in the basement. The major number of changes in electrical features were lighting fixtures and electrical wiring. Lighting fixtures responded to the need for more and better illumination in the house, and electrical wiring basically responded to the basement arrangements. Landscaping (greenery and fences) responded to an immediate need for first-time buyers to upgrade the appearance of their house, increase the resale value, establish territoriality, and provide privacy.

The area of the house where most residents made modifications was the basement (76.6%) (Fig. 4.14). Only 33 of the 141 households made no changes in the basement. Residents benefited from the flexibility that the open basement offered and vigorously participated in its arrangement. Teasdale & Wexler (1993) remark that when a house possesses an open, unfinished area such as the basement, it is expected that residents will appropriate and finish this space according to their priorities and tastes.

For first-time buyers who concentrate on affordability strategies, the basement represents the growth space of the home. Residents perceive the arrangement of the basement as a way to expand their houses. Since the basement registered the greatest

amount of work made in the entire house (12.6%), a more detailed description of changes in this space will be provided.

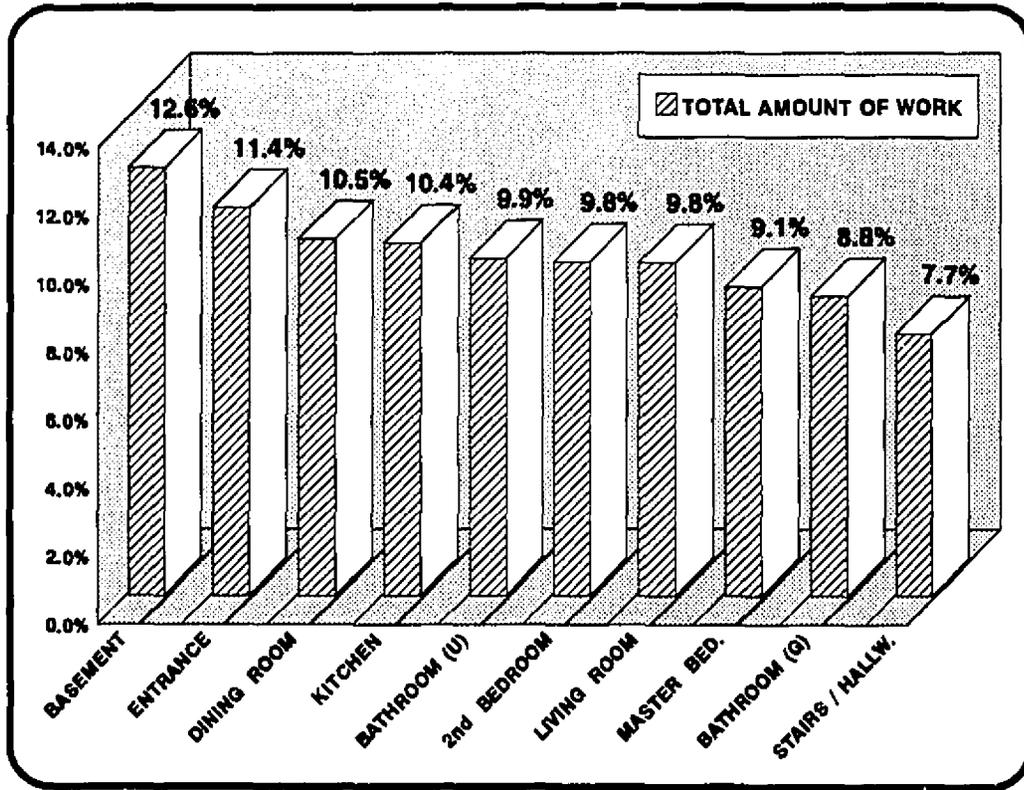


Fig. 4.14 Post-Occupancy Modifications, by Rooms

Married-with-children and companion-with-children registered as the groups which made the highest number of modifications (55.3%). Couples with children engaged in the most modifications because they needed more space for the children. Single people living alone engaged in the least modifications because they found the size and number of spaces in the house to be sufficient. Comparatively, couples with children registered as spending the most on modifications. Companion-with-children spent an average of \$2,923 and married-with-children an average of \$2,735, both higher than the provincial

(Quebec) average expenditure on renovations (additions, renovations and alterations, and new installations²) of \$1,188 (Statistics Canada, 1993c). Single people living alone spent an average of only \$623, slightly higher than half of the provincial average.

A significant percentage of changes made solely by the users themselves (93.6%) was registered. This physical involvement reflects the ability of the householders to perform modifications to their living environments without the assistance of professional tradesmen. Major modifications such as the erection of partitions, tiled walls, finishing the ceiling, electrical wiring, rough plumbing, wooden and tiled floors, and paving were performed mainly by the householders themselves (71.0%). In addition to the willingness of occupants to engage in housing adaptation, it was observed throughout the interviews that householders were proud of their own work.

More than half of the residents (56.7%) encountered difficulties in making modifications to their houses. All of the surveyed occupants, however, still made at least some kind of change. Lack of money, lack of time, lack of skills, and family constraints were the type of obstacles that prevented residents from making modifications. Lack of money (46.8%) represented the main obstacle encountered by residents, which is typical for first-time buyers, followed by a lack of time, which is a typical obstacle for householders with children. The high household involvement previously mentioned

² Statistics Canada identifies *Additions* as structural extensions or additions to the property (such as rooms, decks, garages, carports, garden sheds, etc.), in-ground swimming pools, fences, patios, driveways, and major landscaping; *Renovations and Alterations* as work that was intended to upgrade the property, rearrange the interior space, and modernize existing facilities (includes jobs such as remodelling rooms, adding or replacing doors and windows, renovating exterior walls, upgrading insulation and adding eavestroughing); *New Installations* as the installation of equipment that did not previously exist on the property, or that was installed in addition to the equipment on the property.

indicates that without the lack of money as an obstacle, residents would have been more involved in the arrangement of their houses and the amount of work registered would have been greater. The relatively low percentage registered for lack of skills (12.9%) reflects the confidence of residents in their skills. Family constraints was not a major factor at the time of making modifications (10.1%).

The family type which encountered the most difficulties in making modifications was married-with-children (30 of 42 married-with-children encountered difficulties). Their major constraints were lack of money (24/42) and lack of time (16/42). These findings indicate that the impediment caused by children was interpreted as a lack of time rather than as a family constraint.

Statistics Canada (1993d) states that in urban areas such as Montreal the low income cut-offs for households are: for one person a low income is up to \$16,482; for two people, up to \$20,603; for three people, up to \$25,623; for four people, up to \$31,017; and for five people, up to \$34,671. According to this data, only 9.9% (14) of the households in the researched projected registered as having a low household income. Although it was found that households with low incomes made fewer modifications (58.0%) than those with higher household incomes (61.7%), the difference was relatively slight, indicating that the relationship between income and modifications is not that strong. Regardless of their financial situation, people managed to adapt their spaces according to their priorities and desires.

Significantly, although 65 residents stated that a lack of money was an obstacle to their making modifications, 57 did not have what could be considered a low household income: the largest group (33.8%) registered a household income of between \$40,000

and \$49,000. Cowles et al. in Morris and Winter (1975) remark that the amount spent on residential alterations increases with income; people with higher incomes spend more on modifications than those with low incomes. The average spending of the former group was \$2,493 compared with a \$2,015 average for the latter group, reflecting the ability of those with higher incomes to undertake more costly modifications.

Residents between the ages of 35 and 44, who represented 34.8% of all households, tended to spend the most in modifications per household. They spent \$2,698 on average, closely followed by a \$2,518 average for people between 45 and 54, who represented 15.6% of all households. According to CMHC (1994) people between 35 and 44 years old and those between 45 and 54 tend to be the biggest spenders when it comes to renovation projects. CMHC remarks that people in those groups tend to be relatively secure in their finances and that if they stay in a house they may be willing and able to spend on renovations; even when they move they have the means and the willingness to add facilities if the house is newly built or to engage in modifications if it is an existing one. CMHC also points out that "frequent spending by 35 to 44 year-olds reflects their relative financial security which spurs them to improve their houses and accommodate the changing needs of their children over the years." Residents between 25 and 34 years old, who represented the main group of householders (45.4%), spent an average of \$2,382 on changes to their homes.

The primary reasons for making modifications were to upgrade the appearance (12.7%) and the resale value of the house (9.9%). Aside from spatial requirements, housing aesthetics was considered to be a very important issue for residents. For first-

time buyers, who generally plan to move, it is important to upgrade and maintain the house in a current style in order to increase the resale value of the house.

People who intend to stay in their houses made a greater number of modifications (55.2%) than those who intend to move (44.8%). This may be because people who plan to move are not interested in undertaking major adaptations but only in upgrading the house in order to sell it, while people who intend to stay adapt their houses to their particular needs and desires and thus undertake major adaptations.

4.3.1.1 Entrance

Since the entrance is located on the most public side of a house, factors such as privacy, security and aesthetics were clearly demonstrated. The main type of work performed by residents in the entrance (11.4%) was on doors (44.9%), followed by walls (43.6%) (Fig. 4.15). The prime alteration made to the doors was changing the lock of the front door (79.5%), a response to the need of residents to feel secure in their own homes, and installing storm doors (20.5%), to provide better ventilation and illumination to the house. The types of modifications that residents made to the walls in the entrance, such as painting, wallpaper, woodwork and block-glass wall, respond to aesthetic and functional reasons.

Although the entrances of the surveyed houses do not satisfy the requirements dictated by climate, i.e., a storage area for boots and a private area so that the entrance does not open directly into the living area of the house but onto an entrance hall or vestibule, none of the residents made any changes in order to remedy this shortcoming,

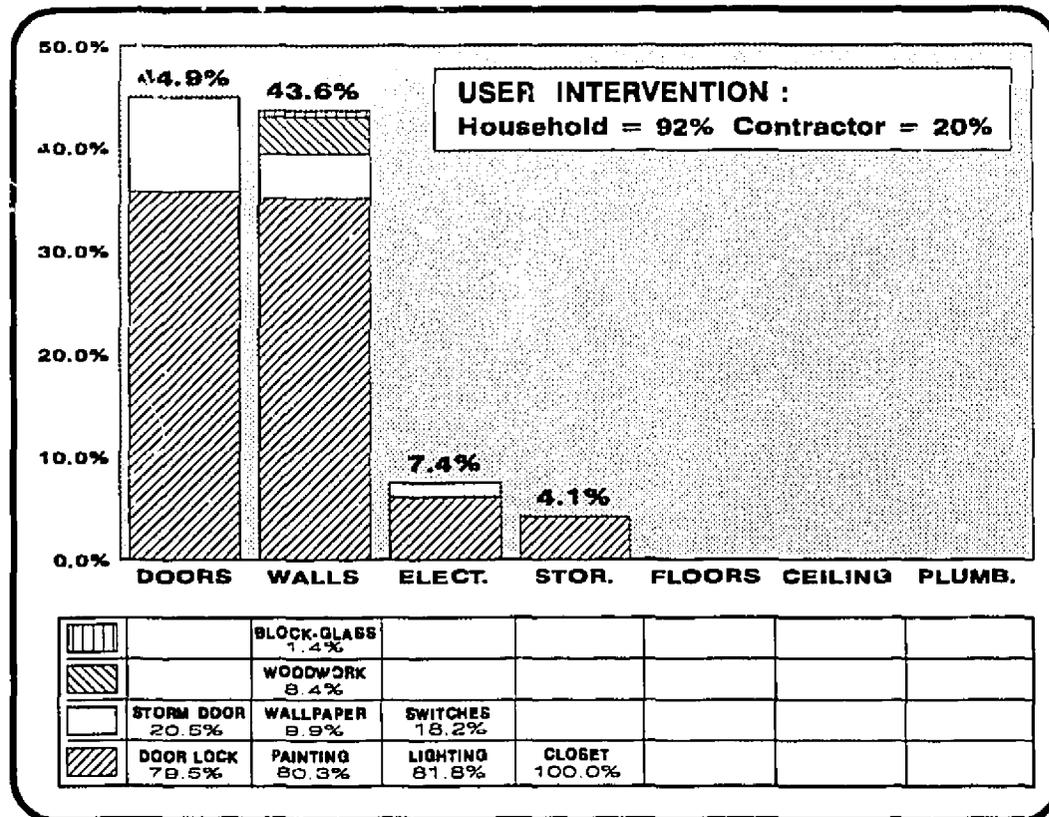


Fig. 4.15 Types of Modifications in the Entrance

due, obviously, to the small proportions of the house. However, some residents erected small walls in order to provide some kind of visual separation between the entrance and living room (Fig. 4.16). Married-with-children (32.6%) was the group which made most changes in the entrance. Intervention by users alone registered very high: 91.8% of all residents who made changes in the entrance made them by themselves.



Fig. 4.16 One household made a visual separation between the entrance and living room by erecting a small block-glass wall (left). Woodwork added to the small wall in order to hold plants (right).

4.3.1.2 Living Room

Although the living room is the space of the house intended for social activities and the space that most residents like to "show off" to others (Zeisel, 1981), not much work was undertaken in this area; only 9.8% of the modifications performed in the house were made in the living room (Fig. 4.17).

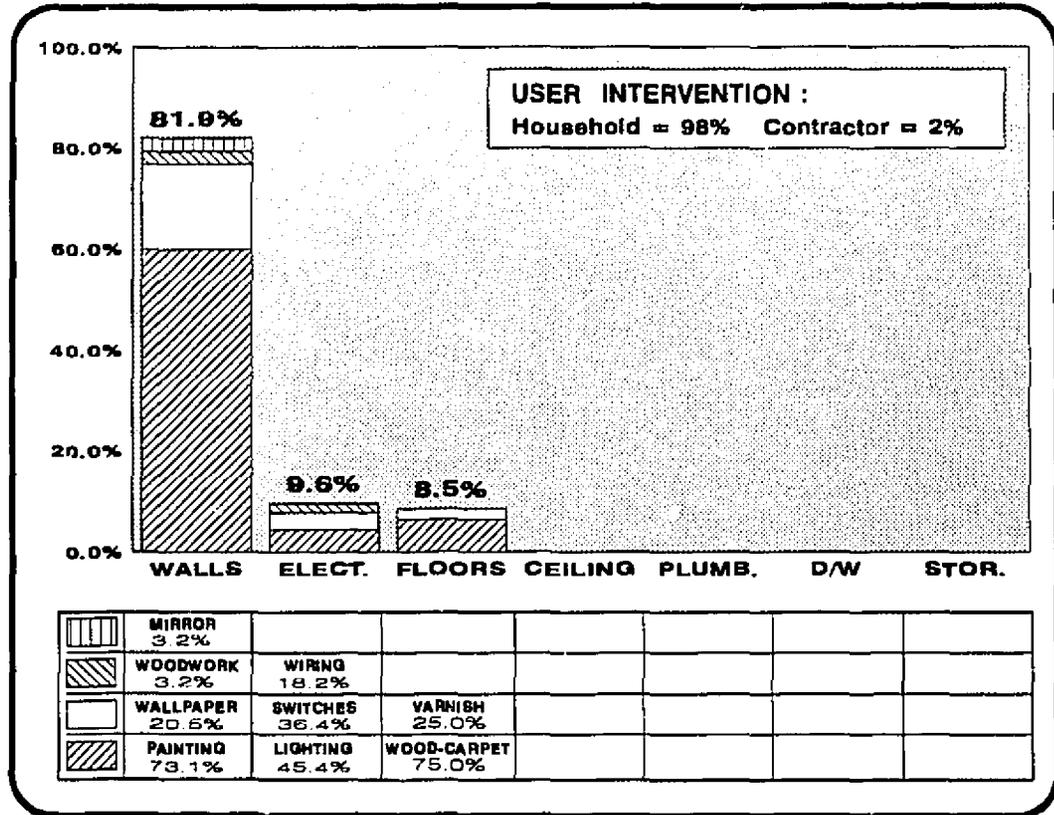


Fig. 4.17 Types of Modifications in the Living Room

This low amount of work is due to most of the owners (41.8%) concentrating on creating a family room in the basement in order to leave the living room for formal activities only. Teasdale & Wexler (1993) remark that normally the living room is used for social and passive activities by adults while the family room is used for informal and active activities by children. The main type of work performed in the living room by residents was on walls (81.9%), and included painting, wallpaper, woodwork, and mirrors. Although changes in electrical features (9.6%) and floors (8.5%) were also registered, the amount of work here was minor. Most of the changes were for aesthetic and functional reasons.

Some examples of such changes include changing lighting fixtures to obtain better lighting and to make the room look attractive, carpeting the floor in order to provide a better floor finish, and changing the appearance of the walls with paint, wallpaper, woodwork, or mirrors (Fig. 4.18).



Fig. 4.18 Households separate the living room from the dining room by erecting different types of walls.

Although the living room and dining room share a wall, they are separated by a single step. In addition, some households have made this separation more distinct by erecting small dividers or by simply applying a different wall finish to the wall shared by the two rooms.

4.3.1.3 Dining Room

10.5% of the modifications made in the homes were performed in the dining room. The primary change in this area was to walls (73.3%), including painting, wallpaper, erection of block glass wall and mirrors (Fig. 4.19). These changes responded to functional and aesthetic demands, including erecting small walls or a wood balustrade in order to separate the living room from the dining room, changing the color of the wall, making openings in the walls and removing the door leading to the basement to make the space look larger, as well as changing the appearance of the walls to make the space look more attractive (Fig. 4.20 & 4.21).

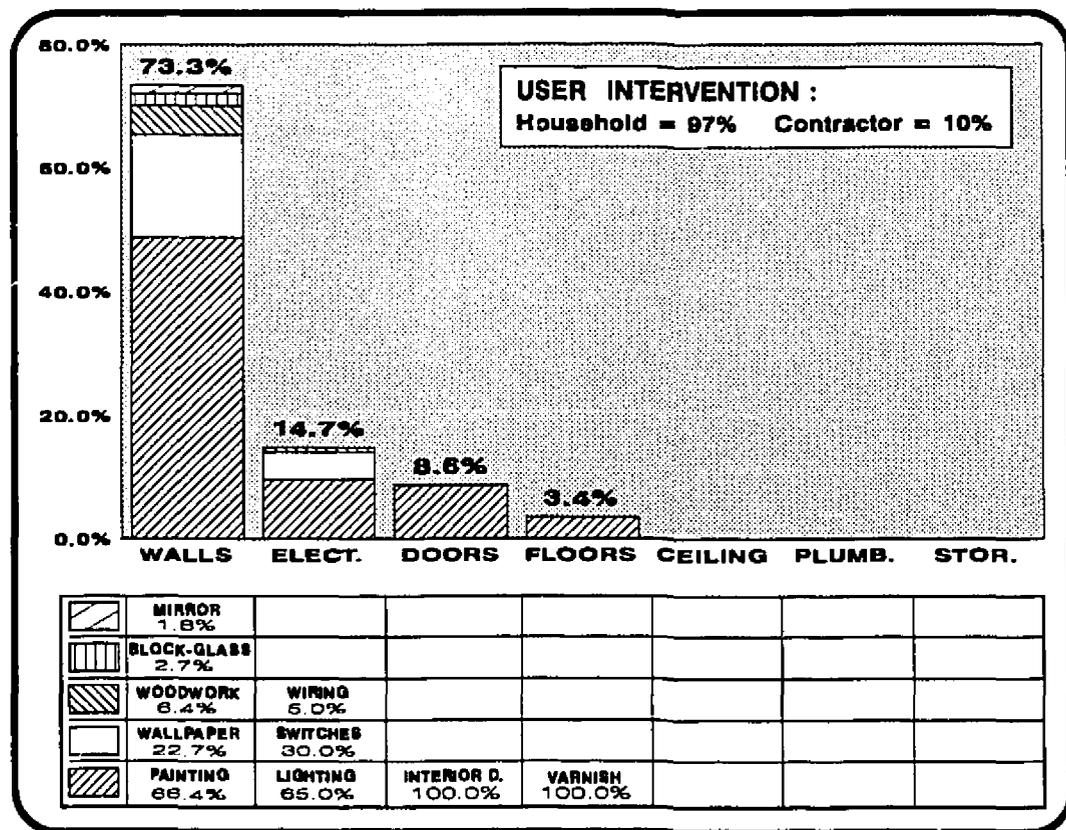


Fig. 4.19 Types of Modifications in the Dining Room



Fig. 4.20 Wood balustrade erected by a household in order to separate the living room and dining room. A different wall treatment (wallpapering) was also applied to reinforce the separation between these two areas.

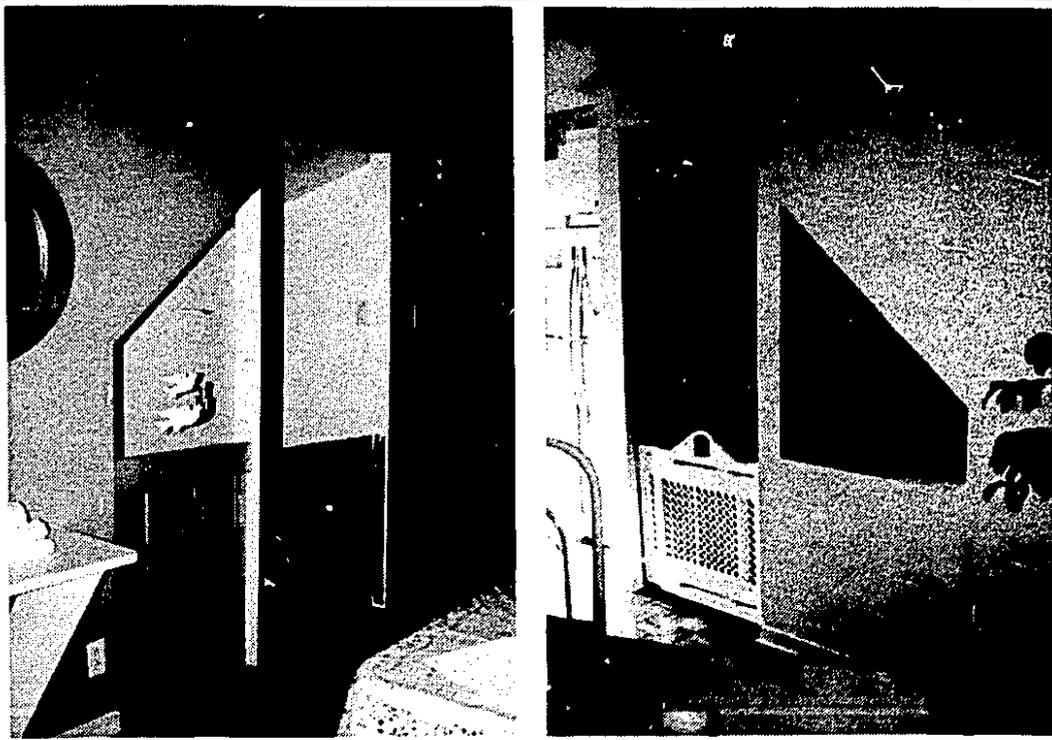


Fig. 4.21 Different openings and the removal of the existing door in the entrance to the basement in order to make the room look more spacious, to obtain greater illumination and ventilation, as well as to improve the aesthetics of the room.

4.3.1.4 Kitchen

The kitchen accounted for 10.4% of all modifications executed in the house. The main type of work carried out by occupants was on walls (68.5%), followed by plumbing features, storage, electrical features and floors, respectively (Fig. 4.22). With regard to household preferences, kitchen space and its functionality represented one of the features most important to owners. However, few residents performed major changes in the kitchen. Some residents, mainly families with children (68.5%), made no major changes in this area due to the lack of money and time.

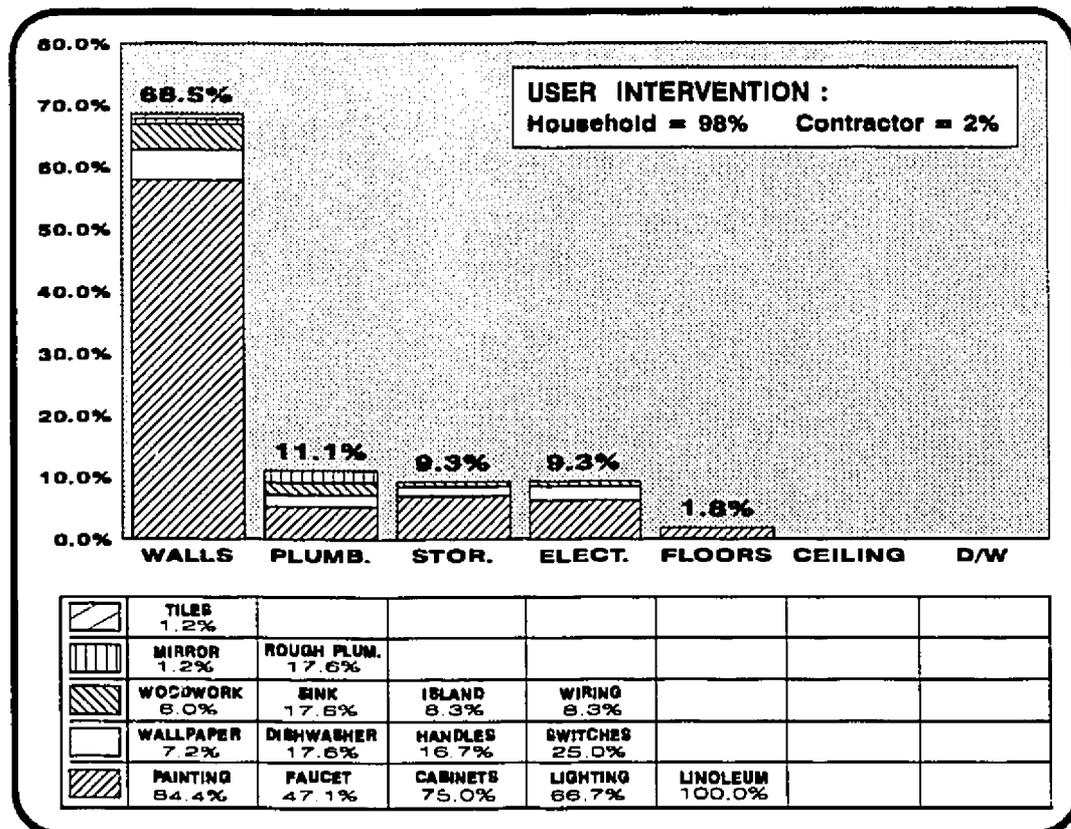


Fig. 4.22 Types of Modifications in the Kitchen

Some of the modifications made by the occupants which respond to specific needs and tastes were changing cabinets and adding an island in order to obtain a greater and more functional storage space, changing the floor finish to improve the quality of the floor, changing lighting fixtures to increase the amount of lighting in the room, removing the eating counter in the kitchen to gain additional space in the area, and changing the appearance of the walls to provide the kitchen with a better visual appearance (Fig. 4.23 & 4.24).

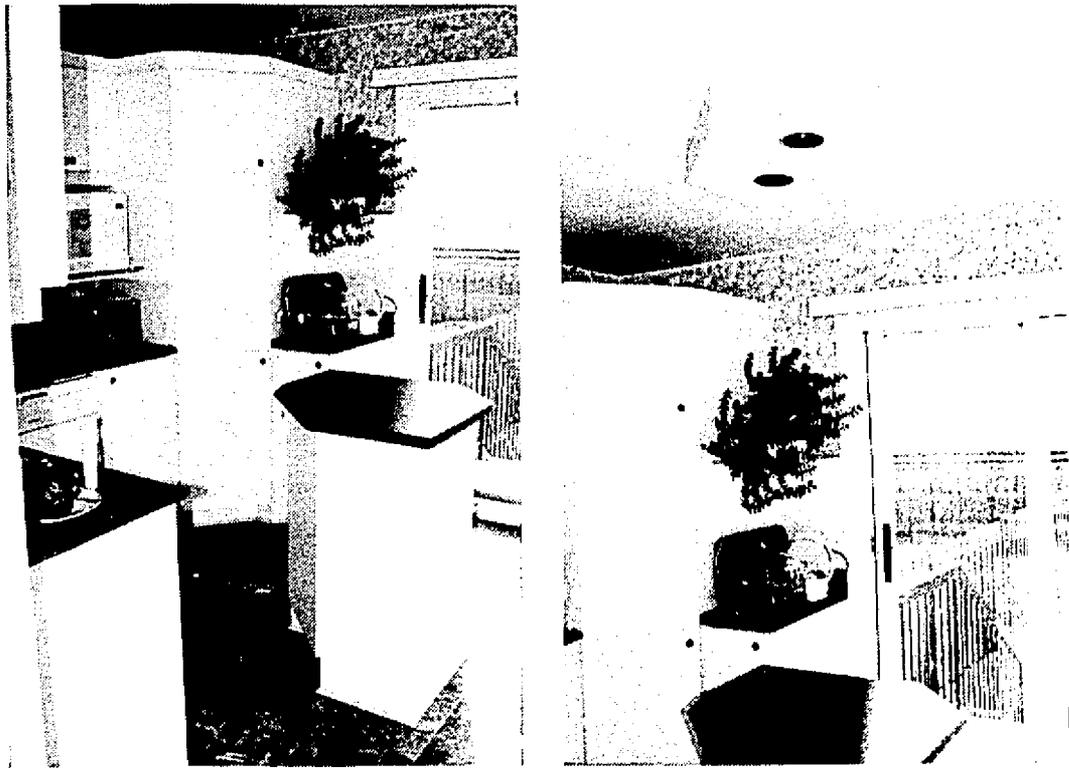


Fig. 4.23 This household completely changed the original kitchen cabinets and added an island in order to gain additional and more functional storage and working space in the kitchen and created a lighting fixture arrangement following the shape of the island.



Fig. 4.24 This household introduced glass block work in the wall dividing the kitchen and dining room in order to improve the aesthetics of the room and to make it look different.

4.3.1.5 Ground-Floor Bathroom

8.8% of the modifications executed in the dwelling were made in the ground-floor bathroom (powder room). This low percentage of changes indicates that residents were not overly concerned about this space. The main type of modifications made in the ground-floor bathroom were on walls (75.9%) (Fig. 4.25).

Residents made modifications for aesthetic reasons in the ground-floor bathroom such as changing the treatment of the walls, floor and door replacements. They also added cabinets to provide the bathroom with additional storage space, and made changes in lighting and plumbing features in order to attain a greater functionality in the room.

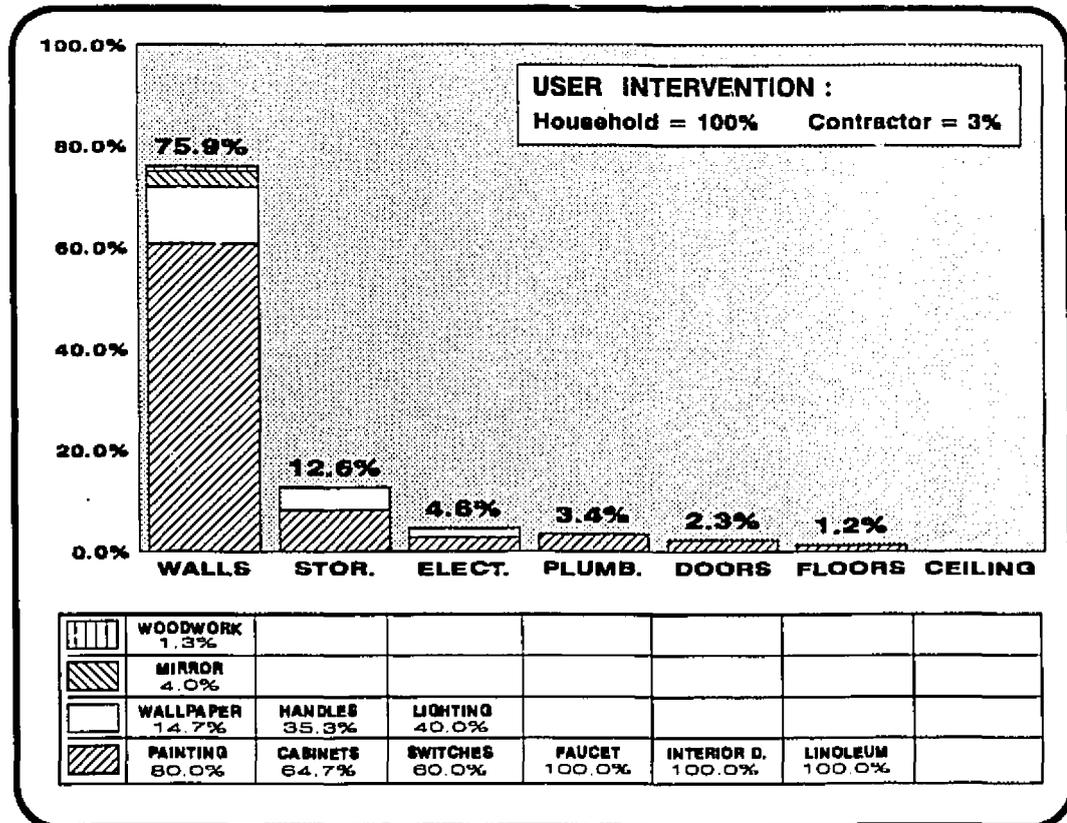


Fig. 4.25 Types of Modifications in the Ground-Floor Bathroom

4.3.1.6 Upper-Floor Bathroom

The upper-floor bathroom (the main bathroom of the house) accounted for 9.9% of all modifications performed in the house. The primary type of work executed by

residents in the upper-floor bathroom was on walls (77.0%). Changes in storage, plumbing features, electrical features and the floor were also recorded (Fig. 4.26).

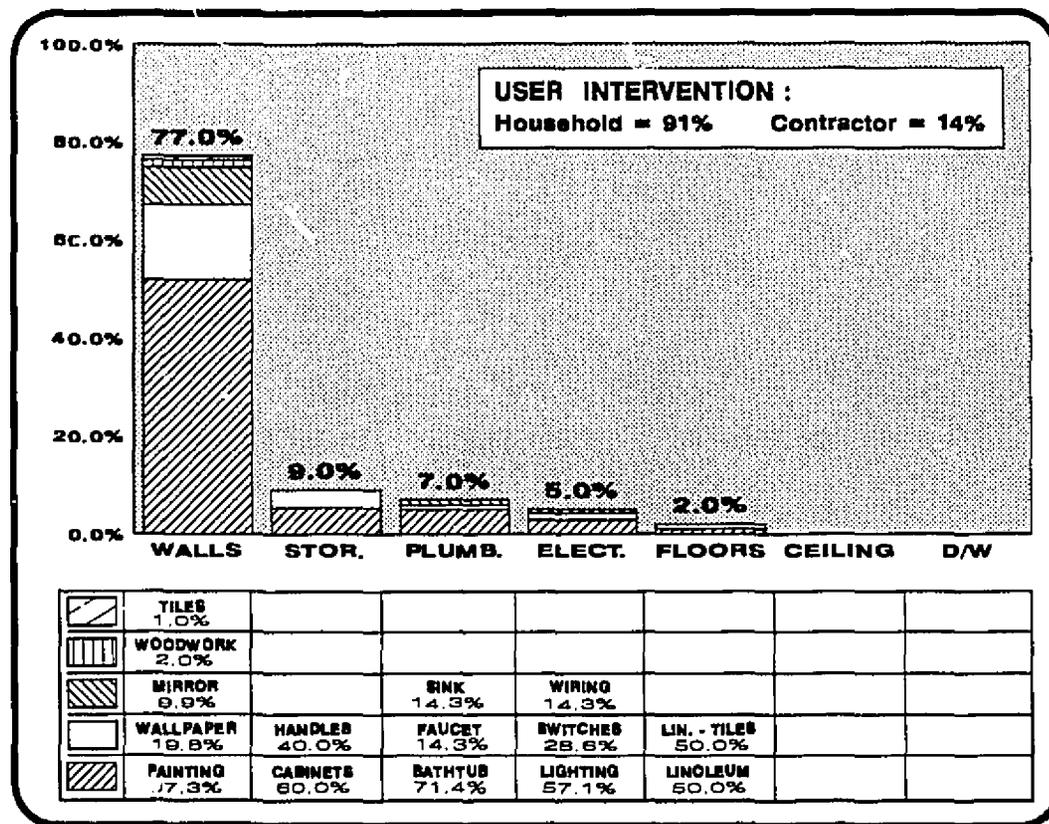


Fig. 4.26 Types of Modifications in the Upper-Floor Bathroom

These modifications were made for functional and aesthetic reasons, including replacing the floor finish (from linoleum to tile) and adding tiles on the walls to provide a superior finish, adding cabinets to gain additional storage space, and changing the shape of a wall to upgrade the appearance of the room (Fig. 4.27).

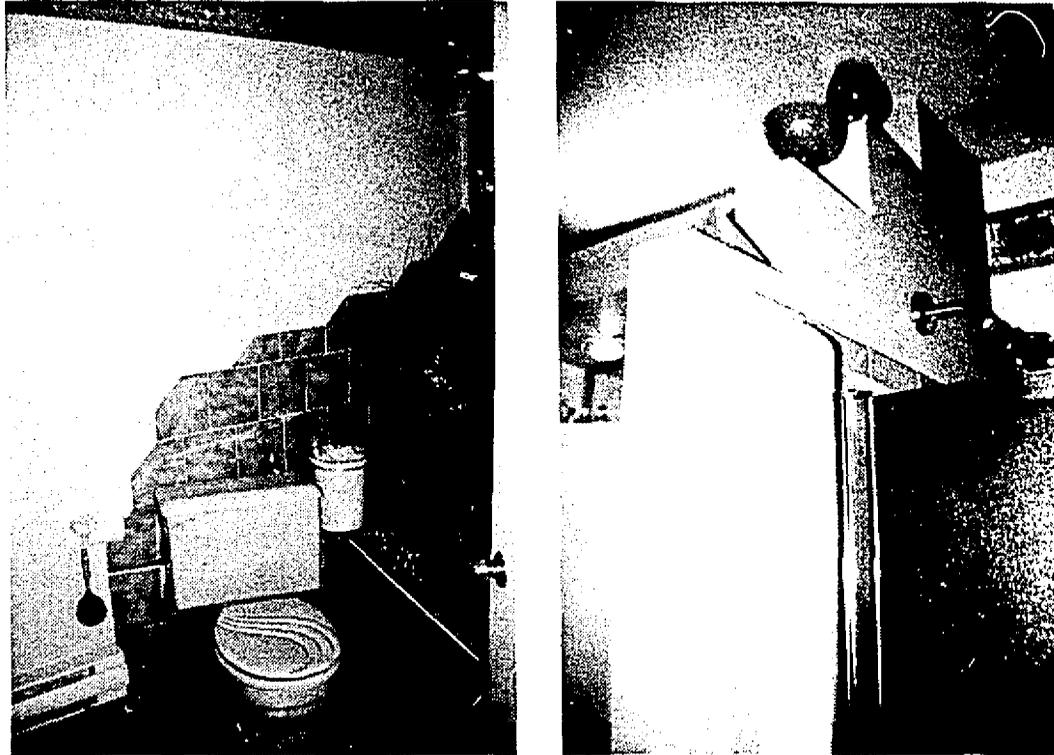


Fig. 4.27 This resident added tiles to the wall to provide a better finish and to upgrade the appearance of the room (left). The shower wall was re-shaped in order to make the room look more attractive (right).

4.3.1.7 Master Bedroom

Since residents consider the master bedroom as the space where they like to relax, they made this room more comfortable through a variety of modifications (9.1%). The primary type of work undertaken in the master bedroom was on walls (59.6%), followed by storage, electrical features, floor, and doors (Fig. 4.28).

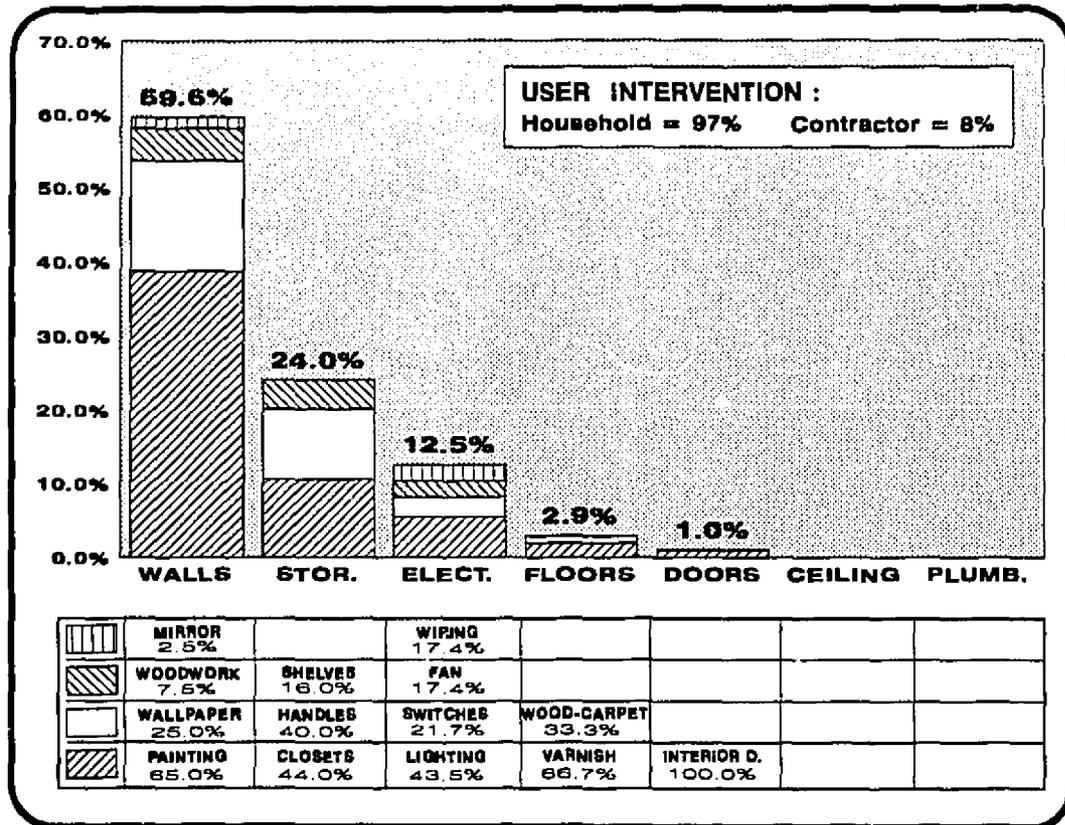


Fig. 4.28 Types of Modifications in the Master Bedroom

The basic types of modifications made on the walls were painting, wallpaper, woodwork, and mirrors in order to mold it to their own identities and tastes. Closets were converted and provided with light to make them more practical. Lighting fixtures were replaced in order to gain more light and to improve the aesthetics of the room (Fig. 4.29).

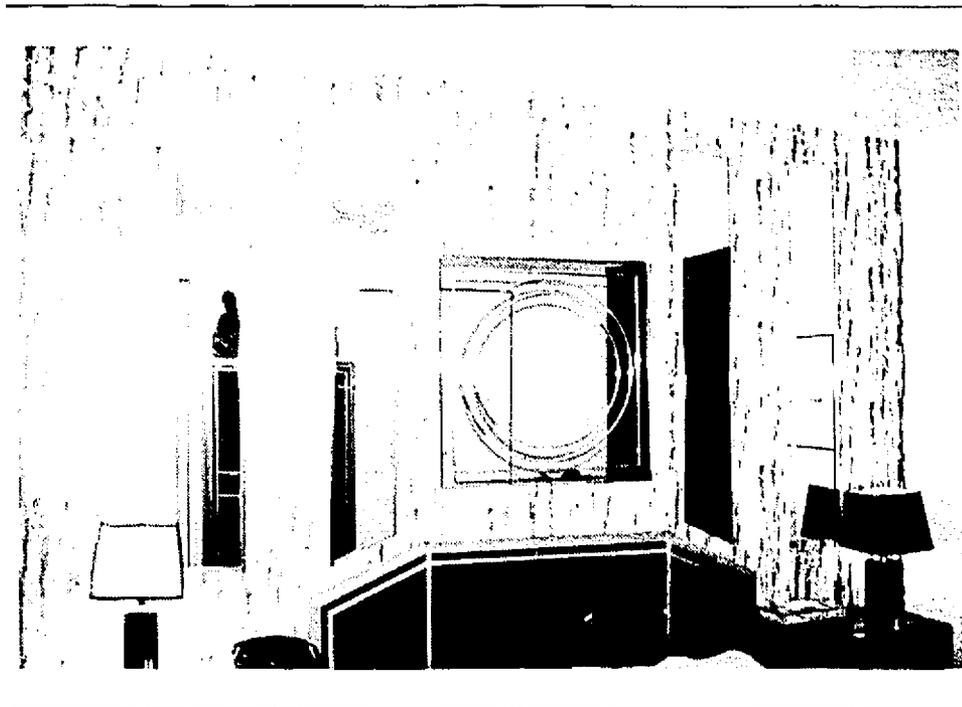


Fig. 4.29 Mirrors and wallpaper applied by a resident to the master bedroom walls

4.3.1.8 Second Bedroom

Generally, the second bedroom is the room intended for children. Families with children were the main group who made modifications to the second bedroom. 9.8% of all modifications made by residents in the entire house were performed in the second bedroom. The primary type of work in this area was on walls (70.1%), followed by storage, electrical features, floor, and plumbing features (Fig. 4.30).

Most of the changes in walls and electrical features were made in response to the desire of occupants to improve the appearance of the room. Others were made to obtain greater functionality. For example, one of the households converted the closet in the second bedroom occupied by their only child by adapting part of this closet with the

installation of a washer and dryer because they considered it too difficult to go to the basement to do the laundry.

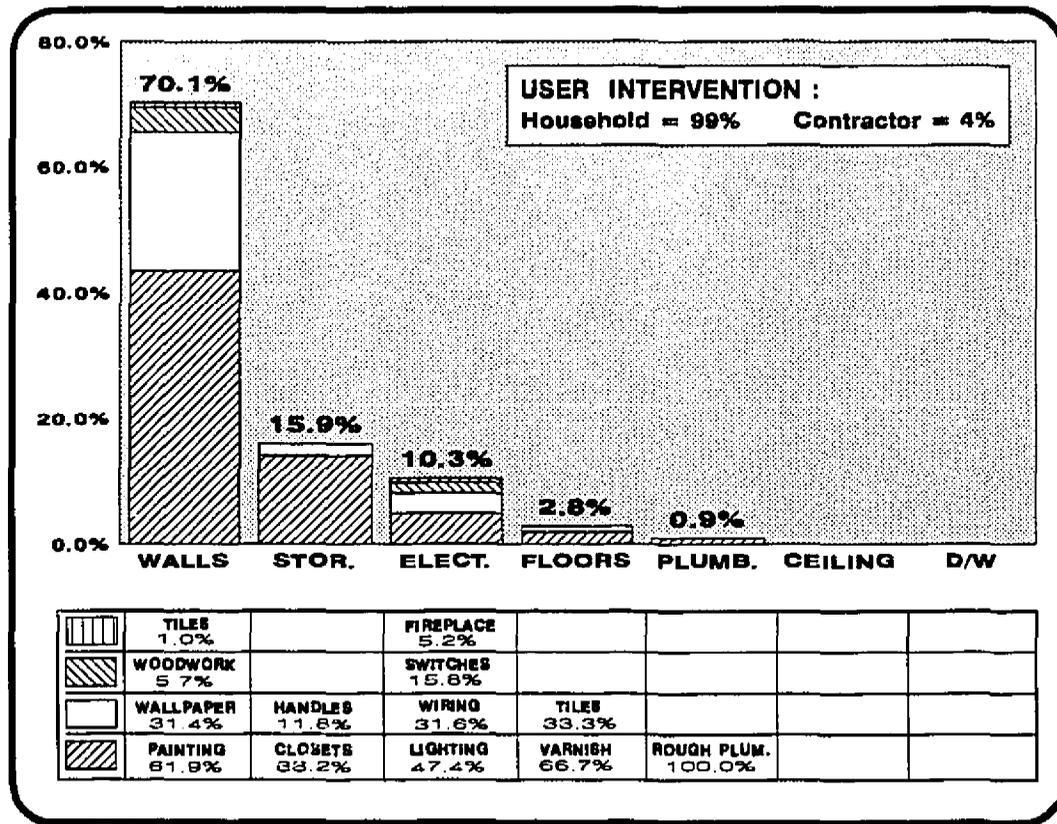


Fig. 4.30 Types of Modifications in the Second Bedroom

In addition, 24 of the 29 residents who used the second bedroom for purposes other than as a bedroom were households without children (representing 42.1% of all families without children) since they did not require an extra bedroom. In these cases, this bedroom was converted to other functions such as an office, exercise room, study, guest room, reading room, and even as a sitting room where a fireplace was installed in one instance, where part of the wall and floor were tiled to make it more functional.

4.3.1.9 Stairs & Hallway

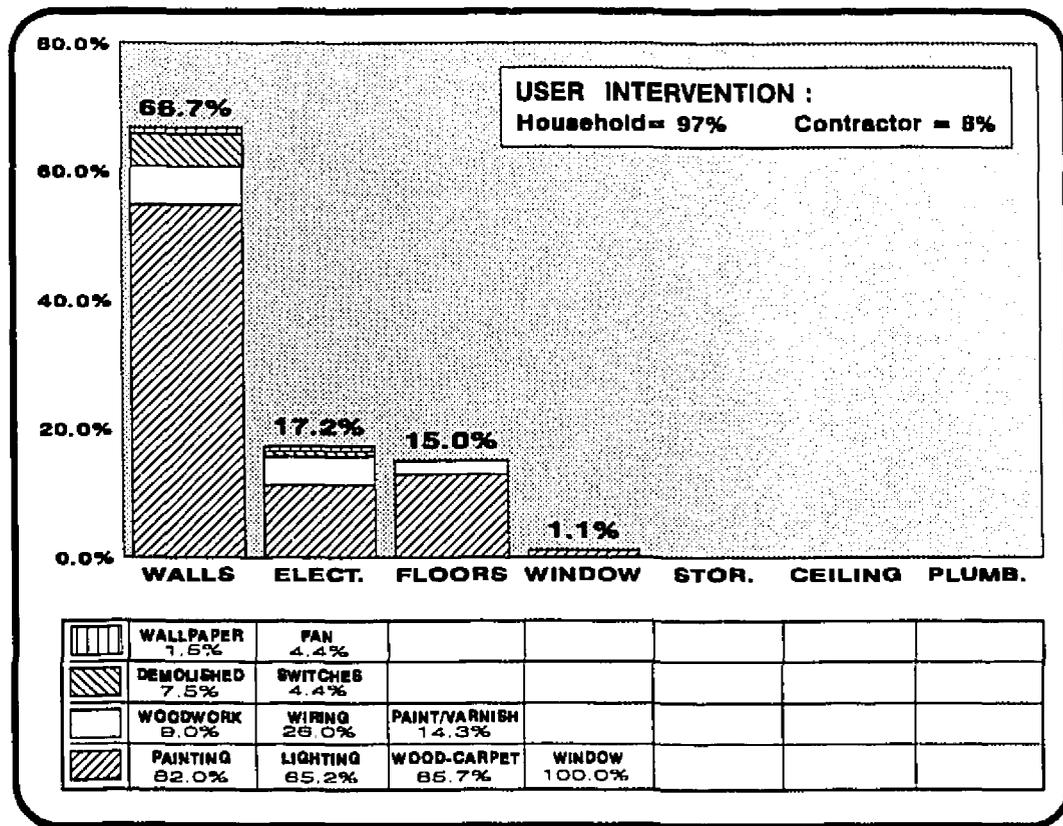


Fig. 4.31 Types of Modifications in Stairs & Hallway

7.7% of the modifications made in the units were performed in the stairs and the hallway. The main type of modification in these areas was on walls (66.7%) (Fig. 4.31). Changes in these areas were made for aesthetic and functional reasons, and included carpeting the stairs in order to provide them with a better finish and to improve the general appearance, adding a window and lighting fixtures, introducing an opening and demolishing walls to obtain extra light, as well as demolishing a small wall in the hallway and replacing it with a wooden handrail to make the area appear more spacious,

illuminated, and generally more attractive (Fig. 4.32 & 4.33). These areas registered the least modifications performed in the entire house, indicating that residents were not greatly interested in these spaces.



Fig. 4.32 The wall in the hallway was demolished and replaced by a wooden handrail (left). A window was added in the stairs area in order to make the room look more spacious, more attractive and to gain extra light (right).

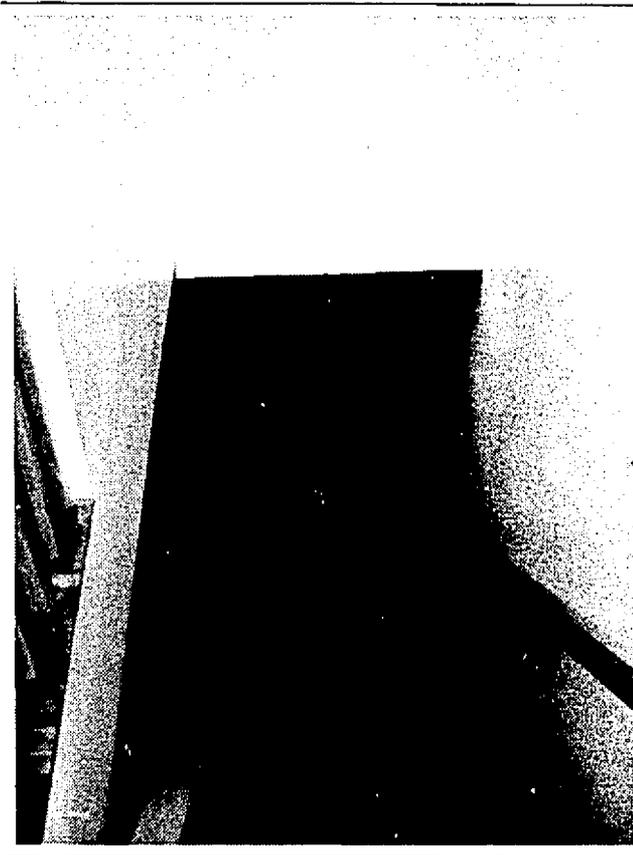


Fig. 4.33 Some residents added a lighting fixture in the basement stairs area to provide additional illumination.

4.3.1.10 Basement

The basement was the space in the house where most changes were carried out (12.6%), the reason being that the open, unfinished basement offered sufficient flexibility for making adaptations to accommodate the households' needs in contrast to the limitations of all other areas. The basement represented the primary growth space in the house. The different types of modifications were in walls, floors, electrical features, ceiling, doors, windows, storage and plumbing features (Fig. 4.34 to 4.36). The basic

reason that residents - mainly families with children (64.8%) - engaged in making modifications to the basement was the need for space. Zeisel (1981) remarks that "housing residents always feel cramped, no matter how much space they have. They need more space for storage as their possessions grow. They need more space for a play room as their family grows. They need more space to get unsightly utilitarian objects like washers and dryers out of the way." Aside from the need for space, residents performed modifications to the basement because of the need for establishing a separation between formal and informal activities, the desire to upgrade the resale value of the house and the appearance of the area, and the growth of the household. A significant degree of user intervention (95.3%) was observed in the modifications to the basement.

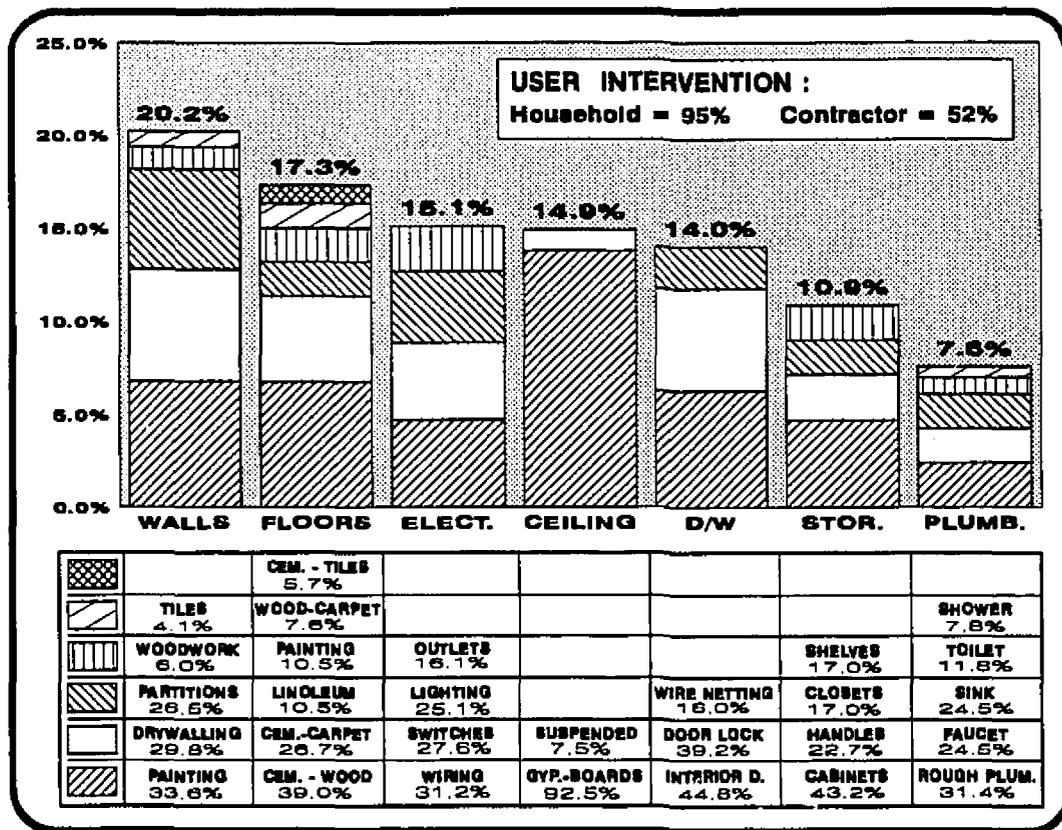


Fig. 4.34 Types of Modifications in the Basement

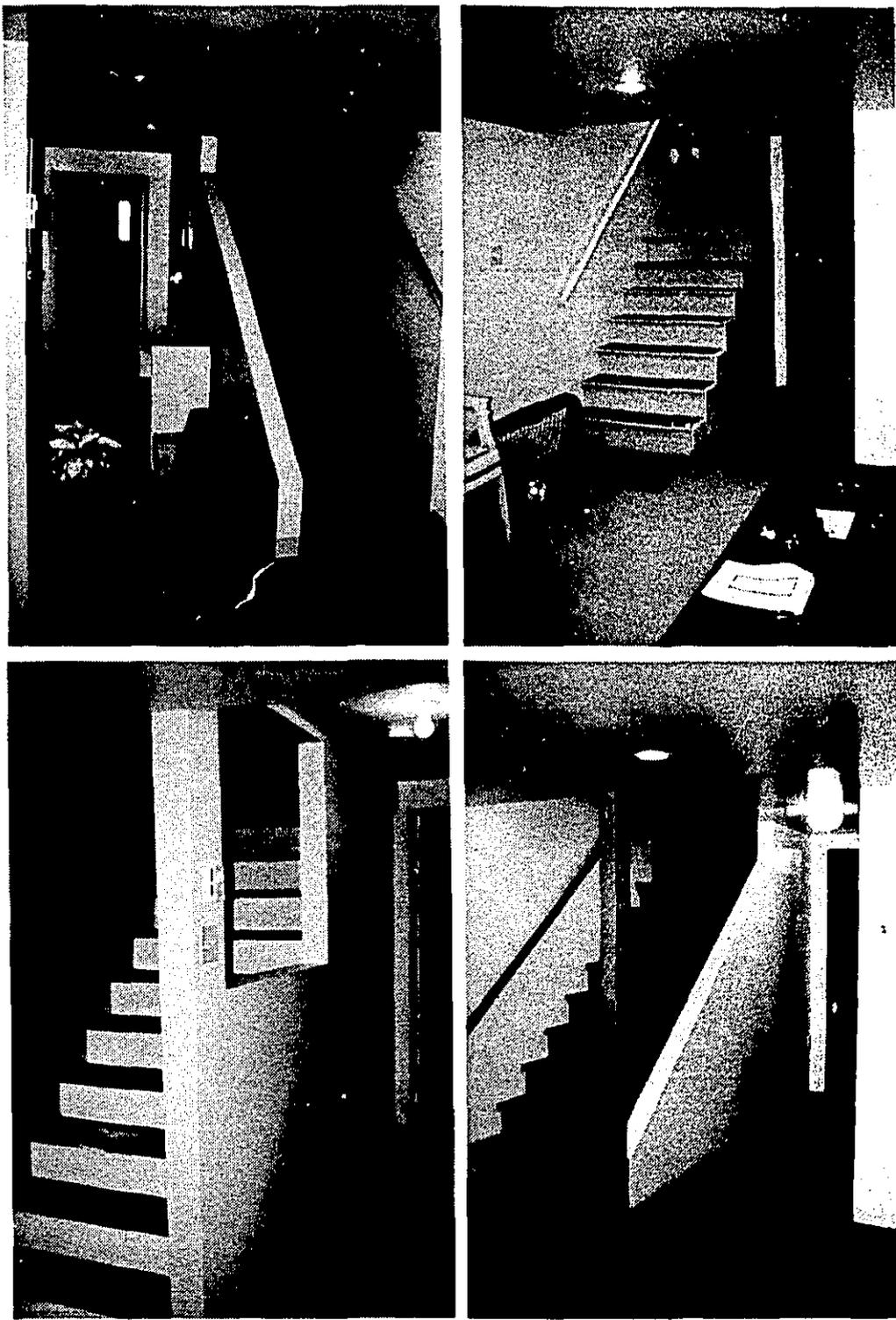


Fig. 4.35 Residents finished and adapted the originally unfinished basement with drywalling work, partitions, floor finishing, ceiling and lighting fixtures. These are examples of openings and of demolishing the wall in the basement stairs to make the room look more spacious.

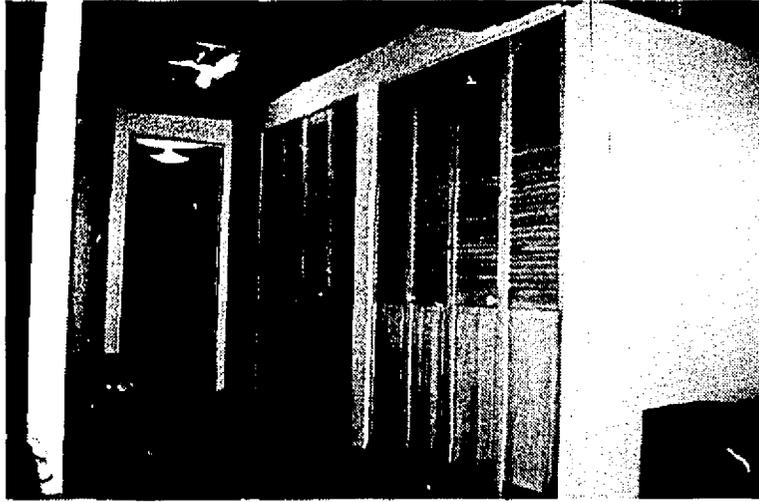


Fig. 4.36 These pictures also show how residents managed to arrange the basement to fit their needs and priorities. These are examples of storage spaces in the basement (some of them located under the stairs) created by residents in order to gain additional storage space in the house.

Walls in the Basement

The walls in the basement were originally unfinished with the exception of a few houses that had the walls finished by their former owners. Since the walls in the basement were in need of finishing, residents actively engaged in transforming them. The different types of modifications to walls (20.2%) were painting, drywalling, erection of partitions, woodwork and tiles (Fig. 4.37). The most common type of work was painting (33.6%) closely followed by drywalling (29.8%) and partitions (26.5%).

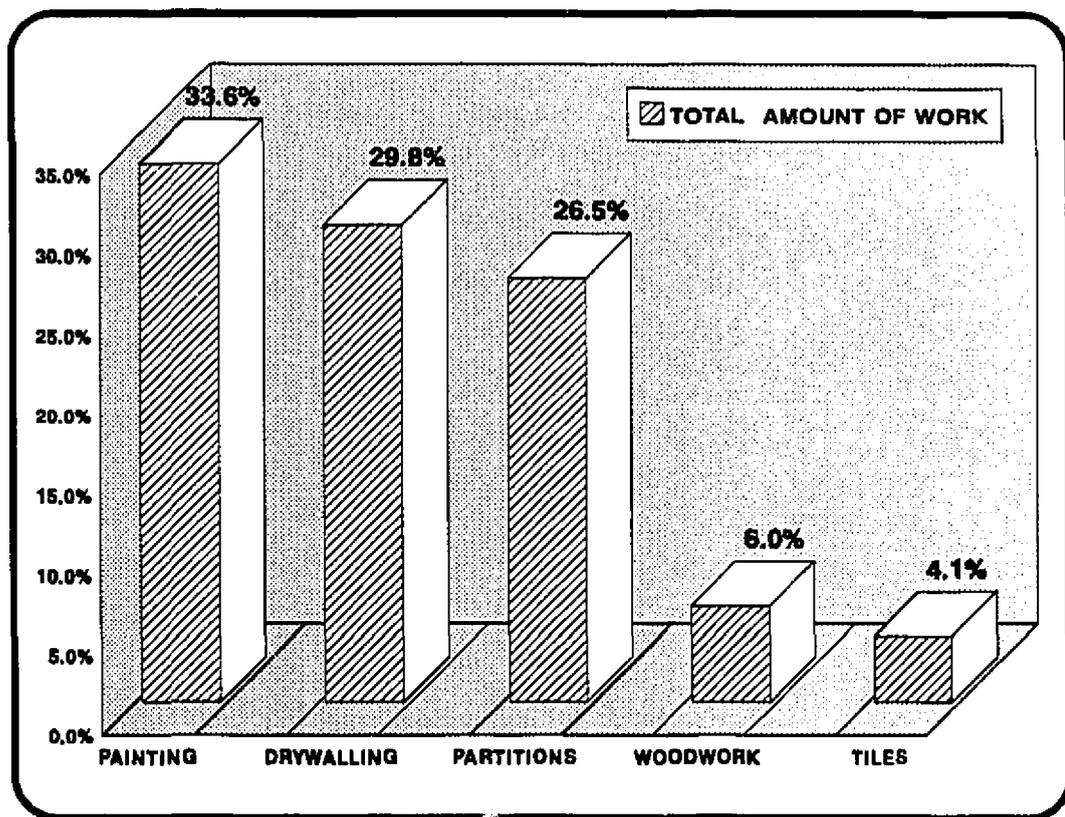


Fig. 4.37 Types of Modifications on Walls in the Basement

The reasons for making modifications to the walls in the basement were basically aesthetic and functional. Painting, woodwork and drywalling (gypsum board) satisfied the desire of residents to upgrade the appearance of the room and to increase the resale value of the house. The erection of partitions responded to the demand for new spaces to overcome the need for additional space. Placing tiles in the bathroom and insulating interior walls were undertaken for functional purposes.

Floor Finish in the Basement

The original floor finish in the basement was polished cement. In order to provide the basement with a better floor finish to upgrade the appearance of the room and to increase the resale value of the house, different types of flooring were applied such as wood (e.g. parquet, wood boards), carpet, tiles, linoleum and paint (Fig. 4.38).

Work on the floor represented 17.3% of the total work done in the basement. Although wood is an expensive material and not easy to work with, it was the most common type of material used on the floors (39.0%), primarily for functional and aesthetic reasons. Wood (parquet) is an attractive material which provides the floor with a pleasing appearance while at the same time it insulates the floor. Some residents (7.6%) used wood boards to first insulate the floor and then carpeted it. Others, basically concerned with aesthetics, placed carpet on the floor without any type of insulation (26.7%). For economic reasons, some homeowners (10.5%) simply painted it. The floors in the bathrooms were covered with tiles or linoleum.

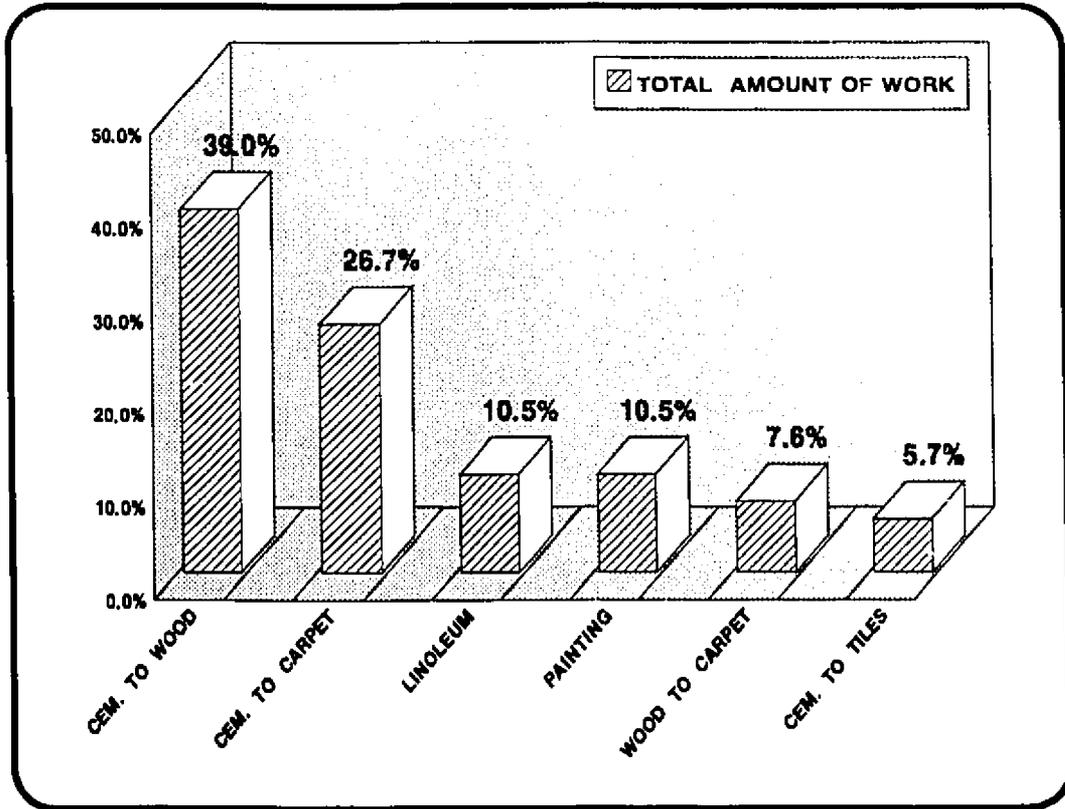


Fig. 4.38 Types of Modifications on Floors in the Basement

Electrical Features in the Basement

The type of electrical work (15.1%) performed by residents in the basement corresponded to the creation of new spaces (Fig. 4.39). The most popular type of electrical modification was electrical wiring (31.2%), followed by different switches, lighting fixtures, and outlets, obviously made to provide the new spaces with additional light. 80.8% of the households that undertook electrical work in the basement did so by themselves, indicating a high degree of household involvement in the arrangement of the basement.

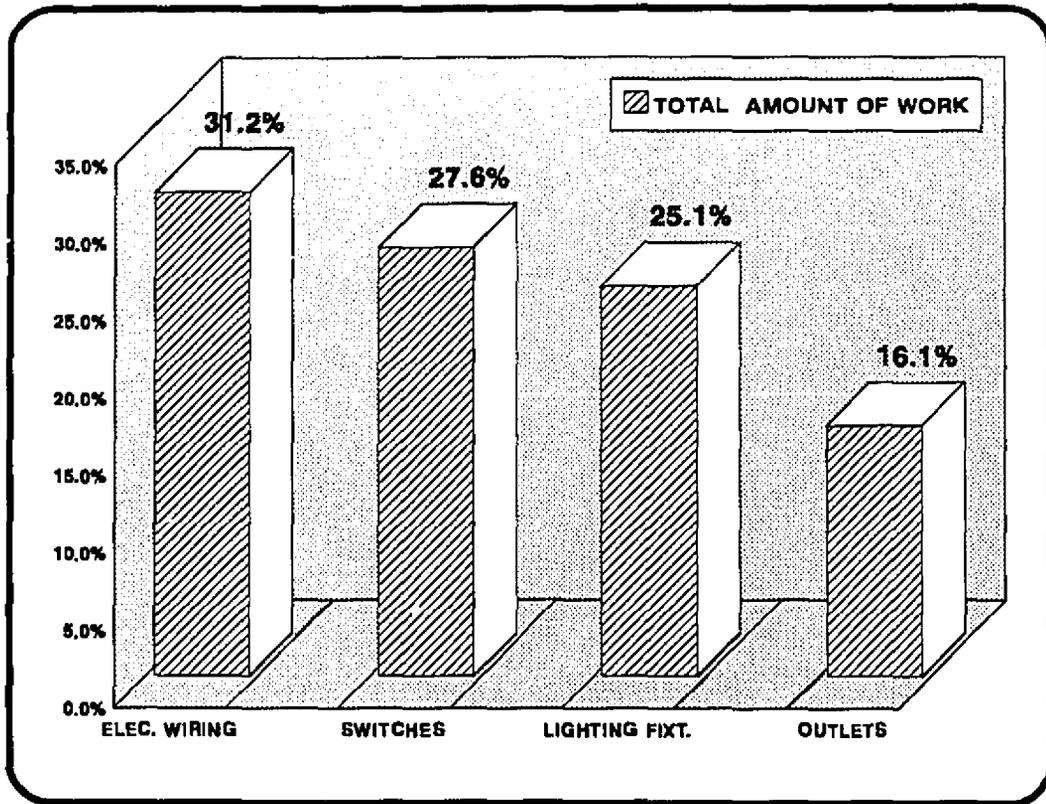


Fig.4.39 Types of Modifications in Electrical Features in the Basement

Plumbing Features in the Basement

The different types of plumbing work (7.6%) performed by residents in the basement corresponded to the creation of an additional bathroom and laundry room (Fig 4.40). Although originally the basement was provided with the plumbing connection for a laundry area, some residents decided to change the location of the washing machine which required an additional plumbing connection. The most common type of plumbing work was rough plumbing, followed by the installation of faucet, sink, toilet, and shower, respectively. 67.6% of the residents who did rough plumbing work in the

basement made these changes by themselves, an indication that residents were willing to adapt their homes personally despite the fact that rough plumbing is a major job.

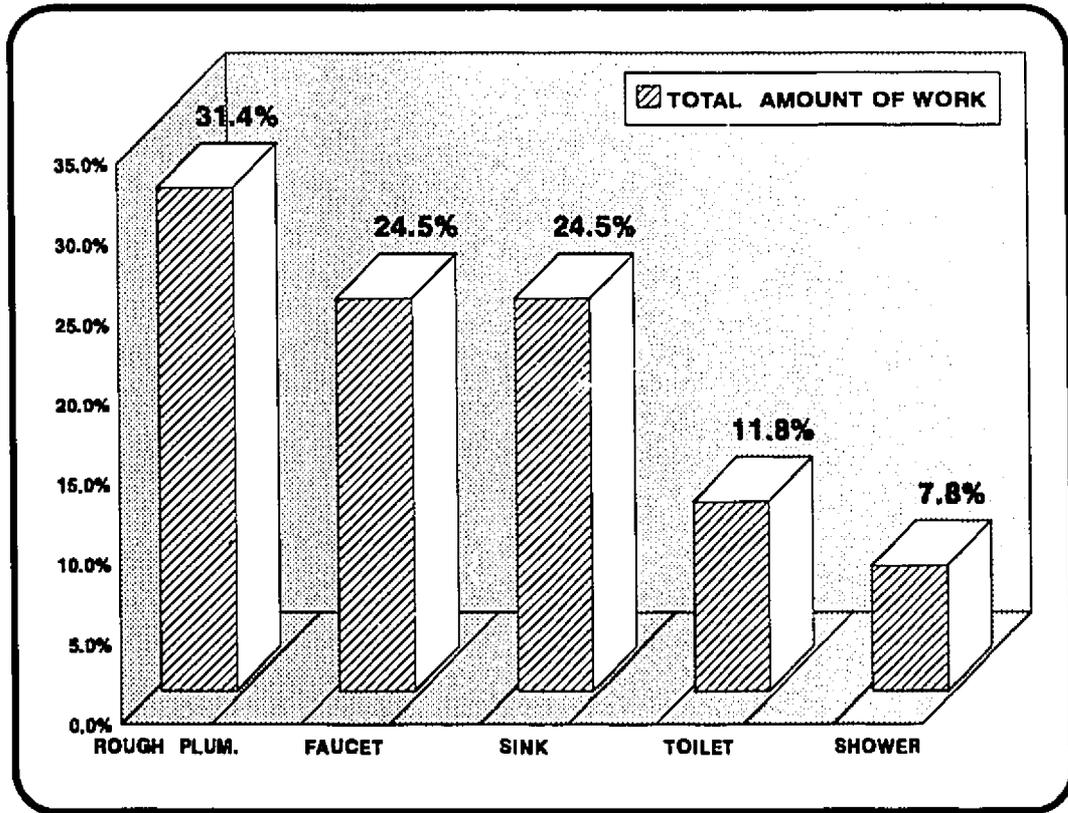


Fig. 4.40 Types of Modifications in Plumbing Features in the Basement

Doors and Windows in the Basement

Changes in doors and windows represented 14.0% of the total work in the basement. The most common type of work alteration was interior doors (44.8%) in order to provide the new spaces with a door (Fig. 4.41). The types of doors used were swing, sliding and folding doors. Most of the residents who changed or removed doors from other areas of the house reused them in the basement for the sake of economy. The

other types of work in the basement were door locks, and wire netting windows, added for reasons of security.

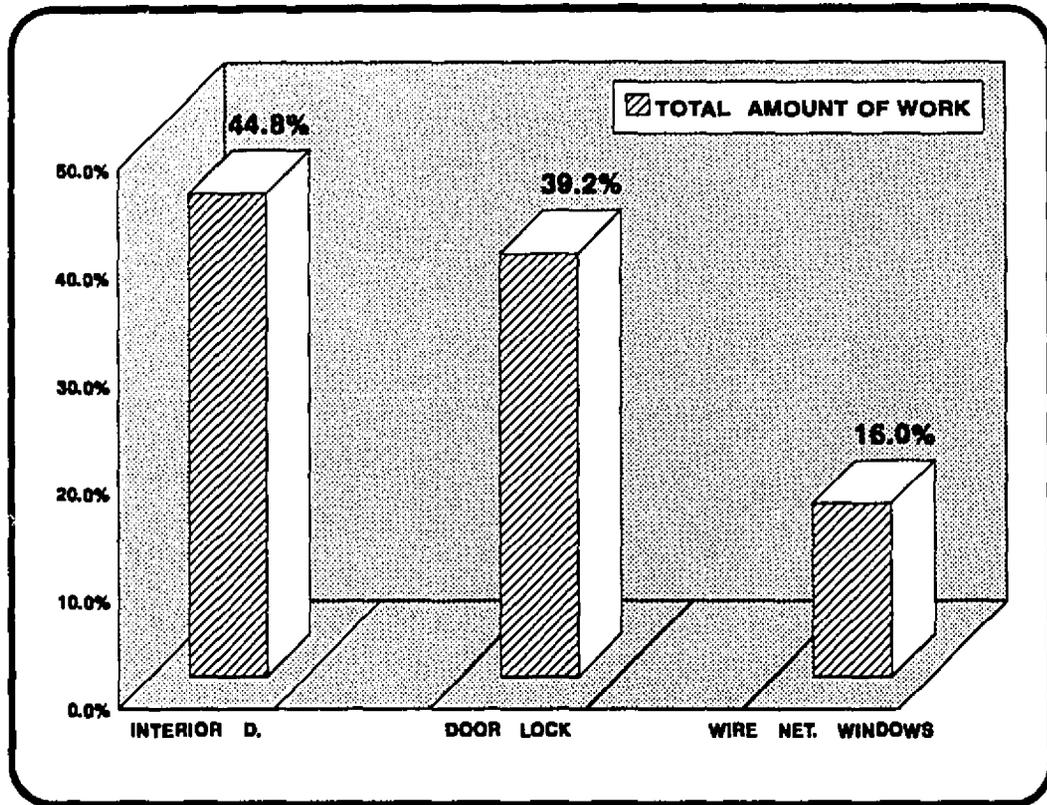


Fig. 4.41 Types of Modifications in Doors & Windows in the Basement

Storage in the Basement

For residents (especially the residents of small houses), it is extremely important to have enough space to store possessions without using spaces intended for other functions. Beck & Teasdale (1977) remark that "basements relieve the storage problem and allow residents scope for improvement and personalization." The most popular type of storage work performed in the basement was cabinets (43.2%) (Fig. 4.42). Residents

worked on storage (10.9%) in the basement essentially to overcome their need for additional storage space. Occupants created spaces for different items such as food, toys, firewood, tools, machines, seasonal clothes and articles, amongst others.

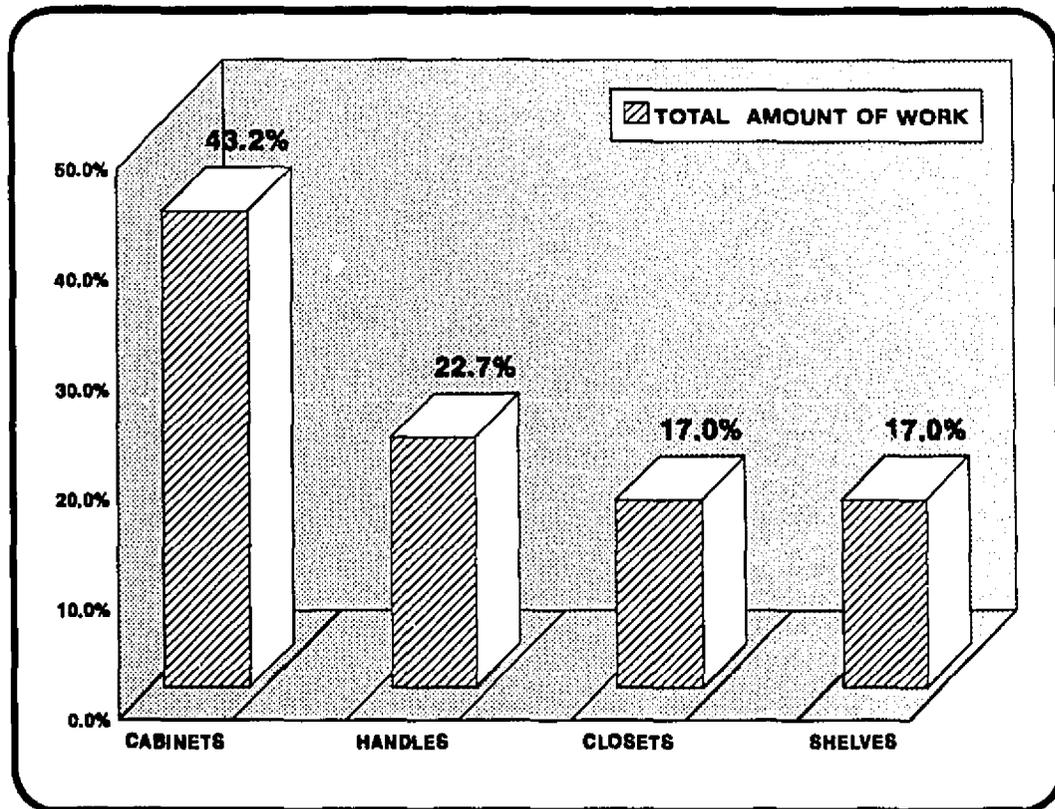


Fig. 4.42 Types of Modifications in Storage in the Basement

The Basement Ceiling

Since the basement had the structure of the ceiling exposed, some residents were eager to finish it. 14.9% of the total work in the basement was performed on the ceiling. Most of the ceilings in the basement (92.5%) were made with gypsum boards; the rest (7.5%) were suspended ceilings. This work was done for aesthetic reasons and to

increase the resale value of the house, an extremely important priority for first-time buyers who usually intend to sell and move to a better house.

Although finishing the ceiling is a major job, 76.1% of the residents involved in this type of work performed it by themselves. This high degree of participation demonstrated their willingness to intervene in the adaptation of their own houses in order to obtain a more affordable residence.

Existing New Spaces in the Basement

The basement represents the space most adaptable to accommodating the needs and desires of residents, where they could expand their affordable, small houses according to their priorities. 61.7% of all residents, mainly families with children (63.2%), created new spaces in the basement (Fig. 4.43 to 4.46). Although a high percentage of residents (87.9%) planned to create new spaces in the basement prior to occupancy, only 62.1% of these residents could actually undertake what they planned. This gap corresponds to residents' constraints such as lack of money and lack of time. It was observed in the interviews that every basement was arranged differently, indicating that in addition to the basement allowing for adaptation and user intervention, it was also an optimal place for personalization. The need for additional space (42.8%), the desire to increase the resale value of the house (25.9%) and to upgrade the appearance of the house (22.3%) were the main reasons for creating new spaces in the basement.

The rooms which most residents planned to create in the basement prior to occupancy and which were actually created were the family room (30.8%) and the

laundry room (25.4%). The family room was a simple space to create, as was stated before, and the creation of a laundry room was facilitated by the existence of a plumbing connection.

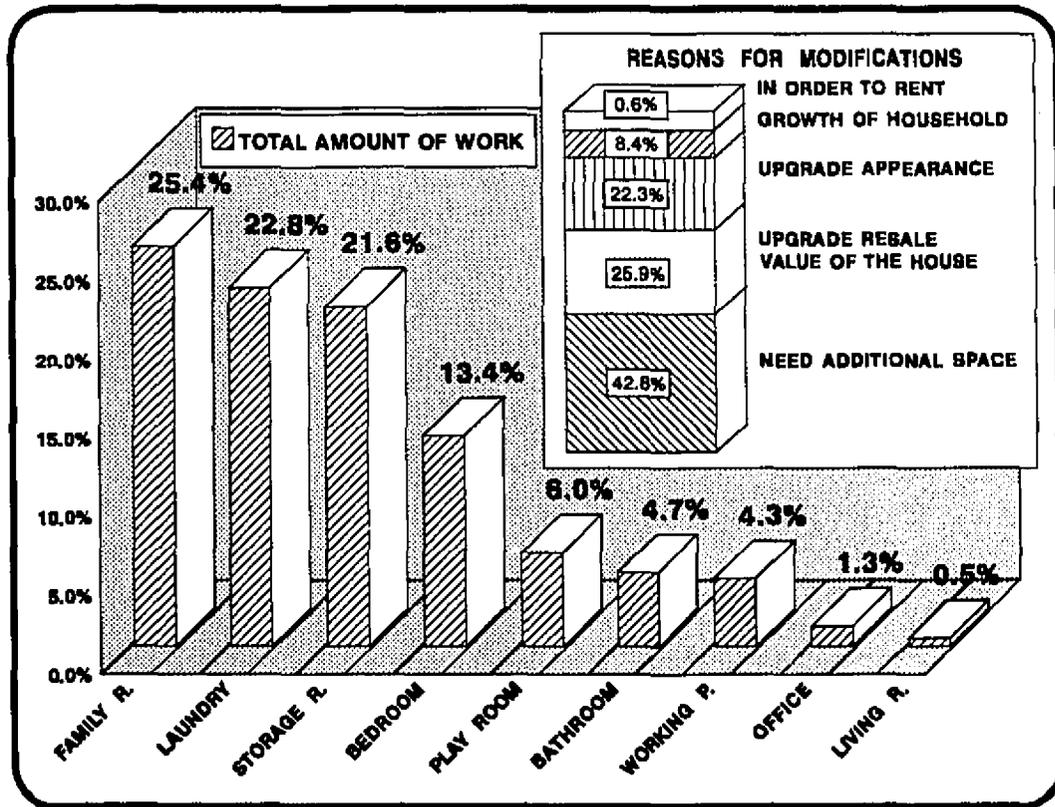


Fig. 4.43 Existing New Spaces in the Basement

The family room (25.4%) was the space created by most residents in the basement. Families with children require an additional space for daily familiar activities where kids can regularly play. As well, some residents also use the family room as a guest room, which is ideal to locate in the basement since it provides guests with some measure of privacy. 62.7% of the residents who created family rooms were families with children. In addition, 13 of the 55 families with children who made new spaces in

the basement created playrooms (6%) in order to have a space exclusively for children to play in. Seven (53.8%) of them created only playrooms, leaving the living room for familiar activities, while the other six (46.2%) families created both spaces, a family room and a playroom, to keep the family room free of children.

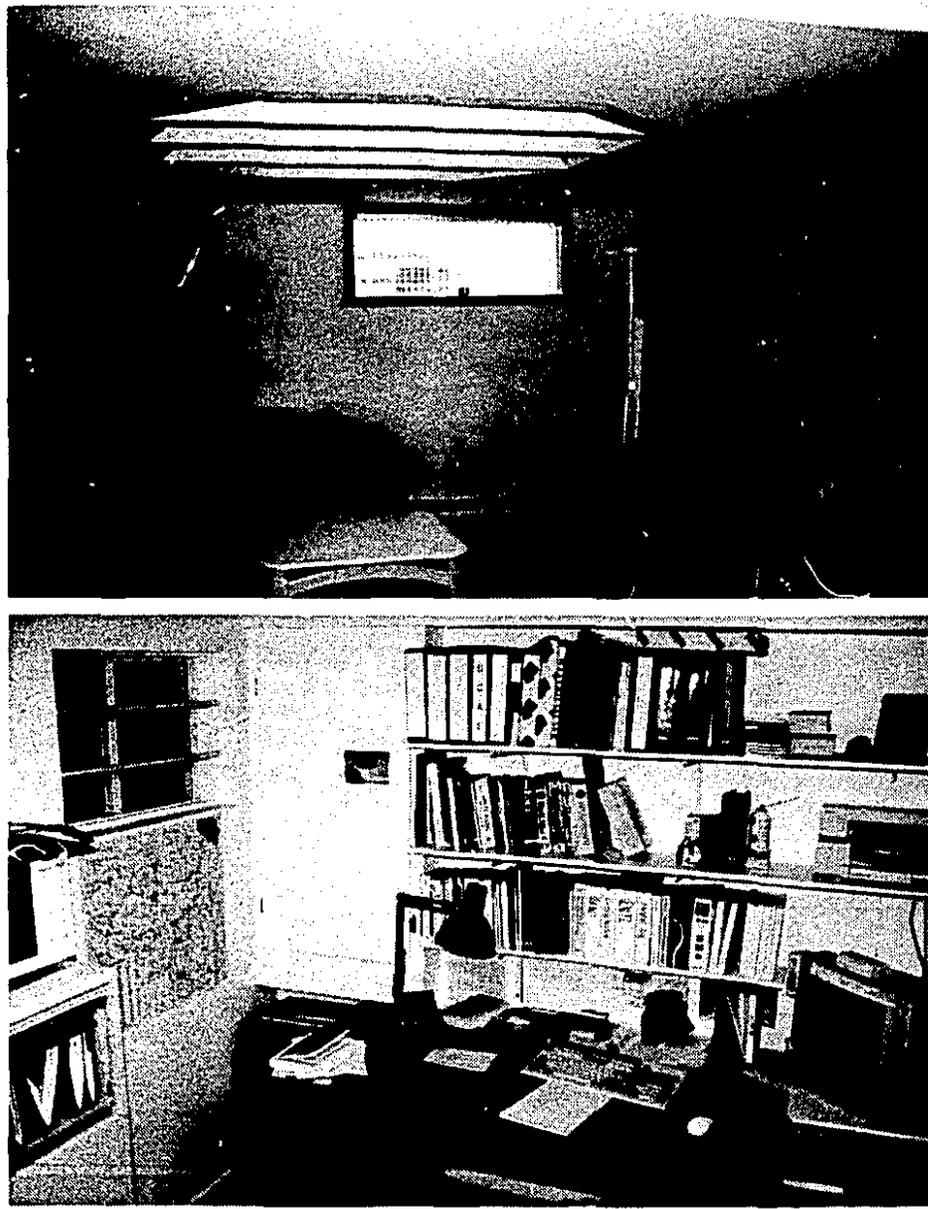


Fig. 4.44 Examples of existing new spaces in the basement. The top picture shows an example of a family room created by one of the residents. The bottom picture shows an example of an office.

Laundry rooms accounted for 22.8% of the spaces created in the basement. Although the existing plumbing connection was an influential factor in the decision to create a laundry room in the basement, some residents did not locate the laundry room where the plumbing connection originally was. Every household has individual needs and tastes, and they all arranged their spaces according to their particular preferences.

21.6% of all spaces created in the basement were storage rooms located mainly under the stairs. It is very important for residents to have a storage space in their houses in order to store their possessions. In small houses, primarily families with children find that the provided storage space is never enough; 72% of the residents who made storage rooms in their basements were families with children.

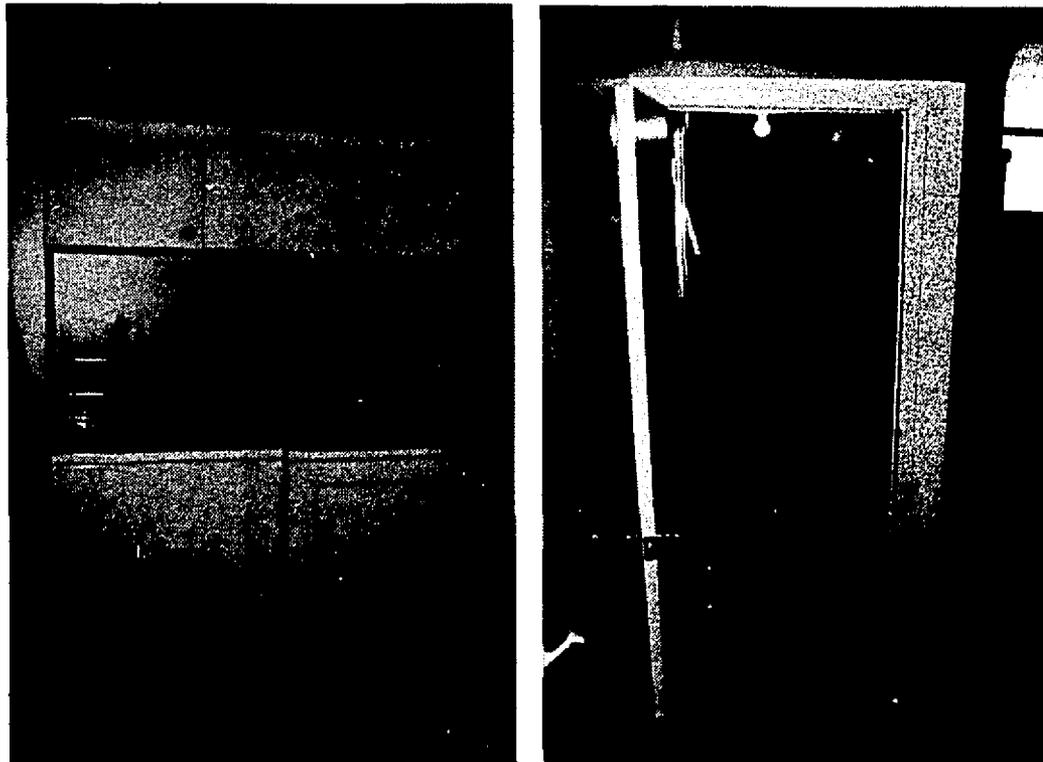


Fig. 4.45 An example of a laundry room created by one of the residents (left) and an example of a storage room (right).

13.4% of the spaces created in the basement were an additional bedroom, 4.7% an additional bathroom, and 4.3% a working place, some of which were also used as a storage place. One resident created a living room (aside from a bedroom and bathroom) in order to be able to rent the basement to increase her income. With the technological advances that allow some people to work at home, a few residents created an office space (1.3%).

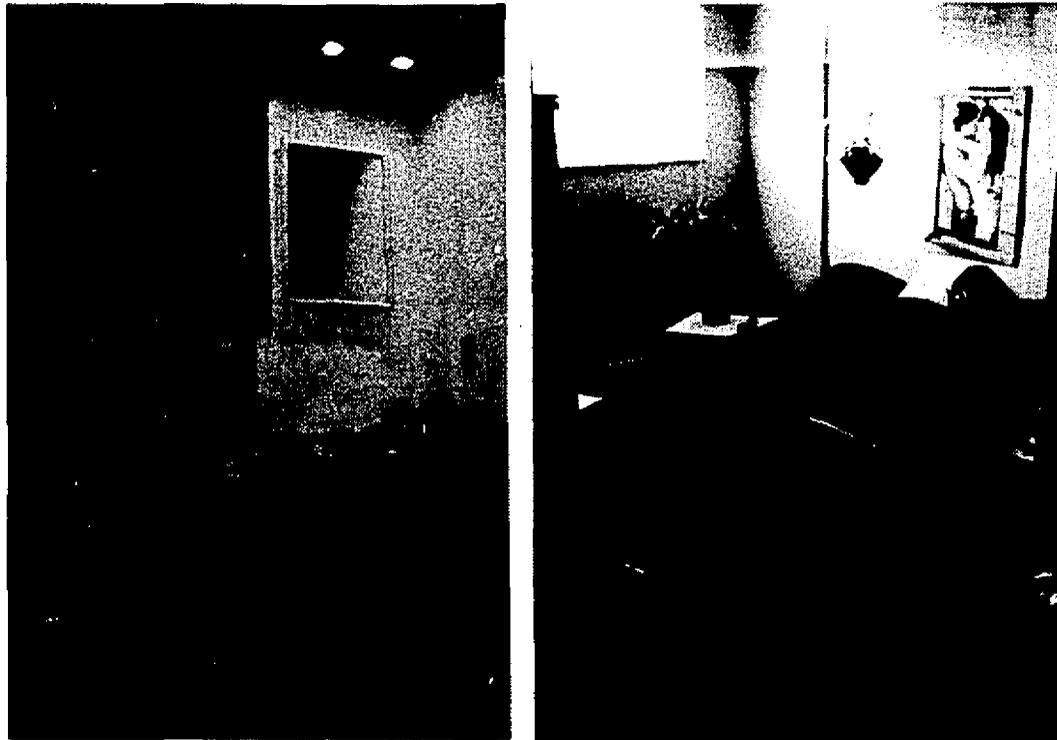


Fig. 4.46 An example of a bathroom created by one of the residents (left) and an example of an additional living room created in order to rent the basement (right).

4.3.1.11 Landscaping

Generally, exterior areas of the house, especially backyards, answer to the social and recreational needs of residents. Since residents partake in important activities in this area, such as sitting outside, meeting with friends, cooking and eating in the open air, gardening, and playing, among other activities, they clearly expressed an interest in re-shaping the exterior of the house (mainly families with children, at 59.1%). They engaged in modifications also because the outdoor space represents the primary image of the house (Fig. 4.47 to 4.49).

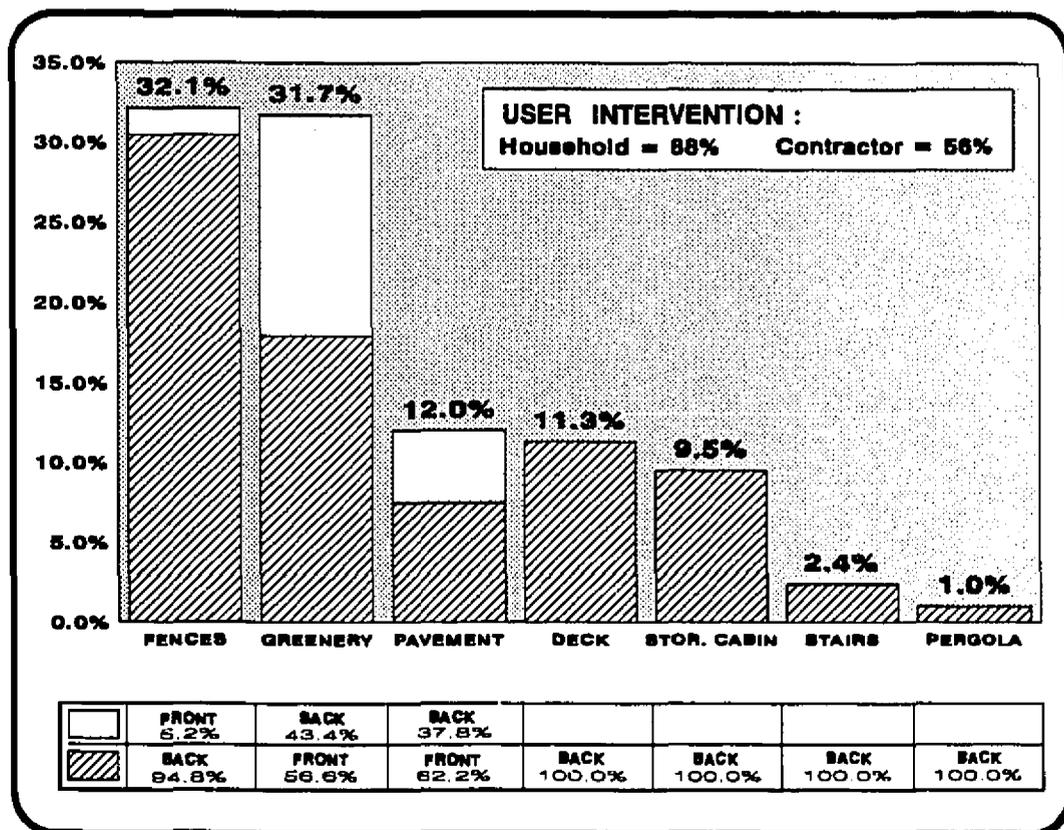


Fig. 4.47 Types of Modifications in Landscaping



Fig. 4.48 Examples of landscaping work performed by residents in their exterior spaces. The top picture shows a pathway and greenery arrangement in the front yard. The bottom picture shows greenery, a storage cabin and fences made by residents in the backyard.

The types of work performed on the exterior of the house represented 11.8% of all work done (interior modifications account for 88.2%). The main types of changes

made in this area were fences (32.1%) and greenery (31.7%). The reasons for making modifications were basically aesthetic and functional, such as to upgrade appearance, define property borders, create a more usable outdoor space, upgrade the resale value of the house, storage, protection of landscaping, and safety. It is important for first-time buyers to define property borders with fences. Fences give them with a sense of territoriality where they can provide a safe place for their children's play, privacy, and protection of gardens and personal possessions. Zeisel (1981) remarks that outsiders are inclined to adopt the exterior areas belonging to a specific house as an extension of public areas if they are not clearly defined. He also points out that this type of behavior is considered as an invasion by the occupants.



Fig. 4.49 This picture shows a pergola made by one of the residents.

Aside from fences and greenery, other types of work on the exterior of the house were paving part of the outdoor space to park the car, adding a deck in order to create

a more usable outdoor space and to improve the resale value of the house, placing a storage cabin to store toys and garden tools, and building a pergola to embellish the look of the house.

4.4 FUTURE MODIFICATIONS

Future modifications refer to the type of modifications that owners plan to make to their houses in the future. Eighty (56.7%) of the 141 households who comprise the study plan to make future modifications. People plan future modifications because they intend to stay and they want to adapt their houses to their evolving needs. Other residents who intend to move plan future modifications in order to upgrade the house to increase the opportunities for resale.

Eighty-one (57.5%) of the 141 households intend to stay in their houses, 53.1% of whom are families with children. Fifty-three (65.4%) of these households who plan to stay intend to make future modifications to their homes, 52.8% of whom are families with children. Forty-nine households (60.5%) of these 81 who intend to stay encountered difficulties in making modifications; even so, 40 (81.6%) of them plan to make further modifications to their houses, reflecting the interest of owners in adapting their homes. As well, 8 of the 11 single persons living alone intend to stay. Four of them plan to make future modifications perhaps because they intend to increase the household number and they would want to adapt their houses for the future.

On the other hand, 60 (42.5%) of the 141 households in the study plan to move from their houses; these were mainly families with children (68.3%). Twenty-seven

(45%) of these households who plan to move intend to make future modifications, reflecting the desire of people to engage in future modifications in order to upgrade the resale value of the house; 70.4% of them were families with children.

The main types of modifications that most of the residents who plan to move will make before selling the house involve walls (23.5%), floors (19.4%), and landscaping (17.3%). They consider that the good appearance of these three features is important in order to the sell the house.

The main reason people plan to move is that they need more space since they presently find the house too small for their needs (33.9%). As well, 23.6% of the residents want to move because they think they can afford a better house. Other reasons given for moving include the perception that the house is poorly insulated for sound, that there is not enough cross-ventilation nor enough natural lighting, that it is too far from work, the location is unsuitable, the residents find the environment too noisy, or they simply do not like their neighbours.

The main group who plan to move because they need more space were married and companion-with-children (88.9%). 11.1% represented married and companion-without-children who are presumably planning to have children. Single persons living alone did not register a need for more space.

The main group of residents (33.3%) who plan to move intend to stay in the house from 5 to 6 years before they move. The main group of residents (36%) who plan to move because they think they can afford a better house have an annual household income of between \$30,000 and \$39,000; this may not represent a high income, but most of them intend to stay for at least 3 to 8 years before they move. In this period of time

they will presumably increase their income to be able to buy a house that suits their needs and aspirations.

4.4.1 Types of Future Modifications

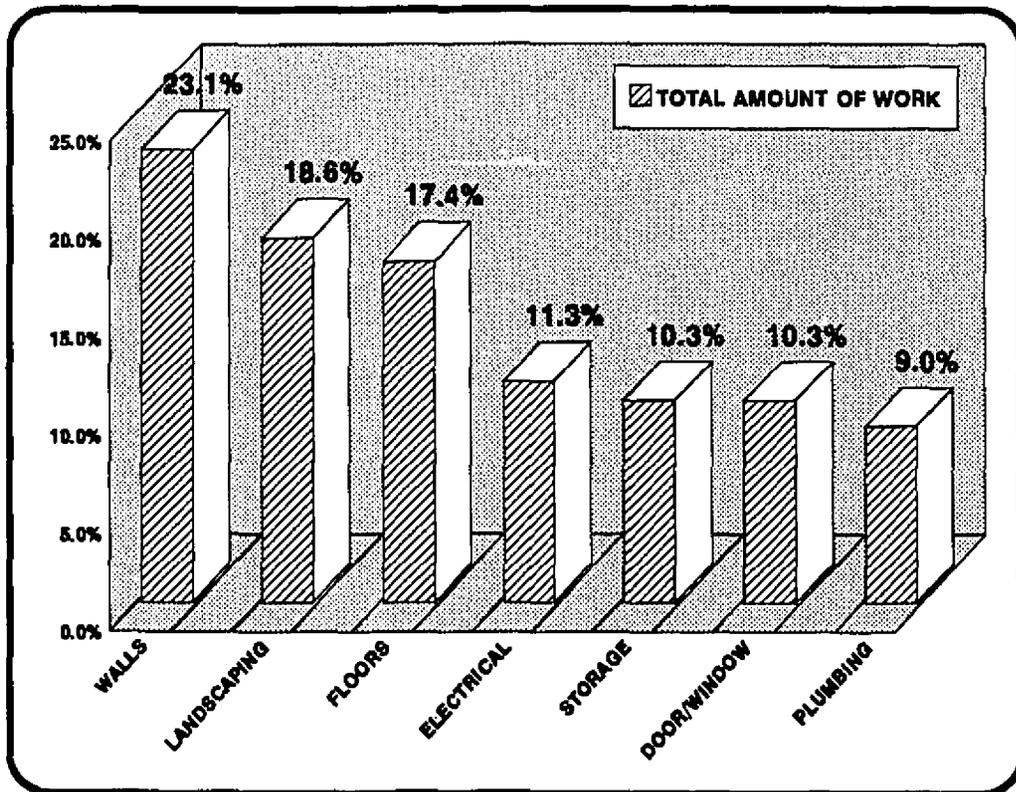


Fig. 4.50 Future Modifications, by Features

The types of work that most residents plan to make in the future were on walls (23.1%), landscaping (18.6%), and floors (17.4%), indicating that occupants are still concerned about the appearance of the house and wish to increase the resale value (Fig. 4.50). The principal type of work that residents have already made and which they plan to continue performing in the future are on walls (27.6%) and landscaping (25.2%). The

type of work residents plan to do most with walls is painting (43.4%); in landscaping, the main plans had to do with greenery (44.9%); and with floors, the most popular modification was carpeting (27.6%).

Changes in plumbing (29.4%) was the primary type of work that residents planned to perform prior to occupancy but which could not be carried out after they moved in and which they still plan to make in the future; this is possibly because plumbing is quite a complicated job to undertake.

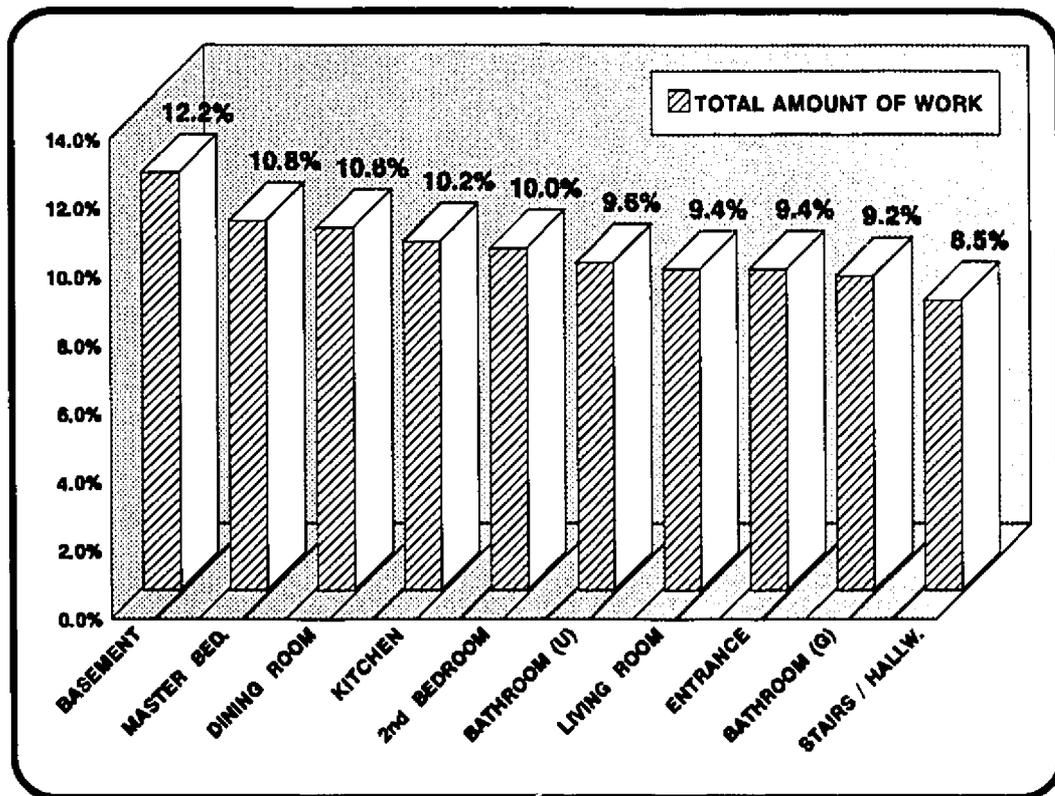


Fig. 4.51 Future Modifications, by Rooms

The area of the house where most changes are planned to be made in the future is the basement (12.2%) (Fig. 4.51). Forty-five households of the 80 households who

plan to make future modifications have already made some changes in the basement. Aside from the basement, the master bedroom (10.8%) and the dining room (10.6%) were next in priority to be changed in the future. Stairs and the ground-floor bathroom were the least important areas to be changed in the future.

4.4.2 Future Spaces in the Basement

45.4% (64) of all residents plan to make future spaces in their basements. The leading group who plan to create future spaces in the basement were families with children (51.6%), and the family room is the area that most residents plan to create in this area (23.8%). Thirty-six residents of the 64 who wish to create future spaces in the basement plan to make family rooms (Fig. 4.52).

Fifty-nine of all the residents have made family rooms in their basements and 36 plan to make one in the future, indicating that the family room is an important space, as 67.4% of all residents have decided to have one in their houses. 52.8% of the households who plan to make family rooms in the basement are families without children, meaning that a family room was not a priority for families without children since they left this work for the future.

Twenty-seven (42.2%) of the 64 households who plan to create a new space in the basement in the future have already created at least one space there; the rest will create a space for the first time. The other spaces that residents plan to make in the future are a storage room, laundry room, additional bedroom, additional bathroom and working place.

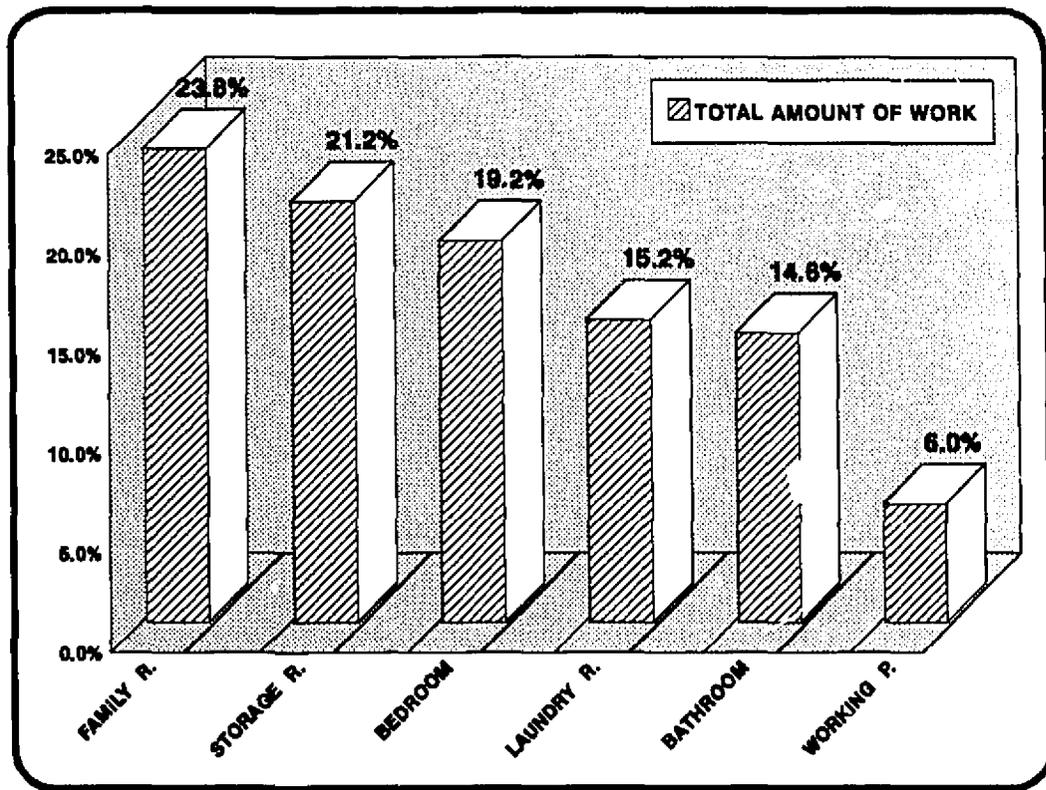


Fig. 4.52 Future Spaces in the Basement

4.5 CONCLUSIONS

The intention of the author in this chapter has been to provide a description and analysis of post-occupancy adaptation survey findings of affordable single-family housing in Montreal. The author hopes to have exhibited an adequate overview of the type of modifications residents performed in their houses, their reasons and motivations, as well as their preferences and priorities.

The present unstable economic situation has begun to motivate many home-owning families to make residential adaptations to their houses rather than to purchase a different

one, indicating that issues like housing flexibility and affordability have to be considered together with the provision of housing. Bunting & Kesik-Delfgaauw (1989) remark that in the 50s, 60s, and 70s it was common and socially acceptable to move to a new house in order to improve residential conditions and family status, and now it is equally acceptable to improve the current house rather than move.

Every one of the 141 surveyed households made at least some kind of modification to their houses. The households were primarily composed of young people (80.8%) who expressed, through their participation in residential adaptation, their high degree of motivation in adapting their homes to their needs and desires. Married-with-children and companion-with-children registered as the family type which made the highest number of modifications. It was clear that the need for space and the need to accommodate their children's requirements were their main motivating factors.

The vast majority of the households (85.8%) had the intention of making modifications prior to occupancy, demonstrating that residents bought their residences with the plan to adapt them later on. First-time buyers include their own physical input and their intervention as components of their affordability strategy.

Although 56.7% of the households encountered obstacles (such as lack of money, lack of time, lack of skills, and family constraints) which prevented them from making changes to their houses, all of them still managed to carry out at least some kind of modification. The majority of the households (88.7%) made their first modifications during the first year of occupancy, revealing that the process of post-occupancy adaptation begins immediately. As well, more than half of the householder population in the researched housing projects intend to make future modifications.

93.6% of the households performed their modifications by themselves. This high level of user intervention reflects the willingness of homeowners to engage in residential adaptations. Again, households undertook their own work as a means of affordability. This observation also reveals the ability to undertake modifications without needing professional tradesmen. As well, major modifications such as the erection of partitions, completion of the ceiling, electrical wiring, rough plumbing, tiled walls, wooden and tiled floor and paving were performed mainly by the residents themselves (71.0%).

The principal reasons that residents gave for making modifications were: upgrading the appearance of the house and upgrading the resale value of the house (which is typical of first-time buyers); and for creating new spaces in the basement the main reason was the need for extra space (which is typical of residents of small houses).

The area of the house which presented the most opportunities for adaptations - the basement - was the place where most modifications were performed. Residents took full advantage of the flexibility that the unfinished and open basement offered. This finding supports the author's remarks concerning the importance of providing home-buyers with houses designed with enough flexibility to allow for easy and affordable adaptations and for user intervention.

Eighty (56.7%) of the 141 householders who form part of the study intend to make future modifications to their houses. People plan future modifications because they intend to stay and they want to adapt their houses to their particular needs and expectations. Other residents who plan to move intend to make future modifications in order to improve the chances of resale.

People who have not been able to adapt their houses to their needs and desires plan to perform them in the future. Others who have already undertaken changes also plan to make additional modifications in the future, showing in both cases that, regardless of their particular constraints, people maintain the desire and the willingness to adapt their living environments.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

Mass housing projects, as was argued in the Rationale for the Study, are being designed without consideration for the specific needs and expectations of home buyers who, due to economic constraints, are unable to afford the professional services of architects. Additionally, these projects do not offer the flexibility that easily enables housing adaptations which would allow residents to exercise their personal choices and satisfy their particular needs.

The high participation of residents in the modification of their houses, as registered in this research, demonstrates that people have a strong tendency to adapt their living environment. Homeowners undertake housing modifications as a way to overcome the fact that their houses do not fulfil their needs and expectations, and to add the signature of their own personality, providing some kind of originality to the house. Irrespective of whatever house they are able to purchase, they will eventually adapt it. For this reason, once again, the author reaffirms her belief that a house should be designed for adaptability and flexibility so that it will respond to its residents' demands to provide themselves with greater opportunity to shape their living space, to personalize it, and to adapt it over time.

A clear example that illustrates how people intervene in the arrangement of their spaces when they are provided with opportunities for adaptation is represented by the open and originally unfinished basement of which most residents (108 of the 141 households made changes in the basement) took full advantage by finishing it and

adapting it to their needs and desires. The author has found in this research that residents appreciated very much the idea of having open and unfinished spaces which they could shape and personalize.

Moreover, Seek (1983) remarks that work done on the house by the homeowner increases the attachment to the home. Beck & Teasdale in Teasdale & Wexler (1993) find that occupants are very pleased when they have the opportunity to make improvements to their houses according to their tastes and that this participation helps them to identify better with their houses. The author also found, in this research, that residents who were able to mold and personalize their spaces to accommodate particular needs and expectations felt attached to their houses.

The findings of this study confirm the author's hypothesis that houses do not need to be supplied completely finished since residents will make modifications anyway. The important key is to provide the flexibility that will allow occupants to easily arrange their houses as they wish and need, encouraging user intervention. In addition, designing unfinished houses spares owners from spending money on changing a feature that had already been included in the selling price of the house. This alternative can reduce the cost of the house (materials, construction time and labor costs are cut down), making it more affordable.

Furthermore, first-time owners foresee their potential work and their own physical intervention as part of their affordability strategy. People who want to purchase their own first house are willing to make tradeoffs to obtain it at a more affordable price. Friedman (1987) remarks that first-time buyers "are ready to buy 'less house' for less money and then finish the house by themselves when means allow." When they do the

job themselves, the expenditure is lower since they save on labor. Since the survey results have demonstrated that people are willing to intervene in the arrangement of their spaces, the author will make some suggestions as to how houses could be marketed to promote user intervention and thereby provide a greater number of affordable houses.

Most residents changed the finish of the interior walls when they moved in, the majority by painting (110/141). Since the houses under study are relatively new (the earliest they were occupied was in the summer of 1991), it can be assumed that residents changed the appearance of the walls more as a means of personalization than to keep them in good condition. Furthermore, by changing the appearance of the walls, residents differentiated their own houses from the others, providing some kind of originality and personalization to the home. Based on this finding, the author suggests that builders could offer the option of unpainted houses, with only a base coat, allowing residents to paint their walls by themselves in line with their wishes and tastes, and eliminating painting from the original cost of the house.

As well, it was found that some stairs' walls were removed or different openings were made in them in order to make the space seem larger and to obtain greater illumination and ventilation in the house. No wall should be provided adjacent to the stairs, especially in small houses where a sense of spaciousness is highly appreciated, since residents will probably take it out anyway. Leaving stairs open is not only a cheaper option, but it is more convenient to erect a new wall (in cases where residents prefer to have closed stairs) than to demolish an existing one. Further research into households' housing preferences would be valuable in order to obtain a better understanding of what residents really desire in their houses.

Although most of the changes in the kitchen in the researched projects were made on walls (others changes were in plumbing and electrical features, floors and storage), and although storage spaces account for only 9.3% of all changes performed in the kitchen, residents still expressed their desire to modify their storage spaces (kitchen cabinets), which they were unable to do because of economic and time constraints. Kitchens in small houses need to be functional and comfortable with sufficient storage and working space. For example, some residents remarked that it would have been preferable and more beneficial to have a pantry or storage space in this area instead of the provided eating counter which reduces the free space and functionality of the kitchen. Such an observation demonstrates the different households' perceptions of how a kitchen should be provided. For this reason, the author suggests that kitchen cabinets, which are offered in a wide range of choices on the market, could also be left to the owner's personal choice. Aside from their technical function of providing storage space and a working place for cooking, kitchen cabinets are also used to improve the aesthetics of the house, especially if the kitchen is open to the living area. Kitchen cabinets offer residents a way of introducing their own style and adapting them to their particular needs.

Closets are also subject to particular needs and are frequently sources of dissatisfaction. Some residents found that there was not enough space to store their clothes, others simply did not like the arrangement and felt uncomfortable with the way they were able to store their clothes (Fig. 5.1). Closets could be another feature left to the owners' physical intervention, allowing them to arrange these spaces according to their needs and wishes. There are several choices of closets on the market (easy-to-

install) such as varied closet sets, closet doors, shelves, and drawers, making closets a simple and accessible feature. Such an option would also provide residents with the alternative of storing their clothes in furniture if they chose to do so. As well, vanities, which support the bathroom sink and store bathroom items, could also be installed by the owners themselves. An alternative would be to allow the owner the option of installing a pedestal sink. Other features such as plumbing fixtures (e.g. faucet, shower), medicine cabinets, and interior doors could also be left to the owners to install themselves.

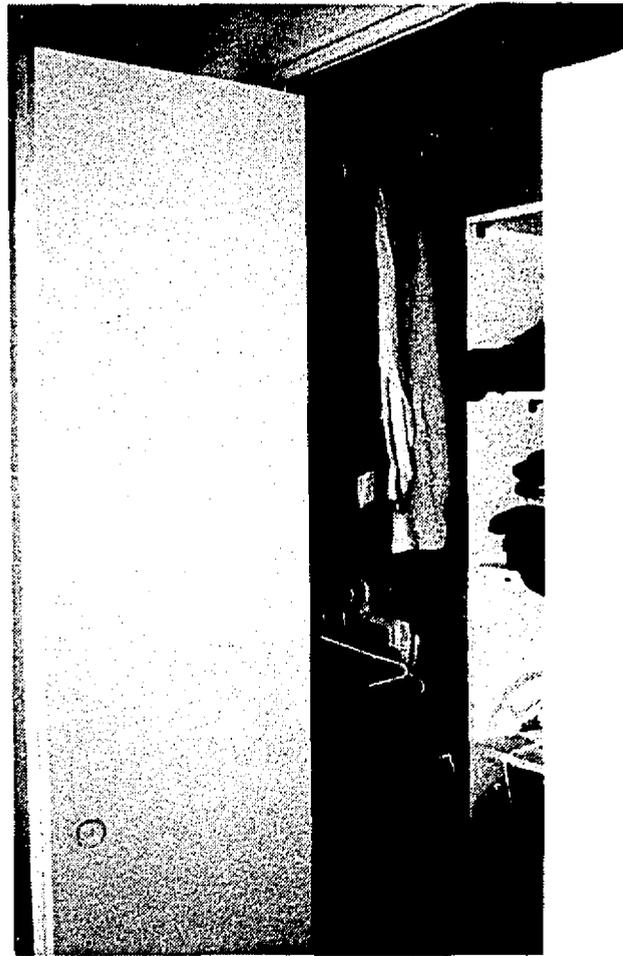


Fig. 5.1 One of the households changed the arrangement of the original closet to make it fit their needs and expectations.

The selection and installation of the lighting fixtures of the researched houses were originally left to the owners. This represents a valuable feature offered by the builder in the promotion of household involvement. Aside from the functional role of a lighting fixture, which is the illumination of the house, this choice also responds to aesthetic tastes. The selection of lighting fixtures allows residents to express their personal preferences and to improve the general appearance, both extremely important factors to homeowners.

Fences represent an important feature for first-time home buyers, since they set the parameters of territoriality and establish privacy needs which are among the main motives in buying a single-family house. The results of this research show that 94 of the 141 (66.7%) residents erected fences on their property, demonstrating that it might be a good decision to provide houses with fences where regulations allow it.

This research showed that major modifications such as the erection of partitions, completion of the ceiling, tiled walls, electrical wiring, rough plumbing, wooden and tiled floors and paving, which are generally done by professionals, were made mainly by the householders themselves (71.0%), which indicates that the renovation process is becoming simpler.

Home improvement stores also play an important role in housing adaptation, offering inexpensive and easy-to-install products which make the renovation process easier for the general public. In addition to this ample number of products offered presently on the market, there also exists a wide range of books, magazines and videos that show people how to renovate. The availability of these different products and publications facilitates the participation of residents in the arrangement of their homes

and helps them to achieve housing affordability. Materials packaged in small quantities and single-stop shopping (aimed at the do-it-yourselfer and handyman) have facilitated renovation activity as well.

The possibility of providing houses with flexible partitions (previously discussed in Chapter Two) could also be considered. The implementation of these flexible components would give residents the opportunity to arrange their internal walls, enclosing and expanding their rooms (making or un-making rooms) in order to accommodate personal needs. Flexible partitions (such as sliding walls, movable partitions, folding partition walls, demountable walls and others) could represent a potential for new products for manufacturers (or to develop and improve existing ones) and might be marketed and incorporated in renovation stores as yet another regular product which facilitates housing adaptation and which suits immediate or longtime household needs and encourages user intervention.

As well, a greater variety of ceiling components could be developed and offered to the general public. For example, different types of boards and frames for a suspended ceiling (used by some residents in the researched houses to finish the exposed ceiling structure), in terms of materials, color and technical installation, could be provided as a means of allowing residents to choose between a wider range of options.

With regard to design issues, the author suggests that houses should contain open and unfinished spaces such as basements in order to provide the flexibility that allows broader opportunities for adaptation and personal involvement by the user. Teasdale & Wexler (1993) remark that "because basements are frequently unfinished or used in a less formal way than upstairs and therefore more susceptible to self-manipulation, the

basements are a primary target for self-expression." Through the 24 interviews of this study, the author observed how different people arranged their basements. These 24 individual arrangements reflected the particular needs and desires of each household, which cannot be satisfied through mass housing projects (standardization of layouts). Open spaces which people can adapt to their own priorities and expectations are very convenient and highly recommended.

Residents of small houses find that the provided storage space is never sufficient and they predict that they will need additional storage space as their possessions increase over time. Zeisel (1981) remarks that "no matter how much storage space is provided in a home, there will not be enough to accommodate what people living there have." The author believes that an open basement provides an alternative for storage space, where residents can create as much storage space as they need according to their convenience (for articles on a daily basis and/or for seasonal items). To provide storage spaces in small houses, every possible space needs to be used, including the space under the stairs and in attics. The researched houses have been provided with some kind of ceiling storage space in the attic which was not widely used since it is a common space between the groups of units. Providing the house with this kind of storage space is a very good idea and a valuable feature but needs to be defined separately for each unit in order to make the residents feel secure when they store their personal belongings. This research also found that owners considered the space under the stairs to be suitable for storing their possessions.

The production of houses designed to provide users with opportunities for adaptation and personal involvement is extremely valuable. The author observed,

throughout this research, that the involvement of residents in the arrangement of their own houses provided them with pride and confidence in their skills and personal decisions, promoted individual creativity, increased the sense of attachment to their houses, and generated a gratifying sense of satisfaction in the shaping of their own spaces.

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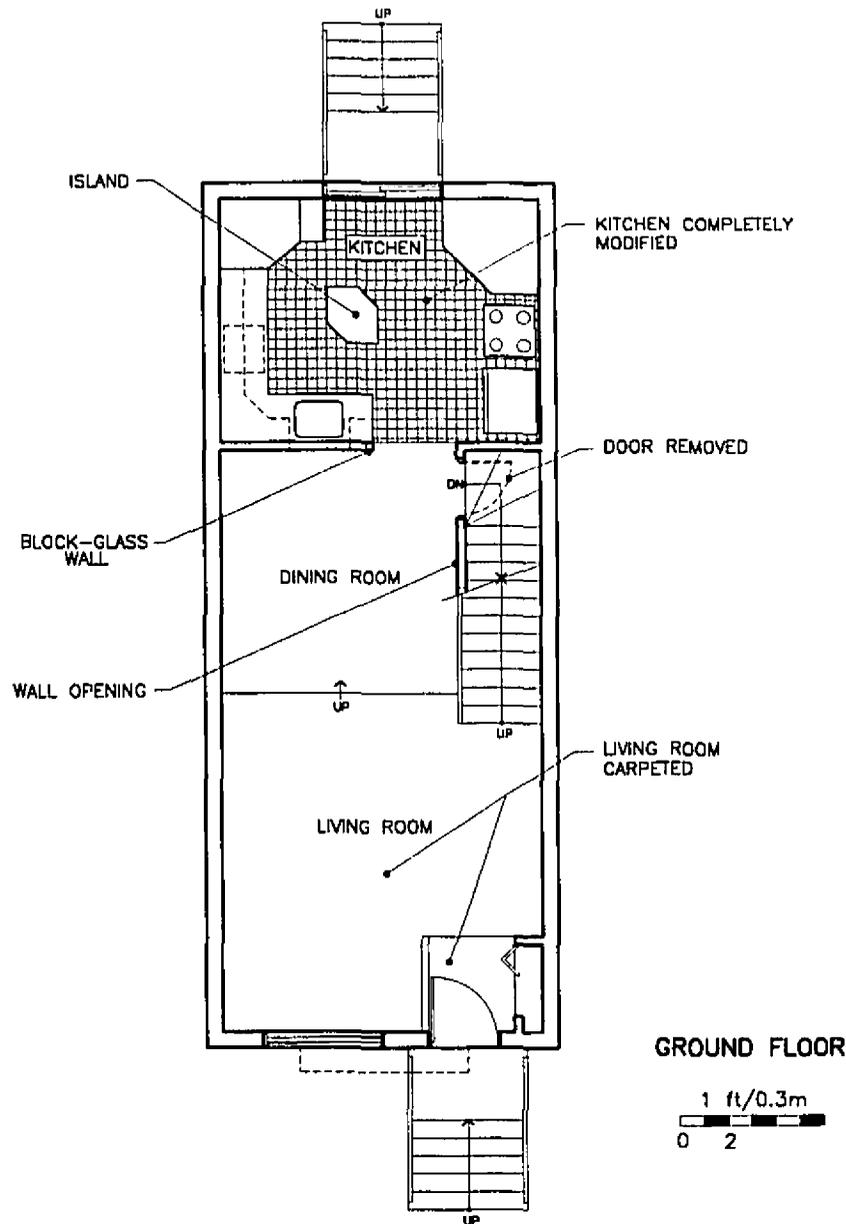
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APPENDIX A

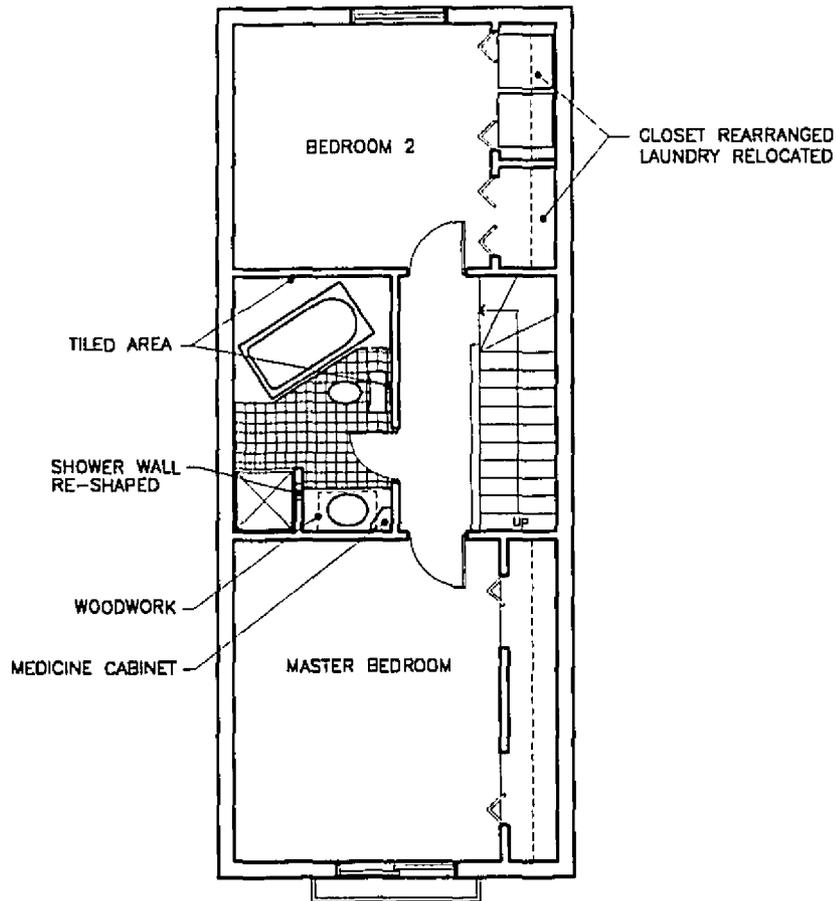
DESCRIPTION OF CHANGES PERFORMED BY INTERVIEWED RESIDENTS

This appendix documents the different modifications performed by the 24 residents interviewed in their houses. These interviews were conducted in order to obtain a direct observation of the modifications made by the owners. These residents expressed that they appreciate the idea of having an open and unfinished basement which they could adapt according to their own choices and requirements. As well, they indicated that the opportunity of personalizing their homes is very important to them. In addition to a brief description of the housing adaptation carried out by them, the author presents drawings of each house, highlighting the changes with the purpose of providing a clearer informative picture.

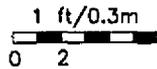


HOUSEHOLD 1

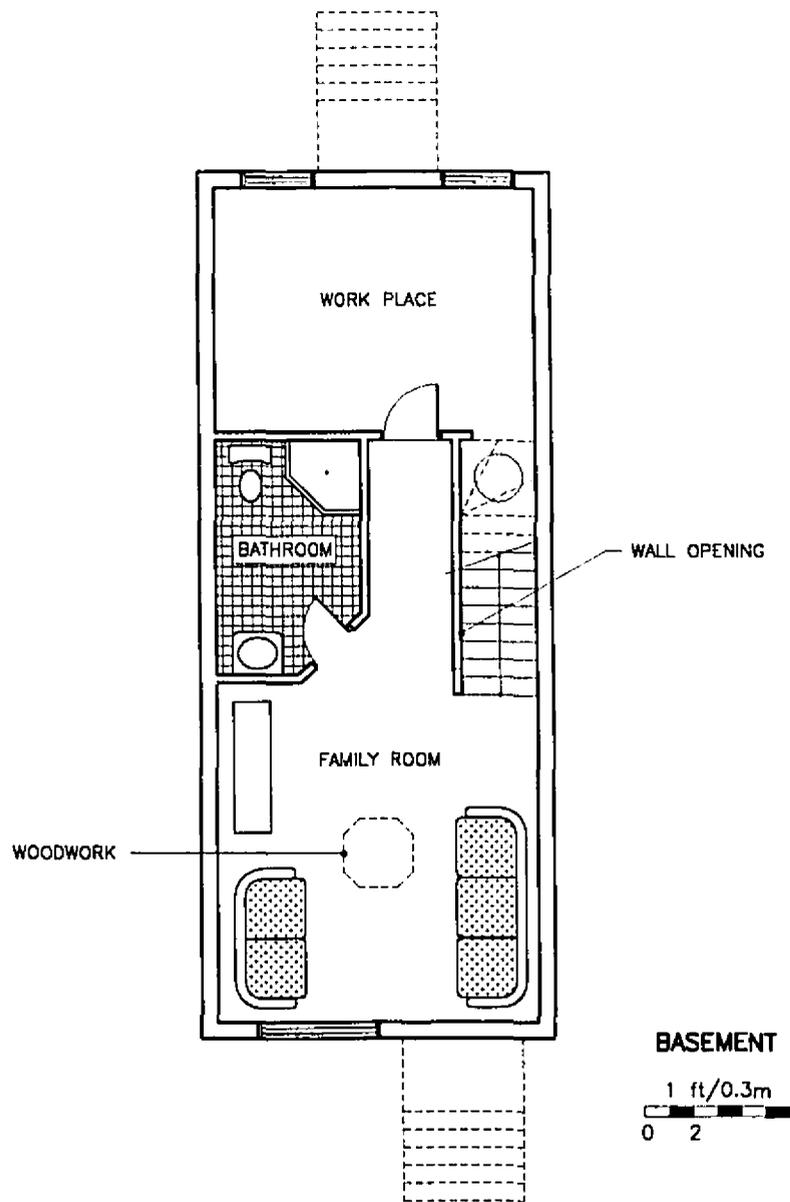
This household is comprised of a common-law couple with a baby. The walls in the entrance, living room, dining room, upper-floor bathroom, bedrooms and the stairs area were painted. The walls of the dining room, upper-floor bathroom, and bedroom were also wallpapered. The floor in the living room was carpeted. Electrical wiring, lighting fixtures and switches were added in the kitchen, and in the upper-floor bathroom the lighting fixture was replaced. The original kitchen cabinets were completely changed, and an island was added to obtain additional and more functional storage and working space. As well, rough plumbing work was performed in the kitchen to install a dishwasher, and the kitchen sink was also changed. A storm door was installed in the entrance, and the door leading to the basement was removed and reused in the basement (work place). An opening in the stairs area (dining room) was made to upgrade the appearance and to provide more illumination and ventilation to the basement.



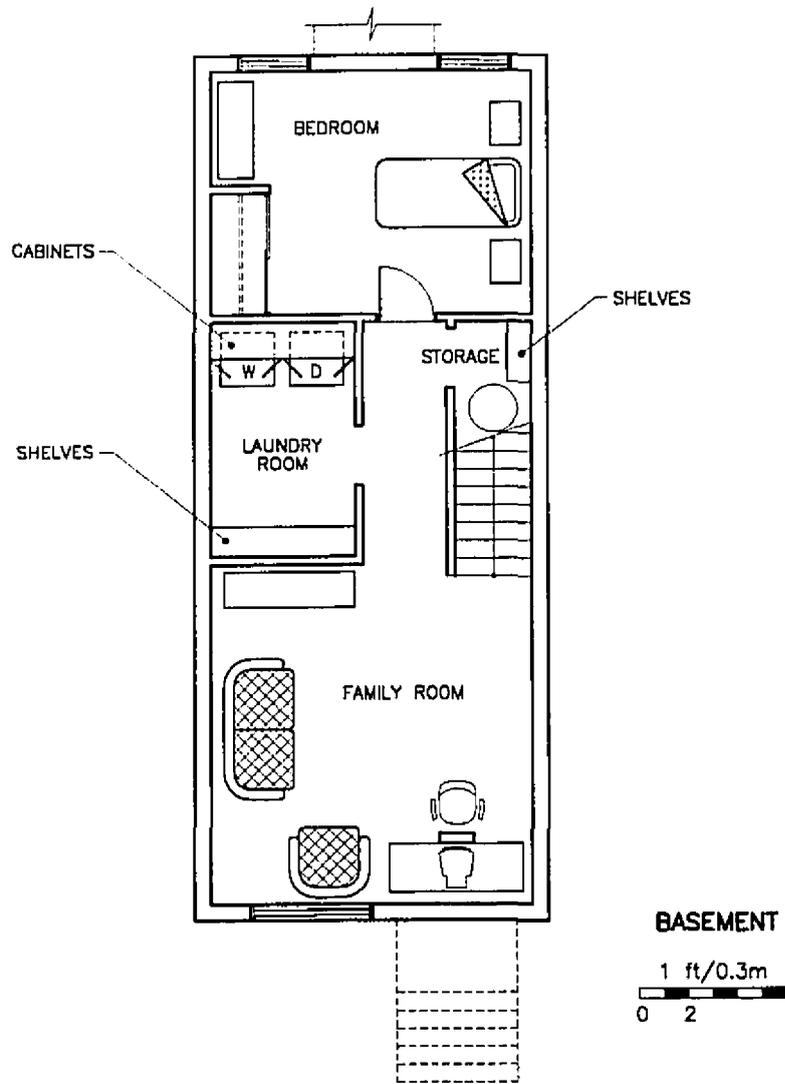
UPPER FLOOR



The walls in the upper-floor bathroom (originally, there was no ground-floor bathroom in the house as required by the owners) were also tiled all around the bathtub and toilet to provide a better finish and to upgrade the appearance of the room, and the shower wall was re-shaped to make the room look more attractive. As well, in the upper-floor bathroom a medicine cabinet was installed, and woodwork was added to the lighting fixture on top of the sink. Rough plumbing work was also performed in the second bedroom, where the residents relocated the original plumbing connection for washer and dryer (from the basement) in part of the closet, since they found it inconvenient to go to the basement to do the laundry.

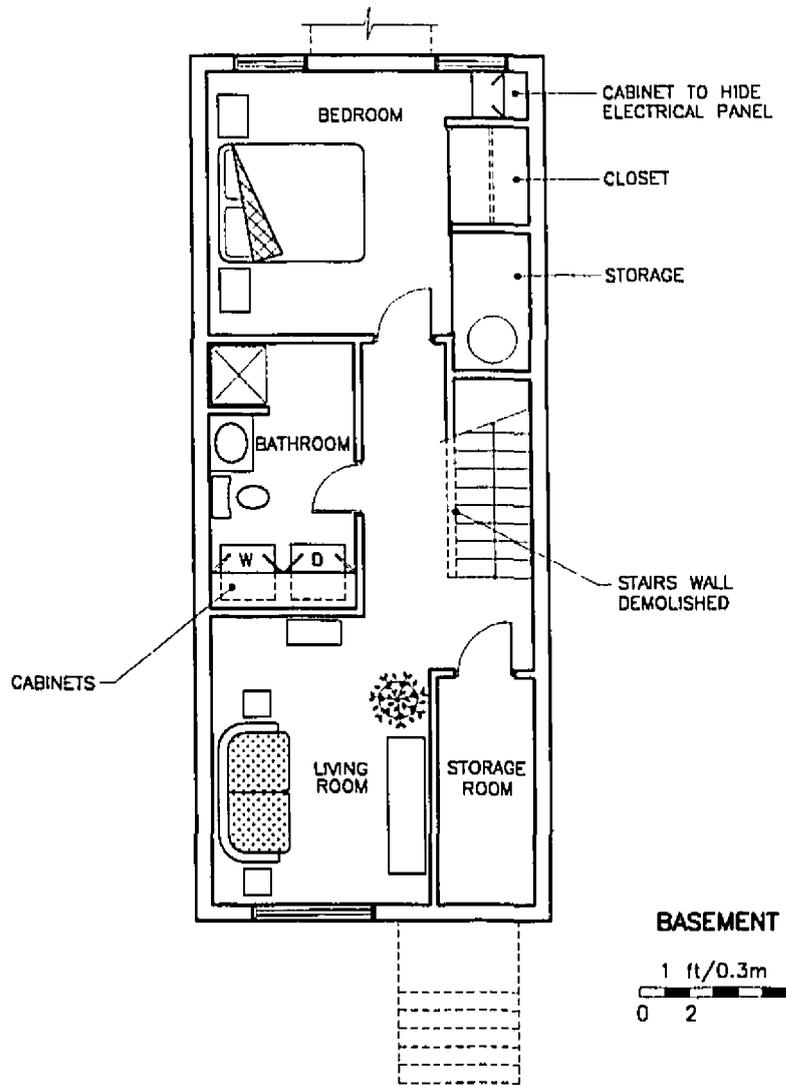


In the basement, the walls were finished by drywalling and painting them. Partitions were erected to create new spaces such as a work place, full bathroom and a family room. The ceiling was completely finished (gypsum boards), and woodwork for the ceiling lighting fixture of the family room was added to improve the appearance of the room. As well, an opening in the stairs wall was made to make the room look attractive. The floor in the family room and hallway was carpeted and insulated with wood, the bathroom floor was tiled, and the work place floor remains in cement. Rough plumbing work was performed to install the shower, toilet and sink in the bathroom. Electrical wiring, lighting fixtures, switches, and outlets were added to provide the new spaces with light. An interior door for the bathroom was also added. In the exterior of the house, a fence, deck, and a storage cabin were built in the backyard, greenery was provided in both yards, and the front yard was paved to park the car.



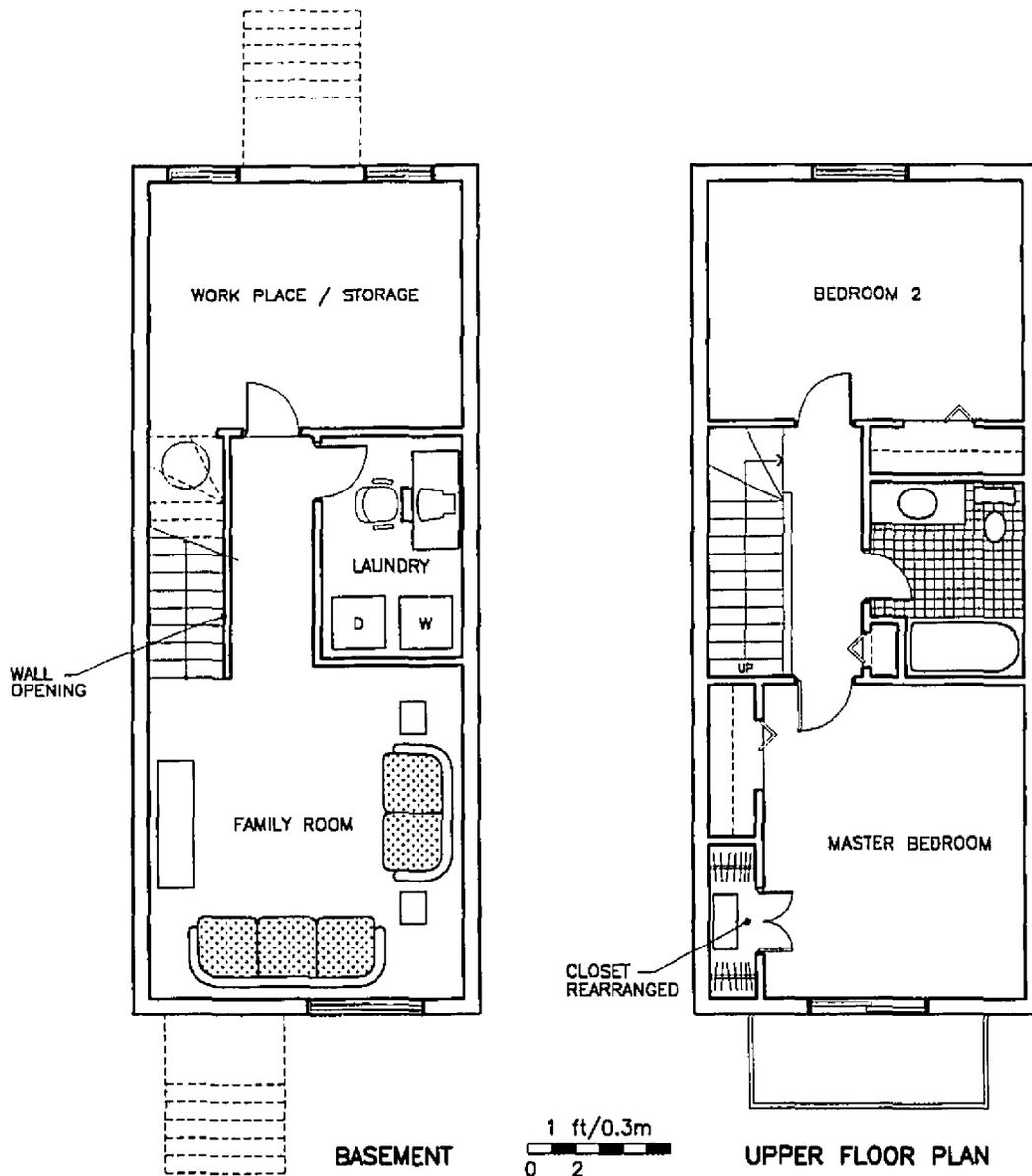
HOUSEHOLD 2

A common-law couple with two young adult children make up this household. The walls in the entrance, living room and dining room were painted and wallpapered. The kitchen was just painted. Woodwork was added to the wall between the kitchen and the dining room. The faucet (sink) in the upper-floor bathroom was replaced in order to provide a better appearance to the room. A storm door was installed in the entrance to obtain more illumination and ventilation. A wood balustrade was erected between living and dining room to make a clearer separation between these two areas. In the basement, partitions were erected to create new spaces such as a bedroom, laundry room, storage, and a family room. Walls in the bedroom were finished (dry walling and painting), and in the rest of the basement, they were in the process of finishing at the time of the interview. In the ceiling, gypsum boards were placed but without painting. The floor in the bedroom was carpeted, and the rest was painted. Residents intend to place wood in the family room and hallway floor, and to tile the laundry in the future. Electrical wiring, lighting fixtures, switches, outlets, and a interior door were added to the new spaces. Shelves were provided in the laundry and storage room, and a closet using sliding doors was built. Residents have placed a desk and computer in the family room, which they use as an office when they bring work home from their jobs. In the exterior, greenery in the front yard was arranged, part of the backyard was paved, and a fence was erected in the back to define property.



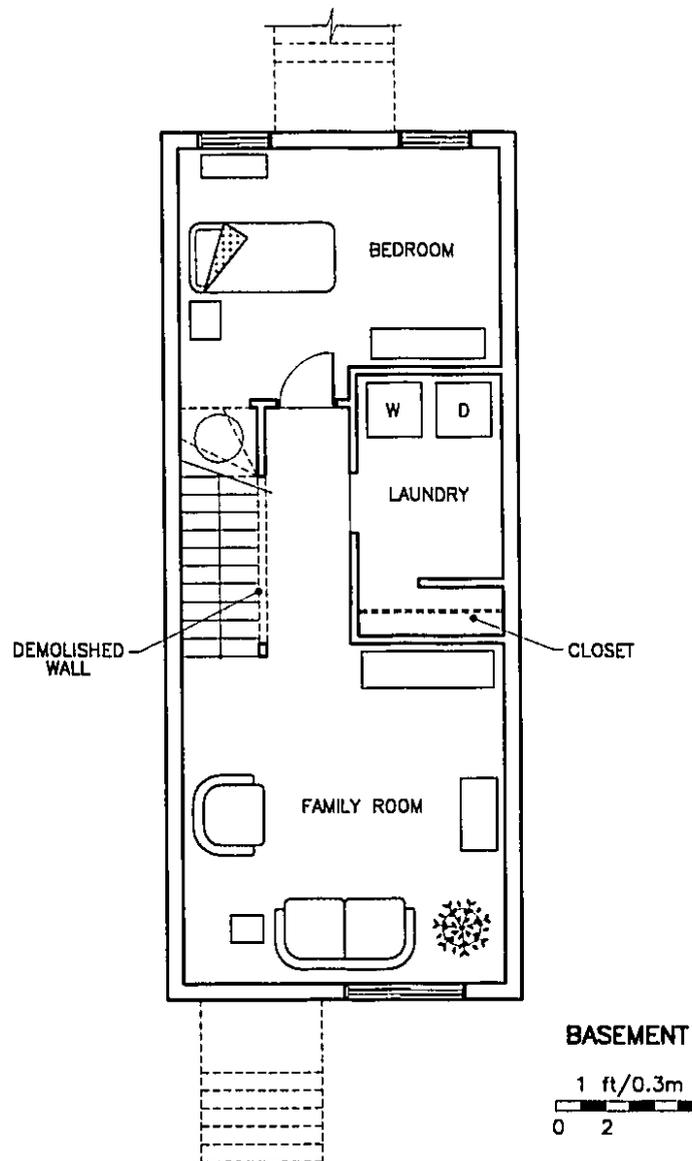
HOUSEHOLD 3

Household 3 consists of a single person living with a tenant. The walls in the living room, dining room, kitchen, upper-floor bathroom, and master bedroom were painted, and in the upper-floor bathroom were also wallpapered. A small wall was erected between the dining room and the living room to make a stronger separation between these two areas. An additional lock was installed in the front door, and wire netting windows were placed in the basement for security purposes. In the basement, the walls were completed by drywalling and painting them, the ceiling was finished (gypsum boards), and partitions were built to create new spaces such as a bedroom, a full bathroom with washer and dryer, storage room, and a living room. These arrangements in the basement were basically performed with the intention of renting it. As well, upgrading the resale value of the house was another motivation in the changes to the basement. The floor was first insulated with wood and then carpeted. The stairs were also carpeted. The stairs wall was demolished to make the room look more spacious. Electrical wiring, lighting fixtures, switches and outlets were added to supply the new spaces with light. Rough plumbing work was undertaken to install the shower, toilet and sink in the bathroom. A closet and storage place with sliding doors were built in the bedroom, and cabinets in the bathroom and bedroom were also added. Interior doors were provided for the new spaces. Greenery arrangements were made in both yards, and a storage cabin was built.



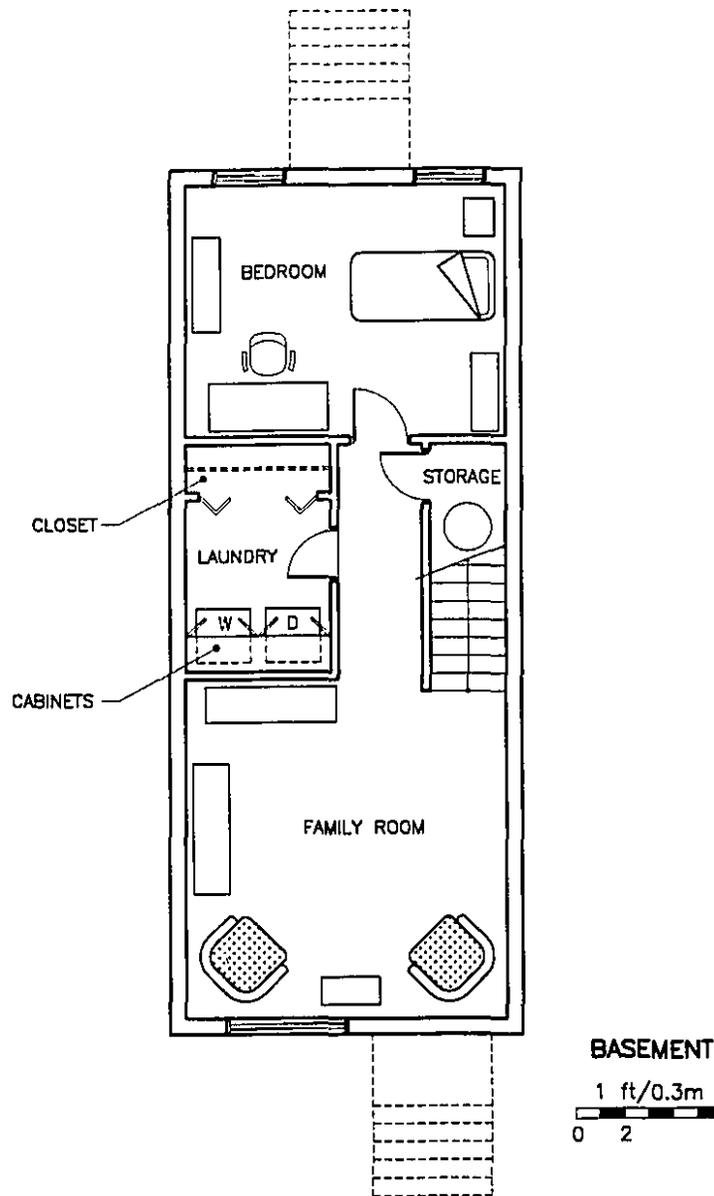
HOUSEHOLD 4

This household is comprised of a married couple with a baby. In the living room, dining room, kitchen, ground-floor bathroom and second bedroom, the walls were painted. Woodwork was added in the wall between the kitchen and dining room, and also in the small wall in the entrance in order to hold plants to make the house more attractive. The arrangement of the closet in the master bedroom was modified to make it fit the residents' needs. In the basement, the walls were refined by drywalling and painting them. Partitions were erected to make new spaces such as work place/storage, laundry (where residents placed a desk with a computer and used it as an office as well), and a family room. The ceiling was finished using gypsum boards. An opening in the stairs wall was made to obtain extra light and to upgrade the appearance of the area. The family room and the hallway were carpeted, and the rest remains in cement, which residents plan to paint in the future. Electrical wiring, lighting fixtures, switches and outlets were added to provide light to these new spaces. Interior doors were supplied to respond to these new spaces, and wire netting windows were placed for security. With regard to landscaping work, greenery was provided in the yards, and a fence and storage cabin were built in the backyard.



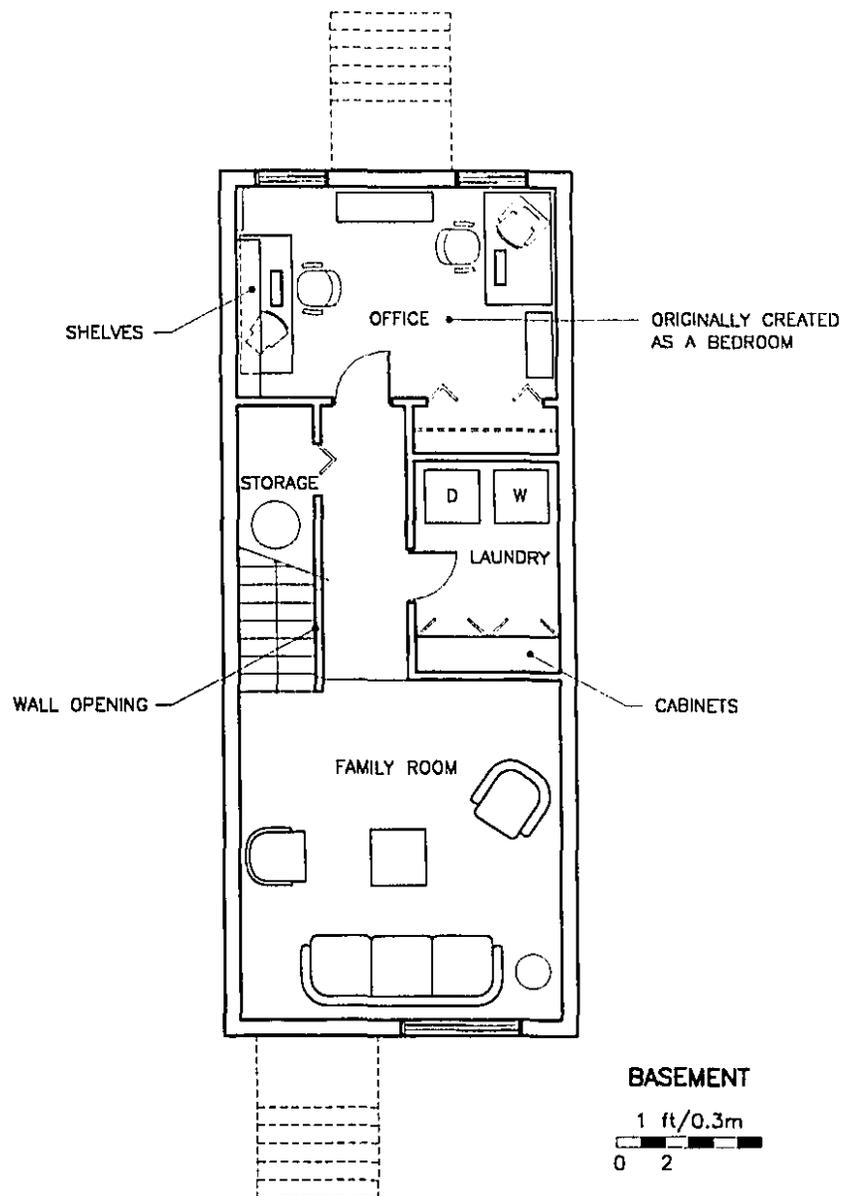
HOUSEHOLD 5

A married couple with two little children constitute this household. All the rooms of the house were painted and the bedrooms were also wallpapered. An opening was made in the stairs wall in the dining room, and a wood handrail was placed in this opening. The existing carpet in the living room was replaced with wooden tiles and varnished. Electrical wiring and a lighting fixture were added in the master bedroom. A storm door was placed in the entrance, and the door leading to the basement was removed and reused in the basement. In the basement, the walls were completed by drywalling and painting them, the ceiling was also finished (gypsum boards), and partitions were built to create a family room, bedroom and laundry room. The wall in the stairs was completely demolished to make the area appear more spacious. The stairs were painted. The family room floor was carpeted, the laundry floor was refined with linoleum, and the bedroom floor remains in cement, but residents intend to carpet it in the future. Electrical wiring, lighting fixtures, switches and outlets were added to supply light to the new spaces. Rough plumbing work was performed since the original plumbing connection for the laundry was rearranged. In the exterior of the house, a deck, pergola and a storage cabin were built, and greenery was provided in both yards as well.



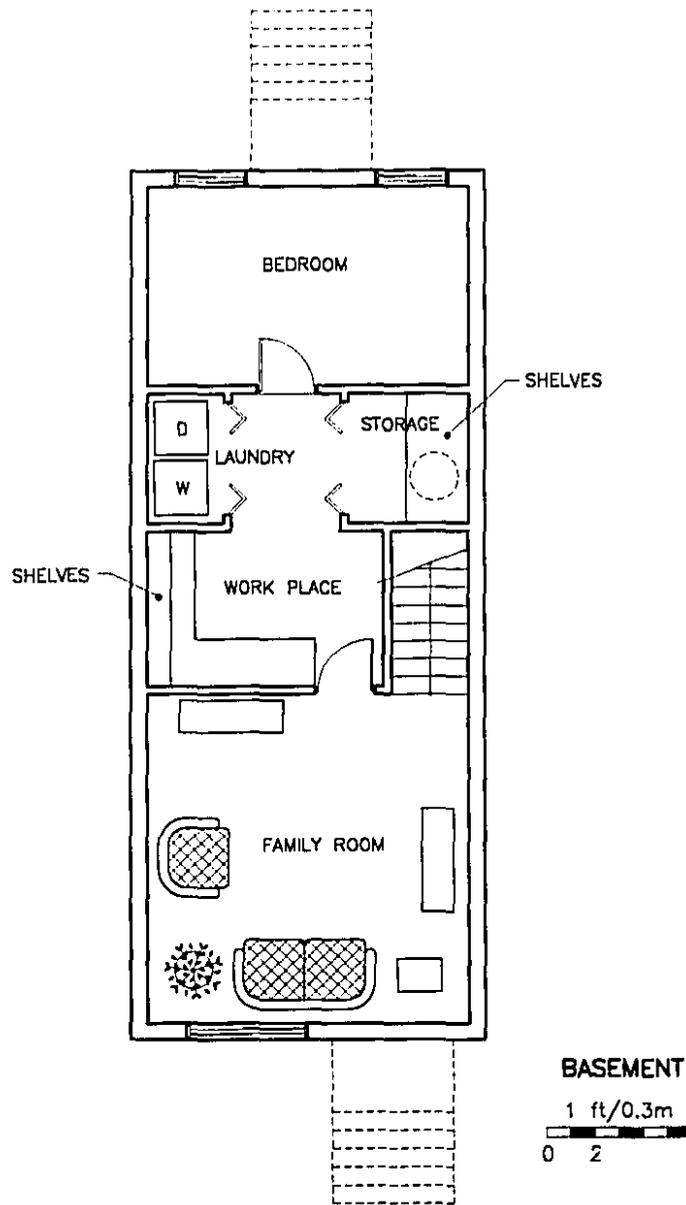
HOUSEHOLD 6

This household consists of a married couple with two young adult children. The walls in the entrance, living room, dining room, kitchen, ground-floor bathroom, second bedroom, and the stairs area were painted. The dining room, kitchen and ground-floor bathroom were also wallpapered. Lighting fixtures in the dining room and master bedroom were replaced, and a lighting fixture was added in the stairs area leading to the basement in order to gain additional lighting. The lock of the front door was changed, and wire netting windows were added in the basement for security reasons. In the basement, drywalling and painting work was undertaken to finish the walls and ceiling. Partitions were erected to create new spaces such as family room, bedroom, laundry and storage room (under the stairs). The floor in the laundry room was left in cement, but the rest was carpeted. Cabinets and a closet with folding doors were made in the laundry room. Electrical wiring, lighting fixtures, switches and outlets were added to respond to the new spaces. Outside of the house, greenery was arranged in the yards, a fence and a storage cabin were built in the back, and the front yard was paved for parking purposes.



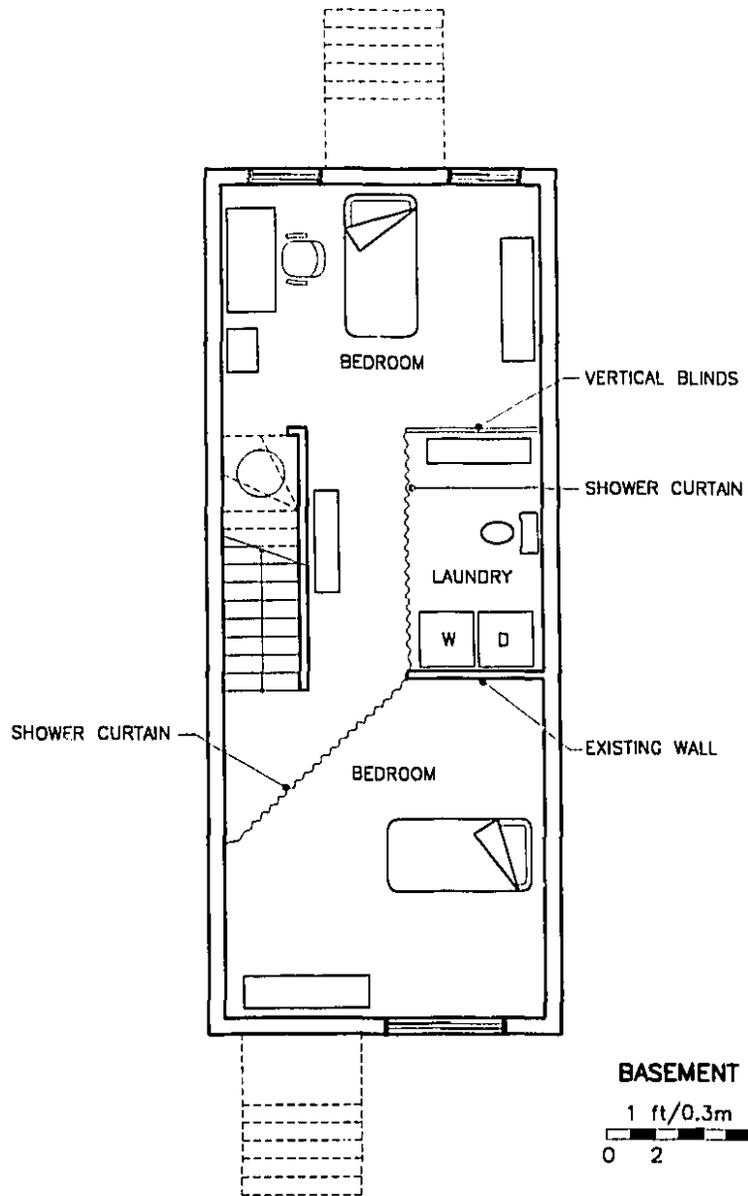
HOUSEHOLD 7

Household 7 is comprised of a common-law couple without children. The entrance, dining room, living room, kitchen, ground-floor bathroom, and stairs area were painted, and the ground-floor bathroom was also wallpapered. The counter table provided in the kitchen will be removed because residents felt that it decreased free space in the room. The door of the ground-floor bathroom and the door leading to the basement were replaced and reused in the basement. In the basement, the walls were completed by drywalling and painting them. The ceiling was refined using gypsum boards, and partitions were built to create a family room, office, laundry room, and storage (under the stairs). The office was originally created to be a bedroom (with a closet with folding doors), but finally was used as an office where some shelves were added. As well, cabinets were provided in the laundry room. An opening was made in the stairs wall to gain more lighting. The family room floor was carpeted, but it was first insulated with wood. The rest of the basement floor was finished with linoleum. The stairs were painted and wire netting windows were placed for security purposes. In order to provide the new spaces with light, electrical wiring, lighting fixtures, switches and outlets were supplied. In the outdoor spaces, a fence and a storage cabin were built in the back, and greenery was provided in both yards.



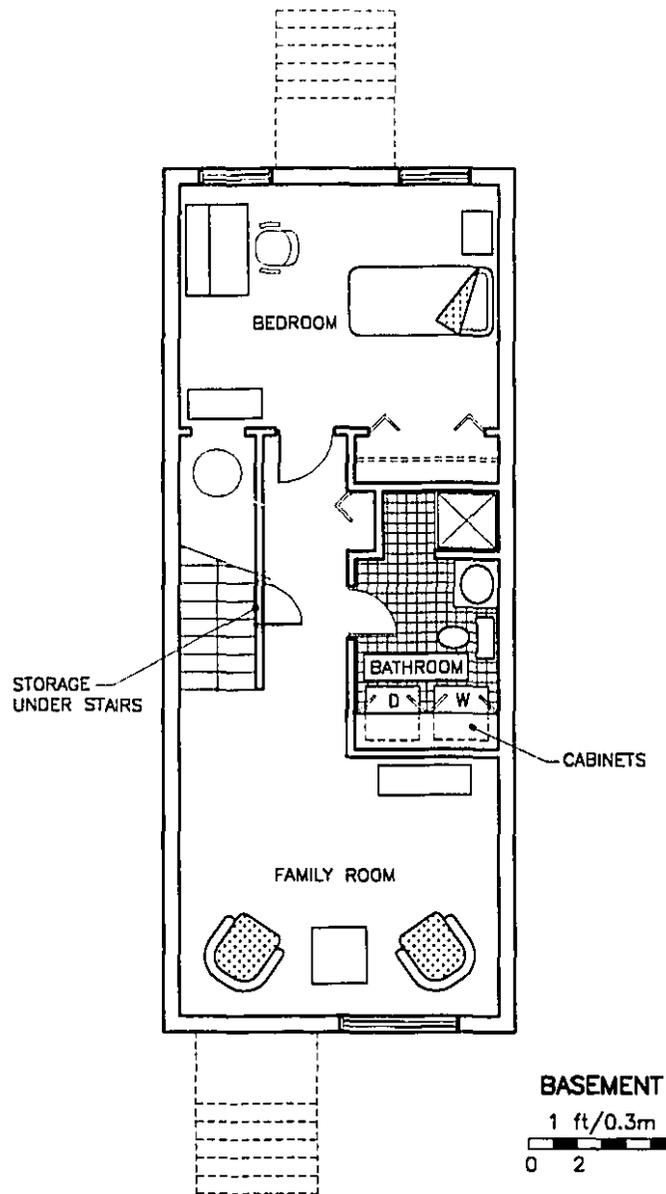
HOUSEHOLD 8

This household consists of a common-law couple with a baby. The walls in the entrance, living room, dining room, bedrooms, and stairs area were painted, and the walls in the living and dining room were also wallpapered. The walls in the upper-floor bathroom were mirrored (around the bathtub area) to upgrade the appearance of the room. For security reasons the lock of the front door was changed, and wire netting windows were installed in the basement. In the basement, the walls were finished by drywalling and painting them. Partitions were erected to make new spaces such as a bedroom, laundry space, storage, family room and a work place. The ceiling was finished only in the family room and bedroom. The floor was finished in wood, excluding the bedroom in which linoleum was applied. The stairs were painted. Interior and folding doors were provided in these new spaces. Electrical wiring, lighting fixtures, switches, and outlets were added to supply the new spaces with light. Rough plumbing work was performed to relocate the plumbing connection of the laundry. Some shelves were made in the storage room and work place to make the room more practical. In the exterior, a fence and a storage cabin were added, and greenery was arranged in both yards.



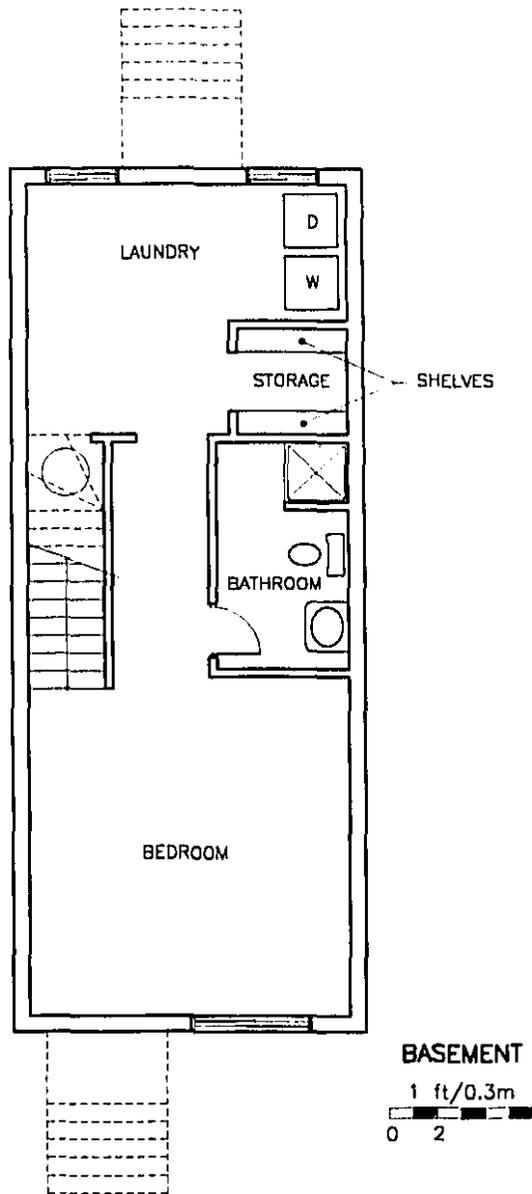
HOUSEHOLD 9

A married couple with a young adult son make up household 9. All the walls in the house were painted (excluding the basement), and the dining room, kitchen and master bedroom were also wallpapered. As well, in the master bedroom mirrors were added to one of the walls to make the room look different, and shelves in the closet were rearranged. The wall in the hallway in the upper floor was demolished and replaced with a wooden handrail in order to make the area appear more spacious, illuminated and more attractive. Although the residents have not finished the walls, floor or ceiling in the basement, they managed to provide three temporary spaces which were used as two bedrooms and a laundry. A toilet was installed in the laundry space which is separated from the other spaces by a vertical blind and shower curtain. It can be observed that although these residents could not finish the basement, they arranged it according to their resources and managed to satisfy their immediate requirements. Greenery in the yards and a storage cabin were provided in the exterior of the house.



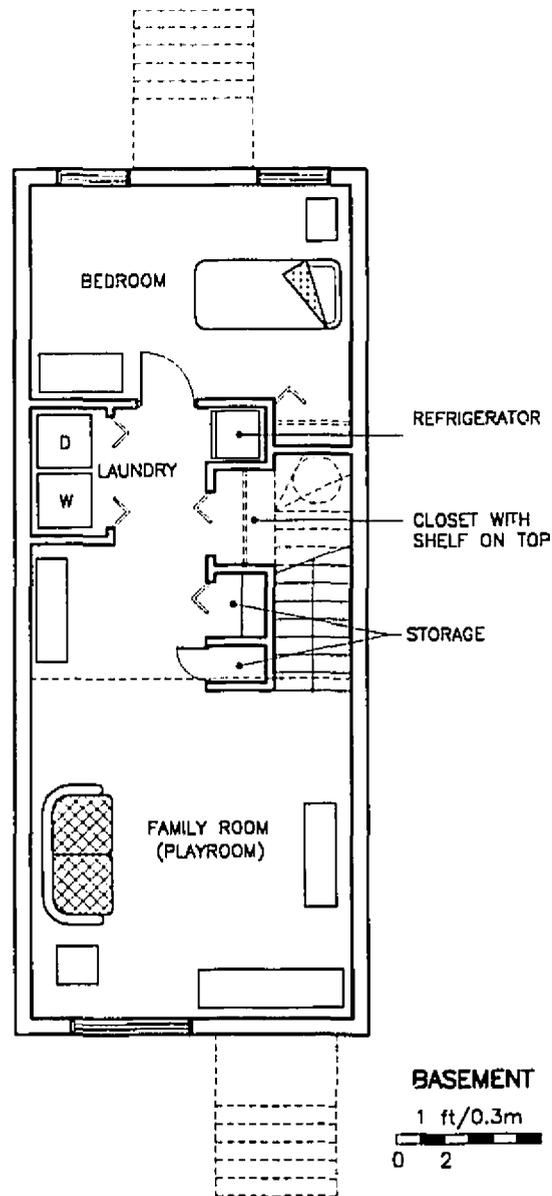
HOUSEHOLD 10

This household consists of a married couple with two young adult children. All the modifications performed in the house have been in the basement. The walls were finished by drywalling and painting them. As well, the ceiling was completed (gypsum boards), and partitions were built to create a family room, bedroom, storage (under the stairs), and a full bathroom where residents placed the washer and dryer, and installed some cabinets. A closet was built in the bedroom. Rough plumbing work was undertaken to install the shower, toilet and sink. Electrical wiring, lighting fixtures, switches and outlets were also added to respond to these new spaces. Interior doors and some shelves were also provided. The bathroom floor was tiled and the rest was covered with plywood boards, and residents expressed their intention to carpet it in the future. In the exterior of the house, greenery was provided to the front and back yards and a fence was erected in the back.



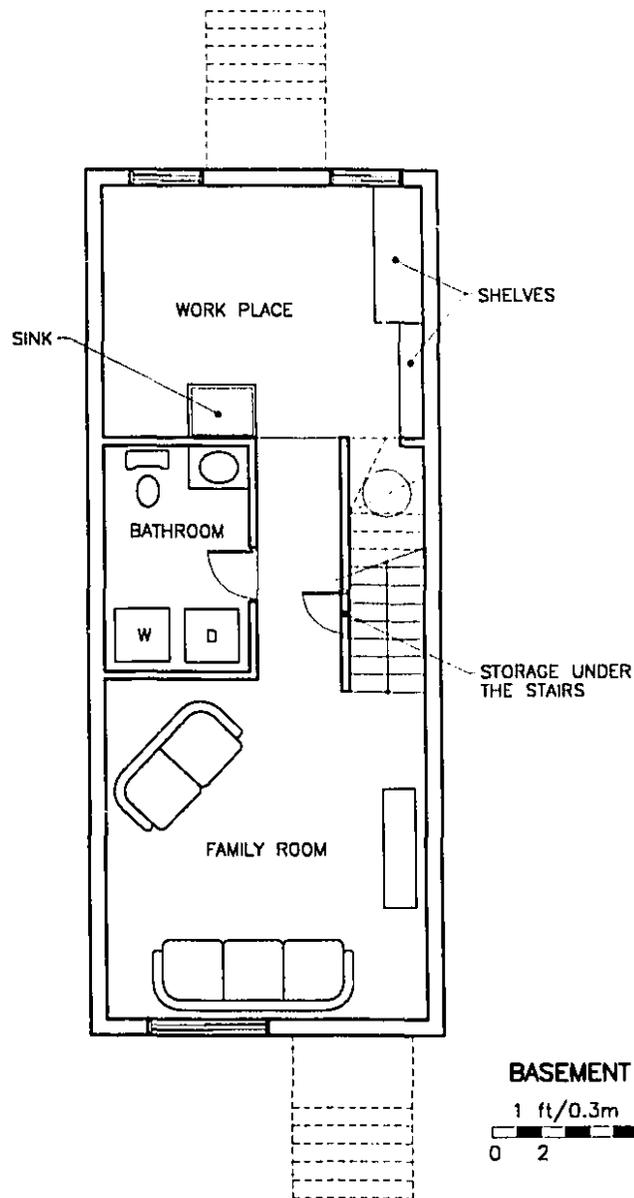
HOUSEHOLD 11

Household 11 is composed of a single parent with an adult son. The walls in the entire house were painted, and woodwork was applied in the entrance, living room and kitchen. In the ground-floor bathroom a cabinet was added. In the basement, drywalling and painting work was undertaken to finish the walls. The ceiling was completed with gypsum boards, and partitions were erected to make new spaces such as a laundry room, storage with shelves, full bathroom and bedroom. Electrical wiring, lighting fixtures, switches and outlets were added to respond to these new spaces. As well, rough plumbing work was done to relocate the plumbing connection for the washer and dryer and to install a shower, toilet and sink. The floor in the basement was painted, but residents plan to carpet it in the future. An interior door for the bathroom was provided and wire netting windows were placed for security reasons. In the front and back yards, greenery was arranged, and a fence and storage cabin were built in the backyard.



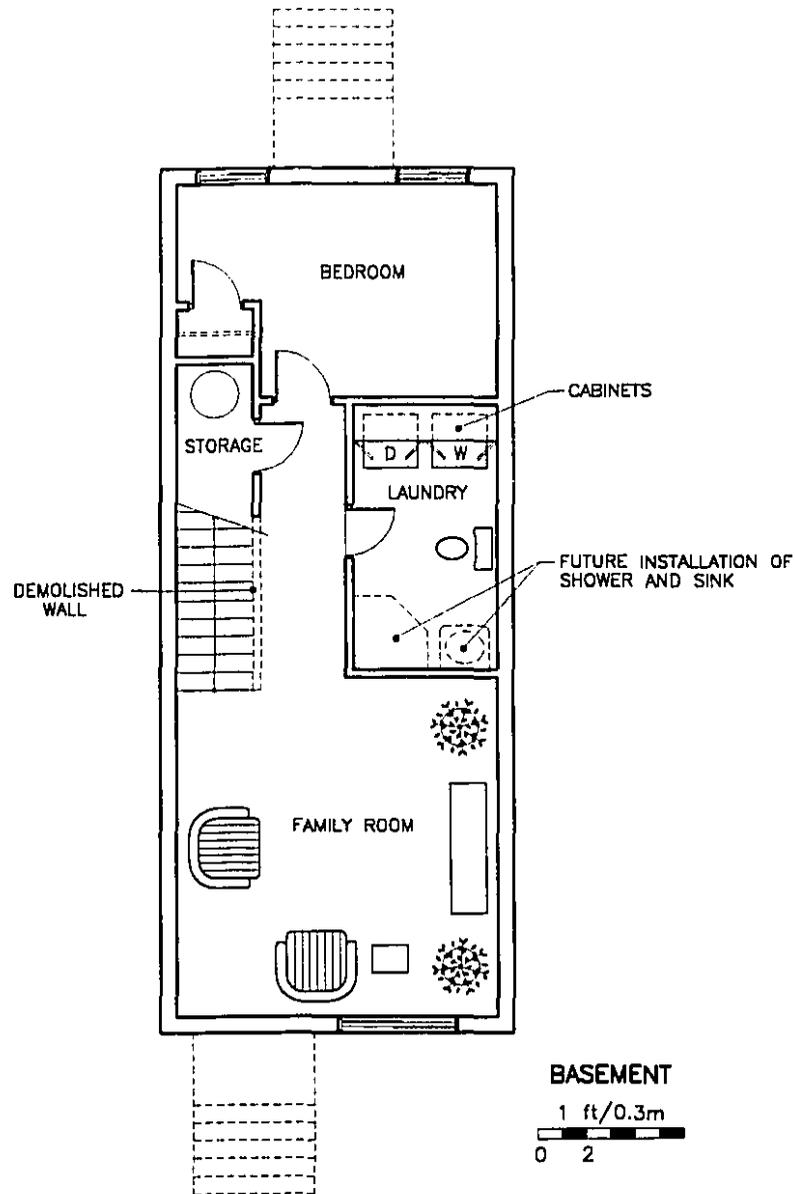
HOUSEHOLD 12

This family is composed of a married couple with two little children. The walls in the second bedroom were painted and wallpapered. The stairs were painted and the linoleum of the kitchen floor was replaced to improve the appearance of the room. The lighting fixture of the living room and the lock of the front door were changed. As well, the door leading to the basement was replaced. In the basement, the walls were finished by drywalling and painting them. The ceiling was completed (gypsum boards) and partitions were built to create a family room (which residents also used as a playroom), bedroom, laundry and storage spaces. To respond to the new spaces, electrical wiring, lighting fixtures, switches, outlets, interior doors and folding doors were provided. Closets and shelves were also added. As well, rough plumbing work was performed to relocate the plumbing connection for the washer and dryer. The floor in the basement was completely carpeted. In the exterior of the house, a fence in the back was erected, and part of the backyard was paved.



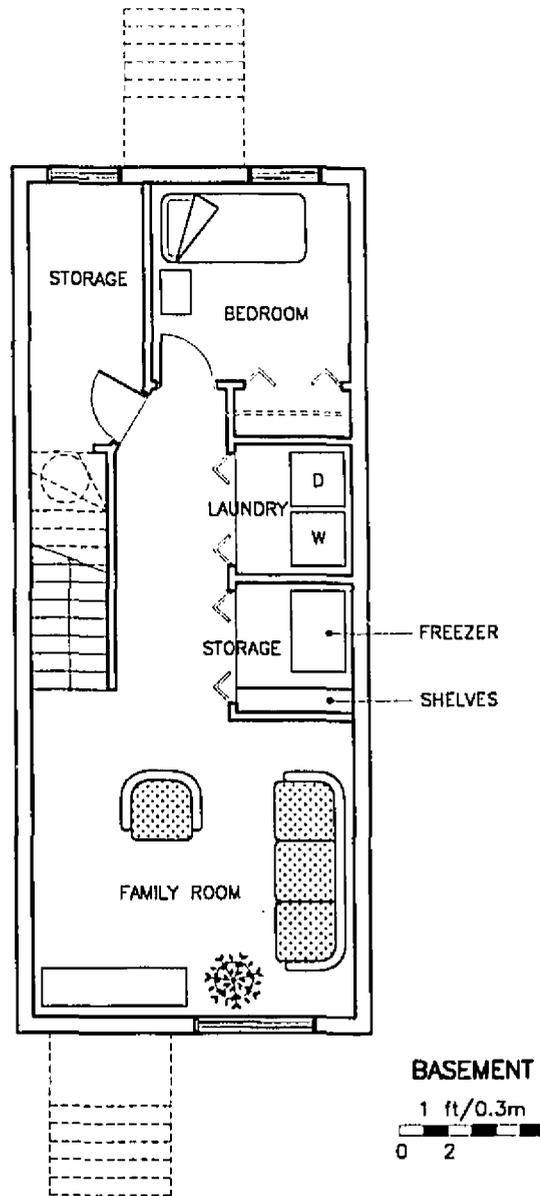
HOUSEHOLD 13

This household is made up of a childless married couple. The walls of the whole house were painted in order to upgrade the appearance of the house and to make the spaces look different. The bathtub in the upper-floor bathroom was replaced since the residents wanted to make the room look more attractive. In the basement, the walls were refined by drywalling and painting them. The ceiling was a suspended ceiling. Partitions were erected to make new spaces such as a bathroom with washer and dryer, storage (under the stairs), family room and work place. In the work place, a sink was installed, several shelves were made and the floor was painted. As well, linoleum was used for the bathroom floor, and the rest of the area was carpeted. Rough plumbing work was performed to install the toilet and the sink in the bathroom and in the work place. Electrical wiring, lighting fixtures, switches and outlets were added to provide light to these new spaces. Interior doors were provided to respond to these new spaces and wire netting windows were placed for security reasons. In the exterior, greenery was provided in both yards, a fence and storage cabin were built in the back.



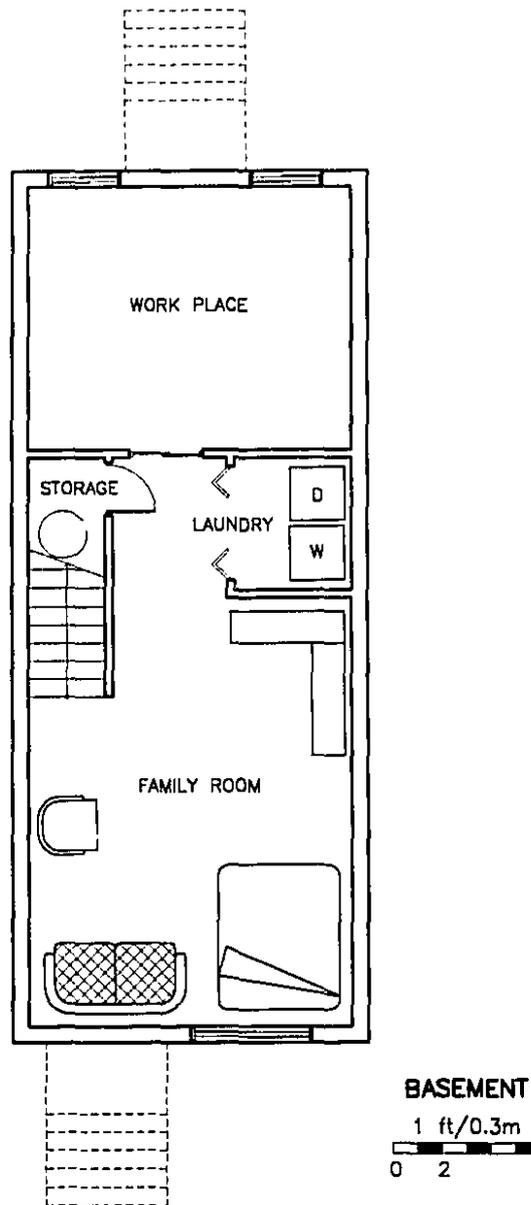
HOUSEHOLD 14

A common-law couple with a little child constitute household 14. All the walls in the house were painted, and the second bedroom was also wallpapered. In the basement, the owners drywalled and painted the walls in order to finish them. The ceiling was completed (gypsum boards), except for the laundry which was in the process of finishing at the time of the interview. Partitions were built to create a bedroom with a closet, storage (under the stairs), family room, and a laundry. In the laundry, residents installed a toilet and built some cabinets, and intend to install a shower and sink to make it a full bathroom in the future. The stairs wall was completely removed to make the room look more spacious. The floor of the basement and the stairs were painted, with the exception of the laundry room floor in which linoleum was applied. Rough plumbing work was done in order to install the toilet and to provide the installation for the future shower and sink. Electrical wiring, lighting fixtures, switches, outlets, as well as an interior door were added to respond to these new spaces. Greenery was provided in the front yard, a fence and a storage cabin were built in the backyard, and the front yard was paved to park the car.



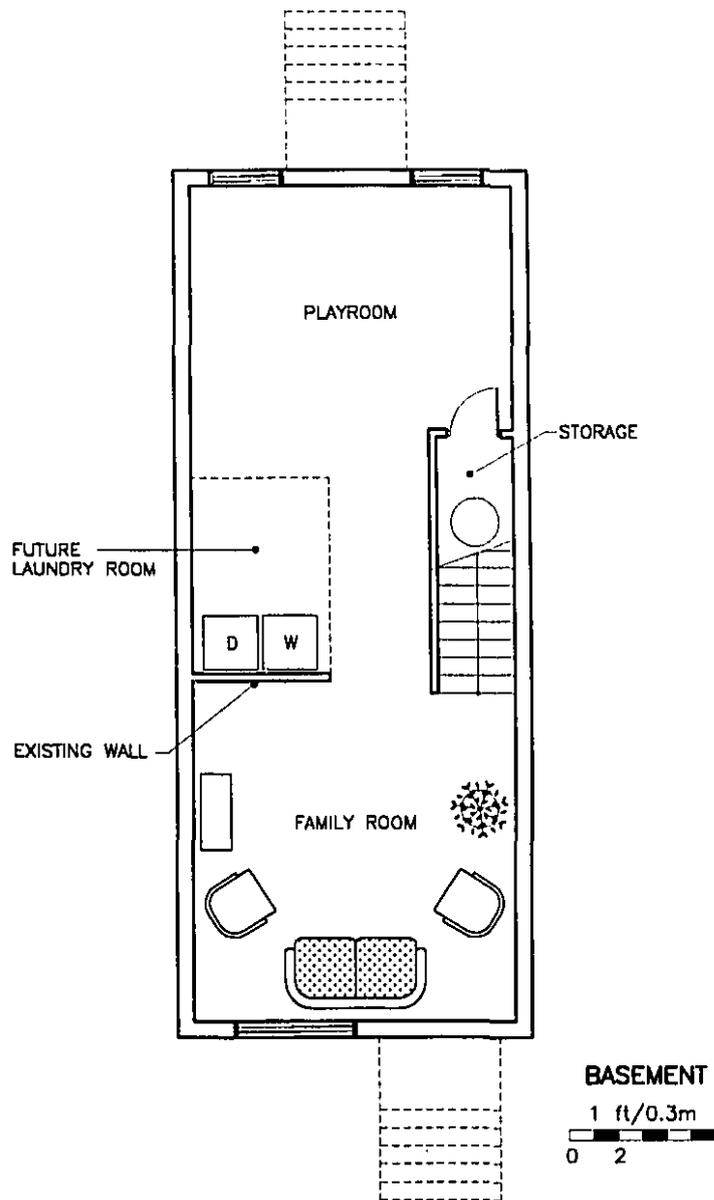
HOUSEHOLD 15

This household consists of a married couple with two little children. The walls in the entire house were painted in order to upgrade the appearance and the resale value of the house. The door leading to the basement was removed and reused in the basement. In the basement, the walls were refined by drywalling and painting them, the ceiling was finished with gypsum boards, and partitions were added to form new spaces such as two storage rooms, a bedroom with a closet, laundry space and family room. The floor was carpeted and insulated with wood, excluding the storage rooms and laundry space which remain in cement. Rough plumbing work was performed to rearrange the plumbing connection of the laundry. Electrical wiring, lighting fixtures, switches and outlets were added to supply light to these new spaces. Interior and folding doors were used to respond to these new spaces. Outside, greenery was provided in the front and back yards.



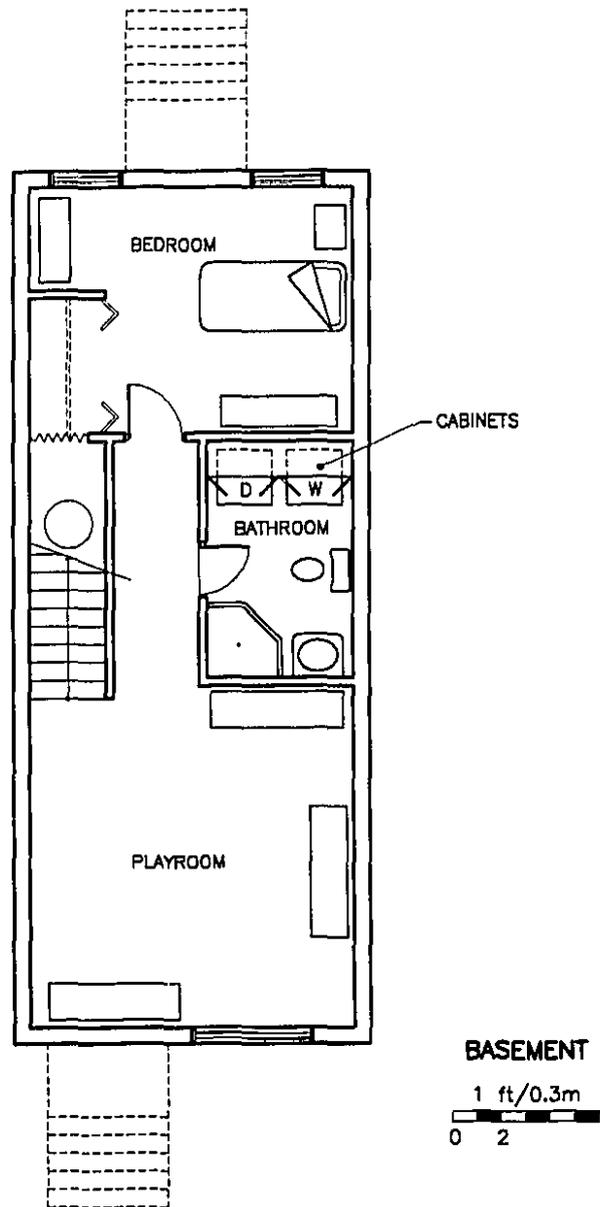
HOUSEHOLD 16

Household 16 is comprised of a common-law couple without children. The walls in the entrance, living room, dining room, kitchen and ground-floor bathroom were painted. The walls in the dining room, living room and ground-floor bathroom were also wallpapered. Woodwork was installed in the wall between the kitchen and dining room. In the basement, the walls were finished by drywalling and painting them. The ceiling was unfinished, but the owners were finishing it at the time of the interview. Partitions were erected to create a work place, laundry space, storage (under the stairs) and a family room which was also used as a guest room. The floor was covered with plywood boards, which the residents intend to carpet in the future. The stairs were painted. Rough plumbing work was undertaken since the plumbing connection for the laundry was relocated. Electrical wiring, lighting fixtures, switches and outlets were added to provide light to these new spaces. Interior, sliding and folding doors were used to respond to these new spaces. In the exterior of the house, greenery was provided in the yards, and a fence and a storage cabin were built in the backyard.

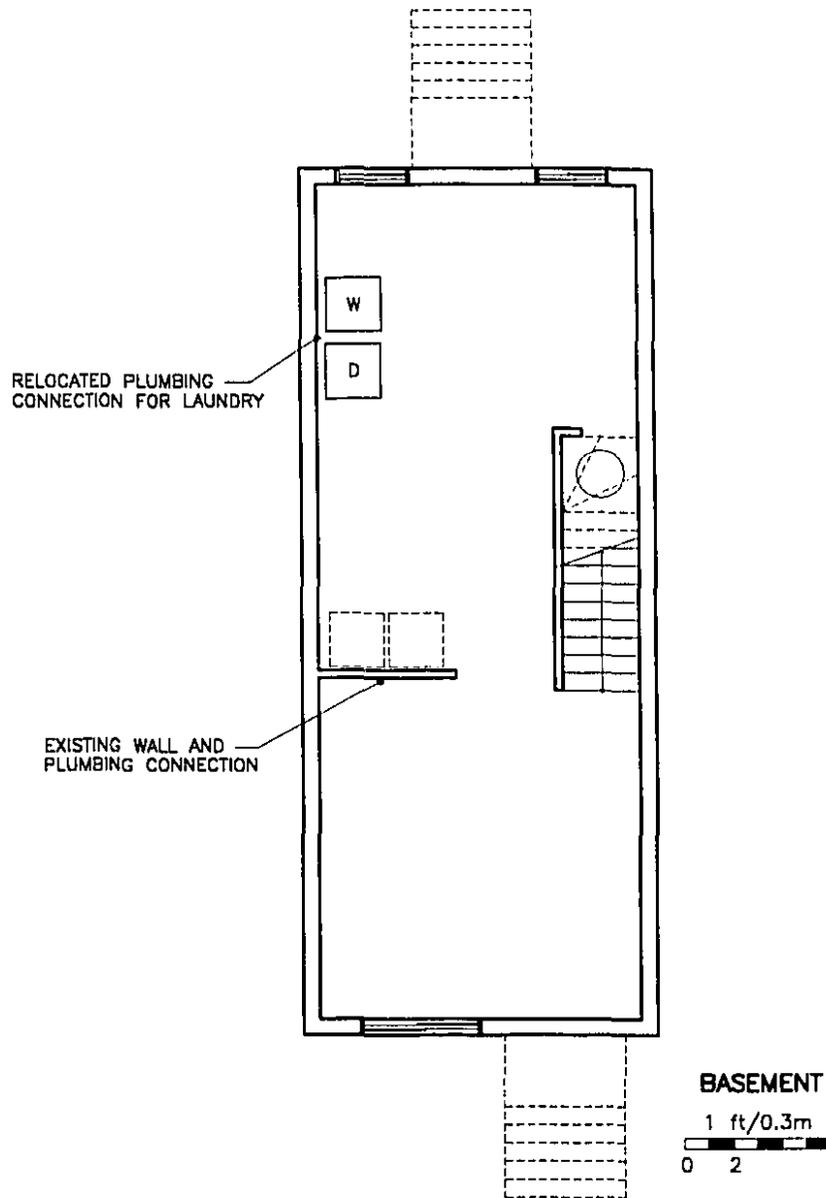


HOUSEHOLD 17

This household is made up of a married couple with two little children. The kitchen was painted and the living room, dining room, bathrooms and bedrooms were wallpapered. Woodwork was applied in the upper-floor bathroom to make a separation between the two different wallpapers used on the walls, and a cabinet was added in the ground-floor bathroom. In the basement, the walls were finished by drywalling and painting them, the ceiling was finished (gypsum boards), the floor and stairs were painted. Residents created new spaces such as family room, playroom and storage room (under the stairs). They plan to close the area of the washer and dryer in order to make a laundry room, and carpet the family and play room in the future. Outside of the house, greenery was arranged in the front and back yards, and the front yard was paved in order to park the car.

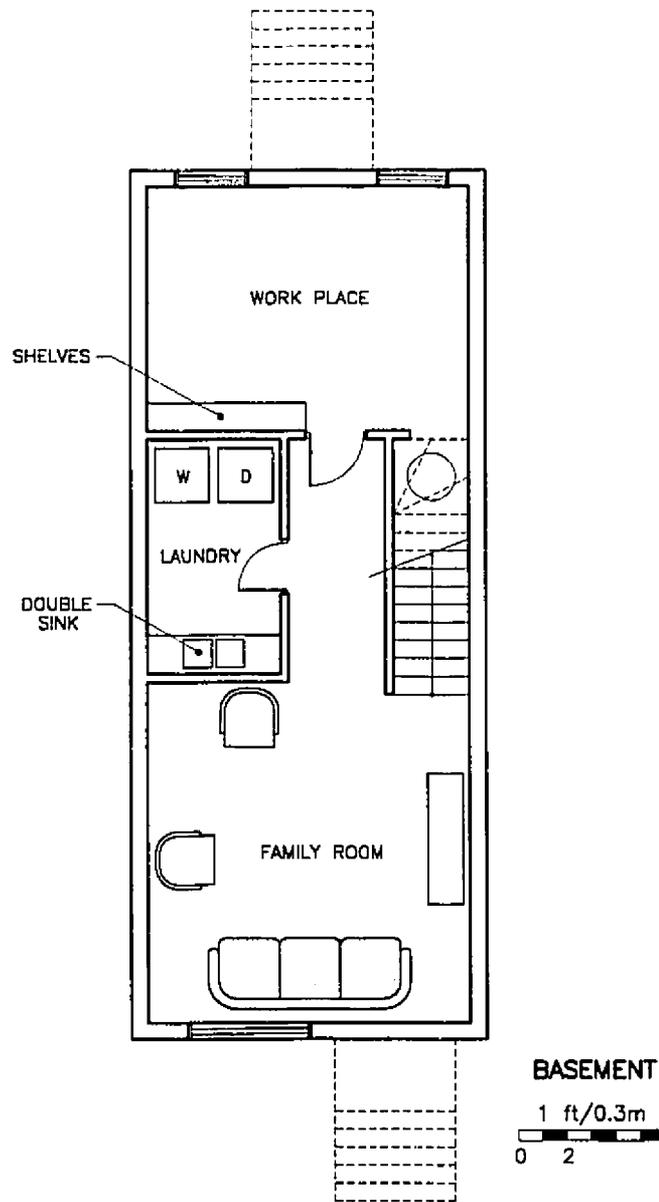


A married couple with two little children comprise this household. The walls in the living room, dining room, ground-floor bathroom and second bedroom were painted. The lighting fixture in the second bedroom was changed to obtain better illumination and to upgrade the appearance of the room. Rough plumbing work was performed in the kitchen to install a dishwasher. In the upper-floor bathroom a door was installed in the bathtub, and a cabinet was added. In the basement, drywalling and painting work was undertaken in order to refine the walls. The ceiling was finished (suspended), and partitions were built to make a bedroom with a closet, a full bathroom with washer, dryer and cabinets, and a playroom. The floor in the bathroom was in linoleum, and the rest was just painted. In order to install a shower, toilet, and sink in the bathroom, rough plumbing work was done. Electrical wiring, lighting fixtures, switches and outlets were added to supply light to these new spaces. Interior doors were used for new spaces and wire netting windows were placed for security. A fence, deck and storage cabin were built in the backyard and part of the backyard was paved.



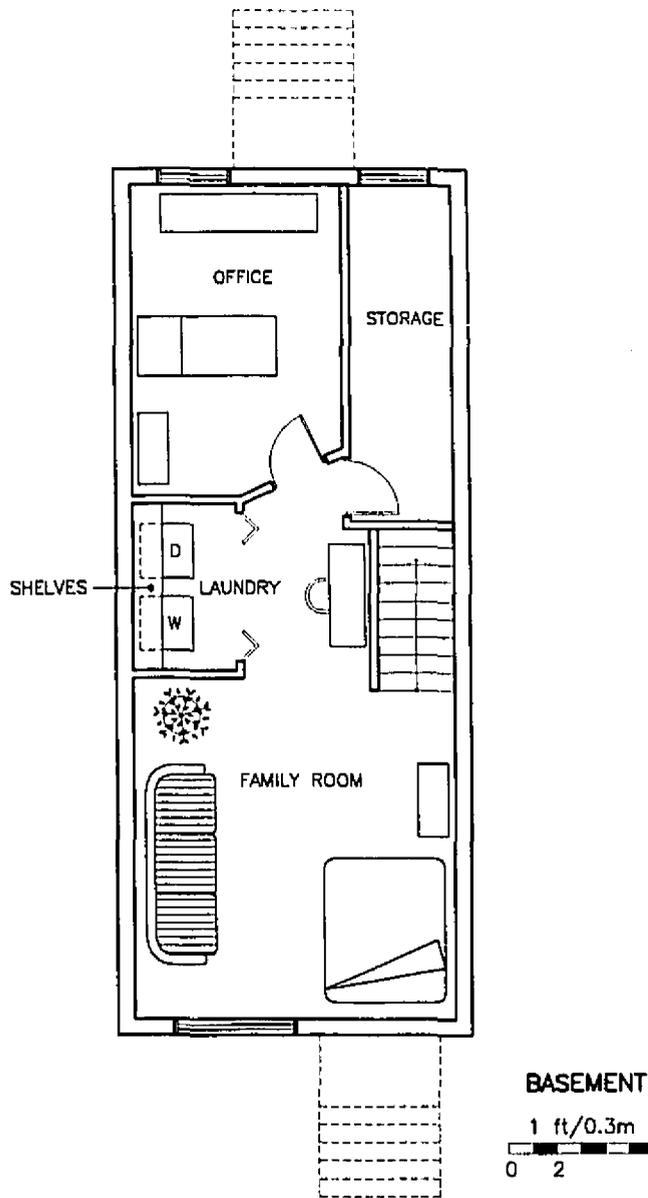
HOUSEHOLD 19

This household consists of a common-law couple with a baby. The walls in the entrance, living room, dining room, kitchen, bedroom and stairs area were painted. The dining room and bedrooms were also wallpapered. The living room was carpeted and the rest was varnished. A window in the stairs area was added in order to obtain extra light and ventilation. Lighting fixtures were changed in the living room and kitchen to upgrade the appearance of the room and to obtain better illumination. In the basement, the walls were finished by drywalling and painting them. The ceiling was unfinished, and no partitions have been erected to create new spaces yet, but the residents intend to create a family room, storage room, bathroom and laundry room in the future. The floor remains in cement. Rough plumbing work was performed to relocate the plumbing connection for the laundry, and to install the plumbing fixtures (shower, toilet and sink) in the future bathroom. In the exterior, a fence all around the house was built (the house is situated on a corner), greenery was provided in both yards, a deck and storage cabin were built, and part of the backyard was paved.



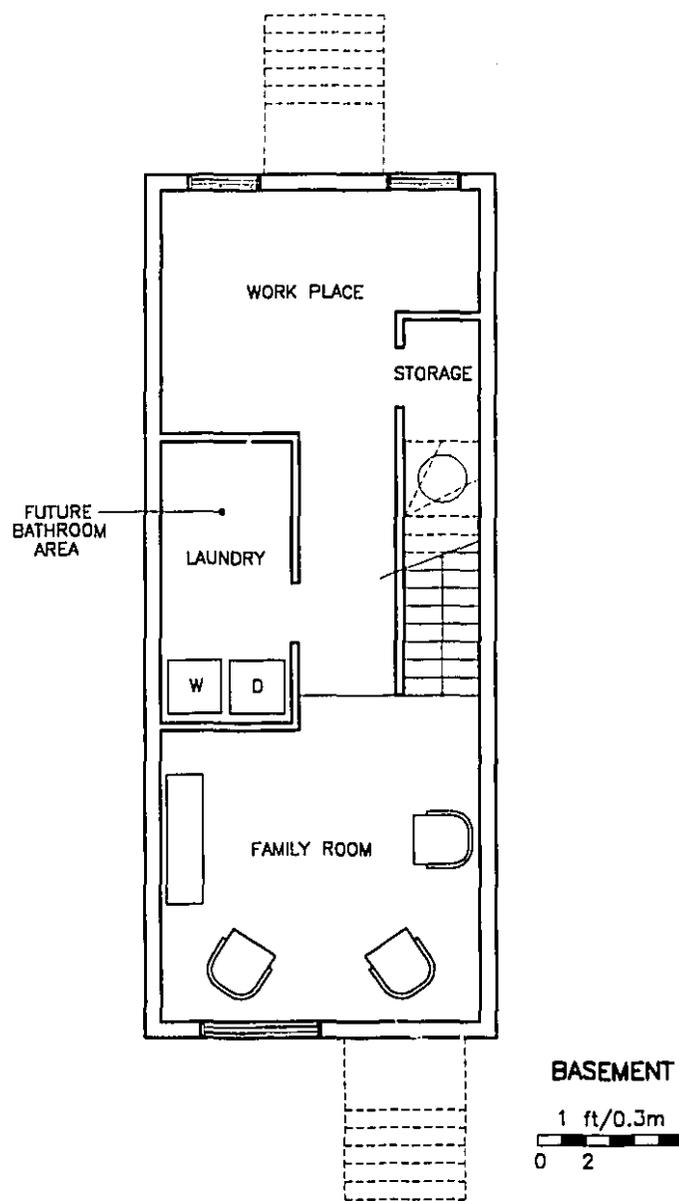
HOUSEHOLD 20

This household is comprised of a married couple with a young adult son. The walls in the entire house were painted, and the walls in the living room, dining room and master bedroom were also wallpapered. In the basement, the walls were finished by drywalling and painting them, the ceiling was finished with gypsum boards, and partitions were built to create new spaces such as laundry room, family room and work place with some shelves. In the laundry a double sink was installed which required rough plumbing work. The floor was painted, but the residents expressed their intention to carpet the family room and to tile the laundry in the future. Electrical wiring and electrical fixtures were added to the new spaces, as well as interior doors. Wire netting windows were installed for security. With regard to landscaping work, greenery was provided in both yards, and a fence in the backyard was erected.



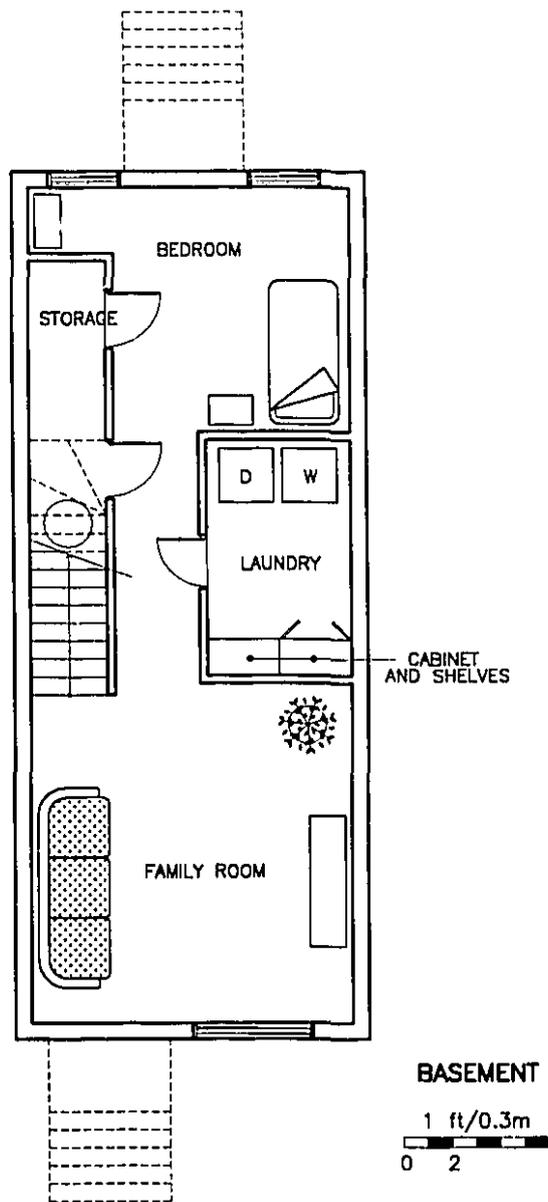
HOUSEHOLD 21

This family is made up of a married couple with a baby. All the walls of the house were painted, and the walls of the second bedroom and upper-floor bathroom were also wallpapered to upgrade the room for the baby and to upgrade the resale value of the house. As well, the lock of the front door and the faucet in the kitchen were changed. In the basement, in order to finish the walls drywalling and painting work was performed. The ceiling was a suspended ceiling. The floor was painted, and partitions were erected to make an office, storage room, laundry with shelves, and family room which is also used as a guest room. The stairs were painted, and electrical wiring, lighting fixtures, switches and outlets were added to provide light to the new spaces. Interior and folding doors for these spaces were also provided. In the exterior, a deck and a fence were built in the back yard, and part of the front yard was paved.



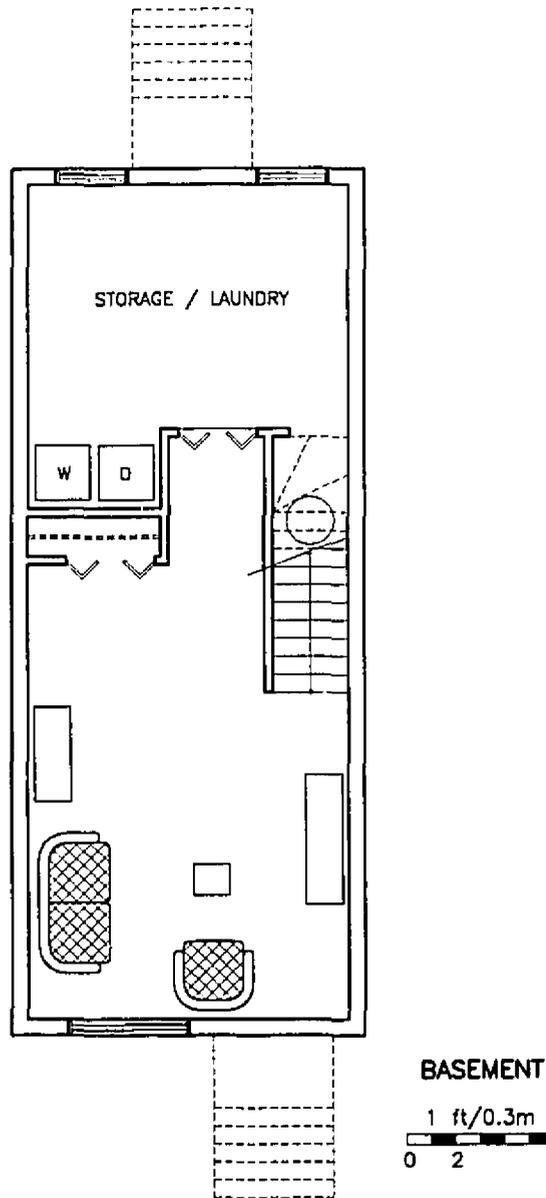
HOUSEHOLD 22

Household 22 is composed of a common-law couple with a baby. The walls of the entire house were painted, and the second room was also wallpapered for the baby. Woodwork was added in the master bedroom to make the room look more attractive. The living room was carpeted. In the basement, the walls were finished by drywalling and painting them. The ceiling was finished with gypsum boards, and partitions were built to create new spaces such as a family room, laundry, storage and work place. In the laundry, owners plan to make a bathroom in the future. The family room floor is in wood and the rest was left in cement, but they intend to finish it in the future. The stairs were painted. To respond to the new spaces, electrical wiring, lighting fixtures, switches, and outlets were provided. Greenery was arranged in both yards. The existing pavement in the back for parking and the fence were made by the former owner.



HOUSEHOLD 23

A common-law couple with a baby constitute this household. The walls in the entrance, dining room, kitchen, bathrooms and second bedroom were painted in order to upgrade the appearance of the house and make the room look different. In the basement, the walls were finished by drywalling and painting them, the ceiling was finished (suspended) and partitions were erected to create a family room, laundry room, bedroom and storage room under the stairs and in the bedroom. Part of the storage room in the bedroom will be converted to a closet in the future. Electrical wiring, lighting fixtures, switches and outlets were added to supply light to the new spaces. Interior doors for the new spaces were also provided. The floor in the family room, bedroom and stairs were carpeted. The laundry and storage room floor remains cement but residents intend to tile it in the future. The laundry room was provided with some shelves and a cabinet. In the exterior of the house, greenery was provided in the front and back yards.



HOUSEHOLD 24

This family consists of a married couple without children. In order to make a separation between areas, two small block-glass walls were erected between the entrance and living room, and between the living room and dining room. The walls in the second bedroom were painted. In the basement, walls were finished by drywalling and painting them. The ceiling was unfinished, but the residents expressed their intention to finish it in the future. Some partitions were built to create the new spaces in the basement: a family room and a laundry/storage room. In the family room a closet was added, and folding doors were used. The floor was carpeted, excluding the laundry/storage room floor which was in linoleum. The stairs were painted. A fence, greenery and deck were provided in the backyard.

APPENDIX B

QUESTIONNAIRE

This appendix presents the questionnaire developed as a survey instrument for this research. It consists of fourteen pages of 29 questions (27 are closed questions and two are open questions) based on short questions and tables that were easy to fill out. The approximate time to complete it was 20 minutes. The practicality of this questionnaire influenced to some degree the positive participation of residents and the high rate of response obtained.

Approximate time to complete: 20 minutes

**A SURVEY OF POST-OCCUPANCY ADAPTATION
IN MONTREAL**

The intention of this questionnaire is to find out what type of modifications Montreal homeowners are making to their houses, their future plans regarding their homes, their housing preferences, and their reasons for making residential changes.

Household status: Husband/wife Companion Single living alone
Single parent Other: _____

Part 1: Pre-modification phase/planning stage

1. What type of housing was your previous home?
Single family Apartment building Plexes Other: _____
2. Did you rent or own your previous home?
Rented Owned
3. When did you move into your present home? _____ (day/month/year)
4. Did you plan to make modifications when you bought the house?
Yes No
5. If YES, please specify the type and the location of the **planned modifications**:

WALL FINISHES										
TYPE OF WALL FINISHES	ROOMS									
	Entrance	Living Room	Dining Room	Kitchen	Bathroom (ground)	Bathroom (upper)	Master Bedroom	Second Bedroom	Basement	Stairs & Hallway
Paint										
Wallpaper										
Woodwork										
Mirror										
Tiles										
Other: _____										
Other: _____										

FLOOR FINISHES										
TYPE OF FLOOR FINISHES	ROOMS									
	Entrance	Living Room	Dining Room	Kitchen	Bathroom (ground)	Bathroom (upper)	Master Bedroom	Second Bedroom	Basement	Stairs & Hallway
From cement to wood										
From cement to carpet										
From cement to tile										
From wood to carpet										
From linoleum to tile										
Other: _____										

ELECTRICAL FEATURES										
TYPE OF ELECTRICAL FEATURES	ROOMS									
	Entrance	Living Room	Dining Room	Kitchen	Bathroom (ground)	Bathroom (upper)	Master Bedroom	Second Bedroom	Basement	Stairs & Hallway
Electrical wiring										
Lighting fixtures										
Switches										
Outlets										
Other: _____										
Other: _____										

PLUMBING FEATURES										
TYPE OF PLUMBING FEATURES	ROOMS									
	Entrance	Living Room	Dining Room	Kitchen	Bathroom (ground)	Bathroom (upper)	Master Bedroom	Second Bedroom	Basement	Stairs & Hallway
Rough plumbing										
Toilet										
Sink										
Bathtub										
Faucet										
Other: _____										
Other: _____										

DOORS AND WINDOWS										
TYPE OF DOORS AND WINDOWS	ROOMS									
	Entrance	Living Room	Dining Room	Kitchen	Bathroom (ground)	Bathroom (upper)	Master Bedroom	Second Bedroom	Basement	Stairs & Hallway
Windows										
Interior door										
Front door										
Rear door										
Balcony door										
Door lock										
Other: _____										
Other: _____										

STORAGE / CABINETS										
STORAGE & CABINETS	ROOMS									
	Entrance	Living Room	Dining Room	Kitchen	Bathroom (ground)	Bathroom (upper)	Master Bedroom	Second Bedroom	Basement	Stairs & Hallway
Closets										
Cabinets										
Shelves										
Other: _____										
Other: _____										

LANDSCAPING		
	LOCATION	
	Front	Back
Fences		
Greenery (flowers, bushes, etc.)		
Pavement		
Deck		
Stair		
Other: _____		

OTHER TYPE OF MODIFICATIONS:

6. Did you plan to create a new space in your basement? If **YES**, please specify which type. If **No**, please go to the next question.

- Storage room
- Additional bedroom
- Additional bathroom
- Laundry room
- Family room
- Other (*specify*) _____

Part 2: Post-modifications phase

7. How important was it for you to modify your home?

Very important Important Not very important

8. Have you given up something that you wanted, for example, a new car, new furniture, vacations, to make modifications to your home?

Yes No

9. Please specify the type of modification that you have made in your home since you moved in. Also, please mention the room, date, time spent, reasons for each modification that have been made in your house and the approximate amount of money spent on the modifications. Also, please specify who made the modifications, selecting an "H" if the modifications were made by yourself or any other member of the household and a "C" if they were made by a contractor.

Example: You have put up wallpaper in your master bedroom by yourself in order to make your bedroom more attractive. It was in August, 1992, and you spent 1 day on the job.

EXAMPLE

CHANGES TO WALL FINISHES												
ROOMS	DATE mth/year	TIME SPENT	WHO MADE THE CHANGES	Paint	Wall- paper	Wood- work	Mirror	Tiles	Wall Finish	Partition	Ceiling	Other (specify)
Entrance												
Living Room												
Dining Room												
Kitchen												
Bathroom(ground)												
Bathroom(upper)												
Master Bedroom	Aug/92	1 day	H		X							
Second Bedroom												
Basement												
Stairs												
AMOUNT OF MONEY SPENT (APPROX)					\$120							
REASONS FOR MAKING THE CHANGES												
Upgrade resale value of the house												
Upgrade Appearance					X							
Want to change the color of the room												
Want to make the room look different												
Other reason: _____												
Other reason: _____												

CHANGES TO WALL FINISHES												
ROOMS	DATE mth/year	TIME SPENT	WHO MADE THE CHANGES	Paint	Wall- paper	Wood- work	Mirror	Tiles	Wall Finish	Partition	Ceiling	Other (specify)
Entrance												
Living Room												
Dining Room												
Kitchen												
Bathroom(ground)												
Bathroom(upper)												
Master Bedroom												
Second Bedroom												
Basement												
Stairs												
AMOUNT OF MONEY SPENT (APPROX.)												
REASONS FOR MAKING THE CHANGES												
Upgrade resale value of the house												
Upgrade Appearance												
Want to change the color of the room												
Want to make the room look different												
Other reason: _____												
Other reason: _____												

CHANGES TO FLOOR FINISHES									
ROOMS	DATE mth/year	TIME SPENT	WHO MADE THE CHANGES	From cement to wood	From cement to carpet	From wood to carpet	From linoleum to tile	Other (specify)	
Entrance									
Living Room									
Dining Room									
Kitchen									
Bathroom(ground)									
Bathroom(upper)									
Master Bedroom									
Second Bedroom									
Basement									
Stairs									
AMOUNT OF MONEY SPENT (APPROX.)									
REASONS FOR MAKING THE CHANGES									
Upgrade resale value of the house									
Upgrade Appearance									
Provide the floor with a better floor finish									
Want to make the room look different									
Other reason: _____									
Other reason: _____									

CHANGES IN ELECTRICAL FEATURES								
ROOMS	DATE mth/year	TIME SPENT	WHO MADE THE CHANGES	Electrical wiring	Lighting fixtures	Switches	Outlets	Other (specify)
Entrance								
Living Room								
Dining Room								
Kitchen								
Bathroom(ground)								
Bathroom(upper)								
Master Bedroom								
Second Bedroom								
Basement								
Stairs								
AMOUNT OF MONEY SPENT (APPROX.)								
REASONS FOR MAKING THE CHANGES								
Upgrade resale value of the house								
Upgrade Appearance								
Need for more light								
Replace existing fixtures								
Previous system did not work								
Other reason: _____								
Other reason: _____								

CHANGES IN PLUMBING FEATURES									
ROOMS	DATE mth/year	TIME SPENT	WHO MADE THE CHANGES	Rough plumbing	Change of plumbing fixtures				Other (specify)
					Toilet	Sink	Bathtub	Faucet	
Entrance									
Living Room									
Dining Room									
Kitchen									
Bathroom(ground)									
Bathroom(upper)									
Master Bedroom									
Second Bedroom									
Basement									
AMOUNT OF MONEY SPENT (APPROX.)									
REASONS FOR MAKING THE CHANGES									
Upgrade resale value of the house									
Upgrade Appearance									
Replace existing fixtures									
Previous system did not work									
Need for more installations									
Other reason: _____									
Other reason: _____									

CHANGES IN DOORS AND WINDOWS										
ROOMS	DATE mth/year	TIME SPENT	WHO MADE THE CHANGES	Window	Door lock	Doors				Other (specify)
						Interior	Front	Rear	Balcony	
Entrance										
Living Room										
Dining Room										
Kitchen										
Bathroom(ground)										
Bathroom(upper)										
Master Bedroom										
Second Bedroom										
Basement										
Stairs										
AMOUNT OF MONEY SPENT (APPROX)										
REASONS FOR MAKING THE CHANGES										
Upgrade resale value of the house										
Upgrade Appearance										
Provide more light to the house										
Previous doors/windows were not in good condition										
Other reason: _____										
Other reason: _____										

CHANGES IN STORAGE AND CABINETS								
ROOMS	DATE mth/year	TIME SPENT	WHO MADE THE CHANGES	Closet	Cabinet	Handles	Shelves	Other (specify)
Living Room								
Dining Room								
Kitchen								
Bathroom(ground)								
Bathroom(upper)								
Master Bedroom								
Second Bedroom								
Basement								
Stairs								
AMOUNT OF MONEY SPENT (APPROX)								
REASONS FOR MAKING THE CHANGES								
Upgrade resale value of the house								
Upgrade Appearance								
Need for more storage space								
Previous storage/closet were not in good condition								
Other reason: _____								
Other reason: _____								

LANDSCAPING									
PLACE	DATE mth/year	TIME SPENT	WHO MADE THE CHANGES	Fences	Greenery (flowers, trees, bushes, etc.)	Pavement	Deck	Stair	Other (specify)
Front									
Back Yard									
AMOUNT OF MONEY SPENT (APPROX)									
REASONS FOR MAKING THE CHANGES									
Upgrade resale value of the house									
Upgrade Appearance									
Create a more usable outdoor space									
Define property borders									
Other reason: _____									
Other reason: _____									

10. Have you created a new space in your basement? *If YES, complete the following table. If NO, please go to the next question.*

CREATE A NEW SPACE								
NEW SPACE	DATE mth/year	TIME SPENT days/weeks	WHO MADE THE CHANGES (*H = household *C = contractor)	AMOUNT OF MONEY SPENT (APPROX.)	REASONS FOR CREATING NEW SPACES			
					Upgrade resale value of the house	Upgrade Appearance	Need of more space	Growth of household
Storage Room								
Laundry Room								
Family Room								
Play Room								
Additional Bedroom								
Additional Bathroom								
Other: _____								
Other: _____								

11. Are you using some of the spaces in your home for a function other than their original function? Example: using one of your bedrooms as a work place or the basement as a family room? Please describe:

Part 3: Work initiation and process

12. Whose idea were the modifications?

Wife Husband Both Companion Other: _____

13. Were there obstacles which prevented you from making modifications to your home? *If NO, go to question 15; if YES please answer question 14.*

Yes No

14. What kind of obstacles prevented you from making modifications to your house?

- Lack of money
- Lack of skills
- Lack of time
- Family constraints (e.g. children too young)
- Other (*specify*) _____

Part 4: Household preferences

15. Please rank how you value the importance of the following features by circling the appropriate number.

	VERY IMPORTANT	NOT IMPORTANT AT ALL			
	1	2	3	4	5
1. Facade design	1	2	3	4	5
2. Sufficient amount of total interior space	1	2	3	4	5
3. Sufficient amount of storage space	1	2	3	4	5
4. Ability to do easy modifications	1	2	3	4	5
5. Natural lighting	1	2	3	4	5
6. Cross-ventilation	1	2	3	4	5
7. Adequate soundproofing between neighbours	1	2	3	4	5
8. Quality of exterior finishes	1	2	3	4	5

9. Quality of interior finishes	1	2	3	4	5
10. Appearance	1	2	3	4	5
11. Size of front yard	1	2	3	4	5
12. Size of backyard	1	2	3	4	5
13. Privacy in backyard	1	2	3	4	5
14. Indoor garage/parking arrangement	1	2	3	4	5
15. Laundry room	1	2	3	4	5
16. Kitchen space and functionality	1	2	3	4	5

Part 5: Future modifications and moving plans

16. Do you plan to move?

Yes No *If NO, go to question 19, if YES please answer questions 17 & 18.*

17. Why do you plan to move from your present house?

- Need for more space
- Poorly insulated for sound
- There is not enough cross-ventilation
- There is not enough natural lighting
- Do not like the neighbours
- Can afford and would like to buy a better house
- It is too far from work
- Other (*specify*) _____

18. How long do you plan to stay in the present house before you move?

- Less than 1 year 1 or 2 years 3 or 4 years
- 5 or 6 years 7 or 8 years Don't know

19. Do you plan to make modifications to your home in the future?

Yes No

20. If YES, please specify the type and the location of your future modifications:

WALL FINISHES										
TYPE OF WALL FINISHES	ROOMS									
	Entrance	Living Room	Dining Room	Kitchen	Bathroom (ground)	Bathroom (upper)	Master Bedroom	Second Bedroom	Basement	Stairs & Hallway
Paint										
Wallpaper										
Woodwork										
Mirror										
Tiles										
Other: _____										
Other: _____										

FLOOR FINISHES										
TYPE OF FLOOR FINISHES	ROOMS									
	Entrance	Living Room	Dining Room	Kitchen	Bathroom (ground)	Bathroom (upper)	Master Bedroom	Second Bedroom	Basement	Stairs & Hallway
From cement to wood										
From cement to carpet										
From cement to tile										
From wood to carpet										
From linoleum to tile										
Other: _____										

ELECTRICAL FEATURES										
TYPE OF ELECTRICAL FEATURES	ROOMS									
	Entrance	Living Room	Dining Room	Kitchen	Bathroom (ground)	Bathroom (upper)	Master Bedroom	Second Bedroom	Basement	Stairs & Hallway
Electrical wiring										
Lighting fixtures										
Switches										
Outlets										
Other: _____										
Other: _____										

PLUMBING FEATURES										
TYPE OF PLUMBING FEATURES	ROOMS									
	Entrance	Living Room	Dining Room	Kitchen	Bathroom (ground)	Bathroom (upper)	Master Bedroom	Second Bedroom	Basement	Stairs & Hallway
Rough plumbing										
Toilet										
Sink										
Bathtub										
Faucet										
Other: _____										

DOORS AND WINDOWS										
TYPE OF DOORS AND WINDOWS	ROOMS									
	Entrance	Living Room	Dining Room	Kitchen	Bathroom (ground)	Bathroom (upper)	Master Bedroom	Second Bedroom	Basement	Stairs & Hallway
Windows										
Interior door										
Front door										
Rear door										
Balcony door										
Door lock										
Other: _____										

STORAGE / CABINETS										
STORAGE & CABINETS	ROOMS									
	Entrance	Living Room	Dining Room	Kitchen	Bathroom (ground)	Bathroom (upper)	Master Bedroom	Second Bedroom	Basement	Stairs & Hallway
Closets										
Cabinets										
Shelves										
Other: _____										

LANDSCAPING		
	LOCATION	
	Front	Back
Fences		
Greenery (flowers, bushes, etc.)		
Pavement		
Deck		
Stair		
Other: _____		

OTHER TYPE OF MODIFICATIONS:

21. Are you planning to create a new space in your basement? *If YES, please specify which type. If No, please go to the next question.*

- Storage room
Additional bedroom
Additional bathroom
Laundry room
Family room
Other (*specify*) _____

Part 6: Household characteristics

22. Are you:

Male Female

23. What is your marital status?

Married Single Companion Other: _____

24. How old are you?

Less than 24 25 to 34 years old 35 to 44 years old
45 to 54 years old 55 or older

25. What is your formal education?

Primary school Secondary school CEGEP
University Trade school

26. What is your occupation? (*Please specify*) _____

27. How many people live with you in the house? Please specify number: _____
If you live alone, go to question #29.

28. Please specify the relationship of each member of the household, their age, occupation, and education. For example:

Relationship to respondent	Age	Occupation	Education
Wife	50	Teacher	University

Please indicate below:

Relationship to respondent	Age	Occupation	Education
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

29. **Optional:** What is your combined annual household income?

Below \$20,000 \$20,000 to \$29,999 \$30,000 to \$39,999
\$40,000 to \$49,999 Over \$50,000

THANK YOU VERY MUCH FOR YOU COOPERATION

APPENDIX C

SURVEY DATA

This appendix contains the survey data. In order to compute all the information obtained from the questionnaires, a database was built by the author in Lotus 123. As well, the different correlations developed with the utilization of this database are presented. This data is based on "ones" and "zeros" to represent the positive and negative answers. "1" means YES and "0" means NO. Separate results in terms of quantities and percentages of each project (Phase I & Phase II) were calculated, as well as the total of both phases.

DATABASE

	1		PHASE 1				PHASE 2				PHASE 1		PHASE 2	
	1171(HP)	1335(MF)	TOTALS	% (71)	%	TOTALS	% (70)	%	TOTALS	% (141)	%	TOTALS	% (141)	%
152 Floor - Living - Wood to Carpet	0	1	9	12.68	81.82	7	10.00	50.00	16	11.35	44.44			
153 Floor - Living - Linoleum to Tile	0	0	1	1.41	9.09	0	0.00	0.00	1	0.71	2.78			
154 Floor - Living - Remove Carpet	0	0	1	1.41	9.09	0	0.00	0.00	1	0.71	2.78			
155 Total Work Living Room (floor)	0	1	11	15.49	100.00	7	10.00	50.00	18	12.77	50.00			
156 Floor - Dining - Wood to Carpet	0	1	5	7.04	83.33	5	7.14	100.00	10	7.09	50.91			
157 Floor - Dining - Linoleum to Tile	0	0	1	1.41	16.67	0	0.00	0.00	1	0.71	9.09			
158 Total Work Dining Room (floor)	0	1	6	8.45	100.00	5	7.14	100.00	11	7.80	100.00			
159 Floor - Kitchen - Linoleum to Tile	0	1	7	9.86	100.00	10	14.29	100.00	17	12.06	100.00			
160 Total Work Kitchen (floor)	0	1	7	9.86		10	14.29		17	12.06				
161 Floor - Bath (G) - Cem. to Tile	0	0	2	2.82	50.00	0	0.00	0.00	2	1.42	22.22			
162 Floor - Bath (G) - Linoleum to Tile	0	1	2	2.82	50.00	5	7.14	100.00	7	4.96	77.78			
163 Total Work Bathroom (ground) (floor)	0	1	4	5.63	100.00	5	7.14	100.00	9	6.38	100.00			
164 Floor - Bath (U) - Cem. to Tile	0	0	1	1.41	20.00	0	0.00	0.00	1	0.71	11.11			
165 Floor - Bath (U) - Linoleum to Tile	0	1	4	5.83	80.00	4	5.71	100.00	8	5.87	88.89			
166 Total Work Bathroom (upper) (floor)	0	1	5	7.04	100.00	4	5.71	100.00	9	6.38	100.00			
167 Floor - M. Bed - Wood to Carpet	0	1	7	9.86	100.00	4	5.71	100.00	11	7.80	100.00			
168 Total Work Master Bedroom (floor)	0	1	7	9.86		4	5.71		11	7.80				
169 Floor - Bed 2 - Cem. to Tile	0	0	0	0.00	0.00	1	1.43	25.00	1	0.71	11.11			
170 Floor - Bed 2 - Wood to Carpet	0	1	5	7.04	100.00	3	4.29	75.00	8	5.87	88.89			
171 Total Work Second Bedroom (floor)	0	1	5	7.04	100.00	4	5.71	100.00	9	6.38	100.00			
172 Floor - Basement - Cem. to Wood	0	1	13	18.31	35.14	13	18.57	24.53	26	18.44	28.89			
173 Floor - Basement - Cem. to Carpet	0	0	15	21.13	40.54	22	31.43	41.51	37	26.24	41.11			
174 Floor - Basement - Cem. to Tile	0	0	5	7.04	13.51	3	4.29	5.66	8	5.67	8.89			
175 Floor - Basement - Wood to Carpet	0	0	2	2.82	5.41	5	7.14	9.43	7	4.96	7.78			
176 Floor - Basement - Linoleum to Tile	0	0	0	0.00	0.00	6	8.57	11.32	6	4.26	6.67			
177 Floor - Basement - Linoleum	0	0	2	2.82	5.41	3	4.29	5.66	5	3.55	5.56			
178 Floor - Basement - Paint	0	0	0	0.00	0.00	1	1.43	1.89	1	0.71	1.11			
179 Total Work Basement	0	1	33	46.46	100.00	41	58.57	100.00	74	52.48	100.00			
180 Floor - Stairs/Hallway - Wood to Carpet	0	1	6	8.45	100.00	18	25.71	100.00	24	17.02	100.00			
181 Total Work Stairs & Hallway (floor)	0	1	6	8.45		18	25.71		24	17.02				
182 Total Work Cement to Wood	0	1	13	18.31	20.97	13	18.57	16.05	26	18.44	18.18			
183 Total Work Cement to Carpet	0	0	15	21.13	24.19	22	31.43	27.16	37	26.24	25.87			
184 Total Work Cement to Tile	0	0	7	9.86	11.29	4	5.71	4.94	11	7.80	7.69			
185 Total Work Wood to Carpet	0	1	16	22.54	25.81	27	38.57	33.33	43	30.50	30.07			
186 Total Work Linoleum to Tile	0	1	10	14.08	16.13	15	21.43	18.52	25	17.73	17.48			
187 Total Work Remove Carpet	0	0	1	1.41	1.61	0	0.00	0.00	1	0.71	0.70			
188 Total Planned Work FLOOR FINISHES	0	1	16	22.54	100.00	19	27.14	100.00	35	24.82	100.00	6.27	6.17	6.22
189 Electrical - Entrance - E.Wiring	0	1	0	0.00	0.00	1	1.43	6.67	1	0.71	3.57			
190 Electrical - Entrance - L. Fixtures	0	0	5	7.04	38.46	11	15.71	73.33	16	11.35	57.14			
191 Electrical - Entrance - Switches	0	0	5	7.04	38.46	3	4.29	20.00	8	5.67	28.57			
192 Electrical - Entrance - Outlets	0	0	3	4.23	23.08	0	0.00	0.00	3	2.13	10.71			
193 Total Work Entrance (elec.)	0	1	10	14.08	100.00	14	20.00	100.00	24	17.02	100.00			
194 Electrical - Living - E.Wiring	0	0	1	1.41	8.33	0	0.00	0.00	1	0.71	4.76			
195 Electrical - Living - L. Fixtures	0	0	6	8.45	50.00	6	8.57	56.67	12	8.51	57.14			
196 Electrical - Living - Switches	0	0	3	4.23	25.00	2	2.86	22.22	5	3.55	23.81			
197 Electrical - Living - Outlets	0	1	2	2.82	16.67	1	1.43	11.11	3	2.13	14.29			
198 Total Work Living Room (elec.)	0	1	9	12.68	100.00	9	12.86	100.00	18	12.77	100.00			
199 Electrical - Dining - E.Wiring	0	0	1	1.41	5.26	0	0.00	0.00	1	0.71	3.13			
200 Electrical - Dining - L. Fixtures	0	1	9	12.68	47.37	9	12.68	89.23	18	12.77	56.25			
201 Electrical - Dining - Switches	0	0	6	8.45	31.58	4	5.71	30.77	10	7.09	31.25			
202 Electrical - Dining - Outlets	0	0	3	4.23	15.79	0	0.00	0.00	3	2.13	9.38			
203 Total Work Dining Room (elec.)	0	1	15	21.13	100.00	12	17.14	100.00	27	19.15	100.00			
204 Electrical - Kitchen - E.Wiring	0	0	0	0.00	0.00	1	1.43	9.09	1	0.71	4.76			
205 Electrical - Kitchen - L. Fixtures	0	0	5	7.04	50.00	6	8.57	54.55	11	7.80	52.38			
206 Electrical - Kitchen - Switches	0	0	3	4.23	30.00	3	4.29	27.27	6	4.26	28.57			
207 Electrical - Kitchen - Outlets	0	1	2	2.82	20.00	1	1.43	9.09	3	2.13	14.29			
208 Total Work Kitchen (elec.)	0	1	9	12.68	100.00	9	12.86	100.00	18	12.77	100.00			
209 Electrical - Bath (G) - E.Wiring	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00			
210 Electrical - Bath (G) - L. Fixtures	0	0	6	8.45	60.00	1	1.43	20.00	7	4.96	46.67			
211 Electrical - Bath (G) - Switches	0	0	2	2.82	20.00	3	4.29	60.00	5	3.55	33.33			
212 Electrical - Bath (G) - Outlets	0	1	2	2.82	20.00	1	1.43	20.00	3	2.13	20.00			
213 Total Work Bathroom (ground) (elec.)	0	1	8	11.27	100.00	5	7.14	100.00	13	9.22	100.00			
214 Electrical - Bath (U) - E.Wiring	0	0	3	4.23	18.75	0	0.00	0.00	3	2.13	11.54			
215 Electrical - Bath (U) - L. Fixtures	0	0	5	7.04	31.25	5	7.14	50.00	10	7.09	36.46			
216 Electrical - Bath (U) - Switches	0	0	6	8.45	37.50	4	5.71	40.00	10	7.09	36.46			
217 Electrical - Bath (U) - Outlets	0	1	2	2.82	12.50	1	1.43	10.00	3	2.13	11.54			
218 Total Work Bathroom (upper) (elec.)	0	1	9	12.68	100.00	9	12.86	100.00	18	12.77	100.00			
219 Electrical - M. Bed - E.Wiring	0	0	2	2.82	10.53	0	0.00	0.00	2	1.42	6.45			
220 Electrical - M. Bed - L. Fixtures	0	0	12	16.90	83.16	9	12.68	75.00	21	14.89	67.74			
221 Electrical - M. Bed - Switches	0	0	3	4.23	15.79	3	4.29	25.00	6	4.26	19.35			
222 Electrical - M. Bed - Outlets	0	0	2	2.82	10.53	0	0.00	0.00	2	1.42	6.45			
223 Total Work Master Bedroom (elec.)	0	0	16	22.54	100.00	12	17.14	100.00	28	19.86	100.00			
224 Electrical - Bed 2 - E.Wiring	0	0	0	0.00	0.00	6	8.57	26.09	6	4.26	14.29			
225 Electrical - Bed 2 - L. Fixtures	0	0	12	16.90	63.16	13	18.57	56.52	25	17.73	59.52			
226 Electrical - Bed 2 - Switches	0	0	4	5.63	21.06	3	4.29	13.04	7	4.96	16.67			
227 Electrical - Bed 2 - Outlets	0	1	3	4.23	15.79	1	1.43	4.35	4	2.84	9.52			
228 Total Work Second Bedroom (elec.)	0	1	15	21.13	100.00	17	24.29	100.00	32	22.70	100.00			

	141		PHASE 1			PHASE 2			PHASE 1		PHASE 2	
	(171)(HP)	(1335)(MP)	TOTALS	% (71)	%	TOTALS	% (70)	%	TOTALS	% (141)	%	
778 Tiles-- Household	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	
779 Varnish-- Household	0	0	1	1.41	100.00	0	0.00	0.00	1	0.71	100.00	
780 Total Work Household	0	0	1	1.41	100.00	0	0.00	0.00	1	0.71	100.00	
781												
782 Tiles-- Contractor	0	0	0	0.00	0.00	1	1.43	100.00	1	0.71	80.00	
783 Varnish-- Contractor	0	0	1	1.41	100.00	0	0.00	0.00	1	0.71	80.00	
784 Total Work Contractor	0	0	1	1.41	100.00	1	1.43	100.00	2	1.42	100.00	
785												
786 FLOOR - BASEMENT												
787												
788 From Cement to Wood	0	0	25	35.21	47.17	16	22.86	30.77	41	29.08	39.06	
789 From Cement to Carpet	1	0	12	16.90	22.64	16	22.86	30.77	26	19.86	26.87	
790 From Wood to Carpet	0	0	5	7.04	9.43	3	4.29	5.77	8	5.87	7.62	
791 From Cement to Tiles	0	0	5	7.04	9.43	1	1.43	1.82	6	4.26	5.71	
792 Paint	0	0	3	4.23	5.66	8	11.43	15.38	11	7.90	10.48	
793 Linoleum	0	0	3	4.23	5.66	8	11.43	15.38	11	7.90	10.48	
794 Total Work Basement	1	0	38	53.52	100.00	40	57.14	100.00	78	55.32	100.00	
795												
796 From Cement to Wood-- Household	0	0	17	23.94	40.48	12	17.14	35.29	29	20.57	38.16	
797 From Cement to Carpet-- Household	1	0	12	16.90	28.57	6	11.43	23.53	20	14.18	28.32	
798 From Wood to Carpet-- Household	0	0	4	5.63	9.52	2	2.86	5.88	6	4.26	7.69	
799 From Cement to Tiles-- Household	0	0	3	4.23	7.14	1	1.43	2.94	4	2.84	5.26	
800 Paint-- Household	0	0	3	4.23	7.14	7	10.00	20.59	10	7.00	13.16	
801 Linoleum-- Household	0	0	3	4.23	7.14	4	5.71	11.76	7	4.98	9.21	
802 Total Work Household	1	0	32	45.07	100.00	30	42.86	100.00	62	43.97	100.00	
803												
804 From Cement to Wood-- Contractor	0	0	8	11.27	72.73	4	5.71	22.22	12	8.51	41.30	
805 From Cement to Carpet-- Contractor	0	0	0	0.00	0.00	8	11.43	44.44	8	5.67	27.50	
806 From Wood to Carpet-- Contractor	0	0	1	1.41	9.09	1	1.43	5.56	2	1.42	6.90	
807 From Cement to Tiles-- Contractor	0	0	2	2.82	18.18	0	0.00	0.00	2	1.42	6.90	
808 Paint-- Contractor	0	0	0	0.00	0.00	1	1.43	5.56	1	0.71	3.45	
809 Linoleum-- Contractor	0	0	0	0.00	0.00	4	5.71	22.22	4	2.84	13.79	
810 Total Work Contractor	0	0	8	11.27	100.00	14	20.00	100.00	22	15.60	100.00	
811												
812 FLOOR - STAIRS & HALLWAY												
813												
814 From Wood to Carpet	1	0	6	8.45	85.71	6	8.57	85.71	12	8.51	85.71	
815 Paint/Varnish	0	0	1	1.41	14.29	1	1.43	14.29	2	1.42	14.29	
816 Total Work Stairs & Hallway	1	0	7	9.86	100.00	7	10.00	100.00	14	9.93	100.00	
817												
818 From Wood to Carpet-- Household	1	0	4	5.63	80.00	6	8.57	85.71	10	7.09	83.33	
819 Paint/Varnish-- Household	0	0	1	1.41	20.00	1	1.43	14.29	2	1.42	16.67	
820 Total Work Household	1	0	5	7.04	100.00	7	10.00	100.00	12	8.51	100.00	
821												
822 From Wood to Carpet-- Contractor	0	0	2	2.82	100.00	0	0.00	0.00	2	1.42	100.00	
823 Paint/Varnish-- Contractor	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	
824 Total Work Contractor	0	0	2	2.82	100.00	0	0.00	0.00	2	1.42	100.00	
825												
826 From Cement to Wood-- Money Spent	0	0	\$9,930			\$5,150			\$15,080			
827 From Cement to Carpet-- Money Spent	400	0	\$6,400			\$5,200			\$11,600			
828 From Wood to Carpet-- Money Spent	0	0	\$3,100			\$4,300			\$7,400			
829 From Cement to Tiles-- Money Spent	0	0	\$900			\$200			\$1,100			
830 Paint/Varnish-- Money Spent	0	0	\$520			\$415			\$935			
831 Linoleum-- Money Spent	0	0	\$530			\$630			\$1,160			
832 Linoleum to Tiles-- Money Spent	0	0	\$90			\$0			\$90			
833 Tiles-- Money Spent	0	0	\$150			\$0			\$150			
834 Total Money Spent	400	0	\$21,630			\$15,895			\$37,525			
835												
836 From Cement to Wood-- Reason:												
837 Upgrade Resale Value of House	0	0	12	16.90	29.27	4	5.71	20.00	16	11.35	29.23	
838 Upgrade Appearance	0	0	11	15.49	26.83	8	8.57	30.00	17	12.06	27.07	
839 Provide Floor With a Better Finish	1	0	14	19.72	34.15	10	14.29	50.00	24	17.02	39.34	
840 Want to Make Room Look Different	0	0	4	5.63	9.78	0	0.00	0.00	4	2.84	6.65	
841					100.00			100.00			100.00	
842 From Cement to Carpet-- Reason:												
843 Upgrade Resale Value of House	0	0	8	11.27	20.00	8	11.43	23.53	16	11.35	21.62	
844 Upgrade Appearance	0	0	14	19.72	35.00	11	15.71	32.36	25	17.73	33.78	
845 Provide Floor With a Better Finish	1	0	9	12.68	22.50	9	12.86	26.47	18	12.77	24.32	
846 Want to Make Room Look Different	0	0	9	12.68	22.50	6	8.57	17.65	15	10.64	20.27	
847					100.00			100.00			100.00	
848 From Wood to Carpet-- Reason:												
849 Upgrade Resale Value of House	0	0	2	2.82	18.18	7	10.00	25.93	9	6.36	23.66	
850 Upgrade Appearance	0	0	4	5.63	36.36	9	12.86	33.33	13	9.22	34.21	
851 Provide Floor With a Better Finish	0	0	3	4.23	27.27	6	8.57	22.22	9	6.36	23.68	
852 Want to Make Room Look Different	0	0	2	2.82	18.18	5	7.14	18.52	7	4.98	18.42	
853					100.00			100.00			100.00	
854 From Cement to Tiles-- Reason:												
855 Upgrade Resale Value of House	0	0	5	7.04	35.71	0	0.00	0.00	5	3.50	31.25	
856 Upgrade Appearance	0	0	4	5.63	28.57	0	0.00	0.00	4	2.84	25.00	
857 Provide Floor With a Better Finish	0	0	2	2.82	14.29	2	2.86	100.00	4	2.84	25.00	
858 Want to Make Room Look Different	0	0	3	4.23	21.43	0	0.00	0.00	3	2.13	18.75	
859					100.00			100.00			100.00	
860 Paint/Varnish-- Reason:												
861 Upgrade Resale Value of House	0	0	1	1.41	12.50	1	1.43	12.50	2	1.42	12.50	
862 Upgrade Appearance	0	0	5	7.04	62.50	3	4.29	37.50	8	5.67	50.00	
863 Provide Floor With a Better Finish	0	0	2	2.82	25.00	4	5.71	60.00	6	4.26	37.50	
864					100.00			100.00			100.00	
865 Linoleum-- Reason:												
866 Upgrade Resale Value of House	0	0	1	1.41	12.50	0	0.00	0.00	1	0.71	5.26	
867 Upgrade Appearance	0	0	3	4.23	37.50	3	4.29	27.27	6	4.26	31.58	
868 Provide Floor With a Better Finish	0	0	2	2.82	25.00	5	7.14	45.45	7	4.98	36.84	
869 Want to Make Room Look Different	0	0	0	0.00	0.00	3	4.29	27.27	3	2.13	15.76	
870 Material(Floor) Not in Good Condition	0	0	2	2.82	25.00	0	0.00	0.00	2	1.42	10.53	
871												
872 Linoleum to Tiles-- Reason:												
873 Upgrade Resale Value of House	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	
874 Upgrade Appearance	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	
875 Provide Floor With a Better Finish	0	0	1	1.41	100.00	1	1.41	100.00	1	0.71	100.00	
876					100.00			100.00			100.00	

	1 141		PHASE 1				PHASE 2				PHASE 1 + PHASE 2			
	1171(HP)	1336(MF)	TOTALS	% (71)	%	%	TOTALS	% (70)	%	%	TOTALS	% (141)	%	%
1074 Electrical Wiring - Household	0	0	1	1.41	25.00		5	7.14	35.71		6	4.28	33.33	
1075 Lighting Fixtures - Household	0	0	1	1.41	25.00		9	12.86	64.29		10	7.09	55.56	
1076 Switches - Household	0	0	1	1.41	25.00		0	0.00	0.00		1	0.71	5.56	
1077 Fan - Household	0	0	1	1.41	25.00		0	0.00	0.00		1	0.71	5.56	
1078 Total Work Household	0	0	5	7.04	100.00		10	14.29	100.00		15	10.64	100.00	
1079														
1080 Electrical Wiring - Contractor	0	0	0	0.00	0.00		0	0.00	0.00		0	0.00	0.00	
1081 Lighting Fixtures - Contractor	0	0	1	1.41	100.00		0	0.00	0.00		1	0.71	100.00	
1082 Switches - Contractor	0	0	0	0.00	0.00		0	0.00	0.00		0	0.00	0.00	
1083 Fan - Contractor	0	0	0	0.00	0.00		0	0.00	0.00		0	0.00	0.00	
1084 Total Work Contractor	0	0	1	1.41	100.00		0	0.00	0.00		1	0.71	100.00	
1085														
1086 Electrical Wiring - Money Spent	0	0	\$2,438				\$3,153				\$5,591			
1087 Lighting Fixtures - Money Spent	0	0	\$4,930				\$3,600				\$8,530			
1088 Switches - Money Spent	0	0	\$1,220				\$1,301				\$2,521			
1089 Outlets - Money Spent	0	0	\$575				\$445				\$1,020			
1090 Fan - Money Spent	0	0	\$235				\$77				\$312			
1091 Fireplace - Money Spent	0	0	\$0				\$2,000				\$2,000			
1092 Total Money Spent	0	0	\$9,398				\$10,576				\$19,974			
1093														
1094 Electrical Wiring Reason:														
1095 Upgrade Resale Value of House	0	0	11	15.49	21.15		13	18.57	25.49		24	17.02	23.30	
1096 Upgrade Appearance	0	0	12	16.90	23.08		4	5.71	7.84		16	11.35	15.53	
1097 Need for More Light	0	0	16	22.54	30.77		18	25.71	35.29		34	24.11	33.01	
1098 Replace Existing Fixtures	0	0	4	5.63	7.69		4	5.71	7.84		8	5.67	7.77	
1099 Previous System Did Not Work	0	0	7	9.86	13.46		9	12.86	17.65		16	11.35	15.53	
1100 Need for Additional Installation	0	0	2	2.82	3.85		3	4.29	5.88		5	3.55	4.85	
1101					100.00				100.00				100.00	
1102 Lighting Fixtures Reason:														
1103 Upgrade Resale Value of House	0	0	6	8.45	9.38		6	8.57	10.91		12	8.51	10.08	
1104 Upgrade Appearance	0	0	19	26.76	29.69		9	12.86	18.36		28	19.86	23.53	
1105 Need for More Light	0	0	20	28.17	31.25		20	28.57	36.36		40	28.37	33.61	
1106 Replace Existing Fixtures	0	0	12	16.90	18.75		11	15.71	20.00		23	16.31	19.33	
1107 Previous System Did Not Work	0	0	7	9.86	10.94		9	12.86	16.36		16	11.35	13.45	
1108					100.00				100.00				100.00	
1109 Switches Reason:														
1110 Upgrade Resale Value of House	0	0	7	9.86	15.56		9	12.86	18.75		16	11.35	17.20	
1111 Upgrade Appearance	0	0	11	15.49	24.44		7	10.00	14.59		18	12.77	19.35	
1112 Need for More Light	0	0	11	15.49	24.44		11	15.71	22.92		22	15.60	23.66	
1113 Replace Existing Fixtures	0	0	11	15.49	24.44		12	17.14	25.00		23	16.31	24.73	
1114 Previous System Did Not Work	0	0	5	7.04	11.11		9	12.86	18.75		14	9.93	15.05	
1115					100.00				100.00				100.00	
1116 Outlets Reason:														
1117 Upgrade Resale Value of House	0	0	20	28.17	74.07		8	11.43	61.54		28	19.88	70.00	
1118 Upgrade Appearance	0	0	2	2.82	7.41		0	0.00	0.00		2	1.42	5.00	
1119 Need for More Light	0	0	3	4.23	11.11		5	7.14	38.48		8	5.67	20.00	
1120 Previous System Did Not Work	0	0	2	2.82	7.41		0	0.00	0.00		2	1.42	5.00	
1121					100.00				100.00				100.00	
1122 Fan Reason:														
1123 Upgrade Resale Value of House	0	0	1	1.41	33.33		1	1.43	100.00		2	1.42	50.00	
1124 Upgrade Appearance	0	0	2	2.82	66.67		0	0.00	0.00		2	1.42	50.00	
1125					100.00				100.00				100.00	
1126 Fireplace Reason:														
1127 Upgrade Resale Value of House	0	0	0	0.00	0.00		1	1.43	100.00		1	0.71	100.00	
1128														
1129														
1130 ELECTRICAL FEATURES TOTALS														
1131 ELECTRICAL FEATURES REASONS:														
1132 Upgrade Resale Value of House	0	0	14	19.72	16.09		18	25.71	19.78		32	22.70	17.98	
1133 Upgrade Appearance	0	0	23	32.39	26.44		9	12.86	9.89		32	22.70	17.98	
1134 Need for More Light	0	0	23	32.39	26.44		27	38.57	29.67		50	35.46	28.09	
1135 Replace Existing Fixtures	0	0	16	22.54	18.39		19	27.14	20.88		35	24.82	19.86	
1136 Previous System Did Not Work	0	0	9	12.68	10.34		15	21.43	16.48		24	17.02	13.48	
1137 Need for Additional Installation	0	0	2	2.82	2.30		3	4.29	3.30		5	3.55	2.81	
1138					100.00				100.00				100.00	
1139														
1140 TOTAL ELECTRICAL WORK BY TYPE														
1141 Total Electrical Wiring / Elect. Features	0	0	32	45.07	28.45		31	44.29	27.43		63	44.68	26.92	
1142 Total Lighting Fixtures / Elect. Features	0	0	38	53.52	31.40		34	48.57	30.09		72	51.06	30.77	
1143 Total Switches / Electrical Features	0	0	31	43.68	25.82		31	44.29	27.43		62	43.97	26.50	
1144 Total Fan/Electrical Features	0	0	3	4.23	2.48		1	1.43	0.88		4	2.84	1.71	
1145 Total Outlets/Electrical Features	0	0	17	23.94	14.05		15	21.43	13.27		32	22.70	13.68	
1146 Total Fireplace/Electrical Features	0	0	0	0.00	0.00		1	1.43	0.88		1	0.71	0.43	
1147					100.00				100.00				100.00	
1148														
1149 Total Time Spent(hours)/ Elec. Features			504.5				456				960.5			
1150 Total Work Household / Elec. Features	0	0	34		79.07		41		87.23		75		83.33	
1151 Total Work Contractor / Elec. Features	0	0	18		41.86		9		19.15		27		30.00	
1152 Total Money Spent / Elec. Features			\$9,398				\$10,576				\$19,974			
1153 TOTAL - ELECTRICAL FEATURES	0	0	43	60.58	12.36		47	67.14	13.66		90	63.83	13.01	
1154														
1155 PLUMBING FEATURES -														
1156 KITCHEN														
1157 Rough Plumbing	0	0	0	0.00	0.00		3	4.29	27.27		3	2.13	21.43	
1158 Sink	0	0	0	0.00	0.00		3	4.29	27.27		3	2.13	21.43	
1159 Faucet	1	0	3	4.23	100.00		5	7.14	45.45		8	5.67	57.14	
1160 Dishwasher	0	0	0	0.00	0.00		3	4.29	27.27		3	2.13	21.43	
1161 Total Work Kitchen	1	0	3	4.23	100.00		9	12.86	127.27		12	8.51	121.43	
1162														
1163 Rough Plumbing - Household	0	0	0	0.00	0.00		3	4.29	23.08		3	2.13	18.75	
1164 Sink - Household	0	0	0	0.00	0.00		2	2.86	15.38		2	1.42	12.50	
1165 Faucet - Household	1	0	3	4.23	100.00		5	7.14	38.48		8	5.67	50.00	
1166 Dishwasher - Household	0	0	0	0.00	0.00		3	4.29	23.08		3	2.13	18.75	
1167 Total Work Household	1	0	3	4.23	100.00		8	11.43	100.00		11	7.90	100.00	
1168														
1169 Rough Plumbing - Contractor	0	0	0	0.00	0.00		0	0.00	0.00		0	0.00	0.00	
1170 Sink - Contractor	0	0	0	0.00	0.00		0	0.00	0.00		0	0.00	0.00	
1171 Faucet - Contractor	0	0	0	0.00	0.00		0	0.00	0.00		0	0.00	0.00	
1172 Dishwasher - Contractor	0	0	0	0.00	0.00		0	0.00	0.00		0	0.00	0.00	
1173 Total Work Contractor	0	0	0	0.00	0.00		0	0.00	0.00		0	0.00		

	141		PHASE 1			PHASE 2			PHASE 1 + PHASE 2		
	1171(HP)	1335(MF)	TOTALS	% (71)	%	TOTALS	% (70)	%	TOTALS	% (141)	%
1473 STORAGE/CABINETS -											
1474 GROUND - FLOOR BATHROOM											
1475 Cabinet	0	0	6	8.45	66.67	5	7.14	62.50	11	7.60	64.71
1476 Handles	0	0	3	4.23	33.33	3	4.29	37.50	6	4.26	35.29
1477 Total Work Bathroom (G)	0	0	6	8.45	100.00	5	7.14	100.00	11	7.80	100.00
1478											
1479 Cabinet - Household	0	0	6	8.45	66.67	5	7.14	62.50	11	7.60	64.71
1480 Handles - Household	0	0	3	4.23	33.33	3	4.29	37.50	6	4.26	35.29
1481 Total Work Household	0	0	6	8.45	100.00	5	7.14	100.00	11	7.80	100.00
1482											
1483 Cabinet - Contractor	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
1484 Handles - Contractor	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
1485 Total Work Contractor	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
1486											
1487 STORAGE/CABINETS -											
1488 UPPER - FLOOR BATHROOM											
1489 Cabinet	0	0	3	4.23	60.00	6	8.57	60.00	9	6.38	60.00
1490 Handles	0	0	2	2.82	40.00	4	5.71	40.00	6	4.26	40.00
1491 Total Work Bathroom (J)	0	0	3	4.23	100.00	6	8.57	100.00	9	6.38	100.00
1492											
1493 Cabinet - Household	0	0	3	4.23	60.00	6	8.57	60.00	9	6.38	60.00
1494 Handles - Household	0	0	2	2.82	40.00	4	5.71	40.00	6	4.26	40.00
1495 Total Work Household	0	0	3	4.23	100.00	6	8.57	100.00	9	6.38	100.00
1496											
1497 Cabinet - Contractor	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
1498 Handles - Contractor	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
1499 Total Work Contractor	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
1500											
1501 STORAGE/CABINETS -											
1502 MASTER BEDROOM											
1503 Closet	0	0	5	7.04	56.56	6	8.57	37.50	11	7.80	44.00
1504 Shelves	0	0	3	4.23	33.33	1	1.43	6.25	4	2.84	16.00
1505 Handles	0	0	1	1.41	11.11	9	12.86	56.25	10	7.09	40.00
1506 Total Work Master Bedroom	0	0	9	12.68	100.00	16	22.86	100.00	25	17.73	100.00
1507											
1508 Closet - Household	0	0	5	7.04	56.56	6	8.57	37.50	11	7.80	44.00
1509 Shelves - Household	0	0	3	4.23	33.33	1	1.43	6.25	4	2.84	16.00
1510 Handles - Household	0	0	1	1.41	11.11	9	12.86	56.25	10	7.09	40.00
1511 Total Work Household	0	0	9	12.68	100.00	16	22.86	100.00	25	17.73	100.00
1512											
1513 Closet - Contractor	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
1514 Shelves - Contractor	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
1515 Handles - Contractor	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
1516 Total Work Contractor	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
1517											
1518 STORAGE/CABINETS -											
1519 SECOND BEDROOM											
1520 Closet	0	0	8	11.27	88.89	7	10.00	87.50	15	10.64	86.24
1521 Handles	0	0	1	1.41	11.11	1	1.43	12.50	2	1.42	11.76
1522 Total Work Second Bedroom	0	0	9	12.68	100.00	8	11.43	100.00	17	12.06	100.00
1523											
1524 Closet - Household	0	0	6	8.45	85.71	8	8.57	85.71	12	8.51	85.71
1525 Handles - Household	0	0	1	1.41	14.29	1	1.43	14.29	2	1.42	14.29
1526 Total Work Household	0	0	7	9.86	100.00	7	10.00	100.00	14	9.93	100.00
1527											
1528 Closet - Contractor	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
1529 Handles - Contractor	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
1530 Total Work Contractor	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
1531											
1532 STORAGE / CABINETS -											
1533 BASEMENT											
1534 Closet	0	0	9	12.68	17.31	6	8.57	16.67	15	10.64	17.06
1535 Cabinet	0	0	22	30.99	42.31	16	22.86	44.44	38	26.95	43.18
1536 Handles	0	0	12	16.90	23.08	8	11.43	22.22	20	14.18	22.73
1537 Shelves	0	0	9	12.68	17.31	6	8.57	16.67	15	10.64	17.06
1538 Total Work Basement	0	0	31	43.66	100.00	18	25.71	100.00	49	34.75	100.00
1539											
1540 Closet - Household	0	0	6	8.45	15.00	5	7.14	16.67	11	7.80	15.71
1541 Cabinet - Household	0	0	18	25.35	45.00	13	18.57	43.33	31	21.99	44.29
1542 Handles - Household	0	0	10	14.08	25.00	7	10.00	23.33	17	12.06	24.29
1543 Shelves - Household	0	0	6	8.45	15.00	5	7.14	16.67	11	7.80	15.71
1544 Total Work Household	0	0	25	35.21	100.00	15	21.43	100.00	40	28.37	100.00
1545											
1546 Closet - Contractor	0	0	3	4.23	25.00	1	1.43	16.67	4	2.84	22.22
1547 Cabinet - Contractor	0	0	4	5.63	33.33	3	4.29	50.00	7	4.96	38.89
1548 Handles - Contractor	0	0	2	2.82	16.67	1	1.43	16.67	3	2.13	16.67
1549 Shelves - Contractor	0	0	3	4.23	25.00	1	1.43	16.67	4	2.84	22.22
1550 Total Work Contractor	0	0	6	8.45	100.00	3	4.29	100.00	9	6.38	100.00
1551											
1552 Closet - Money Spent	0	0	\$2,700			\$2,100			\$4,800		
1553 Cabinet - Money Spent	0	0	\$3,960			\$4,617			\$8,597		
1554 Handles - Money Spent	0	0	\$302			\$360			\$662		
1555 Shelves - Money Spent	0	0	\$650			\$690			\$1,340		
1556 Island - Money Spent	0	0	\$0			\$60			\$60		
1557 Total Money Spent	0	0	\$7,632			\$7,847			\$15,479		
1558											
1559 Closet Reason:											
1560 Need for More Storage Space	0	0	16	22.54	72.73	13	18.57	100.00	29	20.57	82.86
1561					100.00			100.00			100.00
1562 Cabinet Reason:											
1563 Upgrade Resale Value of House	0	0	1	1.41	2.86	1	1.43	4.76	2	1.42	3.57
1564 Upgrade Appearance	0	0	5	7.04	14.29	1	1.43	4.76	6	4.26	10.71
1565 Need for More Storage Space	0	0	28	38.44	80.00	19	27.14	90.46	47	33.33	83.93
1566					100.00			100.00			100.00
1567 Handles Reason:											
1568 Upgrade Appearance	0	0	15	21.13	88.24	20	28.57	100.00	35	24.82	94.59
1569					100.00			100.00			100.00

	141		PHASE 1			PHASE 2			PHASE 1		PHASE 2	
	1171(HP)	1336(MF)	TOTALS	(%) (71)	(%)	TOTALS	(%) (70)	(%)	TOTALS	(%) (141)	(%)	(%)
1570 Shelves Reason:												
1571 Upgrade Resale Value of House	0	0	0	0.00	0.00	1	1.43	16.67	1	0.71	6.67	
1572 Need for More Storage Space	0	0	9	12.68	100.00	5	7.14	83.33	14	9.93	93.33	
1573					100.00			100.00			100.00	
1574 Island Reason:												
1575 Functionality	0	0	0	0.00	0.00	1	1.43	100.00	1	0.71	100.00	
1576					0.00			100.00			100.00	
1577												
1578 STORAGE / CABINETS TOTALS												
1579 STORAGE / CABINETS REASONS:												
1580 Upgrade Resale Value of House	0	0	4	5.83	6.90	1	1.43	2.22	5	3.55	4.85	
1581 Upgrade Appearance	0	0	17	23.94	29.3	21	30.00	46.67	38	26.95	38.89	
1582 Need for More Storage Space	0	0	36	50.70	62.07	23	32.86	51.11	59	41.84	67.28	
1583 Functionality	0	0	0	0.00	0.00	1	1.41	1.72	1	0.71	0.97	
1584					100.00			100.00			100.00	
1585												
1586 TOTAL STOR/CAB. WORK BY TYPE												
1587 Total Closets / Storage and Cabinets	0	0	18	25.35	24.32	13	18.57	21.31	31	21.99	22.96	
1588 Total Cabinets / Storage and Cabinets	0	0	29	40.85	39.19	20	28.57	32.79	49	34.75	36.30	
1589 Total Handles / Storage and Cabinets	0	0	16	22.54	21.62	20	28.57	32.79	36	25.53	28.67	
1590 Total Shelves / Storage and Cabinets	0	0	11	15.49	14.85	7	10.00	11.48	18	12.77	13.33	
1591 Total Island / Storage and Cabinets	0	0	0	0.00	0.00	1	1.43	1.64	1	0.71	0.74	
1592					100.00			100.00			100.00	
1593												
1594 Total Time Spent / Storage and Cab.			1274.5			1263			2527.5			
1595 Total Work Household / Stor. and Cab.	0	0	34		87.18	28		96.65	62		91.18	
1596 Total Work Contractor / Stor. and Cab.	0	0	6		15.36	3		19.34	0		13.23	
1597 Total Money Spent / Storage and Cab.			\$7,632			\$7,647			\$15,479			
1598 TOTAL WORK STOR. AND CAB.	0	0	39	54.93	11.21	29	41.43	8.43	68	48.23	9.83	
1599												
1600 CEILING - BASEMENT												
1601												
1602 Ceiling - Suspended	0	0	1	2.86		4	12.50		5	7.40		
1603 Ceiling - Gypsum Boards	0	0	34	97.14		28	67.50		62	92.54		
1604 Total			35			32			67	100.00		
1605 Ceiling-Time Spent	0	0	1248			916			2164			
1606 Ceiling-Household	0	0	23		65.71	28		87.5	51		78.12	
1607 Ceiling-Contractor	0	0	12		34.28	4		12.5	16		23.88	
1608 TOTAL WORK CEILING	0	0	35	49.30	10.06	32	45.71	9.30	67	47.52	9.68	
1609												
1610 Total Money Spent/Ceiling	0	0	\$10,310			\$9,775			\$20,085			
1611												
1612 Ceiling Reason:												
1613 Upgrade Resale Value of the House	0	0	25	35.21	52.08	24	34.29	54.55	49	34.75	53.26	
1614 Upgrade Appearance	0	0	23	32.39	47.92	20	28.57	45.45	43	30.50	46.74	
1615					100.00			100.00			100.00	
1616 LANDSCAPING												
1617												
1618 Fences - Front	0	0	3	4.23	6.38	2	2.86	4.00	5	3.55	5.15	
1619 Fences - Back	0	1	44	61.97	93.62	48	68.57	96.00	92	66.25	94.85	
1620 Total Fences	0	1	44	61.97	100.00	50	71.43	100.00	94	66.67	100.00	32.08
1621												
1622 Greenery - Front	1	0	40	56.34	55.56	37	52.86	57.81	77	54.81	56.42	
1623 Greenery - Back	1	0	32	45.07	44.44	27	38.57	42.19	59	41.84	43.36	
1624 Total Greenery	1	0	45	64.79	100.00	47	67.14	100.00	93	66.95	100.00	31.74
1625												
1626 Pavement - Front/Parking	0	0	16	14.08	52.63	13	18.57	72.22	23	16.31	62.18	
1627 Pavement - Back	0	0	9	12.68	47.37	5	7.14	27.78	14	9.93	37.84	
1628 Total Pavement	0	0	17	23.94	100.00	18	25.71	100.00	35	24.82	100.00	11.96
1629												
1630 Deck - Back	1	1	16	22.54	100.00	17	24.29	100.00	33	23.40	100.00	
1631 Total Deck	1	1	16	22.54	100.00	17	24.29	100.00	33	23.40	100.00	11.26
1632												
1633 Stair - Back	0	0	3	4.23	100.00	4	5.71	100.00	7	4.96	100.00	2.39
1634 Total Stair	0	0	3	4.23	100.00	4	5.71	100.00	7	4.96	100.00	
1635												
1636 Pergola	0	0	0	0.00	0.00	3	4.29	100.00	3	2.13	100.00	1.02
1637 Storage Cabin	0	0	12	16.90	100.00	16	22.86	100.00	26	19.85	100.00	9.56
1638												
1639 Total Front Work	1	0	41	57.75	41.84	43	61.43	43.43	84	60.57	42.84	
1640 Total Back Work	1	1	57	80.28	58.16	56	80.00	56.67	113	80.14	57.35	
1641 TOTAL WORK LANDSCAPING	1	1	58	81.89	100.00	57	81.43	100.00	115	81.56	100.00	18.62
1642												
1643 Total Time Spent (landscaping)			7759			3735			11494			
1644												
1645 Fences - Front - Household	0	0	1	1.41	5.56	0	0.00	0.00	1	0.71	2.38	
1646 Fences - Back - Household	0	0	17	23.94	94.44	24	34.29	100.00	41	29.08	97.62	
1647 Total Fences Household	0	0	17	23.94	100.00	24	34.29	100.00	41	29.08	100.00	
1648												
1649 Greenery - Front - Household	1	0	40	56.34	56.34	37	52.86	57.81	77	54.81	57.04	
1650 Greenery - Back - Household	1	0	31	43.66	43.66	27	38.57	42.19	58	41.13	42.95	
1651 Total Greenery Household	1	0	45	63.36	100.00	47	67.14	100.00	92	66.25	100.00	
1652												
1653 Pavement - Front - Household	0	0	4	5.83	66.67	2	2.86	100.00	6	4.26	75.00	
1654 Pavement - Back - Household	0	0	2	2.82	33.33	0	0.00	0.00	2	1.42	25.00	
1655 Total Pavement Household	0	0	5	7.04	100.00	2	2.86	100.00	7	4.96	100.00	
1656												
1657 Deck - Back - Household	1	0	11	15.49		14	20.00		25	17.73		
1658 Total Deck Household	1	0	11	15.49	100.00	14	20.00	100.00	25	17.73	100.00	
1659												
1660 Stair - Back - Household	0	0	3	4.23	100.00	1	1.43	100.00	4	2.84	100.00	
1661 Total Stair Household	0	0	3	4.23	100.00	1	1.43	100.00	4	2.84	100.00	
1662												
1663 Pergola - Household	0	0	0	0.00	0.00	3	4.29	100.00	3	2.13	100.00	
1664 Storage Cabin - Household	0	0	7	9.86	100.00	12	17.14	100.00	19	13.48	100.00	
1665												
1666 Total of Household Work (landscaping)	1	0	50		86.21	51		89.47	101		87.83	
1667												
1668 Fences - Front - Contractor	0	0	2	2.82	6.90	2	2.86	7.69	4	2.84	7.27	
1669 Fences - Back - Contractor	0	1	27	38.03	83.10	24	34.29	92.31	51	36.17	92.73	
1670 Total Fences Contractor	0	1	27	38.03	100.00	26	37.14	100.00	53	37.64	100.00	

	141		PHASE 1			PHASE 2			PHASE 1 + PHASE 2			
	1171(MP)	1336(MP)	TOTALS	% (71)	%	TOTALS	% (70)	%	TOTALS	% (141)	%	
1864 WHOLE TOTAL REASONS												
1860 Upgrade Resale Value of House	1	1	50	70.42	10.04	52	74.29	9.83	102	72.34	9.93	
1861 Upgrade Appearance	1	1	66	92.96	13.25	64	91.43	12.10	130	92.20	12.06	
1862 Want to Change Color of Room	0	0	22	30.99	4.42	36	51.43	6.81	58	41.13	5.65	
1863 Want to Make Room Look Different	1	0	36	50.70	7.23	26	37.14	4.91	62	43.97	6.04	
1864 Poor Paint Quality	1	0	3	4.23	0.60	4	5.71	0.76	7	4.96	0.68	
1865 Provide the Floor with a Better Finish	1	0	22	30.99	4.42	27	38.57	5.10	49	34.75	4.77	
1866 Material (Floor) Not in Good Condition	0	0	2	2.82	0.40	0	0.00	0.00	2	1.42	0.19	
1867 Need for More Light	0	0	23	32.39	4.62	27	38.57	5.10	50	35.46	4.87	
1868 Replace Existing Fixtures	1	0	20	28.17	4.02	22	31.43	4.16	42	29.79	4.09	
1869 Previous System Did Not Work	1	0	16	22.54	3.21	17	24.29	3.21	33	23.40	3.21	
1870 Need for Additional Installations	0	0	17	23.94	3.41	20	28.57	3.78	37	26.24	3.60	
1871 Functionality	0	0	0	0.00	0.00	1	1.43	0.19	1	0.71	0.10	
1872 Security	0	0	27	38.03	5.42	35	50.00	6.62	62	43.97	6.04	
1873 Provide More Natural Light	0	0	5	7.04	1.00	10	14.29	1.89	15	10.64	1.48	
1874 Previous D/W in Not Good Condition	0	0	1	1.41	0.20	0	0.00	0.00	1	0.71	0.10	
1875 Additional Space Need a Door	0	0	26	36.62	5.22	26	37.14	4.91	52	36.88	5.06	
1876 Ventilation	0	0	2	2.82	0.40	3	4.29	0.57	5	3.55	0.49	
1877 Need for More Storage Space	0	0	36	50.70	7.23	23	32.86	4.35	59	41.84	5.74	
1878 Previous Storage Not in Good Cond	0	0	1	1.41	0.20	0	0.00	0.00	1	0.71	0.10	
1879 Create a More Usable Outdoor Space	1	1	36	50.70	7.23	33	47.14	6.24	69	48.94	6.72	
1880 Define Property Borders	0	1	37	52.11	7.43	51	72.86	9.64	88	62.41	8.57	
1881 Safety	0	0	1	1.41	0.20	1	1.43	0.19	2	1.42	0.19	
1882 Backyard Arrangement Protection	0	0	0	0.00	0.00	3	4.29	0.57	3	2.13	0.29	
1883 Storage	0	0	5	7.04	1.00	6	8.57	1.13	11	7.80	1.07	
1884 Need for More Space	1	1	37	52.11	7.43	34	48.57	6.43	71	50.35	6.91	
1885 Growth of Household	0	0	6	8.45	1.20	8	11.43	1.51	14	9.83	1.38	
1886 In Order to Rent	0	0	1	1.41	0.20	0	0.00	0.00	1	0.71	0.10	
1887					100.00			100.00			100.00	
1888 NEW SPACES IN THE BASEMENT												
1889												
1890 Storage Room	0	0	25	35.21	20.33	25	35.71	22.94	50	35.46	21.55	
1891 Laundry Room	0	0	30	42.25	24.39	23	32.86	21.10	53	37.59	22.84	
1892 Family Room	0	0	28	39.44	22.76	31	44.29	28.44	59	41.84	25.43	
1893 Play Room	1	0	8	11.27	6.50	6	8.57	5.50	14	9.93	6.03	
1894 Additional Bedroom	0	0	19	26.76	15.45	12	17.14	11.01	31	21.99	13.36	
1895 Additional Bathroom	0	0	6	8.45	4.88	5	7.14	4.59	11	7.80	4.74	
1896 Office	0	0	2	2.82	1.63	1	1.43	0.92	3	2.13	1.29	
1897 Working Place	0	0	4	5.63	3.25	6	8.57	5.50	10	7.09	4.31	
1898 Living Room	0	0	1	1.41	0.81	0	0.00	0.00	1	0.71	0.43	
1899 Total Work in the Basement	1	0	41	57.75	100.00	46	65.71	100.00	87	61.70	100.00	
1900												
1901 Storage Room - Time Spent	0	0	1632			1176			2808			
1902 Laundry Room - Time Spent	0	0	1540			944			2484			
1903 Family Room - Time Spent	0	0	1710			1378			3088			
1904 Play Room - Time Spent	8	0	360			240			600			
1905 Additional Bedroom - Time Spent	0	0	2496			1712			4198			
1906 Additional Bathroom - Time Spent	0	0	936			280			1216			
1907 Office - Time Spent	0	0	504			24			528			
1908 Working Place - Time Spent	0	0	204			320			524			
1909 Living Room - Time Spent	0	0	240			0			240			
1910 Total Time Spent Basement			9612			6072			15684			
1911												
1912 Storage Room - Household	0	0	22	30.99	21.57	24	34.29	24.00	46	32.62	22.77	
1913 Laundry Room - Household	0	0	26	36.62	25.49	22	31.43	22.00	48	34.04	23.76	
1914 Family Room - Household	0	0	27	38.03	26.47	31	44.29	31.00	58	41.13	26.71	
1915 Play Room - Household	1	0	8	11.27	7.84	5	7.14	5.00	13	9.22	6.44	
1916 Additional Bedroom - Household	0	0	10	14.08	9.60	11	15.71	11.00	21	14.89	10.40	
1917 Additional Bathroom - Household	0	0	3	4.23	2.94	4	5.71	4.00	7	4.96	3.47	
1918 Office - Household	0	0	2	2.82	1.96	1	1.43	1.00	3	2.13	1.49	
1919 Working Place - Household	0	0	4	5.63	3.92	2	2.86	2.00	6	4.28	2.97	
1920 Living Room - Household	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	
1921 Total Work Household Basement	1	0	36	50.70	100.00	43	61.43	100.00	79	56.03	100.00	
1922												
1923 Storage Room - Contractor	0	0	3	4.23	12.00	1	1.43	12.50	4	2.84	12.12	
1924 Laundry Room - Contractor	0	0	4	5.63	16.00	1	1.43	12.50	5	3.55	15.15	
1925 Family Room - Contractor	0	0	1	1.41	4.00	0	0.00	0.00	1	0.71	3.03	
1926 Play Room - Contractor	0	0	0	0.00	0.00	1	1.43	12.50	1	0.71	3.03	
1927 Additional Bedroom - Contractor	0	0	9	12.68	36.00	1	1.43	12.50	10	7.09	30.30	
1928 Additional Bathroom - Contractor	0	0	7	9.86	28.00	1	1.43	12.50	8	5.67	24.24	
1929 Office - Contractor	0	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	
1930 Working Place - Contractor	0	0	0	0.00	0.00	3	4.29	37.50	3	2.13	9.09	
1931 Living Room - Contractor	0	0	1	1.41	4.00	0	0.00	0.00	1	0.71	3.03	
1932 Total Work Contractor Basement	0	0	13	18.31	100.00	5	7.14	100.00	18	12.77	100.00	
1933												
1934 Storage Room - Money Spent	0	0	\$7,570			\$7,870			\$15,440			
1935 Laundry Room - Money Spent	0	0	\$6,010			\$5,010			\$11,020			
1936 Family Room - Money Spent	0	0	\$16,940			\$17,008			\$33,948			
1937 Play Room - Money Spent	300	0	\$6,900			\$1,830			\$8,730			
1938 Additional Bedroom - Money Spent	0	0	\$15,450			\$13,100			\$28,550			
1939 Additional Bathroom - Money Spent	0	0	\$7,600			\$2,650			\$10,250			
1940 Office - Money Spent	0	0	\$1,000			\$500			\$1,300			
1941 Working Place - Money Spent	0	0	\$600			\$900			\$1,400			
1942 Living Room - Money Spent	0	0	\$1,000			\$0			\$1,000			
1943 Total Money Spent in the Basement			\$63,170			\$48,666			\$111,836			
1944												
1945 Storage Room Reason:												
1946 Upgrade Resale Value of House	0	0	14	19.72	27.45	5	7.14	14.71	19	13.48	22.35	
1947 Upgrade Appearance	0	0	11	15.49	21.57	4	5.71	11.78	15	10.64	17.65	
1948 Need for More Space	0	0	23	32.39	45.10	21	30.00	61.78	44	31.21	51.78	
1949 Growth of Household	0	0	3	4.23	5.68	4	5.71	11.78	7	4.96	8.24	
1950					100.00			100.00			100.00	
1951 Laundry Room Reason:												
1952 Upgrade Resale Value of House	0	0	12	16.90	26.67	3	4.29	13.04	15	10.64	22.06	
1953 Upgrade Appearance	0	0	9	12.68	20.00	3	4.29	13.04	12	8.51	17.55	
1954 Need for More Space	0	0	22	30.99	48.89	17	24.29	73.91	39	27.66	57.35	
1955 Growth of Household	0	0	2	2.82	4.44	0	0.00	0.00	2	1.42	2.94	
1956					100.00			100.00			100.00	

	141		PHASE 1			PHASE 2			PHASE 1 + PHASE 2		
	1171(HP)	1336(MR)	TOTALS	% (71)	%	TOTALS	% (70)	%	TOTALS	% (141)	%
2058 Natural Lighting											
2059 1 Very Important	1	1	46	64.79		46	65.71		92	65.25	
2060 2	0	0	16	22.54		17	24.29		33	23.40	
2061 3	0	0	8	11.27		6	7.14		13	9.22	
2062 4	0	0	1	1.41		0	0.00		1	0.71	
2063 5 Not Important at All	0	0	0	0.00		2	2.86		2	1.42	
2064											
2065 Cross-Ventilation											
2066 1 Very Important	1	1	40	56.34		53	75.71		93	65.96	
2067 2	0	0	24	33.80		11	15.71		35	24.82	
2068 3	0	0	6	8.45		5	7.14		11	7.80	
2069 4	0	0	1	1.41		0	0.00		1	0.71	
2070 5 Not Important at All	0	0	0	0.00		1	1.43		1	0.71	
2071											
2072 Adequate Soundproofing											
2073 1 Very Important	1	1	62	87.32		65	92.86		127	90.07	
2074 2	0	0	5	7.04		3	4.29		8	5.67	
2075 3	0	0	2	2.82		2	2.86		4	2.84	
2076 4	0	0	2	2.82		0	0.00		2	1.42	
2077 5 Not Important at All	0	0	0	0.00		0	0.00		0	0.00	
2078											
2079 Quality of Exterior Finishes											
2080 1 Very Important	1	1	44	61.97		48	68.57		92	65.25	
2081 2	0	0	19	26.78		14	20.00		33	23.40	
2082 3	0	0	5	7.04		7	10.00		12	8.51	
2083 4	0	0	3	4.23		0	0.00		3	2.13	
2084 5 Not Important at All	0	0	0	0.00		1	1.43		1	0.71	
2085											
2086 Quality of Interior Finishes											
2087 1 Very Important	1	1	49	69.01		33	47.14		82	58.16	
2088 2	0	0	14	19.72		32	45.71		46	32.62	
2089 3	0	0	7	9.86		6	7.14		12	8.51	
2090 4	0	0	1	1.41		0	0.00		1	0.71	
2091 5 Not Important at All	0	0	0	0.00		0	0.00		0	0.00	
2092											
2093 Appearance:											
2094 1 Very Important	1	1	30	42.25		29	41.43		59	41.04	
2095 2	0	0	26	36.62		27	38.57		53	37.59	
2096 3	0	0	13	18.31		13	18.57		26	18.44	
2097 4	0	0	2	2.82		1	1.43		3	2.13	
2098 5 Not Important at All	0	0	0	0.00		0	0.00		0	0.00	
2099											
2100 Size of Front Yard											
2101 1 Very Important	1	1	5	7.04		7	10.00		12	8.51	
2102 2	0	0	14	19.72		18	25.71		32	22.70	
2103 3	0	0	32	45.07		26	37.14		58	41.13	
2104 4	0	0	16	22.54		12	17.14		28	19.88	
2105 5 Not Important at All	0	0	4	5.63		7	10.00		11	7.80	
2106											
2107 Size of Backyard											
2108 1 Very Important	1	1	17	23.94		15	21.43		32	22.70	
2109 2	0	0	20	28.17		27	38.57		47	33.33	
2110 3	0	0	25	35.21		16	21.43		40	28.37	
2111 4	0	0	7	9.86		10	14.29		17	12.08	
2112 5 Not Important at All	0	0	2	2.82		3	4.29		5	3.55	
2113											
2114 Privacy in Backyard											
2115 1 Very Important	1	1	25	35.21		24	34.29		49	34.75	
2116 2	0	0	23	32.39		21	30.00		44	31.21	
2117 3	0	0	17	23.94		22	31.43		39	27.66	
2118 4	0	0	2	2.82		1	1.43		3	2.13	
2119 5 Not Important at All	0	0	4	5.63		2	2.86		6	4.26	
2120											
2121 Indoor Garage:											
2122 1 Very Important	1	0	6	8.45		4	5.71		10	7.09	
2123 2	0	0	5	7.04		1	1.43		6	4.26	
2124 3	0	0	12	16.90		7	10.00		19	13.48	
2125 4	0	0	17	23.94		8	11.43		25	17.73	
2126 5 Not Important at All	0	1	31	43.06		50	71.43		81	57.45	
2127											
2128 Laundry Room:											
2129 1 Very Important	1	0	30	42.25		24	34.29		54	38.30	
2130 2	0	1	16	22.54		25	35.71		41	29.08	
2131 3	0	0	19	26.78		17	24.29		36	25.53	
2132 4	0	0	4	5.63		1	1.43		5	3.55	
2133 5 Not Important at All	0	0	2	2.82		3	4.29		5	3.55	
2134											
2135 Kitchen Space and Functionality:											
2136 1 Very Important	1	1	46	64.79		32	45.71		78	55.32	
2137 2	0	0	16	22.54		24	34.29		40	28.37	
2138 3	0	0	7	9.86		13	18.57		20	14.18	
2139 4	0	0	2	2.82		1	1.43		3	2.13	
2140 5 Not Important at All	0	0	0	0.00		0	0.00		0	0.00	
2141											
2142 PLAN TO MOVE											
2143 Yes	1	1	35	49.30		25	35.71		60	42.55	
2144 No	0	0	36	50.70		45	64.29		81	57.45	
2145											
2146 REASONS FOR MOVING											
2147 Need for More Space	0	0	21	29.58	28.77	15	21.43	45.45	36	25.53	33.86
2148 Poorly Insulated for Sound	1	0	10	14.08	13.70	1	1.43	3.03	11	7.80	10.38
2149 There is Not Enough Cross-Ventilation	0	0	8	11.27	10.96	1	1.43	3.03	9	6.38	8.49
2150 There is Not Enough Natural Lighting	0	0	4	5.63	5.46	1	1.43	3.03	5	3.55	4.72
2151 Do not Like the Neighbours	0	0	8	11.27	10.96	2	2.86	6.06	10	7.09	9.43
2152 Can Afford Better House	0	0	16	22.54	21.92	9	12.86	27.27	25	17.73	23.58
2153 It is Too Far From Work	0	1	5	7.04	6.85	3	4.29	9.09	8	5.67	7.55
2154 Moving of Location	0	0	1	1.41	1.37	0	0.00	0.00	1	0.71	0.94
2155 Environment Too Noisy	0	0	0	0.00	0.00	1	1.43	3.03	1	0.71	0.94
2156					100.00			100.00			100.00

CORRELATIONS

	141		PHASE 1		PHASE 2		PHASE 1 + PHASE 2	
	1171 (HP)	1335 (MF)	TOTALS	%	TOTALS	%	TOTALS	%
250 LANDSCAPING								
251 Fences	0	0	14	48.28	13	44.83	27	46.55
252 Greenery	0	0	11	37.93	12	41.38	23	39.66
253 Pavement	0	0	2	6.90	2	6.90	4	6.90
254 Deck	0	0	2	6.90	2	6.90	4	6.90
255 Storage Cabin	0	0	0	0.00	0	0.00	0	0.00
256 Stairs	0	0	0	0.00	0	0.00	0	0.00
257 Pergola	0	0	0	0.00	0	0.00	0	0.00
258 Total			29	100.00	29	100.00	58	100.00
259								
260 CEILING								
261 Gypsum Boards	0	0	3	100.00	3	100.00	6	100.00
262 Suspended	0	0	0	0.00	0	0.00	0	0.00
263 Total			3	100.00	3	100.00	6	100.00
264								
265 FIRST MODIFICATIONS BY ROOMS								
266								
267 Entrance	0	0	22	14.77	22	14.97	44	14.86
268 Living Room	0	0	14	9.40	13	8.84	27	9.12
269 Dining Room	0	0	13	8.72	13	8.84	26	8.78
270 Kitchen	0	0	9	6.04	9	6.12	18	6.08
271 Ground-Floor Bathroom	0	0	7	4.70	8	5.44	15	5.07
272 Upper-Floor Bathroom	0	0	9	6.04	11	7.48	20	6.76
273 Master Bedroom	0	0	12	8.05	10	6.80	22	7.43
274 Second Bedroom	0	0	11	7.38	10	6.80	21	7.09
275 Basement	0	0	23	15.44	28	19.05	51	17.23
276 Stairs & Hallway	0	0	6	4.03	4	2.72	10	3.38
277 Exterior	0	0	23	15.44	19	12.93	42	14.19
278 Total			149	100.00	147	100.00	296	100.00
279								
280 GREATER No. OF MODIFICATIONS /								
281 FAMILY TYPE								
282 Single parent (14)	4	0	40	11.49	29	8.43	69	9.97
283 Married with children (42)	0	0	133	38.22	94	27.33	227	32.80
284 Married without children (19)	0	0	51	14.86	49	14.24	100	14.45
285 Single living alone (11)	0	1	7	2.01	13	3.78	20	2.89
286 Companion with children (28)	0	0	54	15.52	102	29.65	156	22.54
287 Single person living with a tenant (1)	0	0	7	2.01	0	0.00	7	1.01
288 Companion without children (26)	0	0	56	16.09	57	16.57	113	16.23
289 Total			348	100.00	344	100.00	692	100.00
290								
291 POST-OCCUPANCY MODIFICATIONS								
292 BY FEATURES / FAMILY TYPE								
293								
294 WALLS:								
295								
296 PAINT								
297 Single Parent	0	0	7	12.73	6	10.91	13	11.82
298 Married with children	0	1	21	38.18	12	21.82	33	30.00
299 Married without children	0	0	8	14.55	9	16.36	17	15.45
300 Single living alone	0	0	0	0.00	2	3.64	2	1.82
301 Companion with children	0	0	9	16.36	18	29.09	25	22.73
302 Single person living with a tenant	0	0	1	1.82	0	0.00	1	0.91
303 Companion without children	0	0	9	16.36	10	18.18	19	17.27
304 Total			55	100.00	55	100.00	110	100.00
305								
306 WALLPAPER								
307 Single Parent	0	0	2	6.45	2	8.00	4	7.14
308 Married with children	0	0	12	36.71	8	32.00	20	35.71
309 Married without children	0	0	3	9.08	2	8.00	5	8.93
310 Single living alone	0	0	1	3.23	0	0.00	1	1.79
311 Companion with children	0	0	7	22.58	10	40.00	17	30.36
312 Single person living with a tenant	0	0	1	3.23	0	0.00	1	1.79
313 Companion without children	0	0	5	16.13	3	12.00	8	14.29
314 Total			31	100.00	25	100.00	56	100.00
315								
316 WOODWORK								
317 Single Parent	0	0	1	4.76	1	5.88	2	5.26
318 Married with children	0	0	8	38.10	3	17.65	11	28.95
319 Married without children	0	0	1	4.76	4	23.53	5	13.16
320 Single living alone	0	0	1	4.76	0	0.00	1	2.63
321 Companion with children	0	0	6	28.57	7	41.18	13	34.21
322 Single person living with a tenant	0	0	0	0.00	0	0.00	0	0.00
323 Companion without children	0	0	4	19.05	2	11.76	6	15.79
324 Total			21	100.00	17	100.00	38	100.00
325								
326 MIRROR								
327 Single Parent	0	0	2	22.22	1	10.00	3	15.79
328 Married with children	0	0	2	22.22	2	20.00	4	21.05
329 Married without children	0	0	2	22.22	1	10.00	3	15.79
330 Single living alone	0	0	0	0.00	0	0.00	0	0.00
331 Companion with children	0	0	1	11.11	4	40.00	5	26.32
332 Single person living with a tenant	0	0	0	0.00	0	0.00	0	0.00
333 Companion without children	0	0	2	22.22	2	20.00	4	21.05
334 Total			9	100.00	10	100.00	19	100.00
335								
336 TILES								
337 Single Parent	0	0	0	0.00	0	0.00	0	0.00
338 Married with children	0	0	2	25.00	1	20.00	3	23.08
339 Married without children	0	0	2	25.00	0	0.00	2	15.38
340 Single living alone	0	0	1	12.50	0	0.00	1	7.69
341 Companion with children	0	0	0	0.00	2	40.00	2	15.38
342 Single person living with a tenant	0	0	0	0.00	0	0.00	0	0.00
343 Companion without children	0	0	3	37.50	2	40.00	5	38.46
344 Total			8	100.00	5	100.00	13	100.00

	141		PHASE 1		PHASE 2		PHASE 1 + PHASE 2	
	1171(HP)	1335(MF)	TOTALS	%	TOTALS	%	TOTALS	%
1090 ELECTRICAL FEATURES								
1091 IN THE BASEMENT / FAMILY TYPE								
1092								
1093 BASEMENT - ELECTRICAL WIRING								
1094 Single Parent	0	0	4	12.90	0	0.00	4	8.45
1095 Married with children	0	1	13	41.94	7	22.58	20	32.26
1096 Married without children	0	0	3	9.68	6	19.35	9	14.52
1097 Single living alone	0	0	1	3.23	1	3.23	2	3.23
1098 Companion with children	0	0	4	12.90	14	45.16	18	29.85
1099 Single person living with a tenant	0	0	1	3.23	0	0.00	1	1.61
1100 Companion without children	0	0	5	16.13	3	9.68	8	12.90
1101 Total			31	100.00	31	100.00	62	100.00
1102								
1103 BASEMENT - SWITCHES								
1104 Single Parent	0	0	1	3.85	0	0.00	1	1.62
1105 Married with children	0	1	15	57.69	7	24.14	22	40.00
1106 Married without children	0	0	3	11.54	4	13.79	7	12.73
1107 Single living alone	0	0	1	3.85	1	3.45	2	3.64
1108 Companion with children	0	0	2	7.69	13	44.83	15	27.27
1109 Single person living with a tenant	0	0	1	3.85	0	0.00	1	1.62
1110 Companion without children	0	0	3	11.54	4	13.79	7	12.73
1111 Total			28	100.00	29	100.00	55	100.00
1112								
1113 BASEMENT - LIGHTING FIXTURES								
1114 Single Parent	0	0	3	11.54	1	4.17	4	8.00
1115 Married with children	0	1	12	46.15	2	8.33	14	28.00
1116 Married without children	0	0	3	11.54	3	12.50	6	12.00
1117 Single living alone	0	0	1	3.85	1	4.17	2	4.00
1118 Companion with children	0	0	2	7.69	12	50.00	14	28.00
1119 Single person living with a tenant	0	0	1	3.85	0	0.00	1	2.00
1120 Companion without children	0	0	4	15.38	5	20.83	9	18.00
1121 Total			28	100.00	24	100.00	50	100.00
1122								
1123 BASEMENT - OUTLETS								
1124 Single Parent	0	0	2	11.76	0	0.00	2	6.25
1125 Married with children	0	0	7	41.18	2	13.33	9	28.13
1126 Married without children	0	0	2	11.76	0	0.00	2	6.25
1127 Single living alone	0	0	0	0.00	0	0.00	0	0.00
1128 Companion with children	0	0	3	17.65	12	80.00	15	46.88
1129 Single person living with a tenant	0	0	1	5.88	0	0.00	1	3.13
1130 Companion without children	0	0	2	11.76	1	6.67	3	9.38
1131 Total			17	100.00	15	100.00	32	100.00
1132								
1133 PLUMBING FEATURES								
1134 IN THE BASEMENT / FAMILY TYPE								
1135								
1136 BASEMENT - ROUGH PLUMBING								
1137 Single Parent	0	0	3	20.00	0	0.00	3	9.38
1138 Married with children	0	0	3	20.00	7	41.18	10	31.25
1139 Married without children	0	0	2	13.33	1	5.88	3	9.38
1140 Single living alone	0	0	0	0.00	0	0.00	0	0.00
1141 Companion with children	0	0	3	20.00	8	47.06	11	34.38
1142 Single person living with a tenant	0	0	0	0.00	0	0.00	0	0.00
1143 Companion without children	0	0	4	26.67	1	5.88	5	15.63
1144 Total			15	100.00	17	100.00	32	100.00
1145								
1146 BASEMENT - FAUCET								
1147 Single Parent	0	0	4	30.77	0	0.00	4	16.00
1148 Married with children	0	0	1	7.69	4	33.33	5	20.00
1149 Married without children	0	0	3	23.08	0	0.00	3	12.00
1150 Single living alone	0	0	0	0.00	0	0.00	0	0.00
1151 Companion with children	0	0	2	15.38	7	58.33	9	36.00
1152 Single person living with a tenant	0	0	0	0.00	0	0.00	0	0.00
1153 Companion without children	0	0	3	23.08	1	8.33	4	16.00
1154 Total			13	100.00	12	100.00	25	100.00
1155								
1156 BASEMENT - SINK								
1157 Single Parent	0	0	4	30.77	0	0.00	4	16.00
1158 Married with children	0	0	1	7.69	4	33.33	5	20.00
1159 Married without children	0	0	3	23.08	0	0.00	3	12.00
1160 Single living alone	0	0	0	0.00	0	0.00	0	0.00
1161 Companion with children	0	0	2	15.38	7	58.33	9	36.00
1162 Single person living with a tenant	0	0	0	0.00	0	0.00	0	0.00
1163 Companion without children	0	0	3	23.08	1	8.33	4	16.00
1164 Total			13	100.00	12	100.00	25	100.00
1165								
1166 BASEMENT - TOILET								
1167 Single Parent	0	0	3	50.00	0	0.00	3	25.00
1168 Married with children	0	0	0	0.00	2	33.33	2	16.67
1169 Married without children	0	0	2	33.33	0	0.00	2	16.67
1170 Single living alone	0	0	0	0.00	0	0.00	0	0.00
1171 Companion with children	0	0	0	0.00	4	66.67	4	33.33
1172 Single person living with a tenant	0	0	0	0.00	0	0.00	0	0.00
1173 Companion without children	0	0	1	16.67	0	0.00	1	8.33
1174 Total			6	100.00	6	100.00	12	100.00
1175								
1176 BASEMENT - SHOWER								
1177 Single Parent	0	0	3	75.00	0	0.00	3	37.50
1178 Married with children	0	0	0	0.00	1	25.00	1	12.50
1179 Married without children	0	0	1	25.00	0	0.00	1	12.50
1180 Single living alone	0	0	0	0.00	0	0.00	0	0.00
1181 Companion with children	0	0	0	0.00	3	75.00	3	37.50
1182 Single person living with a tenant	0	0	0	0.00	0	0.00	0	0.00
1183 Companion without children	0	0	0	0.00	0	0.00	0	0.00
1184 Total			4	100.00	4	100.00	8	100.00

	1171 (HP) 1335 (MR)		PHASE 1		PHASE 2		PHASE 1 + PHASE 2	
	TOTALS	%	TOTALS	%	TOTALS	%	TOTALS	%
1280 CEILING								
1281 Ceiling - Household	0	1	23	65.71	26	87.50	51	76.12
1282 Ceiling - Contractor	0	0	12	34.29	4	12.50	16	23.88
1283								
1284 FLOOR								
1285 Cement to Wood - Household	0	0	17	68.00	12	75.00	29	70.73
1286 Cement to Wood - Contractor	0	0	8	32.00	4	25.00	12	29.27
1287								
1288 Cement to Tiles - Household	0	0	3	60.00	1	100.00	4	66.67
1289 Cement to Tiles - Contractor	0	0	2	40.00	0	0.00	2	33.33
1290								
1291 Linoeum to Tiles (Bath. U.) - Household	0	0	0	0.00	0	0.00	0	0.00
1292 Linoeum to Tiles (Bath. U.) - Contractor	0	0	1	100.00	0	0.00	1	100.00
1293								
1294 Tiles - Household	0	0	0	0.00	0	0.00	0	0.00
1295 Tiles - Contractor	0	0	0	0.00	1	100.00	1	100.00
1296								
1297 ELECTRICAL FEATURES								
1298								
1299 Electrical Wiring - Household	0	1	26	81.25	30	96.77	56	84.80
1300 Electrical Wiring - Contractor	0	0	14	43.75	4	12.90	18	28.57
1301								
1302 PLUMBING FEATURES								
1303								
1304 Rough Plumbing - Household	0	0	7	46.87	17	94.44	24	72.73
1305 Rough Plumbing - Contractor	0	0	8	53.33	1	5.56	9	27.27
1306								
1307 LANDSCAPING								
1308								
1309 Pavement - Household	0	0	6	35.29	2	11.11	8	22.86
1310 Pavement - Contractor	0	0	13	76.47	16	88.89	29	82.86
1311								
1312 TOTAL - HOUSEHOLD - MAJOR MOD.	0	0	108	62.84	126	80.26	235	70.98
1313 TOTAL - CONTRACTOR - MAJOR MOD.	0	0	75	43.10	35	22.29	110	33.23
1314								
1315 PLANNED, POST-OCCUPANCY								
1316 & FUTURE MODIFICATIONS								
1317								
1318 PLANNED / POST-OCCUPANCY								
1319 MODIFICATIONS								
1320 Walls	1	0	41	20.50	54	24.11	95	22.41
1321 Floor	0	0	9	4.50	12	5.36	21	4.95
1322 Electrical Features	0	0	31	15.50	37	16.52	68	16.04
1323 Plumbing Features	0	0	13	6.50	17	7.59	30	7.08
1324 Doors and Windows	0	0	28	14.00	33	14.73	61	14.30
1325 Storage	1	0	28	14.00	20	8.93	48	11.32
1326 Landscaping	1	1	50	25.00	51	22.77	101	23.62
1327 TOTAL	1	1	57	100.00	63	100.00	120	100.00
1328								
1329 POST-OCCUPANCY / FUTURE								
1330 MODIFICATIONS								
1331 Walls	0	0	28	26.82	31	28.18	59	27.57
1332 Floor	0	0	14	13.46	17	15.46	31	14.40
1333 Electrical Features	0	0	12	11.54	12	10.91	24	11.21
1334 Plumbing Features	0	0	1	0.96	5	4.55	6	2.80
1335 Doors and Windows	0	0	13	12.50	11	10.00	24	11.21
1336 Storage	0	0	10	9.62	6	5.45	16	7.49
1337 Landscaping	0	0	26	25.00	28	25.45	54	25.23
1338 TOTAL	0	0	40	100.00	37	100.00	77	100.00
1339								
1340 PLANNED / POST-OCCUPANCY / FUTURE								
1341 MODIFICATIONS								
1342 Walls	0	0	19	26.39	28	31.82	47	29.36
1343 Floor	0	0	4	5.56	3	3.41	7	4.38
1344 Electrical Features	0	0	8	11.11	11	12.50	19	11.88
1345 Plumbing Features	0	0	1	1.39	3	3.41	4	2.50
1346 Doors and Windows	0	0	10	13.89	11	12.50	21	13.13
1347 Storage	0	0	8	11.11	5	5.68	13	8.13
1348 Landscaping	0	0	22	30.56	27	30.68	49	30.63
1349 TOTAL	0	0	31	100.00	34	100.00	65	100.00
1350								
1351 PLANNED / NONE POST-OCCUPANCY /								
1352 FUTURE MODIFICATIONS								
1353 Walls	0	0	5	33.33	3	8.33	8	15.88
1354 Floor	0	0	5	33.33	4	11.11	9	17.65
1355 Electrical Features	0	0	0	0.00	2	5.56	2	3.82
1356 Plumbing Features	0	0	2	13.33	13	36.11	15	29.41
1357 Doors and Windows	0	0	1	6.67	4	11.11	5	9.80
1358 Storage	0	0	2	13.33	8	22.22	10	19.61
1359 Landscaping	0	0	0	0.00	2	5.56	2	3.82
1360 TOTAL	0	0	8	100.00	19	100.00	27	100.00
1361								
1362 PLANNED, NEW & FUTURE SPACES								
1363 IN THE BASEMENT								
1364								
1365 PLANNED & NEW SPACES								
1366 Storage Room	0	0	19	19.79	20	22.47	39	21.08
1367 Additional Bathroom	0	0	18	18.75	11	12.36	29	15.88
1368 Additional Bathroom	0	0	4	4.17	5	5.62	9	4.86
1369 Laundry Room	0	0	26	27.08	21	23.60	47	25.41
1370 Family Room	0	0	26	27.08	31	34.83	57	30.81
1371 Play Room	0	0	1	1.04	1	1.12	2	1.08
1372 Working Place	0	0	2	2.08	0	0.00	2	1.08
1373 Living Room	0	0	0	0.00	0	0.00	0	0.00
1374 Office	0	0	0	0.00	0	0.00	0	0.00
1375 TOTAL	0	0	37	100.00	40	100.00	77	100.00

	141		PHASE 1		PHASE 2		PHASE 1 + PHASE 2	
	1171 (HP)	1235 (MF)	TOTALS	%	TOTALS	%	TOTALS	%
1376								
1377 PLANNED / NO NEW / FUTURE SPCS								
1378 Storage Room	0	0	11	22.00	12	20.00	23	20.91
1379 Additional Bedroom	0	0	8	16.00	9	15.00	17	15.45
1380 Additional Bathroom	0	0	9	18.00	7	11.67	16	14.56
1381 Laundry Room	0	0	8	16.00	10	16.67	18	16.36
1382 Family Room	0	0	12	24.00	18	30.00	30	27.27
1383 Play Room	0	0	0	0.00	0	0.00	0	0.00
1384 Working Place	0	0	2	4.00	4	6.67	6	5.45
1385 Living Room	0	0	0	0.00	0	0.00	0	0.00
1386 Office	0	0	0	0.00	0	0.00	0	0.00
1387 TOTAL	0	0	22	100.00	27	100.00	49	100.00
1388								
1389 No. WHO COULD DO THE NEW								
1390 SPACES THEY PLANNED (124)	0	0	37	62.71	45	69.23	82	66.12
1391								
1392 NEW SPACES / TYPE OF FAMILY								
1393								
1394 STORAGE ROOM								
1395 Single parent	0	0	2	8.00	1	4.00	3	6.00
1396 Married with children	0	0	10	40.00	6	32.00	18	36.00
1397 Married without children	0	0	3	12.00	2	8.00	5	10.00
1398 Single living alone	0	0	0	0.00	0	0.00	0	0.00
1399 Companion with children	0	0	5	20.00	10	40.00	15	30.00
1400 Single person living with a tenant	0	0	1	4.00	0	0.00	1	2.00
1401 Companion without children	0	0	4	16.00	4	16.00	8	16.00
1402 TOTAL			25	100.00	25	100.00	50	100.00
1403								
1404 LAUNDRY ROOM								
1405 Single parent	0	0	4	13.33	1	4.35	5	9.43
1406 Married with children	0	0	12	40.00	6	26.09	18	33.96
1407 Married without children	0	0	6	20.00	5	21.74	11	20.75
1408 Single living alone	0	0	0	0.00	0	0.00	0	0.00
1409 Companion with children	0	0	3	10.00	11	47.83	14	26.42
1410 Single person living with a tenant	0	0	0	0.00	0	0.00	0	0.00
1411 Companion without children	0	0	5	16.67	0	0.00	5	9.43
1412 TOTAL			30	100.00	23	100.00	53	100.00
1413								
1414 FAMILY ROOM								
1415 Single parent	0	0	1	3.57	0	0.00	1	1.69
1416 Married with children	0	0	11	39.29	7	22.56	18	30.51
1417 Married without children	0	0	5	17.86	7	22.56	12	20.34
1418 Single living alone	0	0	0	0.00	2	6.45	2	3.39
1419 Companion with children	0	0	5	17.86	13	41.94	18	30.51
1420 Single person living with a tenant	0	0	0	0.00	0	0.00	0	0.00
1421 Companion without children	0	0	6	21.43	2	6.45	8	13.56
1422 TOTAL			28	100.00	31	100.00	59	100.00
1423								
1424 PLAY ROOM								
1425 Single parent	0	0	1	12.50	1	16.67	2	14.29
1426 Married with children	0	0	7	87.50	1	16.67	8	57.14
1427 Married without children	0	0	0	0.00	1	16.67	1	7.14
1428 Single living alone	0	0	0	0.00	0	0.00	0	0.00
1429 Companion with children	0	0	0	0.00	3	50.00	3	21.43
1430 Single person living with a tenant	0	0	0	0.00	0	0.00	0	0.00
1431 Companion without children	0	0	0	0.00	0	0.00	0	0.00
1432 TOTAL			8	100.00	6	100.00	14	100.00
1433								
1434 ADDITIONAL BEDROOM								
1435 Single parent	0	0	3	15.79	3	25.00	6	19.35
1436 Married with children	0	0	9	47.37	2	16.67	11	35.48
1437 Married without children	0	0	4	21.05	1	8.33	5	16.13
1438 Single living alone	0	0	0	0.00	0	0.00	0	0.00
1439 Companion with children	0	0	1	5.26	6	50.00	7	22.56
1440 Single person living with a tenant	0	0	1	5.26	0	0.00	1	3.23
1441 Companion without children	0	0	1	5.26	0	0.00	1	3.23
1442 TOTAL			19	100.00	12	100.00	31	100.00
1443								
1444 ADDITIONAL BATHROOM								
1445 Single parent	0	0	3	50.00	0	0.00	3	27.27
1446 Married with children	0	0	0	0.00	1	20.00	1	9.09
1447 Married without children	0	0	2	33.33	0	0.00	2	18.18
1448 Single living alone	0	0	0	0.00	0	0.00	0	0.00
1449 Companion with children	0	0	0	0.00	4	80.00	4	36.36
1450 Single person living with a tenant	0	0	0	0.00	0	0.00	0	0.00
1451 Companion without children	0	0	1	16.67	0	0.00	1	9.09
1452 TOTAL			6	100.00	5	100.00	11	100.00
1453								
1454 OFFICE								
1455 Single parent	0	0	0	0.00	0	0.00	0	0.00
1456 Married with children	0	0	1	50.00	0	0.00	1	33.33
1457 Married without children	0	0	0	0.00	0	0.00	0	0.00
1458 Single living alone	0	0	0	0.00	0	0.00	0	0.00
1459 Companion with children	0	0	0	0.00	0	0.00	0	0.00
1460 Single person living with a tenant	0	0	0	0.00	0	0.00	0	0.00
1461 Companion without children	0	0	1	50.00	1	100.00	2	66.67
1462 TOTAL			2	100.00	1	100.00	3	100.00
1463								
1464 WORKING PLACE								
1465 Single parent	0	0	0	0.00	0	0.00	0	0.00
1466 Married with children	0	0	0	0.00	0	0.00	0	0.00
1467 Married without children	0	0	2	50.00	0	0.00	2	20.00
1468 Single living alone	0	0	0	0.00	0	0.00	0	0.00
1469 Companion with children	0	0	1	25.00	3	50.00	4	40.00
1470 Single person living with a tenant	0	0	0	0.00	0	0.00	0	0.00
1471 Companion without children	0	0	1	25.00	3	50.00	4	40.00
1472 TOTAL			4	100.00	6	100.00	10	100.00

	141		PHASE 1		PHASE 2		PHASE 1 + PHASE 2	
	1171(HP)	1335(MF)	TOTALS	%	TOTALS	%	TOTALS	%
1473								
1474 LIVING ROOM								
1475 Single parent	0	0	0	0.00	0	0.00	0	0.00
1476 Married with children	0	0	0	0.00	0	0.00	0	0.00
1477 Married without children	0	0	0	0.00	0	0.00	0	0.00
1478 Single living alone	0	0	0	0.00	0	0.00	0	0.00
1479 Companion with children	0	0	0	0.00	0	0.00	0	0.00
1480 Single person living with a tenant	0	0	1	100.00	0	0.00	1	100.00
1481 Companion without children	0	0	0	0.00	0	0.00	0	0.00
1482 TOTAL	0	0	1	100.00	0	0.00	1	100.00
1483								
1484 TOTAL NEW SPACES / FAMILY TYPE								
1485 Single parent	0	0	5	12.20	3	6.52	8	9.20
1486 Married with children	0	0	17	41.46	9	19.57	26	29.89
1487 Married without children	0	0	7	17.07	8	17.39	15	17.24
1488 Single living alone	0	0	0	0.00	2	4.35	2	2.30
1489 Companion with children	0	0	5	12.20	16	34.78	21	24.14
1490 Single person living with a tenant	0	0	1	2.44	0	0.00	1	1.15
1491 Companion without children	0	0	6	14.83	8	17.39	14	16.09
1492 TOTAL			41	100.00	46	100.00	87	100.00
1493								
1494 FAMILY ROOM / PLAYROOM / BOTH								
1495 ONLY FAMILY ROOM								
1496 Single parent	0	0					1	1.92
1497 Married with children	0	0					13	25.00
1498 Married without children	0	0					11	21.15
1499 Single living alone	0	0					2	3.85
1500 Companion with children	0	0					17	32.89
1501 Single person living with a tenant	0	0					0	0.00
1502 Companion without children	0	0					8	15.38
1503 TOTAL							52	100.00
1504								
1505 ONLY PLAYROOM								
1506 Single parent	0	0					2	29.57
1507 Married with children	0	0					3	42.86
1508 Married without children	0	0					0	0.00
1509 Single living alone	0	0					0	0.00
1510 Companion with children	0	0					2	28.57
1511 Single person living with a tenant	0	0					0	0.00
1512 Companion without children	0	0					0	0.00
1513 TOTAL							7	100.00
1514								
1515 BOTH, FAMILY ROOM & PLAYROOM								
1516 Single parent	0	0					0	0.00
1517 Married with children	0	0					5	71.43
1518 Married without children	0	0					1	14.29
1519 Single living alone	0	0					0	0.00
1520 Companion with children	0	0					1	14.29
1521 Single person living with a tenant	0	0					0	0.00
1522 Companion without children	0	0					0	0.00
1523 TOTAL							7	100.00
1524								
1525 FUTURE MODIFICATIONS								
1526								
1527 PLAN TO STAY / FAMILY TYPE								
1528 Single parent	0	0	5	13.89	0	13.33	11	13.58
1529 Married with children	1	0	9	25.00	12	26.87	21	25.93
1530 Married without children	0	0	6	16.67	6	13.33	12	14.81
1531 Single living alone	0	0	5	13.89	0	8.87	8	9.88
1532 Companion with children	0	0	4	11.11	7	15.56	11	13.58
1533 Single person living with a tenant	0	0	1	2.78	0	0.00	1	1.23
1534 Companion without children	0	0	6	16.67	11	24.44	17	20.99
1535 TOTAL			36	100.00	45	100.00	81	100.00
1536								
1537 PLAN TO MOVE / FAMILY TYPE								
1538 Single parent	0	0	2	5.71	1	4.00	3	5.00
1539 Married with children	0	0	16	45.71	5	20.00	21	35.00
1540 Married without children	0	0	3	8.57	4	16.00	7	11.67
1541 Single living alone	0	1	1	2.86	2	8.00	3	5.00
1542 Companion with children	0	0	8	22.86	9	36.00	17	28.33
1543 Single person living with a tenant	0	0	0	0.00	0	0.00	0	0.00
1544 Companion without children	0	0	5	14.29	4	16.00	9	15.00
1545 TOTAL			35	100.00	25	100.00	60	100.00
1546								
1547 FUTURE MODIFICATIONS / FAMILY								
1548 Single parent	0	0	5	11.90	4	10.53	9	11.25
1549 Married with children	0	0	16	38.10	9	23.68	25	31.25
1550 Married without children	0	0	5	11.90	5	13.16	10	12.50
1551 Single living alone	0	0	3	7.14	2	5.26	5	6.25
1552 Companion with children	0	0	7	16.67	6	15.79	13	16.25
1553 Single person living with a tenant	0	0	1	2.38	0	0.00	1	1.25
1554 Companion without children	0	0	5	11.90	12	31.58	17	21.25
1555 TOTAL			42	100.00	38	100.00	80	100.00
1556								
1557 NO FUTURE MODIFICATIONS / FAMILY								
1558 Single parent	0	0	2	6.90	3	9.38	5	8.20
1559 Married with children	1	0	9	31.03	8	25.00	17	27.87
1560 Married without children	0	0	4	13.79	5	15.63	9	14.75
1561 Single living alone	0	1	3	10.34	3	9.38	6	9.84
1562 Companion with children	0	0	5	17.24	10	31.25	15	24.59
1563 Single person living with a tenant	0	0	0	0.00	0	0.00	0	0.00
1564 Companion without children	0	0	6	20.69	3	9.38	9	14.75
1565 TOTAL			29	100.00	32	100.00	61	100.00

