SMALL LIVING SPACES:

A STUDY OF SPACE MANAGEMENT IN WARTIME HOMES 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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(c) July 9, 1993

A Study of Space Management in Wartime Homes in Montreal

To my parents John and Constantina, and in memory of my grandfather Nicholas who by trade, built homes in his native Greece.

Abstract

Last year (1992) marked the 50th anniversary of wartime housing in Montreal. Built as temporary shelter for workers engaged in the war industry, these homes were to be demounted after the war. Public demand for inexpensive housing however, forced authorities to allow workers and veterans to purchase a unit. No bigger than a 1000 ft^2 (100 m^2), the wartime home can be investigated as a prototype for today's small affordable housing. Downsized homes, tailored to suit modern lifestyles and provide opportunity for ownership, have been criticized by theorists like Ruth Madigan, Moira Munro and Constance Perin for their inflexible designs in fulfilling people's social and spatial demands. This thesis explores how people manage to meet these needs by employing wartime housing as a research model. Interviews were conducted with owners of 22 wartime homes that were not enlarged, drawn from the Ville St-Laurent, Montreal-East, and Snowdon districts. The case studies revealed that spaces like the kitchen, the bedrooms, and storage areas play a major role in accommodating users' changing needs. Moreover, solutions rendered in space management by residents can serve as guidelines for architects in designing small living spaces. Relative to small-lot housing, adaptability in the wartime house was facilitated by its sizable lot and coal shed in the rear.

Résumé

Le cinquantième anniversaire du logement de guerre à Montréal a été célébré l'année dernière (1992). Construites pour accueillir temporairement les travailleurs de l'industrie de guerre, ces maisons devaient être démolies après la guerre. Toutefois, la demande publique en matière de logements bon marché a placé les autorités dans l'obligation d'autoriser les travailleurs et les vétérans à les acheter. D'une superficie de 1 000 pi^2 (100 m^2), la maison de guerre peut être étudiée comme le prototype du petit logement à prix abordable d'aujourd'hui. Les maisons de taille réduite, conçues pour le mode de vie moderne et pour faciliter l'accès à la propriété ont été critiquées par plusieurs théoriciens dont Ruth Madigan, Moira Munro et Constance Perin notamment à cause du manque de souplesse de leur conception dans la satisfaction des besoins sociaux et spatiaux de leurs habitants. Ce mémoire étudie la manière dont les gens réussissent à couvrir leurs besoins en prenant les maisons de guerre comme modèle de recherche. Des entrevues ont été effectuées auprès des propriétaires de 22 de ces maisons, à Ville St-Laurent, Montréal-Est et Snowdon, lesquelles n'ont jamais été agrandies. Les études de cas révèlent que les pièces comme la cuisine, les chambres à coucher et les espaces de rangement jouent un rôle capital dans l'accommodation des besoins des utilisateurs. Par ailleurs, les solutions que les résidents ont trouvées au chapitre de l'organisation de l'espace peuvent servir de guide aux architectes chargés de concevoir de petits espaces de vie. Par contre, le caractère adaptable de la maison de guerre est très largement attribuable à la superficie du terrain sur lequel elle est construite et à l'existence d'un hangar à charbon à l'arrière.

Acknowledgements

I would like to express my sincere appreciation to those whose assistance and encouragement made possible the completion of this thesis. I am greatly indebted to my thesis advisor Dr. Avi Friedman for having *faith* in me from the very beginning. His generous support throughout the preparation of this study will always be remembered. I would also like to express my gratitude to professor Dr. Annmarie Adams for her criticism and advice during the final preparation of this document. Paul Lalonde, the school's computer technician, also deserves much credit for teaching me everything about ArchiCad. The case study drawings presented in this thesis are attributed to him.

A special thanks goes out in particular to all the residents of wartime houses in Montreal who graciously participated in this study. It is their invaluable experiences that contribute to our understanding of how space in a small home can be efficiently utilized.

Finally, I would like to thank McGill University for granting me the privilege to study in its esteemed school.

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CHAPTER 1: INTRODUCTION

A little house well filled, a little field well tilled, a little wife well willed, are great riches.

Benjamin Franklin (1704-1790)
Poor Richard's Almanac

Industry, frugality, and thrift are the virtues expressed in many of Franklin's quotes such as the one cited above. They are the key ingredients in making the best of one's few resources. Written with a hint of humour, the conventional wisdom expressed in Franklin's anecdote is being employed in meeting the need for affordable housing with similar principles stated above.[1] The idea of starting small and building upon one's modest investment is the raison d'etre in recycling the concept of the small home today. One popular example is the *Grow Home* pioneered by the McGill University School of Architecture. Not more than 1000 square feet (100 m^2) in floor area, this compact two-bedroom unit is an investment for anyone who does not necessarily need or can afford a bigger home.

The author's own curiosity with small living spaces was the impetus in undertaking a study which seeks to contribute to the design of affordable housing. The notion of small-lot homes is related to the fact that the high cost of land accounts for the

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[1] Traditionally, households have been expected to pay no more than 25% of their gross income on rent. This changed by the early 1980s when 30% of gross income allocated to meet the cost of housing (including principal, interest and taxes) became the measure of affordability. According to the Ontario Housing Corporation, the use of 25% or 30% is arbitrary since some households can comfortably pay more than 30% while others may have difficulty with 25%. (Policy and Program Division, Planning Department. Discussion Paper. Affordability of Housing in Ottawa-Carleton. Regional Municipality of Ottawa-Carleton. April 1990)

bulk of housing prices. Therefore, the growing pressure on the cost of housing and the realization that incomes will not be rising substantially in the near future, has prompted a considerable floor area reduction in homes as a means to lower their cost.[1] The demand for smaller housing also derives from the sociological changes incurred by the traditional family. The traditional family household in the postwar era has not remained constant but has considerably decreased in size.

Due to rising interest rates, taxes, labour and construction costs, real estate speculation and scarcity of land, home ownership in inner cities has become out of reach for many. As a result, more of the middle-class population is driven to the suburbs in search of affordable accommodations--much to the detriment of our cities. Transportation to and from work has burdened our environment and put a considerable expense both for the driver and the city which has to provide and maintain an efficient traffic infrastructure. Montreal, relative to other North American cities, has managed better but nonetheless, the high cost of its inner city housing remains prevalent. In the field of affordable housing, solutions are required in keeping middle-class households on the island of Montreal--not to mention the plight of the poorer segments of the population.

One major obstacle towards small housing lies in the difficulty in revising zoning and residential building codes of municipalities which architect/developer Donald MacDonald believes, are "tailored to suit middle-class ideals".[2] In a speech given to the

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[1] Putting more dwelling units on less land is the single most effective way of reducing the cost of new housing, provided that developers pass on this reduction in cost to consumers.

[2] Pastier. "One Architect Movement for Affordable Housing", Architecture, July 1988: p. 64.

Michigan State Housing Development Authority, he points out that with existing residential standards "we have developed a mythology of space--a middle-class mythology."[3] In evaluating conventional ideas of living space by redefining residential standards, one needs to overcome common misconceptions about affordable housing as outlined by Witold Rybczynski:

> *The chief obstacle to smaller houses on smaller lots is not the consumer, nor is it the home-building industry. It is those who already own our homes. Municipalities, reflecting the attitudes of homeowners, have staunchly resisted the idea of modifying zoning regulations to permit the construction of smaller homes, or to allow the subdivision of and into smaller lots...smaller, less expensive houses are perceived as a threat to property values and to community status, even though housing in the $50,000-$80,000 range is still accessible to solid middle-class citizens.*[4]

This attitude hinders the provision of affordable housing in middle-class neighbourhoods where they work best rather than being segregated on their own in different localities.[5]

This thesis will investigate how people use spaces in their home to determine how a smaller home can be successful in meeting modern lifestyles. Using the wartime house as a research model, it will examine how residents living in homes under 1200 square feet (120 m^2) manage to fulfil their space needs. Lessons can be achieved for today's affordable housing by evaluating the wartime house through the personal living experiences of its owners.

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[3] Pastier. "A One-Architect Movement for Affordable Housing", Architecture, July 1988: p. 65.

[4] Rybczynski. "Living Smaller", The Atlantic, February 1991: p. 78.

[5] In a lecture given at the University of Toronto, Andres Duany suggested that a good ratio to use was the Cape Cod standard in which 10% of all housing be affordable units. He warned that "putting affordable housing in the same place is a big mistake since all it needs to go down is a bad crabapple selling crack." (Re-thinking Urban Sprawl. Videocassette. University of Toronto)

Rationale of Study

Addressing the topic of small living spaces generates from the author's own observations in affordable housing in Canada and United States. Building smaller has been presented as one solution to keep housing within reach for average consumers, particularly for low-income households. Jocelyn Duff writes in *Canadian Housing* that:

> *Current architectural research on lowering housing costs puts forward a variety of solutions. Due to the impact of land costs on housing prices however, the research on affordable housing often centres on reducing the lot coverage and liveable area. The similarity of existing prototypes of small, detached houses leads one to conclude that the cubic form rationalises space and cost best.*[1]

Rybczynski suggests that "similar to the Japanese car, houses can become more compact in size, simple in design and retain a high degree of workmanship".[2] This has been demonstrated by a number of small unit designs which have created a niche in the North American housing market: The *Grow Home* in Montreal designed by architects Witold Rybczynski and Avi Friedman (Figure 1.1)[3]; the *Starter Homes* in San Francisco designed by Donald MacDonald (Figure 1.2); and *Affordable Row* in Andrew Square, south of Boston designed by architect William Rawn are foremost examples.

According to MacDonald, the availability of housing (preferably with ownership) is more relevant than the size and layout of house.[4] Since the cost of renting in most North American cities has become almost equal to mortgage payments, with the only

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[1] Duff. "Small is Affordable". Canadian Housing, Summer 1990: p. 17.

[2] Rybczynski. "Home of the 90s: Designing for Affordability--Part 1", Canadian Architect, April 1990: p. 30.

[3] All sources of figures are cited in the "List of Figures."

[4] Pastier. "A One-Architect Movement for Affordable Housing", Architecture, July 1988: p. 64.

difference being that the latter form of tenure constitutes building equity, home ownership has become a more favourable option. Once a person has acquired a home, it is then possible to capitalize on accumulated equity and improved personal finances to trade up for a better home through time.[1] When a unit is designed to be adaptable to growth, owners can have the option to keep the house and improve it according to their needs and budgets. Advantages like ownership, lower taxes and less housework (for those who spend little at their home) support the demand of building more compact units--an architectural solution to affordable housing well grounded for the tough economic conditions of the 1990s.

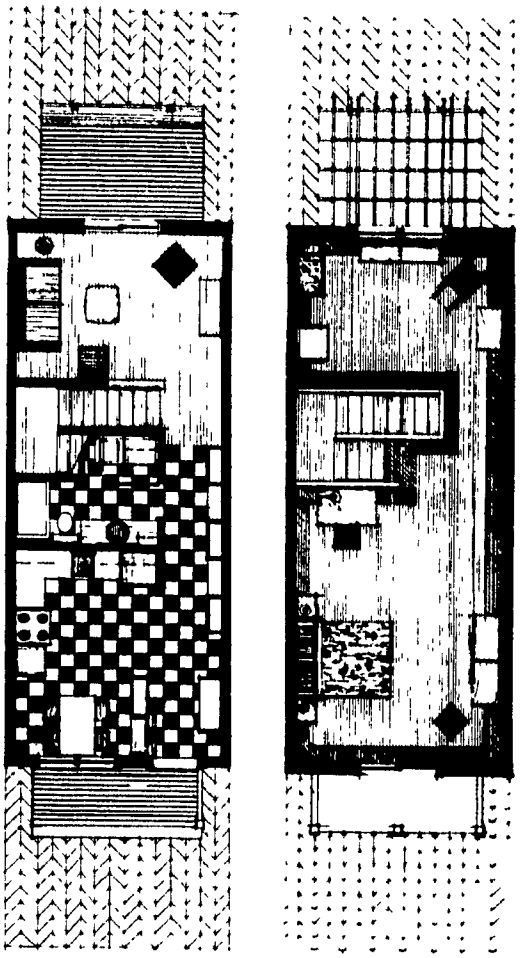

Figure 1.1 The Grow Home is a 14 feet wide townhouse with 1000 ft^2 living space. It has an unpartitioned upper floor, traditional design elements and modest finishes.

Changing lifestyles have influenced housing in regards to building smaller and more diversified dwellings. Sherry Ahrentzen and Karen Franck (1989) write in their

[1] Pastier, "A One-Architect MOvement for Affordable Housing." Architecture, July 1988: p. 64.

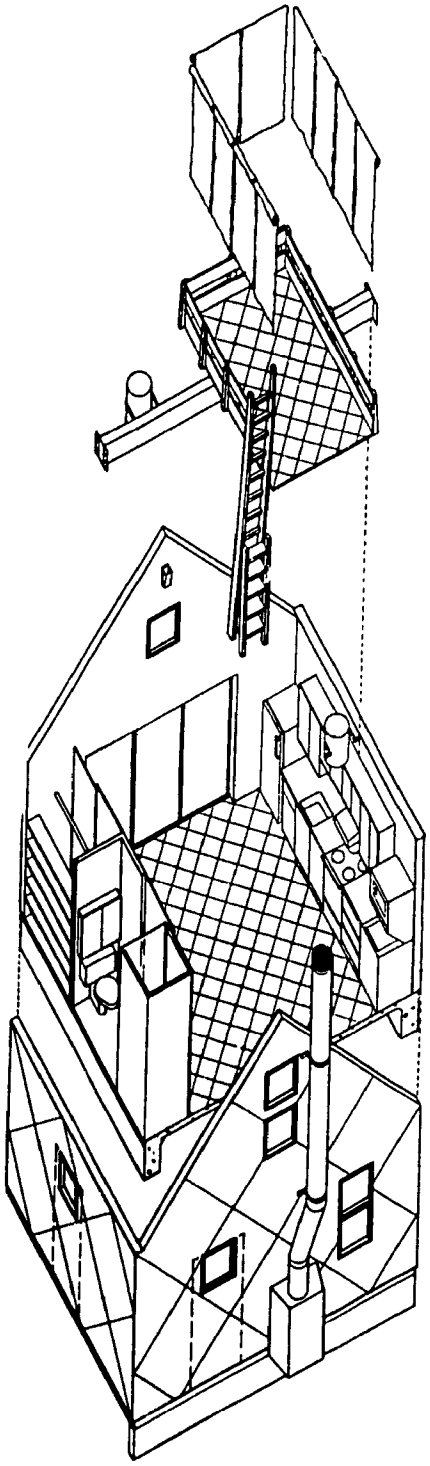

Figure 1.2 The Starter Home. About the size of a studio apartment, it has a fireplace, kitchen appliances, a stacked washer and dryer, a full bath, and sleeping space in the loft.

introduction to their book *New Households, New Housing*, the following:

> *The image in the United States of the traditional family--a married couple with young children with an employed husband and homemaker wife--that characterized the 1950s and the 1960s does not match today's demographic realities. Other types account 79% of the households created since 1980, whereas traditional married couple family accounts for only 21% (U.S. Bureau of Census 1985). The fastest growing household type is the single person living alone: persons living alone comprise 24% of all households. Single parent families account for 12%.*[1]

The term "traditional housing" is a misnomer since no single type of family presently dominates the statistics as the nuclear family did in the 1950s.[2] Today there are different types of families on the rise, some of which were considered rare in the past.[3] They are categorized by the *Vanier Institute of the Family (1991)* as: *nuclear* families composed of two parents living with their children; *extended* families consisting of parents, children, aunts, uncles, grandparents and other blood relatives living together; *blended, recombined or reconstituted* families of parents who have divorced their first spouses, remarried and formed a new family arrangement with children of previous marriage and/or remarriage; families of *childless* couples; *single-parent* families which in most cases are headed by women supporting their child or children; *cohabitating couples* and *Common Law* families formed without legalized marriages (for percentages of major family structures in Canada, refer to Figure 1.3).[4] With these facts in mind, housing forms must reflect the diversity found in families.

Important changes in socio-demographics have also affected housing demand in

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[1] Ahrentzen and Franck, introduction, New Households, New Housing.
[2] The Vanier Institute of the Family (1992). Canadian Families in Transition, p. 18.
[3] Cadotte and Duff. Logement et Nouveaux Modes de Vie, p. 15.
[4] The Vanier Institute of the Family (1991). Canadian Families, p. 3.

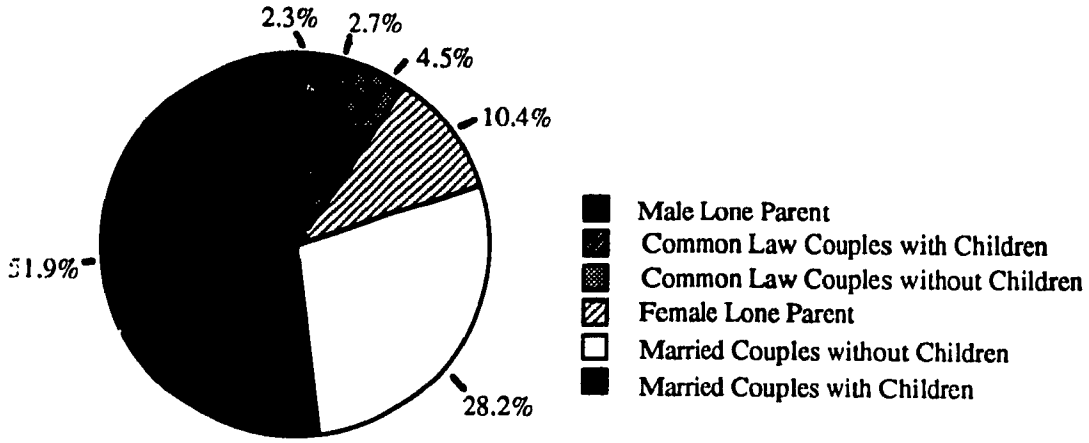

Figure 1.3 Percentage of Family Structures in Canada.

the following manner:

1. The postwar baby boom (1946-1960) had played a role in dictating housing types in the market. During that period the rise of many young and large families fuelled the boom in suburban development in search of low density, family oriented housing equipped with back yards and open spaces. With the drop of fertility rates after 1960s, housing preferences were altered as the sizes of households became smaller.[1] Studies conducted by the Vanier Institute of the Family (1992) indicate that Canadians are now producing below the replacement rate of 2.1 children per woman (Figure 1.4).[2]

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[1] Miron. Housing in Post-War Canada: Demographic Change, Household Formation, and Housing Demand, p.7.

[2] The Vanier Institute of the Family (1992). Canadian Families in Transition, p. 11.

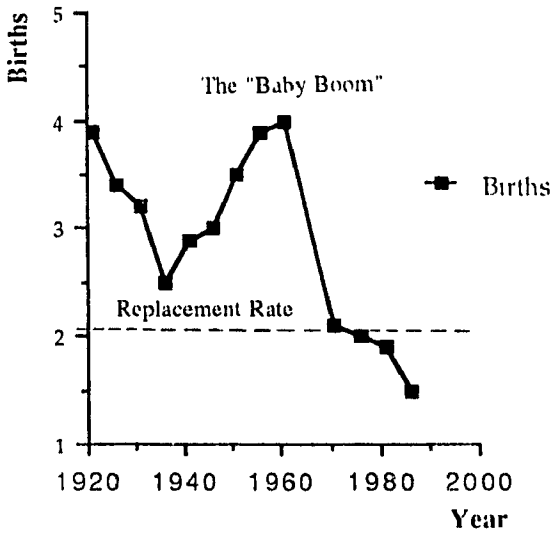

Figure 1.4 Average number of Births per Canadian Woman.

2. Marriage, birth of the first child, birth of the last child, and the leaving of the last child are events most people experience in a lifecycle. In comparison to the postwar era, women today typically start having their first child later in life. They also tend to have their last child earlier, unlike women in the 1950s who "spread-out" their children. Child-rearing considerations have therefore become less important in housing demand.[1]

3. As a result of improved living conditions, people are growing healthier and living longer than their predecessors. Two-person households in an "empty nest" are increasing in numbers. There also exists an increase in sex differential in mortality whereby more women outlive their husbands and for longer periods of time (Figure 1.5).[2] As baby boomers grow closer to retirement, they will form the largest population group

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[1] Miron. Housing in Post-war Canada, p. 8.
[2] Ibid., p. 8.

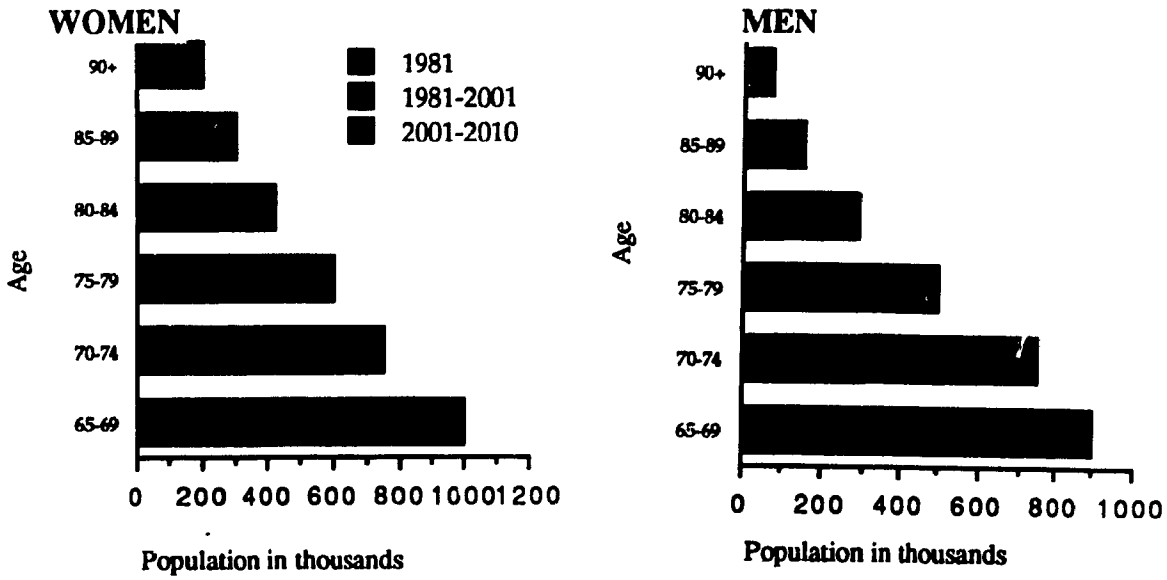

Figure 1.5 Age pyramids of Canada's elderly population between 1981-2021.

in Canada thereby having important consequences on housing. The financial responsibility of the elderly will be shifting more to the elderly themselves and their children rather than the government.[1] Although the detached single family house still remains dominant, US studies show that aside from exercise and media rooms, apartments for in-laws are also being incorporated into contemporary floor plans.[2] In meeting the demand for smaller quarters (granny flats or accessory apartments), one must also account the fact that the elderly experience a reduction in mobility because of age and frailty. The design for elderly housing must allow freedom in moving about and

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[1] The Canadian government has announced in 1993 that the amount of funds paid out to pension recipients are exceeding those collected from working Canadians.

[2] Keiffer. Architectural Geography of Residential Housing. Diss. Kent State University, 1993. N. pag.

between residences, workplaces, public facilities, and commercial settings.

4. Marriage went through a phase of popularity in the early postwar period and then declined after the 1960s. During the 1950s couples who were married were relatively younger than today. This may be attributed to changes in lifestyle attitudes where cohabitation or delay of marriage (particularly for women) to build a career have become more the norm.[1]

5. Earlier home leaving of young adults for variety reasons decreased the household size and created different living arrangements. Since the postwar period, it was common for young Canadians to leave home for reasons such as attending a university, take a job, or privacy and freedom from parental influence. In Quebec for example, statistics reveal that the number of persons living in family households dropped to 70 percent in 1991 from close to 90 percent in 1961. On the other hand, the number of people living in non-family households (where members are not related) rose to 30 percent in 1991 from 10 percent in 1961.[2] The housing market must therefore respond to the number of unrelated adults co-habitating and persons living alone.

6. The rising incidence of divorce has decreased household size significantly. In 1968, Canada reformed its laws so divorce procedures can be simplified and the grounds for divorce extended. Consequently, the rise of single-parent families with lower household income has had implications on housing demand.[3] It has also generated a

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[1] Statistics Canada reported in 1990 that on average, men marry at approximately age 25 and women at 24. (The Vanier Institute of the Family. Canadian Families in Transition, p. 10.)

[2] "Changing Lifestyles Influence Housing". The Gazette, Montreal; December 9, 1992: p. D3.

[3] "Changing Lifestyles Influence Housing". The Gazette, Montreal; December 9,

trend where individuals with children are now teaming up with other individuals with children to create a blended family. Such persons tend to look for four bedroom homes.[1] As Rybczynski points out, given the fact that the size of family households has diminished substantially, a smaller home does not necessarily represent a reduction of space standards.[2]

Downsized housing has been lauded for the social, economic, and demographic conditions that exist but it has also been criticized particularly for the "open plan living" promoted in several types. Social scientists like Ruth Madigan and Moira Munro(1989) argue that their layouts fall short in meeting people's social and spatial needs:

> *There has been a revolution in the postwar period in the status of children, who increasingly expect a well-equipped room of their own. It is now accepted that children need a private, independent space. But what about privacy for adults, both from children--equally important from each other?...In a small modern house there is simply no room to pursue separate activities, escape from television or talk privately to your own friends.*
>
> *Fewer households these days are "family" households, anyhow. The traditional household comprising two parents with children is now in the minority. The enforced communality of a small modern house is even less appropriate in households where unrelated adults are sharing accommodation. As technology in the workplace changes, there will be increased demand for home-based work. How will current designs accommodate these changes?*[3]

To create a feeling of spaciousness in a small house through open plan living is not as

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1992: p. D3.

[1] "Changing Lifestyles Influence Housing" The Gazette, Montreal; December 9, 1992: p. D3.

[2] Rybczynski, Friedman, and Ross. The Grow Home, p. 6.

[3] Madigan and Munro. "Do You Ever Think About Us?" Architect's Journal (December 20-27, 1989): p. 58.

important as meeting the spatial (or functional) needs of people, especially their concerns for privacy. Moreover, Constance Perin (1974) writes that with "declining space standards" in housing, residents are often forced to make behavioral trade-offs in open plan living:

> *People have often demonstrated that to do the things that are important to them, they rearrange their given environments...unalterable small spaces which have two activities that take place cumulatively over time in the same place often require the interruption of one activity to be resumed after the space was made available.*[1]

Thus, "the more rules for using rooms (or the type of activities permissible) the more disputes over their infraction".[2] A small home should therefore be flexible enough to be adapted to the user needs of different households.

Today, the term "adaptability" has been augmented to include housing which is designed for affordability by eliminating the "extra frills" found in conventional homes. Owners are given the option to make trade-offs like lower quality finishes in order to lower the cost of their home. In a report prepared by the Massachusettes Institute of Technology Centre of Real Estate Development, *Design Strategies for Affordable Housing (1987)*, cost-saving trade-offs in housing are seen as way of allowing owners to adapt their dwelling according to their needs and budgets:

> *Issues of affordability should never preempt responsiveness to the preferences of low and moderate income homeowners. Any discussion of cost saving features and their impact on liveability must recognize the diversity of consumer preferences at the lower end of the market where*

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[1] Perin. "The Social Order of Environmental Design," The Ecology of Home Environments, eds. Irwin Altman and Patricia A. Nelson, p. 40.

[2] Ibid., p. 40.

> *choices are already limited. Among low and moderate-income purchasers few will opt for increased size at the expense of other features, given a choice. This willingness to make trade-offs is seldom recognized by the critics of smaller houses on smaller lots.*
>
> *An examination of cost saving trade-offs is particularly important for low and moderate income purchasers because opportunities for reducing unit costs without decreasing buyer satisfaction or the liveability of the unit are relatively few. In the study, "Design Preferences and Trade-offs for Moderately Priced Housing in Alberta" (Department of Housing, Alberta. November 1985)...one acceptable trade-off was between unit area and unit quality. The cost savings derived from a smaller unit were applied to upgrade construction quality, particularly insulation, floor and wall surfaces and other visible construction related items.*[1]

Grow Home projects in Montreal demonstrate that people prefer to make small trade-offs to become the owners. Friedman's post-occupancy study in 1992, shows that there is a higher preference for residents to undertake operations requiring least skills such as finishing operations (i.e. painting, installing drywall, and landscaping) rather than rough installation work, namely partitioning the upper floor (which was the core of the original Grow Home project), in exchange for a reduction of price.[2]

The unfinished attic and coal shed in the small wartime housing on the other hand, modelled after the Cape Cod Cottage, allowed owners to expand their living space as their family needs grew. In her thesis *User Adaptations of Wartime Housing*, Mary B. Galloway's exhaustive survey of wartime houses in Renfrew, Calgary shows that:

> *Renfrew residents committed themselves to their house when they purchased them...after the home was purchased it was immediately adopted by the family and they expended no further effort looking at other houses.*

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[1] Pasquale and McKellar. Design Strategies for Affordable Housing, p. 26, 27.

[2] Friedman and Cammalleri. Evaluation of Affordable Housing Projects Based on the Grow Home Concept. p. 36.

> *Adaptations began as soon as families moved in. The intention to stay seems to have been motivated residents to feel committed enough to begin modifying the home.*[1]

Galloway's findings coincide with what Perin has written about flexibility in the home. She states in her thesis that the only reason that Renfrew residents were compelled to move from their home was when it was either impossible to adjust it to their needs or its maintenance costs were too high:

> *Constant frustration of the ability of a family to improve and maintain the home resulted in demoralization and dislike of a house. Some objected to characteristics they could not change: they were permanently dissatisfied.*
>
> *Participants in the study had lived in Renfrew for periods of six months to 29 years: none believed they would move in the future. The family interviewed who had already moved, sold their wartime house to their daughter with a written option to buy it back. Inability to care for the home was the only reason for a possible move.*[2]

Galloway's post-occupancy studies confirm that adaptability in small housing is therefore the key to residential satisfaction.

It is very clear that the high cost of serviced land, the growing demand for ownership, and lifestyle changes have conditioned the market for downsized housing in North America. Yet in supplying efficient home layouts, there first needs to be further research in the use of small living spaces.

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[1] Galloway. User Adaptations of Wartime Housing, pp. 86, 87.
[2] Ibid., pp. 86, 87.

Research Question

By investigating the wartime house as a prototype of today's small affordable housing, the author attempted to answer the following research question:

How have residents of wartime homes managed to meet their space and lifestyle needs in the lifecycle of their small home and what type of functional trade-offs are they making?

Objectives of Thesis

1. To review literature devoted to the use domestic spaces in the postwar era and today. The impact of lifestyle and technological changes on the North American single family home will be addressed in this thesis.

2. To investigate space management in the wartime house through in-depth interviews. The field analysis which focuses on the solutions sought by residents in meeting their diverse spatial demands, reflects on the ability of wartime home to be adapted to the needs of different users.

3. Through analysis of findings, knowledge gained from study will be integrated into future design criteria for small affordable housing.

Methodology

The methodology used to achieve the objectives of this thesis are: Literary review, field analysis (observation analysis with in-depth interviews), and analysis of data.

(a) Literature Review

Although this study is largely based on field analysis, a literary review was necessary in building a framework for conducting interviews. It largely involves the evolution of the use of space in the home from the postwar era to the present. Having become familiar with other past studies on this subject, sound knowledge was acquired beforehand in preparing a structured interview with participants.

Since the end of World War II, the study of residential environments, in terms of values and preferences of the residents, has been an important subject of design research in many countries. *Environmental Behavioral Studies* were an attempt to close the social gap between designers and users of buildings. Behavioral research in housing employs only traditional survey techniques to measure residents' satisfaction, preferences and space occupation. The data which is collected from these studies are allocated in establishing guidelines for the design of new environments. One of the drawbacks of such studies is that they did not consider how data would be interpreted by diverse groups of people.[1] Despite the limitations of methods adopted, these studies have made some contribution in understanding the psychological, social, and behavioral aspects of home environments. In regards to this study which focuses on the use of spaces in the home, research undertaken by proponents of Environmental Behaviour Design studies like John Ziesel's *Housing Designed for Families (1982)* and Pierre Teasedale's *Family Dynamics, Residential Adjustments and Dwelling Adaptability (1986)* will be frequently cited. These

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[1] Lawrence. Housing, Dwellings and Homes: Design Theory, Research and Practice, pp. 185, 186.

and literature on the postwar home will be tied together with the case findings to render design solutions or guidelines.

(b) Field analysis

The scope of this study is based on in-depth interviews with owners of twenty-two wartime houses in Montreal that have retained their original dimensions. With the consent of the interviewee, photographs of interiors were taken during the interview. In reference to original plans of houses, information was gathered on how the interior was modified or adapted over time to meet lifestyle needs. A close-ended questionnaire (with a few open ended questions) was drafted with the intent that the owners could independently respond thereby allowing them to become familiarized with the scope of the study (Appendix II).[1] It was also one way of building rapport with interviewees. Although the information collected from the participant would not suffice, a personal interview to collect photographs and drawings was used to close any information gaps. After a few pilot studies, the author realized that it was best to administer the questionnaire personally to be assured that the interviewee clearly understood all questions and answered them to the fullest. The wartime homes investigated in this study were not randomly selected but chosen on the basis that they retained more or less its original dimensions. A map with building footprints of the area in study was used to

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[1] Close-ended questionnaires are in multiple choice form, whereby the respondent is offered a choice of alternative replies. Open or free answer types of questions are followed by any choice and answers are recorded in full. (See Oppenheim's Questionnaire Design and Attitude Measurements, pp. 40, 41.)

determine which homes were suitable in terms of size. The municipalities' recent voting lists were very instrumental in determining the size of the household and its length of residency. Moreover, the lists enabled the author to make contact with residents by telephone.

Letters were forwarded to the owners of these homes to ask them to participate in an interview and their permission to take photographs of their interiors. Contents of letter included authorization of study (McGill University School of Architecture), objectives of questionnaire, how the house of the occupant was selected, and the value of occupants' participation in this research (Appendix III).

Outline of Study

This thesis is divided into five chapters. In the **first chapter**, the author has explained why the topic was chosen, reviews what literature exists to support the study, and the methodology applied to conduct research. The objectives and parameters of the study are also outlined.

The **second chapter** investigates the history and use of space in the North American postwar home. The history of the wartime house in Montreal is also provided in brief form. The purpose of providing a discussion on postwar housing lies in the fact that the wartime homes, built temporarily to suit the living patters of families during the war, were "transformed" to be used like postwar spaces through time. It serves as a baseline from which the case studies could be carried out and analyzed.

In the **third chapter**, the effect of technology and lifestyle the use of space in the

single family home is examined in depth by looking at how public, private, and semi private spaces in the home have been redefined. This chapter forms the theoretical framework for conducting interviews with households.

The **fourth chapter** of this study is an analysis of the interviews with 22 households. It documents in detail how people manage to fulfil their space needs in small dwellings. Floor plans and photographs of case studies are presented in this chapter to complement analysis.

The **fifth chapter** concludes observations from case studies and outlines recommendations for future criteria for designing small housing.

CHAPTER 2: USE OF DOMESTIC SPACES DURING THE POSTWAR PERIOD IN NORTH AMERICA[1]

Our house served its purpose. By working on it bit by bit it gave us the opportunity to save money and put our children through school.

Interviewee in Case Study 10

The 1950s were a period in American history when home and family were synonymous in meaning. Television, a novelty in the postwar home, became the promoter of this image with programs like *I Love Lucy*, *Leave it to Beaver*, *Ozzie and Harriet*, and *Father Knows Best.* In most cases, the home of "family next door" represented in these programs, looked identical to all other houses on the block that were mass-produced to meet the housing crisis after the war.[2] These modest homes were affordable, provided decent shelter and pride of ownership for 3.6 million Americans.[3] Coupled with the fact that improved standards of living in the 1950s allowed more Americans to own a car, these homes launched suburban development in the U.S. as well as in Canada.

Improvements made to the quality of North American living during the postwar period, called for new spaces within the wartime house thus forcing many new owners to update their layouts. Many of the features promoted in the postwar home were eventually incorporated into the wartime house: the open kitchen, the family or multi-

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[1] Some clarification is required here on the use of the term "postwar" and "wartime" house. Wartime houses were built during the war to provide accommodation for employees of factories working for the war effort. These shelters were temporary and to be dismantling after the war but with housing shortages, residents who were renting were given the option to buy. On the other hand, the postwar house (1945-1959) was built immediately after the war in response to the housing shortages in North America.

[2] Keiffer. Architectural Geography of Residential Housing, Diss. Kent State University. No. pag.

[3] Ibid.

purpose room, and the utility room. In the first section, the history of the postwar house is examined in terms of how architects simplified housing design to render affordability. The brief history of wartime houses in Montreal with special reference to Ville St-Laurent is also outlined in a separate section. The second section is a discussion on how small postwar homes were designed to take on the many functions of family life of the 1950s while maintaining a feeling of spaciousness. The author will reflect on how social thinking on the one hand and marketing on the other, influenced domestic architecture and the use of space in postwar homes.

A Historical Overview of the Postwar House

Housing Canadians after World War II was considered a "long-term peacetime problem" for the supply of housing could not keep in pace with the country's growing population. The Canada's immigrant population increased dramatically with the influx of 2,000,000 Europeans by 1960, not to mention the return of 620,000 war veterans and war brides who married Canadian servicemen overseas between 1945-1946.[1]

During Canada's involvement in the war, the country was experiencing a massive housing problem triggered by several factors. One was the shortage of supplies for construction initially brought on by the Depression and later, by wartime shortages in skilled labour and building materials. A second factor was the problem of overcrowding and doubling up of family and non-family groups in large Canadian cities. Despite the

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[1] Wade. "Wartime Housing Limited 1941-1947", Urban History Review, June 1986: p. 44.

Figure 2.1 The postwar dream for many was owning a home and the modern appliances that made homemaking as easy as play.

absence of population growth (the country's birth rate had dropped and immigration was at its lowest), shortages in the housing became more apparent during the Depression when

masses from the rural areas migrated to urban settings in search of employment.[1] The deterioration of the existing housing stock is a third factor. By 1945, many homes in large Canadian cities were deemed substandard: they were either in dire need of exterior repairs and/or lacking shared flush toilet and bathing facilities.[2]

In that same year, the Central Mortgage and Housing Corporation (CMHC) was established as a vehicle for the federal government to provide housing for Canadians. The housing industry in Canada, as well as in the U.S., was radically transformed to meet shortages. The governments at the federal, provincial, and local levels worked for economic solutions to speed up the pace of the housing supply. They, through CMHC, contributed funds for subsidizing housing through its policy for the most part was subsidizing construction of builders who would put up small yet affordable units of 800

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[1] Saywell. Housing Canadians: Essays in the History of Residential Construction in Canada, p. 172. An extract from the Wartime Housing Ltd.: Report of Subcommittee of the Parliamentary Committee on War Expenditure, July 16th, 1942, points out the two main causes of housing shortage in Canada at the time being: "The mass movement of labour from its normal residence to location surrounding districts where war industries were concentrated"; and the "substantial housing shortage which existed at the outbreak of war had been greatly accentuated through the rise of national income...The increased national income had taken most families off relief and had enabled many thousands of families to move from their then existing congested living conditions into single family dwellings." Choko writes in his dissertation La Crise du Logement à Montréal, that housing shortages between 1946-47 in Montreal and lack of local government policy forced many homeless veterans who formed a movement named "la ligue des veterans sans logis" to fend for themselves by illegally occupying houses standing empty around the city. Collin's article, Crise du Logement et Action Catholique à Montréal (1940-1960), states that insofar as homeownership was concerned in Montreal, it was not until group leaders in Catholic social action enjoined homeownership of single-family detached house as a model of living conditions. "A home for every family" was their slogan (p. 179)

[2] Wade. "Wartime Housing Limited 1941-1947", Urban History Review, June 1986: p. 42.

ft^2 to 1100 ft^2 (80 m^2 to 110 m^2) [1].

The war had already taught industrialists the concept of full-scale mass production and many war factories were converted into producing innovative materials that were less costly yet extremely efficient for a growing construction market. The average house had doubled in price by the 1940s and therefore the need to keep construction costs low helped to stimulate the development of new building materials: prefabricated window units, weather-resistant exterior plywood, latex glues and caulking, composition-board products, and improved drywall construction. The war years, which put tremendous pressures on builders to improve their speed and efficiency, also helped to create technological breakthroughs that were to be beneficial after 1946.[2]

The prefabricated house seemed very promising in meeting demands within a short term however producing a completely prefabricated house in substantial quantities proved to be too cumbersome and costly. Instead, prefabricated housing components like kitchen-bathroom units were deemed more economical and by 1951, one-fifth of an average house was made of prefabricated components.[3] Windows, doors and wall panels were also standardized and produced in large quantities to reduce costs. Alfred Levitt introduced power tools and labour specialization at the construction site. He broke down house construction into 26 steps and with the extensive use of prefabricated components,

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[1] Friedman and Von Niessen. Postwar Housing Innovation, p. 7. The Veteran's Administration in the U.S. created the Veteran's Mortgage Guarantee Program, later known as the G.I. Bill of Rights, set forth these guidelines for the veteran housing industry in 1944. The program limited the price range of the affordable postwar family home to between $6 000 to $8 000 depending on the size.

[2] Clark. The American Family Home 1800-1960, pp. 194, 195.

[3] Friedman and Von Niessen. Postwar Housing Innovation, p. 28.

it was made possible for an 800 ft^2 (80 m^2) house to be completed within fifteen minutes.[1]

Architects adopted the idea of mass-produced housing and sought a variety of cost reduction design strategies. One important strategy which maximized the efficient use of space and kept housing prices low was the use of a square or rectangular floor plan with as few interior subdivisions as possible. Economy was achieved through the square floor plan for it minimized the amount of materials required for foundation walls and insulation. It was even cheaper to service due to lower heating costs. The introduction of multi-purpose rooms, the elimination of the basement to reduce excavation costs for foundation, back-to-back locations of kitchens and bathrooms to minimize work for plumbing, centralized heating to reduce duct work, and various built-ins into the house to save space were other cost-saving techniques used by builders.[2]

The postwar housing industry realized at the time that in meeting consumer demand, traditional methods of building and design were no longer economically feasible. Ornamentation in housing needed to be reduced to minimize costs of construction and practicality redefined the family home.[3] Aside from being cost effective, the modern postwar home was successful in gaining market acceptance for its traditional styles, namely the popular 1-1/2 storey pitched roofed *Cape Cod Cottage*. With the growth modern technology, the "West Coast" single storey, flat roofed *Ranch House* also began

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[1] Wright. Building the Dream: A Social History of Housing in America, p. 252. Friedman and Von Niessen. Postwar Housing Innovation, p. 29.

[2] Friedman and Von Niessen. Postwar Housing Innovation, p. 9.

[3] Ibid., p. 8.

to influence postwar housing design. Initially these homes were climatically suited to California however advances in heating and cooling technology made it possible to adapt them to colder regions. The Ranch House developed during the postwar period features like pitched eaves, large expanses of glass, and a low profile. To most people then the word "ranch" implied a rambling layout in the home, rooms which flowed into other rooms.[1] Advertisements promoted it for the relaxed, easygoing lifestyles of the West coast they represented in its design.[2] The four-bedroom Cape Cod Cottages and two-bedroom Ranch Houses produced by the Levitts were widely popular.[3]

Postwar homes were unique and selling them required some marketing since the tastes of most Americans favoured the more traditional styles.[4] They became attractive not only for the modern lifestyle they offered, but by their freebies added to lure buyers: free swimming pools in the development, household appliances, landscaping, and curving roads.[5] In fact, the Levitt homes included a fireplace, built-in television sets, Bendex

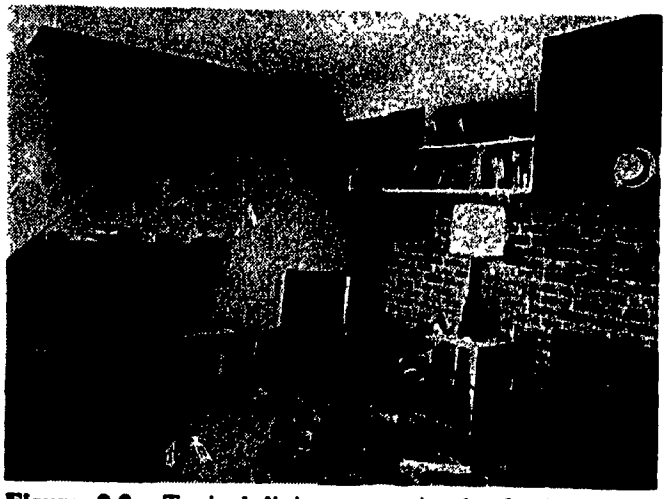

Figure 2.2 Typical living room in the Levitt house includes a fireplace and a built-in television.

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[1] Wright. Building the Dream: A Social History of Housing in America, p. 251.
[2] Friedman and Von Niessen. Postwar Housing Innovation, p. 8.
[3] Ibid., p. 30.
[4] Nelson and Wright. Tomorrow's House, pp. 1-2.
[5] Friedman and Von Niessen. Postwar Housing Innovation, p. 30.

washing machines and kitchen appliances that appealed to families who were influenced by advertisements about the benefits of comfort, convenience, and efficiency of the postwar home (Figure 2.2).[1] Their biggest buyers were war veterans, comprised of a younger group with a median age of thirty-five, who had young children and had run out of space in their apartments (Figure 2.3).

Figure 2.3 The mass produced Levitt house became a powerful symbol of the American dream of homeownership and upward mobility for many families.

One major difficulty for architects at the time was how to compromise between their expertise on housing and their clients' dreams. From U.S. federal government surveys done in the 1950s, it is clear that there existed a major gap between home buyers' expectations and what they were able to afford. Larger rooms and more of them, larger lot sizes, porches, and more storage space were high on most buyers' lists. Builders, however, could not meet these demands at a cost which average middle-class home-buyers could afford. Despite small size of houses supplied to consumers, buyers were nevertheless satisfied with their new houses because they were perceived to be much larger than the apartments in which most people had been living.[2] Relative to the standard of housing people were accustomed to living in the city at the time, the postwar home was far more superior quality-wise and had more amenities.[3]

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[1] In 1949, the 700 ft^2 (70 m^2) Levitt house had two bedrooms, a dining alcove by the living room, an attic which would be adapted for more living space.

[2] Clark. The American Family Home 1800-1960, p. 229.

[3] According to Campbell, American families during the Depression and the war

Wartime Housing in Montreal

During the war Canada, being a major armament supplier to its Allies, had plants all over the country employing thousands of workers. In meeting the war effort, it was not only necessary to re-orient the country's industry but also provide suitable living quarters for factory employees. This new housing was initially financed under Part I of the National Housing Act of 1938 which outlined the federal government's mandate in guaranteeing part of a new housing mortgage. The act itself was short-lived since it did not fulfil the vast need for houses across the country and in 1941, an order in Council was passed establishing Wartime Housing Limited (WHL). WHL was empowered to contract out the building of emergency housing across Canada. The units were wholly financed by the federal government and rented to the occupants.

Wartime houses are found in a number of areas on the island of Montreal: Ville St-Laurent (Figure 2.4); Montreal-East, and Snowdon. Ville-St-Laurent which has 400 units (and where the bulk of the case studies were derived) was a project launched during the war when Canadair factories were operating for the war effort. The design of the buildings were straightforward, suitable living quarters for families and demountable after the war to ensure high salvage value of the materials employed.[1] Rising hostilities out

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period were living either with relatives, in trailers or tents, old abandoned shelters, unfinished houses, or coal sheds. "Nine out ten, the toilets and sewage disposal were completely inadequate and the water supply was questionable." With very few or no vacancies available in urban areas, children made the search for rental housing even more difficult (D'Ann Campbell. Women at War with America: Private Lives in a Patriotic Era, pp. 170-172).

[1] In a letter addressed to Lucien Toupin, the manager of Ville St-Laurent, dated January 27, 1949, C.A. Black of the CMHC office in Montreal writes that: "As you are aware, it was necessary for the Crown to make certain emergency temporary arrangement

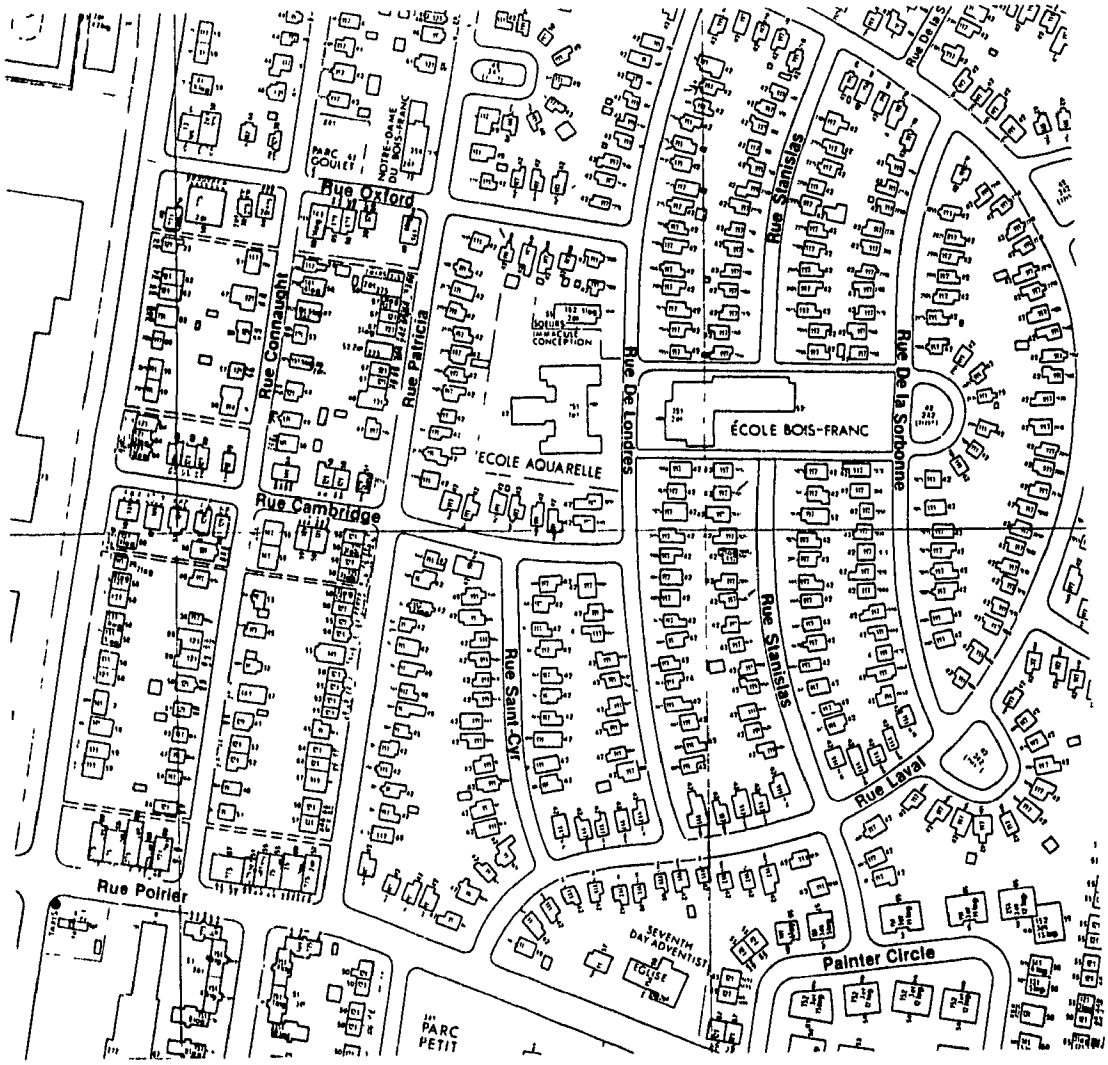

Figure 2.4 Location of wartime homes in Ville St-Laurent.

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during the war years in order to meet the conditions arising out of hostilities. The construction of the 400 unit housing project astride the boundary line between the municipality of Montreal and Ville St-Laurent was conceived and developed for these reasons...that operations was to be a temporary one, having utility for the duration of the hostilities only, after which it was anticipated that the community would be abandoned by its occupants and installations cease to have value except for salvage and removal." These expectations did not come to pass, and Black continues in his letter saying that: "instead of vacancy, the community is faced with an unprecedented shortage of homes. This shortage has of course, borne particularly heavily on the veteran group." (Ville St-Laurent Archives) In other parts of the country possible reassemblage of wartime homes was also being considered. (Wade. "Wartime Housing Limited 1941-1947". Urban History Review, June 1986: p. 47.)

of need for housing compelled authorities to grant residents the option to buy their homes after the war. Later, this option also became available to military servicemen.[1]

Ville St-Laurent has wartime homes comprised of two basic types: the 1-1/2 storey Cape Cod Cottage, typically 25 x 25 feet (7.5 x 7.5 meters) with a coal shed or rear entry attached, supported by temporary footings of cedar posts; and the one storey two-bedroom bungalow home.[2] All units had modest finishes: Kitchen cabinets and closets in these houses had no doors and residents used curtains to conceal their contents. Shortly after residents were granted the option to buy their homes, curtains were replaced with doors and other higher grade finishes were applied to these homes. Moreover, mechanical heating (which replaced the coal stove) and permanent foundations were also were added in all units. According to one owner, basement installations were very popular in the 1950s--probably out of the family's need for additional living or storage space.

People easily accepted the massed-produced houses because they also considered their purchase as merely their first house. Given the young age of many of the families in 1955--men averaged thirty-one years, women about twenty-six--most looked forward to increased buying power in later years. Another reason was that 70 percent of the new home buyers held back enough money to make improvements as soon as they moved in. Some added a porch or an extra room. Others modified a bathroom or rearranged a

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[1] After CMHC seized and dismantled WHL, the corporation sold units to tenants. and veterans all over the country (See also Jill Wade's, "War-time Housing Limited 1941-1947", Urban History Review, June 1986: p. 41.)

[2] Wade., p. 47.

kitchen. Changing the layout of their home helped ease their discontent and instilled their hope that if this house was not all that they wanted, they would be able to make further modifications in the future that would make it more acceptable. This "do-it-yourself" trend developed the housing improvement industry and had a substantial impact on middle-class housing.[1]

The Use of Space in the Postwar Home

The postwar house called for reorganization of traditional house planning.[2] Coping with its small size meant employing "multi-purpose rooms", "open space plans" and "built-ins". Apart from using architectural techniques in making small spaces more liveable or bearable, the notion of "cosiness" and increased family interaction was advocated by the media to consumers.[3] With the advent of television and the flood of magazines, advertising became an integral vehicle in promoting the new lifestyles promised in the modern postwar home with their built-in closets and "exciting kitchens". Modernity of housing that would recognize the new needs of family life was seen a priority in design. Since many women worked outside the home and had less time to cook and clean, and because more entertainment now took place at the movies, churches, nightclubs, and other outside agencies, and because children moved out of the family more quickly than they had hitherto, the traditional form of the house had to be changed.[4]

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[1] Clark. The American Family Home 1800-1960, p. 231.
[2] Friedman and Von Niessen. Postwar Housing Innovation, p. 9.
[3] Clark. The American Family Home 1800-1960, p. 209.
[4] Ibid., p. 199.

Royal Barry Wills challenged architects like himself and builders to create one-storey modern homes that had the advantage of flexibility of interior space. His approach was to combine rooms like the living room with the dining room or the dining room with the kitchen (Figure 2.5). Most rooms in the postwar house had multiple functions such as study-guest room or kitchen-laundry room-sewing room-playroom for toddlers. With the aid of drapery, accordion walls or ceiling high movable storage shelves as partitions, rooms seemed larger and their limits undefined.[1] "Use" became the defining element of Wills' design whereas questions of decoration was of secondary importance to function and utility.[2] This idea was borrowed by other architects like Robert Anshen who was involved in designing the popular custom-built Eichler homes of the 1950s in United States:

> *In a small house the economics of the selling price indicate that rooms cannot be as large as might be desirable, and therefore, in order to provide at least one space which gives at least a visual sense of large size, the architect finds it desirable to throw together visually as much space as possible.*[3]

Wills also initiated the development of outdoor living in effort to achieve efficient use of the small postwar home where terraces would serve as extensions of the living room or dining room. Large plate glass windows and glass patio doors opened up walls expanding the perceived limit of a room outside the house.[4] Utilizing the outdoors as additional living space in the design of the house was made possible at a larger scale in the

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[1] Friedman and Von Niessen. Postwar Housing Innovation, p. 10.
[2] Clark. The American Home 1800-1960, pp. 198, 199.
[3] Anshen. "Design: Today's Contemporary House", AIA Journal; September 1960, p. 47.
[4] Friedman and Von Niessen. Postwar Housing Innovation, p. 10.

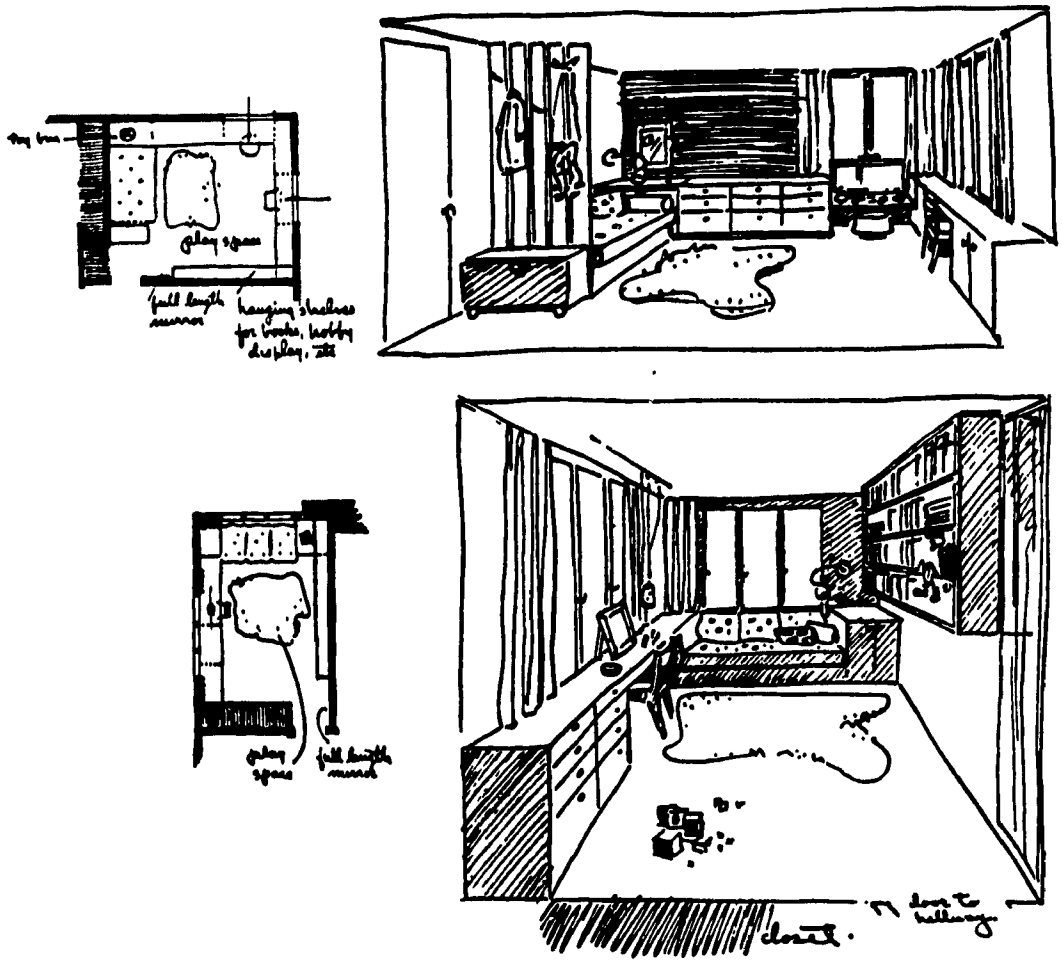

Figure 2.5 One of Royal Barry Wills' designs where he combines a study-playroom and adds a variety of built-in counters and cupboards for storage.

suburbs.[1]

High employment and optimism which followed after the recovery of the economy encouraged people to upgrade their style of living through the purchase of new consumer products. Appliance makers and manufacturers created an image of housework being transformed into play, from being a burden to fun. The idea of the kitchen being

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[1] Adams. The Eichler Home: Intention and Experience in Postwar Suburbia, p. 11.

associated with drudgery was done away with the "living kitchen". Kitchens which were commonly isolated from the rest of the household in the past, became centrally important in the postwar home.[1] The kitchen was treated as *part* of a room with social standing equal to other rooms.[2] A low counter wall was all that separated the kitchen from the living room thereby allowing the housewife, who once worked "in exile", to cook leisurely while at the same time, talk with guests or watch over children (Figure 2.6).[3] In *Mechanization Takes Command (1945)*, Giedion explains how features built into "living kitchens" aided the kitchen in becoming part of the living room and resolved the problem of trying to keep the room in tidy condition:

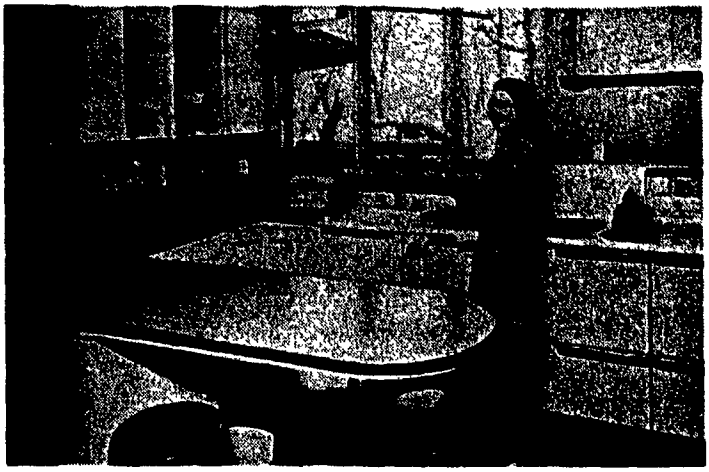

Figure 2.6 The living kitchen in the postwar home advertised here with all its amenities. One can cook in leisure while maintaining social contacts with the rest of the household.

> *The most diverse ways of keeping the kitchen into a living room is suggested, such as a closing sink and range as one might a piano, or the use of folding screens to hide the soiled dishes.*[4]

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[1] Giedion. Mechanization Takes Command, p. 621. The author quotes in his book from an article in *The New York Times Magazine*, dated June 10, 1945 under the heading "Today's Compressed Efficiency Kitchen", that cooking itself is not so laborious a duty rather "its the isolation that hurts"and there is no reason why this activity must be done in "solitary confinement".

[2] Stires. "Home Life and House Architecture", Architectural Record; April 1949: pp. 103-8.

[3] Giedion. Mechanization Takes Command, p. 625.

[4] Ibid., p. 625.

This new idea of a multi-purpose kitchen also reflected the popular image of the multiple roles that needed to be played by women at the time. Magazines like *Life* and *Better Homes and Gardens* advocated this new model of middle-class family life. In the 1950s it was common practice for women to host dinner and cocktail parties for their husband's business associates. This was a necessary routine for good business relations. Adams writes in her essay, *The Eichler Home: Intention and Experience in Postwar Suburbia (1991)*, that "corporations would closely scrutinize the wives of job applicants to ensure that they were pleasant, satisfied with their marriages, and willing to accept their husband's transfers."[1] The "living kitchen" allowed the wife to prepare food and drinks in the kitchen while entertaining guests at the same time. Company brochures showed how large social gatherings could be spread from the multi-purpose room into the atrium or the backyard, taking advantage of the open plan of the house.[2]

The central position of the kitchen in the postwar home is also directly connected to the patterns of child-care developed at the time.[3] In his famous work *Common Sense Book of Baby and Child Care,* Dr. Benjamin Spock instinctual approach to mothering advocated for the mother's constantly close companionship with the child even while at work to foster good relationships.[4] Spock's teaching influenced the design of housing of that era in that it called for open floor plans where "a mother could observe her child, ready to tend to its needs."[5]

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[1] Adams. The Eichler Home: Intention and Experience in Postwar Suburbia, p. 17.
[2] Ibid., pp. 17-18.
[3] Adams. The Eichler Home, p. 16.
[4] Mintz and Kellogg. Domestic Revolutions, p. 188.
[5] Adams. The Eichler Home, pp. 16-17.

The dining room was also brought out of isolation by opening the ground floor plan in order to achieve more spaciousness in the small postwar home.[1] Giedion describes how the design of the traditional dining room table underwent some reform to suit this open-plan concept:

> *The table is made less wide and is brought as close as convenient to the serving hatch, it almost returns to the rustic simplicity of its medieval ancestors. Often it folds to the wall so as to increase the free space of the room. At first these hints were cautiously employed in bachelor dwellings...They appear in the luxurious dream kitchens of the forties.*[2]

In order to sell the modern house, the public opinion polls were employed in the U.S. in influencing the tastes of home buyers.[3] In regards to questions like where a family should eat, the majority of families surveyed responded that they "did not prefer the living room for reasons that it was too far away from the kitchen, risked messing up the room and was inconvenient if guests dropped in unexpectedly."[4] The polls also showed that American families neither wanted to have all their meals in the kitchen. As a compromise, designers recommended that the dining area and the living room should be separated visually either with a folding partition or with an L-shaped plan. Such a combination would be both convenient and private and grant greater flexibility to eating arrangements as children grew up.

Two new rooms appeared in the postwar period: the utility room and the multi-

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[1] The popular open floor plans which also permitted flexibility and adaptability in the postwar home had a minimum of fixed elements like the kitchen and bathroom or lavatory--known as the mechanical core of the home.

[2] Giedion. Mechanization Takes Command, pp. 623-624.

[3] Clark. The American Family Home 1800-1960, p. 203.

[4] Ibid., p. 203.

purpose room later named the "family room". The utility room provided space for the new automatic washer and dryer. It was located next to the kitchen, the mechanical core, to reduce plumbing costs. It opened onto the backyard where housewives, who could not afford a dryer, could get to the clothes lines outside.[1]

Television and children, being the centre of family life in the 1940s and 1950s, produced the need of reserving a room for all the "clutter and noise" in the house. Television and radio brought entertainment into the home thereby allowing families to tied to the home more often.[2] Many claimed that one of the benefits of television is that it strengthened a sense of family cohesiveness and self interest (Figure 2.7). Improvements in television and record-playing technologies in the 1950s--together with the emergence of rock and roll music and a distinct teen culture--made many parents want to separate off different household functions. In addition to the living room, the family room or playroom became necessary in separating the world of the television to that of adults who wished to read and have peace and quiet to themselves.[3] During the postwar period, this room was furnished with "a linoleum floor for dancing, a table for bridge games, and comfortable furniture for the new family pastime of watching television."[4]

Bedrooms were generally treated in the postwar home not as retreats as in large

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[1] Wright. Building the Dream: A Social History of Housing in America, p. 255.

[2] Television was also hailed for keeping children out of dangerous public spaces (Spiegel. "The Suburban Home Companion: Television and the Neighbourhood Ideal in Postwar America". in Sexuality and Space, p. 194). For more information on television and domestic space in the postwar period, also refer to Lynn Spiegel's essay, "Installing the Television Set: Popular Discourses on television and Domestic Space, 1948-1955." Camera Obscura; March 1988: pp. 11-47.

[3] Clark. The American Family Home 1800-1960, p. 215.

[4] Wright. Building the Dream: A Social History of Housing in America, p. 255.

Figure 2.7 Television was advocated for strengthening family cohesion and self-interest: two important themes of the postwar years. It also gave rise to the family room.

luxury homes but only as places for sleeping. Usually their decoration would be kept to a minimum with no carpets or elaborate furniture. Children's bedrooms in the postwar era were intended to be used extensively during the waking hours for play. The typical child's bedroom of the 1960s expressed in its arrangement and decoration, the personality

of its inhabitant.[1] Wall colour or wall paper was based on gender: books and toys were displayed in bedrooms; older children often exhibited posters of music or television stars of their popular culture.[2] The postwar bedroom was marked by a high degree of enclosure with family spaces in the house. The master bedroom also had gained popularity in the postwar years and therefore more attention was paid to decoration.[3]

Bedrooms and bathrooms are considered as "private zones" in the home and one mechanism to increase this privacy was to add more bathrooms. In small, economical homes a second lavatory or half-baths were provided for guests to keep them from intruding into private family zones. In *Mechanization Takes Command*, Giedion writes that during the postwar period a bathroom for every bedroom and a powder room or a small washroom on the main floor adjoining the living and the dining room for guest use was popular.[4] The idea of having a bathroom for every bedroom was not fully realized but rather the common use of all the family was solely American in tradition since the turn of the century when the compact three-fixture bathroom, with the tub placed across the end of the room and a water-closet and sink side by side became commonplace.[5] In addition, the introduction of a mechanical core in the home also made the idea of a second washroom more feasible by keeping costs at a minimum (Figure 2.8).

Life in the postwar home was indoctrinated to the public by the media which placed emphasis on the middle-class ideal: the family as the focus of fun and recreation

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[1] Adams. The Eichler Home, p. 24.
[2] Ibid.
[3] Galloway. User Adaptations to Wartime Housing, p. 144.
[4] Giedion. Mechanization takes Command, p. 705.
[5] Rybczynski. Home: A Short History of An Idea, p. 164.

was the model employed throughout. Themes were centred around raising healthy, independent children, decorating the home to one's own taste, and sitting back in the evening with family members in front of a new television set. Another set of images were those that showed families working together to improve the home, taking vacations, and enjoying the outdoor "patio" and backyard barbecue.[1] This constant emphasis on family life and fashionable master-bedroom suites in magazine literature reflected the decreasing force of traditional separate male and female spheres of the nineteenth century when each member of the family had their own defined spaces. Marriage and family in the postwar era was viewed as a partnership, a cooperation in all affairs. The space restraints in the postwar home together with the emphasis on family interaction created the positive vision of harmonious family life.[2] Whenever size became intolerable, adaptation alleviated the space constraints on the living patterns of residents.

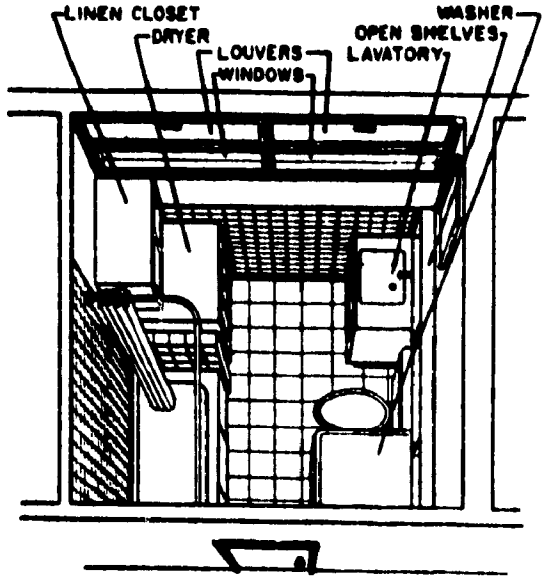

Figure 2.8 The compact three-fixture bathroom facilitated the design of small houses. In this example, several functions are combined to save space in the home.

In an effort for the postwar home to gain acceptability for their novel use of living space, architects and builders with the help of marketing experts consolidated their

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[1] Clark. The American Family Home 1800-1960, p. 209.
[2] Ibid., p. 216.

designs with the idealized lifestyles of the times. The vision of ideal family life, however, did not last and by the 1970s, new social realities gradually transformed the inner spaces of the home compelling new households to adjust them to their own situation.

CHAPTER 3: THE EFFECT OF TECHNOLOGICAL AND LIFESTYLE CHANGES ON THE NORTH AMERICAN SINGLE FAMILY HOME TODAY

The spatial changes that have transpired in the North American single-family home stem from two factors: advances made in technology and reformed lifestyles.[1] As a result of the former, rooms have become specialized (i.e. T.V. room/family room, exercise room, computer, or business centre) and more space is available in them due to compact, space saving technological devices.[2] With the latter, the number of households increasingly moving away from traditional family relationships have, according to CMHC, created a demand in the 1990s for "smaller and more diversified dwellings of higher density and urban as opposed to suburban".[3] Both technology and societal changes work interdependently in transforming our living environments.

In order to understand how various spaces in the home are utilized, one must first determine their traditional use and configuration. Keiser (1978) divides the house into four zones: *public, operative, semi-private, transitional,* and *private*.[4] Public spaces are areas open to guests and include points of entry, living and dining rooms. Operative zones include the kitchen, laundry, work and hobby rooms and storage areas. Semi-private spaces are rooms used in common such as bathrooms, washrooms, family rooms,

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[1] It should be acknowledged that this is the personal view of Montreal architect/housing researcher, Jocelyn Duff of the Societé de Habitation du Quebec, whose own research has led him to conclude that the evolution of the use of domestic space has always been a result of both societal and technological changes.

[2] Keiffer. Bigger, Better and Faster: Technology and the Spatial Reorientation of the American Family Home. Diss. Kent State University 1993, No. Pag.

[3] "Changing Lifestyles Influence Housing", The Gazette, Montreal; December 9, 1992: p. D3.

[4] Keiser. Housing: An Environment for Living, pp. 207-216.

or study rooms. Private spaces consist of bedrooms, dressing areas, and personal washrooms. Transitional zones are circulation paths (or corridors) which link one space to another. In respect to technology and lifestyle changes, this chapter will elaborate on the first four zones. The "home office" and its impact on the private and public spheres in the home will also addressed in a separate section.

The Public Domain

In the context of western culture, the living room and dining room embody the public sphere in the home. These rooms are a formal space and often the place where treasured family possessions and furniture in the home are displayed.[1] In homes with small kitchens, the dining area often undertakes a multi-purpose role such as a study area, office, or a hobby room.[2]

The 1990s living room still has a token representation in the floor plan being located in the front of the house. In his study, *Housing Designed for Families (1981)*, Zeisel refers to numerous post-occupancy studies conducted in the U.S. which verify that the living room is regarded by most people as a formal room--a place where they can express their own personality and identity.[3] Studies on residential satisfaction undertaken by Saulter (1969), Portas (1967) and Griffin (1973) show that a "traffic-through" living room is disliked by most residents.[4] The location of the unit entry directly in the living

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[1] Teasdale and Wexler. Dynamique Famille, Ajustements Residentiels et Souplesse du Logement, p. 214.

[2] Richie. Long-term Adaptability of Single Family Housing, p. 136.

[3] Zeisel et al. Housing Designed for Families, p. 95.

[4] Jerry Saulter et al. 221D3 Housing in Boston: An Evaluation. Unpublished report

room was also viewed as a major shortcoming.[1]

Activities in the home have shifted from domestic (family activity around the kitchen table) to leisure (easy chairs grouped around the T.V.). The living room has always been very much the focal point, the symbolic "heart" of the house. The "modern" multi-purpose living room has widely replaced the parlour with its clear differentiation between front and back, formal and informal.[2] According to Madigan and Munro, this "reflects the transition from an overtly patriarchal and hierarchial family to a more modern democratic norm".[3] Keiffer (1992) predicts that "the living room and the dining room will disappear from the North American home in the next century if they have not already, to be replaced by the family-entertainment room and computer room".[4]

(Appendix); N. Portas. Appropriation of Space and Dwelling Constraints: Some Results of a Survey in Lisbon and Oporto. Paper published in the National Swedish Institute of Building Research; M.E. Griffin. Mount Hope Courts: A Social/Physical Evaluation. Brown University, 1973. All references are quoted from Zeisel's Housing Designed for Families, p. 96.

[1] Zeisel et al. Housing Designed for Families, p. 97.

[2] By the early twentieth century, the term "living room" was defined as a multi-purpose room in small and very modest households, "a room one had on the way to economic success and future parlour making." The new middle-class "living room" evolved in part of the fact that living space in new apartments and single-family housing became smaller in the 1910s and 1920s. The shift from the parlour to the living room is also attributed to the fact that Victorian family ideals broke down the ceremony and pomp of the parlour. In addition, average families during the 1900s also started to redirect their finances from elaborate furnishings to purchasing new inventions such as automobiles and household appliances. (For more information on the history of living rooms, see chapter on "Victorianism in the Modern Era: At Home in the Living Room 1910-1930" in Katherine C. Grier's, Culture and Comfort: People, Parlors and Upholstery 1850-1930. Rochester: New York. University of Massachussettes Press, 1988: pp. 287-300.)

[3] Madigan and Munro. Privacy in the Private Sphere, p. 33.

[4] "Family Fun Room Will Replace Living Room." The Gazette, Montreal; September 17, 1992: p. D4.

Technology, particularly for home entertainment, has had an impact on home life in creating shared activity of the household.[1] With the introduction of the VCR, a rare and costly novelty in 1980 now as commonplace as the T.V. set, advanced home entertainment options have transformed the living room into a home theatre as outlined by *Consumer Reports*:

> *Last year, nearly four billion videotapes were rented, close to one third of all T.V. sets sold were stereo, and some 300 million pounds of microwave popcorn were consumed--all evidence that every week, showtime at millions of home theatres across the land.*[2]

In response to an extensive poll study used to determine what career women wanted in their ideal home, "The Busy Woman's Dream House" (sponsored in 1990 by the National Association of Home Builders) featured expanded living space. The kitchen and family room were combined (as was done with the open kitchen in the postwar house which allowed the room to be used for various activities) to include a built-in entertainment centre. The system contained "a stereo, computer, television, and a VCR--all complete with master controls that regulate the housewide intercom and music centre."[3]

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[1] Advertisements for television sets in the 1940s and 1950s often referred to television as the "chairside theater", the "video theater", and the "family theatre". As early as 1951, the theatricalization of the home began with the television set and advocated by magazines like *American Home* (May 1952) with the "Room That Does Everything." (Spigel. "The Suburban Home Companion: Television and the Neighbourhood Ideal in Postwar America". in Sexuality and Space, ed. Beatriz Colimina: p. 198)

[2] "Home Theatre: The Machine that Started it All was the VCR". Consumer Reports, March 1991: p. 155.

[3] "Dream House: What a Woman Wants in her Ideal Home". The Futurist, July-August 1990: p. 49.

The formal public sphere has been shrinking for reasons that its relatively unused by the household. Being at a time when the family is less tied to the home than ever before, the family or multi-purpose room represents the growing desire to provide a framework in which the members will be better equipped to interact with each other as pointed out by architect John Bloodgood:

> *Rather than sitting around the living room in a formal posture, we are recognizing who we are. The kitchen and the family room are becoming the reality of the house, instead of being tucked away. As family spends less time together, they want to communicate more.*[1]

One important aspect of this room is that it strongly public in nature: all members and guests in the household can use it for any purpose. Rock, Torre, and Wright (1980) argue that:

> *Crucial to the concept of privacy is the notion that most parts of the dwelling can accommodate different kinds of activities. The dispersion of gatherings of various household members and outsiders throughout the house suggests a multiple use of spaces and is key concept in breaking down the specialized and efficient use of space inherent in the traditional home. This requires the inclusion of furnishings in every space in the house that create a proper setting for socializing as well as solitude. Since each member of the household may have very different ideas about how to work and entertain, the house could be a rich kaleidoscope of options each reflecting in organization and decor many different personalities. Perhaps with the exception of the bathroom, each room is susceptible to multiple use. But even that bastion of specificity can be modified.*[2]

With this extra room, privacy can be enhanced in the home since other living spaces can be enjoyed in solitude. Children's bedrooms are not under pressure to double as

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[1] Brown. "Houses for Keeping Up with the Joneses: A Dual-Career Couple". New York Times, January 25, 1990: pp. C1, C6.

[2] Rock, Torre, and Wright (1980), The Appropriation of the House: Changes in House Design and Concepts of Domesticity, p. 95.

playrooms and sleeping study areas.

The family/multi-purpose room serves as an informal outlet where one can spend leisure time. More people are choosing to entertain at home for convenience sake, as opposed to "going out". Home entertainment setups which are not suitable in formal living rooms are allocated to the family room. Because of the versatility of this room, its size has become more important relative to its use.

The Operative Zone

The operative zones in the home are the kitchen, the laundry and storage areas. The kitchen is the hub of daily activity for meals and an informal meeting place for family and friends.[1] Zeisel (1981) emphasizes the need for a small eating area in the kitchen.[2] Although a separate dining room and living room are acceptable in most households, eat-in kitchens are a necessity for households with young children. Zeisel quotes form Becker's study, *Design for Living*, that:

> *Given the choice between an all-purpose room or a dining room, 1) Families with children, especially young adults, preferred the all-purpose room, 2) Only older people preferred a separate dining room over an all-purpose room.*[3]

This type of kitchen also serves as an informal "sitting room" for relatives, family members, and friends.[4]

There is a relationship between changing gender roles and behaviour and the fact

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[1] Sayegh. Housing: A Canadian Perspective, p. 397.
[2] Zeisel et al. Housing Designed for Families, p. 100.
[3] Ibid., p. 104.
[4] Ibid., p. 100.

that the kitchen is merging with the family room. Part of this explanation comes from the fact that as women increase their public profiles they will seek more open home spaces that allow multiple uses to occur simultaneously. In a study conducted by Peatross and Hasell (1992) it was found that couples, who have more role interchangeability in terms of employment pattern and kitchen task performance, tended to prefer the most open kitchen space or the farmhouse kitchen. By way of contrast, couples with less role interchangeability tended to prefer semi-open kitchens. Their data indicated that younger persons--those with more education, couples where both persons were employed and where men participated more fully in household tasks--wanted spaces compatible with their egalitarian lifestyle.[1] Judging by the statements of male participants in their study, Peatross and Hasell concluded that men felt more comfortable in an "open kitchen" because they perceive it as being

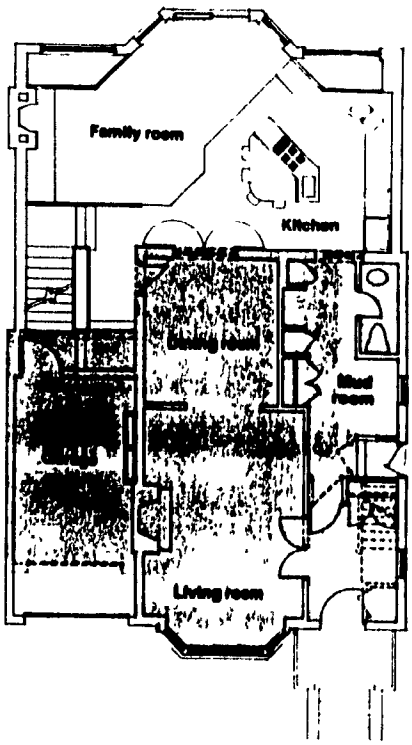

Figure 3.1 This Ontario home was renovated to combine the kitchen with the family room. The owners wanted an open kitchen so they could supervise their children's activities.

[1] Peatross and Hasell. "Changing lives/Changing Spaces: An Investigation of the Relationships Between Gender Orientation and Behaviours, and Spatial Preferences in Residential Kitchens." Journal of Architectural Planning and Research, Autumn 1992: pp. 252, 252.

different from the enclosed kitchen traditionally associated with the female domain.[1] Their updated study (1993) also shows that the more children at home, the more likely both men and women would prefer an open kitchen (Figure 3.1).[2]

The importance of storage space in the today's home lies in the fact that it plays a role in residential satisfaction. This is attributed to the proliferation of home products created to provide both comfort and convenience: labour saving household appliances like microwaves, food processors, and other gadgets have created new storage problems in the kitchen. The fact that freezers were found in 20% of households interviewed in this study demonstrates that people are recognizing the economic advantages of buying food at bulk rates thereby making storage space more relevant in the home. In a report undertaken the Institute of Environmental Research, *A Study of Storage Space in Multiple Unit Residential Buildings (1981)*, residents were asked about the desirability of various options for increasing their storage space. The report showed that:

> *The majority of both highrise and townhouse respondents (57.9% and 58.3% respectively) were not willing to increase the amount of storage space in their unit by giving up space in existing rooms. These respondents were unwilling to sacrifice existing living space for additional storage space because they felt there was no unused space in their unit.*
>
> *The respondents were most willing to give up living space from bedrooms to gain additional storage. Bedrooms comprised 33% of all rooms mentioned. Other rooms mentioned included the dining hall, hall, and*

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[1] Peatross and Hasell. "Changing Lives/Changing Spaces: An Investigation of the Relationships Between Gender Orientation and Behaviours, and Spatial Preferences in Residential Kitchens." Journal of Architectural and Planning Research, Autumn 1992: p. 253.

[2] Hasell, Peatross, and Bono. "Gender Choice and Domestic Space: Preferences for Kitchens in Married Households." Journal of Architectural and Planning Research, Spring 1993: p. 11.

> *balcony (each representing 9.5% of all rooms mentioned). Fewer respondents mentioned the basement, living room, bathroom and kitchen as areas where living space could be reduced to provide additional storage space.*[1]

Another example would be the response to a survey of 900 readers by *Family Circle Magazine* on what women wanted in their ideal home. It found that plentiful storage space was a top ranking priority for 97% of the women polled.[2]

The problem of providing storage is that the need is often unsatiable. Zeisel points out that "no matter how much storage space is provided in a home, there will not be enough to accommodate what people living there have."[3] In order to provide enough space for storage, designers need to have an understanding of what kinds of objects people store, which can be stored together, and which apart. For example, post-occupancy studies support that most people favour storage space near entries for outdoor clothing, shoes, and umbrellas.[4] According Cooper and Sims'(1978) findings, a convenient location for washers and dryers is another high ranking need.[5] In providing

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[1] Institute of Environmental Research. A Study of Storage Space in Multiple Unit Residential Buildings, pp. 59-60.

[2] "Dream House: What a Woman Wants in her Ideal Home". The Futurist, July-August 1990: p. 49.

[3] Zeisel et al. Housing Designed for Families, p. 109.

[4] Clare Cooper. Resident Attitudes Towards the Environment at St. Francis Square in San Francisco: A Summary of the Initial Studies. Working Paper No. 126, Institute of Urban and Regional Development, University of California at Berkeley, 1970; Department of the Environment. Homes for Tomorrow. Her Majesty's Stationary Office, 1961; Same author. New Housing in a Cleared Area: A Study of St. Mary's Oldham. London: Her Majesty's Office, Design Bulletin No. 22, 1971. References quoted in Zeisel's Housing Designed for Families, p. 110.

[5] Carla Cooper and Bill Sims. "A Post Occupancy Evaluation of the Fourplex Condominium" Journal of the American Association of Housing Educators, Volume 5, No. 1, 1978: p. 39, Table 6. References from Ziesel's Housing Designed for Families, p. 109.

enough space for machines, cleaning supplies, and ironing boards, "basement washer/dryer and kitchen hook-ups" are favoured by most people.[1] In regards to storage for this equipment in the kitchen, Cooper and Sims' studies show that residents prefer placing them behind a door in order to keep messy laundry "out of sight".[2]

Since the operative zone encompasses highly used spaces in the home and therefore their design is critical. Kitchens need to be large enough to contain adequate storage for various appliances and other items. In homes without basements or utility rooms, these storage spaces must account for freezers and laundry machines.

The Semi-Private Sphere

The semi-private sphere consists of the bathroom and family room. The bathroom can also be considered private, depending on who has access to it or where it is located in the home (usually adjacent to bedrooms away from view from the public zones of the house). In residences, however, where there is only one bathroom to be shared by both the household and guests, this bathroom is less private.

The family room is the main space for family gathering or for entertaining close friends. Usually the main television for the home is located there. It is also a multi-purpose room for undertaking personal tasks such as hobbies, doing homework, or office work.

Lifestyles today call for one bathroom to be shared by the children and another

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[1] Zeisel et al. Housing Designed for Families, p. 109.
[2] Ibid., pp. 109-110.

used exclusively by parents. Bathrooms traditionally contained a washbasin, toilet, combination bath tub/shower and storage for linen, personal hygiene appliances and consumables. Modern design introduced separate showers, whirlpool bath tubs, double sink vanities and bidets that have increased the demands for space for bathrooms to be equal to that of a bedroom.[1] Rock, Torre, and Wright (1980) write that:

> *Because many of their important conversations take place between the bathtub and the sink, a working couple we know have expanded and redesigned their bathroom to include all their plants, wicker chair, soft lighting, and their exercise chair.*[2]

It must be noted that family households could manage without the added shower or bath since its members will be more cooperative and wait for one member to finish his/her bath. In households composed of unrelated adults or reconstituted families, a private bathroom is necessary since individual privacy is more critical.[3]

The family room made became very popular in the suburban period and was incorporated into the plan of the Ranch house.[4] Today it has become the most functional room in the house and is usually located in the rear, leading out to the deck in the backyard. It is complimented with sliding glass doors, skylights and cathedral ceilings. It is where one entertains guests and locates the fireplace, the original hearth and symbol of family.[5] In most family households, an informal living area is necessary to

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[1] Richie. Long-term Adaptability of Single-Family Housing, p. 139.

[2] Rock, Torre, and Wright. The Appropriation of the House: Changes in House Design and Concepts of Domesticity, p. 95.

[3] Cadotte and Duff. Logement et Noveaux Modes de Vie, p. 172.

[4] Keiffer. Bigger, Better, and Faster: Technology and the Spatial Reorientation of the American Family Home, p. 8.

[5] Keiffer. Bigger, Better and Faster: Technology and the Spatial Orientation of the American Home, p. 8.

accommodate informal family activities. If there is no extra room in the house which could meet this function, then a sizeable kitchen would be able to achieve the same ends. The purpose of such spaces is to provide for activities like children's play, television, entertaining, and hobbies.[1]

The Private Zone

"It has been argued," Madigan and Munro state in their *Privacy in the Private Sphere (1992)*, "that as family sizes have decreased throughout the century, the investment of time and effort in children have grown proportionately."[2] This change has been associated with the reformed status of mothering in the postwar period, when theories of maternal deprivation introduced new ideas that mothering required attention to the psychological development and health of the child, apart form meeting its physical needs.[3] Children evidently have become the focus of consumption expenditure, as seen in the growth of an industry of baby products and other "required" goods such as high chairs, car seats, back-packs, and carriages or strollers. As children grow older they demand more expensive toys and games which of course, require considerable storage and play space.[4] Children's bedrooms therefore need to be large enough since they serve

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[1] Zeisel et al. Housing Designed for Families, p. 98.

[2] Shorter. The Making of the Modern Family.

[3] For more information refer to John Bowlby's Childcare and the Growth of Love, Second Edition (Harmondsworth: Penguin Books, 1965) and Barbara Ehrenreich's For Her Own Good: 150 Years of Experts' Advice to Women (Garden City, New York: Anchor Press, Double Day, 1979).

[4] Madigan and Munro. Privacy in the Private Sphere, pp. 10-11.

other activities than sleeping, such as play and study.[1] It is an indispensable space for children since it is the only room in the house they can call their own and not have to share with other members of the house. As children grow into adolescence, their space demands increase even greater. Their spatial behaviour is transformed by the need for greater independence and autonomous lifestyles for activities like watching television late or listening to music, entertaining friends, or decorating to one's taste.[2] Teasedale and Wexler in their study of family homes in Montreal found that basements were most suitable for teenagers' activities:

> *In almost all household studied, the basement was used by adolescents during a crucial part of their lives. It provides not only more space and space which is distinct, but it also allows for a symbolic division between "upstairs" and "downstairs" activity with control for downstairs behaviour somewhat freer of parental control.*[3]

Zeisel writes that studies by Saile (1972), Ray (1972), and Griffin (1973) show that the basement is considered by 80% of residents (living in houses with their addition) as a "very important" feature. Furthermore in terms of activities that take place in them, 80% is used for storage, 82% for laundry, and 59% by children's activities.[4]

One interesting finding cited in Galloway's thesis, *User Adaptations to Wartime Housing (1979)*, was that basements in wartime homes were also a source of income. Bedrooms in the basement were used as boardrooms by some owners to increase family

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[1] Zeisel et al. Housing Designed for Families, p. 107.

[2] Teasedale and Wexler. Dynamique de la Famille, Ajustements Residentiels et Souplesse du Logement, p. 51.

[3] Ibid., p. 75.

[4] Zeisel et al. Housing Designed for Families, p. 116.

income.[1] This corresponds with Teasedale and Wexler own findings (1986) in which one interviewee had built a small basement accessory unit.[2] The author's own field study contains a similar incident in case study 15 where the upper floor of the Cape Cod unit was converted into an accessory unit. The previous owner of this home used the space in the basement for his children's bedrooms (refer to case study drawing in Appendix I).

Parents on the other hand, who would use the basement for their own purposes have to sacrifice it for their children and rearrange their own work areas in their bedrooms, living, or dining room areas of the house.[3] For the most part, bedrooms constitute the only space adults can retreat from family activities to have privacy. It is the place for solitude, listening to music, reading a book, or watching an alternative program of T.V. The main bedroom in the house is unsuited for this multi-functional role.[4] Hence, we find the fashionable "master suite" where the bathroom has become an important adjunct to the master bedroom where parents can perform personal hygiene and dress in private.[5] The official catalogue of *The National Homeshow* in September 1988, details among the various renovations performed by homeowners in Ontario, additions of popular master suites made in homes:

> *A young professional couple with a growing family wanted more than just new sleeping quarters. They chose to indulge themselves by turning existing attic space into a retreat with all the "bells and whistles". The 650-square foot space was converted to a master bedroom with*

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[1] Galloway. User Adaptations to Wartime Housing, p. 149.

[2] Teasedale and Wexler. Dynamique de la Famille, Ajustements Residentiels et Souplesse du Logement, p. 130.

[3] Ibid., pp. 72, 75.

[4] Munro and Madigan Privacy in the Private Sphere, p. 22.

[5] Richie. Long-term Adaptability of Single-Family Housing, p. 139.

accompanying sitting area and luxury ensuite washroom.[1]

In single-parent households for example, where there is "doubling up" (i.e. single mothers living together with their children or two unrelated adults co-habitating) the question of privacy leads to multiple-use of the parent's bedrooms. Leavitt (1990) suggests that in order to make bedrooms more flexible, L-shaped rooms should be developed or loft spaces which can create separate zones within the room. She adds that built-in furniture to free other spaces in the room or nooks that can accommodate computers, typewriters, or sewing machines should also be considered.[2]

Unlike the 1970s when young adults left their home in order to have their own "place", today there is the trend where children are returning to live with their parents. The slump of the economy of last two recessions and the high cost of housing have made it very difficult for the younger generation to afford their own accommodation. This was evident in the author's own findings in which the owners' children returned home out of financial considerations (case studies 2, 12, and 22). In meeting the need for more privacy between parents and their children, home layouts can include more autonomous living. This form of housing is common in Denmark, such as the notable Bondebjergt co-op project. The Bondebjergt has split-level units were designed so that the children bedrooms were at a different level from at of the parents and could be accessed from outside privately (Figure 3.2).[3]

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[1] Adair. "30 Great Case Studies". The Fall National Home Show, 1988: p. 44.

[2] Leavitt. "Two Prototypical Designs for Single Parents", in New Housing for New Households, eds. Karen A. Franck and Sherry Ahrentzen: p. 167.

[3] Duff and Cadotte. Logements et Noveaux Modes de Vie, pp. 59-60.

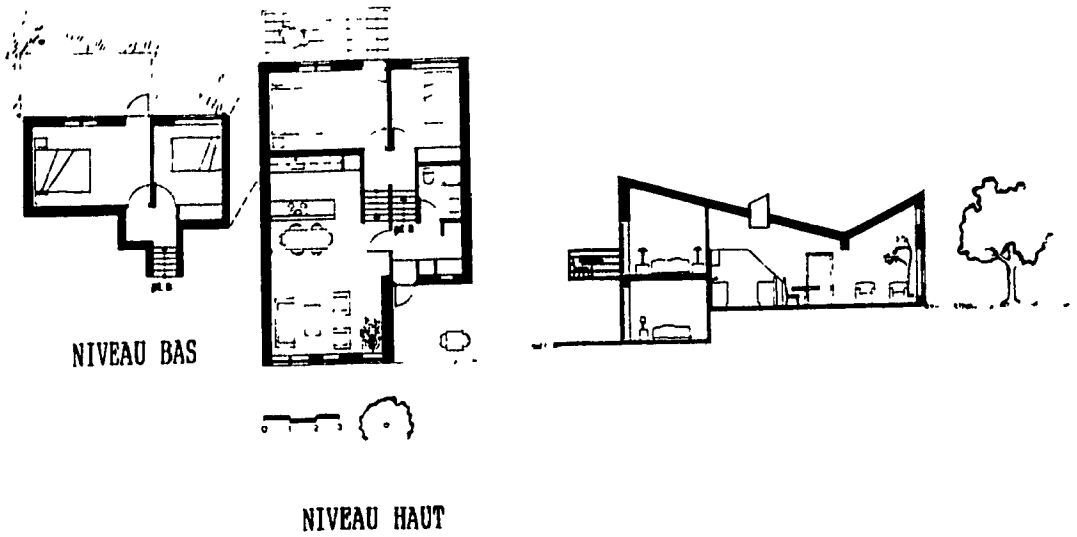

Figure 3.2 This split-level family unit in the Bondebjergt project in Denmark allows autonomy for young adults in the household with separate entries for parents and children.

It should also be noted that the design of the Bondebjergt unit also allows owners to make extra income by renting out the bedrooms (with the access from outside) to students.

Home as a Place of Work

Changes in the workplace have created home-oriented work or home offices, facilitated by computers and fax machines and other forms of telecommunication. According to Martha Riche of the Population Reference Bureau, the growing number of people in the workforce coupled with the desire to spend time with one's family, is driving an increase in home-based work.[1] Home-based work is opted by women and men alike, including

[1] Home Life Issues Report, Whirlpool Corporation (1991). No. pag.

elderly and handicapped who need or prefer to stay home.[1] Some of the advantages of working at home are less time spent travelling to work thereby lowering transportation costs; fiscal benefits; savings from expensive office rents; and closer interaction with family and the ability to look after household chores while working on the phone with clients. The popularity of "electronic homework" is reflected in the numbers of persons working at home, as outlined in an article in a Montreal real estate newspaper:

> *C'est ainsi que de plus de gens optent pur le travail à la maison lorsque la situation le permet. La compagnie Sharp, fabricant de produits électroniques souvent utilisés à la maison, estime à plus de trois millions le nombre Américains dont le lieu de travail principal est situé dans leur résidence. En l'absence de données précises pour Canada, on peut néanmoins appliquer un ration de 1-10 et ainsi obtenir le chiffre de 300,000 Canadiens profitant des avantages du travail à la maison.*[2]

With the onset of technological changes on the home, flexible and efficient work space is becoming increasingly important. Aside from finding a place to work, the need for storage for books, papers, and computer equipment also needs to be considered. Teasedale and Wexler (1986) in their studies on flexibility in the home contend that areas like the kitchen or bedrooms are regarded by the "homeworkers" to be unsuitable:

> *As in many households, the kitchen or dining room table is the place*

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[1] It should be mentioned that there are different types of homeworkers. There are mainly categorized as follows: The *self-employed* who represent the heart of the home office market, and depend on their at-home business for their primary income; the *freelancers* or *part-timers* whose home-office is not the primary source of income; the corporate employee who brings work home after hours and weekends; and the chairman who is financially well off who works at home rather than in the office for reasons of convenience, productivity and lifestyle. The first two types home offices are grouped as income-generating whereas the last two are known as corporate affiliated home offices. ("Who Works at Home?" Electronic House, January-February 1992, p. 21)

[2] Dubois. "Travailler à la Maison: Les Avantages ont du Poids", Habitabec, February 21, 1992: p. 3.

> *where desk-type work is often done. But women who return to complete their studies or who work outside the home seem to want a space of their own.*[1]
>
> *The work patterns of parents are not necessarily stable. Just as children's needs are changing, parents, because of job shifts, taking on extra work, changed preference or opportunities for doing work at home... often bring work home. This requires additional or special areas, often bringing parents and children into competition for space.*[2]

Penny Gurstein (1991) in her study found that family-oriented homeworkers have work spaces usually in spaces that are used for other purposes such as the living/family room, bedrooms or kitchens. They organize their schedule around the needs of their family. Work-centred individuals on the other hand, have settings which dominate their home environments and whose daily schedules are organized around their job. These homeworkers often convert their living rooms or an extra bedroom to a workspace.[3]

Apart from representing the private aspects of life, the home now begins to reflect on the individual as a professional working person. Gurstein writes that, "public life is intruding into the home more than ever by social connections and information received through electronic equipment without having to go outside the home".[4] New boundaries therefore need to be defined in the home to account for the merging private and public spheres. One major implication on the layout of home is the need for clear separation between domestic and public scenarios. For example, some residents would prefer to

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[1] Teasdale and Wexler. Dynamique de la Famille, Ajustements Residentiels et Souplesse du Logement, p. 118

[2] Ibid., p. 124.

[3] Gurstein. "Working at Home and Living at Home: Emerging Scenarios", The Journal of Architectural and Planning Research, Summer 1991: p. 172.

[4] Ibid., p. 175.

have separate entrances in home-based work settings and common work areas. A survey of forty-five homeworkers conducted by Gurstein (1991) in the San Francisco Bay and Sacramento Metropolitan areas indicates that for homeworkers with children, having a separate workplace is ranked very important while having a separate entrance is somewhat less important to them. Women with children also stated that they wanted a separate workspace but within close proximity to domestic activities. Female workers without children share similar preferences with their male counterparts than with women with children. Men with children on the other hand, preferred to be as separate as possible to maintain their professional identity apart from their domestic life.[1] Gurstein study shows that that although men are engaging more than ever in household tasks (i.e. caring for children, cooking, and cleaning), women are still performing the bulk of domestic work. Therefore, the location or layout of the "office" in the home will vary between men and women with children.

"Art de Vivre en Ville", a competition organized in 1991 to discuss housing solutions for inner city families of Montreal, sought designs which consolidate family life with work at home. One popular proposal rendered by architects Suzanne Gagnon and Georges Lagacé, calls for a plan in which the home is integrated with the office whereby both are accessed from outside by separate entries (Figure 3.3).

Because every homeworker operates on a different level (i.e. income-generating home office versus corporate-affiliated home office or full-time versus part-time), it is

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[1] Gurstein. "Working at Home and Living at Home: Emerging Scenarios", Journal of Architectural and Planning Research, Summer 1991: p. 175.

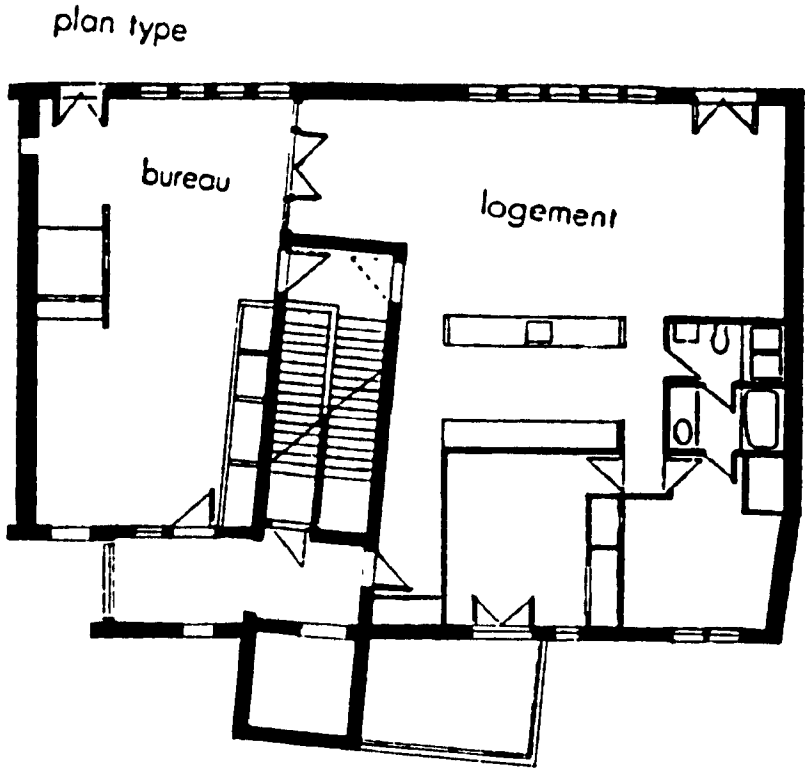

Figure 3.3 As public life encroaches into the private realm, boundaries need to be redefined in the home. This unit by Gagnon and Lagacé calls for separate entries into the home and office.

difficult to fit the "home office" into a single category of the functional zones in the home (i.e. public, private, semi-private, operational). Depending on the status of the worker, it is either intergrated into rooms with other functions (in a bedroom, family room, or kitchen) or ascribed a space of its own by converting a room to serve this purpose or adding another room.

The meaning and use of spaces within the home have undergone some transformation since the postwar period. In the postwar era, the cohesiveness of the traditional family and the mass proliferation of household goods changed the structure of kitchens and living rooms: the sphere of men and women and children in the home. Societal and technological changes have consequently fortified the boundaries between

formal and informal spaces in the home. In the following chapter, the author will examine how residents of wartime homes conformed their living spaces to account for some of these changes.

PART 4: CASE STUDIES OF WARTIME HOUSES IN MONTREAL

Burwell Coon's article in 1942 for the *Journal of the Royal Architectural Institute of Canada*, titled *Wartime Housing*, outlines three basic types of single detached wartime homes that were to be built across the country: the one storey, 24 x 24 feet (7.2 x 7.2 meters), with a living room, two bedrooms, kitchen and bath; a one storey, 24 1/2 x 28 feet (7.4 x 8.4 meters), with a larger living room, two bedrooms, kitchen, bathroom, and a larger porch; and the 1-1/2 storey, 24 x 28 feet (7.2 x 8.4 meters) with two additional bedrooms on the upper level.[1] This study surveyed these varieties in Montreal whose layouts also had a cold room or coal shed attached (Figures 4.1 and 4.2).[2] Moreover, an effort was made to interview residents whose units were expanded no greater than 1200 ft^2 (120 m^2). All wartime houses are situated on sizable lots, typically 40 x 100 feet (12 x 30 meters). Although these home layouts express family life (i.e. household with a husband, wife and children), Coon states in his above mentioned article, that the units were also intended "for the large numbers of unmarried employees".[3] In all likelihood, women too were probably working in local war factories and therefore were less homebound. As lifestyles and technology evolved in the last 50 years, there were clear opportunities to adopt different schemes within different households.

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[1] Coon. "Wartime Housing", Journal of Royal Architectural Institute of Canada, January 1942: p. 3.

[2] Cold room or coal shed was once used to store coal when homes were heated by a stove. Typically 100 ft^2 (10 m^2) in floor area, this room is not heated since it is intended to be used for storage. Due to its sloping ceiling however, owners who wanted this room as living space had to modify the structure by bringing all its walls to full height.

[3] Coon. "Wartime Housing", Journal of Royal Architectural Institute of Canada, January 1942: p. 3.

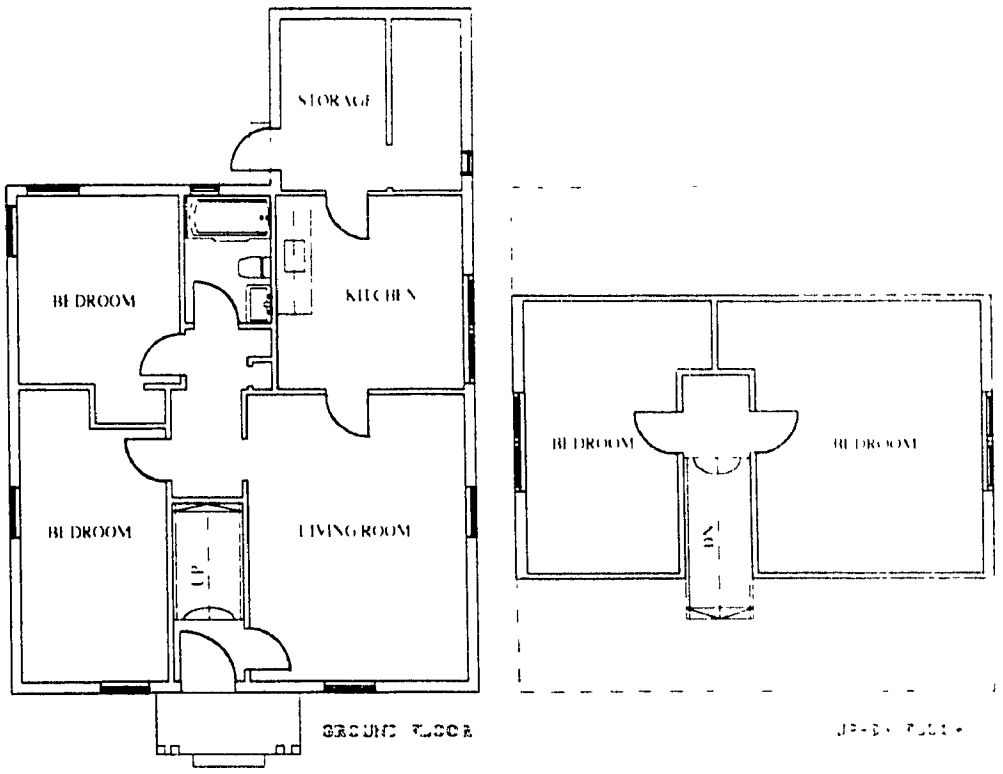

Figure 4.1 Typical 1-1/2 storey wartime home in Montreal.

adopt different schemes within different households.

According to Madigan and Munro (1992), the rising demand for home ownership and the need to sell housing to lower income groups has put pressure today on developers and builders to produce an "affordable product which has resulted in declining space standards that could be expected to have an important consequences for the use of internal space."[1] Madigan and Monro (1992) argue that "the potential limitations of having only one large public room will result in conflicts over its use". Apart from fulfilling many

[1] Madigan and Munro, Privacy in the Private Sphere, p. 6; Ideal Homes: Gender and Domestic Architecture, in Putnam and Newton (eds); "Gender House and Home: Social Meanings and Domestic Architecture", Journal of Architecture and Planning Research, Volume 8, no. 2: p. 123.

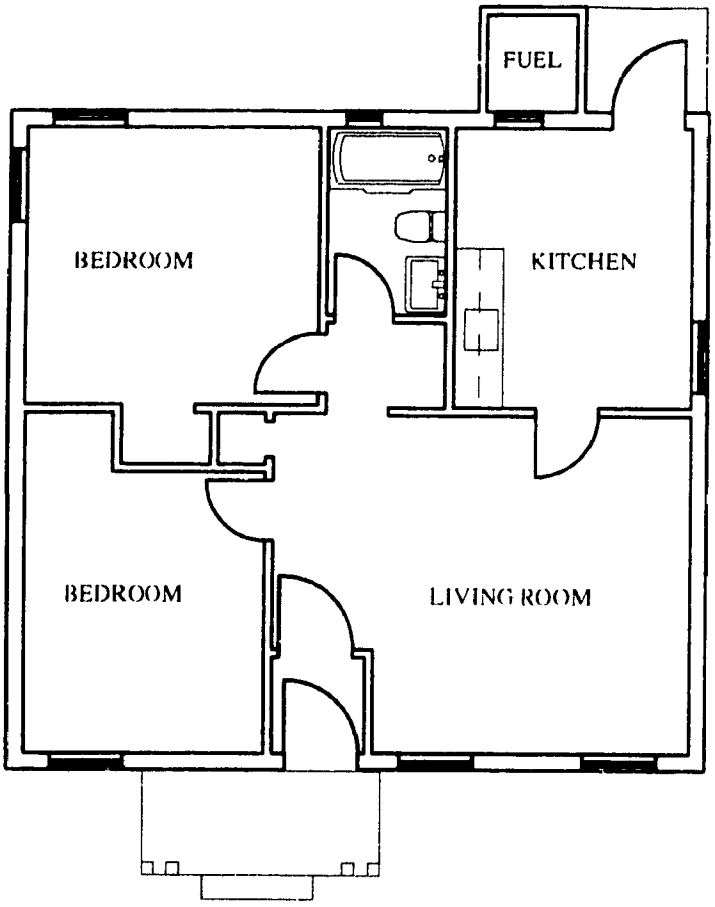

Figure 4.2 Typical one storey wartime home in Montreal.

of the different demands for daily living and recreational activities of the household, this public space must also be capable of undertaking the functions of a traditional parlour--as a showcase for the household and a more formal space for entertaining. The purpose of undertaking empirical work for this study is **to investigate people's living experiences in wartime housing in terms of how each household manages to meet their spatial needs in a small house. Furthermore, this field study sought to determine the types of functional trade-offs made in small houses? It examined the spatial conflicts which arose in the occupancy of these homes and how**

such conflicts were resolved (i.e. through physical modification or behavioral adjustment such as time-zoning rooms or sharing rooms with household members).

Methodology

In order to explore these issues in detail, information was collected about households made up of at least two members in wartime housing found in the neighbourhood of Ville St-Laurent, Montreal-East, and the Snowdon district in Montreal. Although there is very little potential conflict over the use of space in two-person households, it was hypothesized that pertinent information on the ability of a small house to meet the long-term needs of residents could be obtained from the elderly who lived in their homes since the beginning of their marriage and family life. An effort was made to collect as many types of households: retired and near retirement couples, families with older children aged (over 13 years of age), families with young children (aged less than 12 years), single parent households, and disabled elderly. The study parameters used for selecting these homes were those which more or less, have retained their original dimensions. Nine residents interviewed lived in homes to which basements were added after the war. The data collected is based on a convenience sample of 22 personal interviews.

The methodology utilized in the field study was to break down the observations and findings into five areas in the following order and presentation:

1. Each interview was summarized in detail and added in Appendix I.

2. Floor plans of each case study were drawn with all necessary information (including details on furniture layout) that illustrates how residents resolved their spatial

needs (i.e. either through physical modification or through the use of special furniture such as built-ins or portable storage units). These in conjunction with the summary of interviews presented in Appendix I, provide a short visual description of solutions rendered by owners.

3. Photographs of interiors were also taken in notable cases which demonstrated innovative solutions conceived by the owners.

4. A summary detailing household type, the length of residency, unit type and size of each case study was drawn in table form (Appendix II).

5. Factors such as how changes in the household and lifestyles influenced space needs and the solutions employed were analyzed.

Background information collected regarding the household to assist in the analysis of space management for each case study was:

1. The ages of the owners and their children (if any) particularly at the time of moving into the home. The functional relationship between the stage of the family lifecycle upon occupancy and the demand of space required by the household played an important role in space management.

2. The type of house in which owners were residing prior to their present home was noted. Owners were also asked what motivated them to move into a wartime house.

3. Changes in household composition and important life events (i.e. birth of child, leaving of a child, death in the family or divorce) were recorded. Owners were asked if these events influenced their space needs.

4. Residents were asked how they spend their leisure time in their home and

where such activities took place.

5. The owners indicated any aspects of the design layout of their home that they particularly liked or disliked.

6. Questions concerning the flexibility of the wartime home in meeting the space needs of the household were also addressed to residents. In cases where the home could not be adapted to meet a particular need, residents were asked what alternative means (if any) were selected.

7. The total annual income of the household was recorded with the owner's consent.

A questionnaire was designed in order to ensure that comparative information was collected (Appendix III).

Findings and Analysis

The findings are organized according to the different spaces in the home: the kitchen, bedrooms of adults and children, the living room, and the bathroom. Special reference is also made to the roles of storage, furniture, windows and stairs in a small house. The household characteristics are correlated with the spatial arrangements of each home. The accompanying figures are intended to illustrate significant correlations.

(a) Demographic Profile

Fifty percent (50%) of the study sample was older, retired, or near retirement couples. Only three out of twenty-two homes were still occupied by its original owners. Price was

the single-most factor that motivated owners to purchase their homes, location was ranked second, proximity to work was third. Forty-five percent (45%) of the residents lived in low-rise apartment dwellings prior to moving to their present home. Thirty-two percent (32%) lived in a plex type of homes. Five owners out of 22 cases intended to sell their homes in the future and among these, two were planning to move for reasons of retirement (i.e. to their country home or to homes near their children). Eighty-six percent (86%) of the residents interviewed stated that they were generally satisfied with their home; 48% said they were very satisfied; 38% stated they were somewhat satisfied. Finally, the annual household income of the majority of residents falls between $20,000 and $60,000: 50% declared a household income above $20,000 and less than $40,000; 35% earned incomes above $40,000 and less than $60,000.

(b) Spaces in Home

The case studies demonstrated that people are willing to make several trade-offs to live in a smaller home and when household finances permit, modify the layout of the home and personalize it to the owner's lifestyle needs. The data collected in the interviews helped determine which spaces frequently underwent change relative to the household cycle and which were deemed most critical in terms of size.

The Kitchen

The kitchen is an important space, both as a work room and where possible, an additional social space. The lack of a kitchen which is big enough to use as a social space is a

major shortcoming of modern housing design. One of most common change desired among respondents who owned a small kitchen was a larger one. There are two reasons for this. First, it provides an alternative social space, somewhere people could go and talk informally without disturbing others in the living room and secondly, it would provide a "back region" in which domestic work could be carried out away from public gaze.[1] According to Cooper (1975), a housewife in a family of four can spend up to 1/3 of her working day preparing meals.[2] Becker (1974) writes from his studies on residential satisfaction that:

> *When residents were asked where they would add space in their apartment if they could, most indicated they would prefer either enlarging the bedroom or the kitchen, followed by the living room.*[3]

Wartime kitchens were designed to be small work areas (averaging 120 square feet or 12 m^2) rather than a social space, therefore leaving the household with only one public area.[4] In cases 6, 8, and 12 the original kitchen has been expanded into the cold shed area for additional space (Figures 4.3 and 4.7). The fact that the house possessed a bigger kitchen was regarded as one of the most positive features for these residents. In cases 2,3,7,16,20, and 21, where the kitchen was not enlarged, residents complained about its size being inadequate. For example, in case study 7 whose household is comprised of a

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[1] Madigan and Munro. Privacy in the Private Sphere, p. 29, 30.

[2] Clare Cooper. Easter Hill Village: Some Social Implications of Design. (New York: The Free Press, 1975) quoted from Zeisel's Housing Designed for Families, p. 101. For a more comprehensive analysis on housework refer to the renown study by Joann Vanek, "Time Spent in Housework," Scientific American, (November 1974), pp. 116-120.

[3] Becker. Design for Living: The Residents' View of Multi-Family Housing, p. 100.

[4] Madigan and Munro. "Gender House and 'Home'", Journal of Architectural and Planning Research, Summer 1992: p. 123.

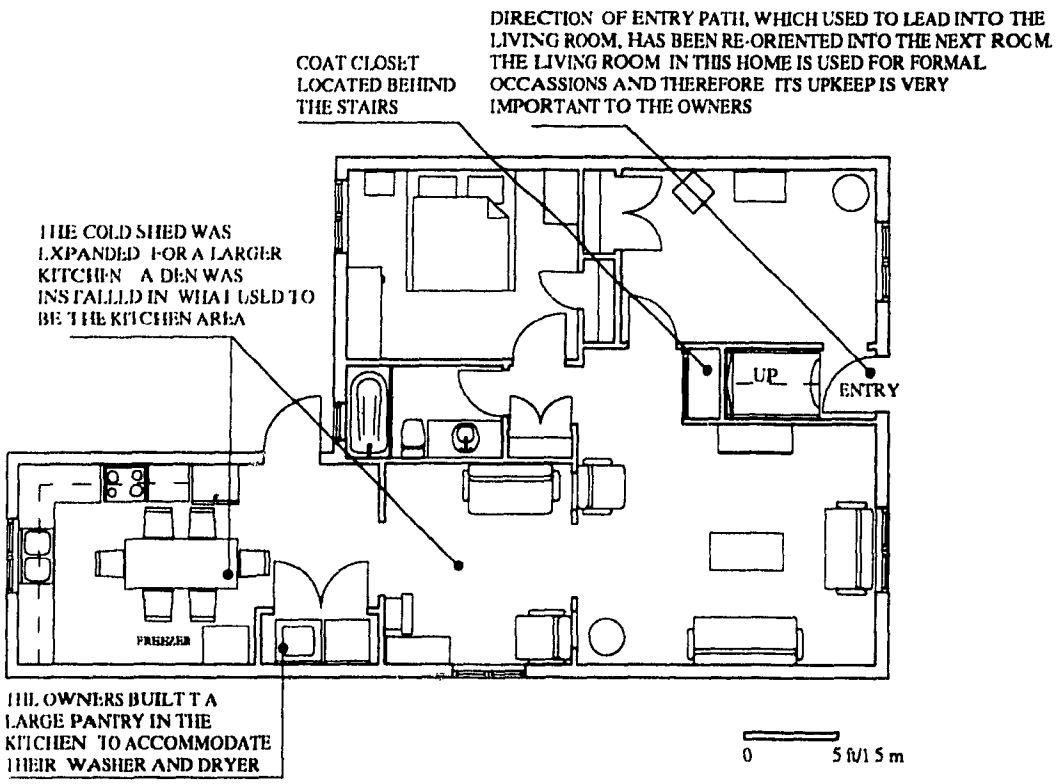

Figure 4.3 Ground floor plan of Case Study 6.

couple with two baby children, the owner stated that the small size of her kitchen allows very little movement space and room for seating. She found it even more difficult to host guests at dinners, children's birthday parties, and holiday entertaining. As a trade-off, she would host children's parties in her yard during the summer whereas in the fall and winter, both living room and kitchen were used for entertaining. In case study 11, where the household size used to total seven, the kitchen was too small for all family members to sit at the table during meals so everyone had to eat at different times--which was possible due the varying work schedules of each individual. There were cases in which

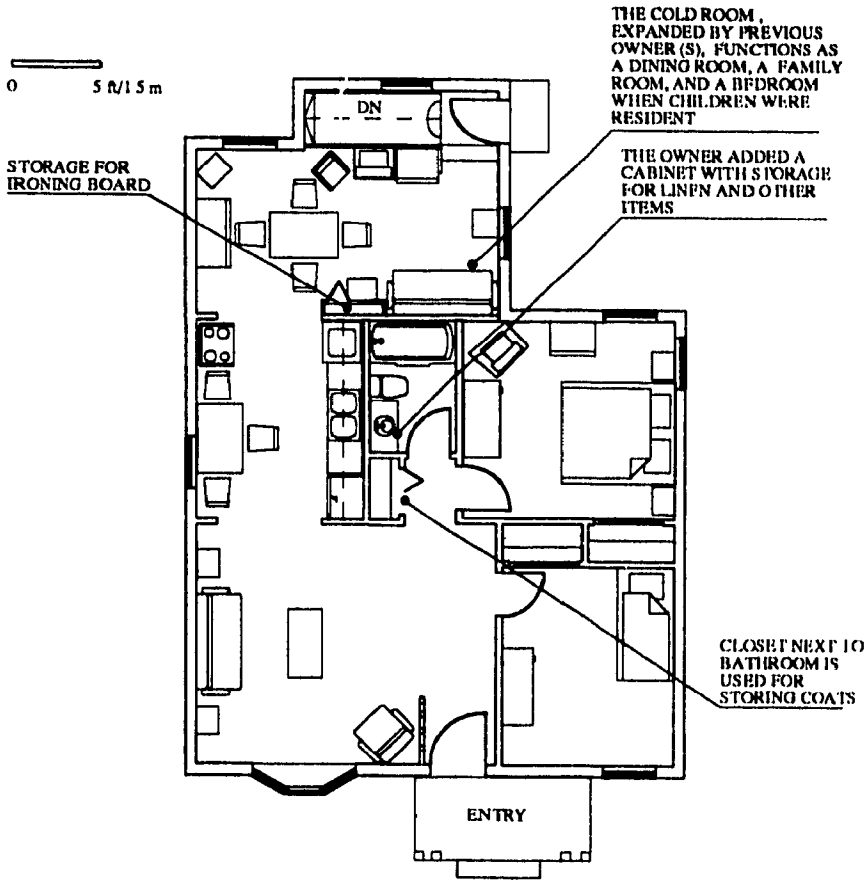

Figure 4.4 Ground floor plan of Case Study 21.

the kitchen was not expanded to equip a larger eating area and owners sought alternative solutions: in case studies 19, 14, and 21, the cold shed was employed as a dining room (Figure 4.4). The living room in case study 22, was once used as a dining room by the household (which at one time numbered to thirteen persons living under one roof). The living room was re-located in the adjacent bedroom and an additional entry was carved out next to the main entrance of the house, leading into the former bedroom (refer to drawing in Appendix I). This arrangement remained until household size decreased.

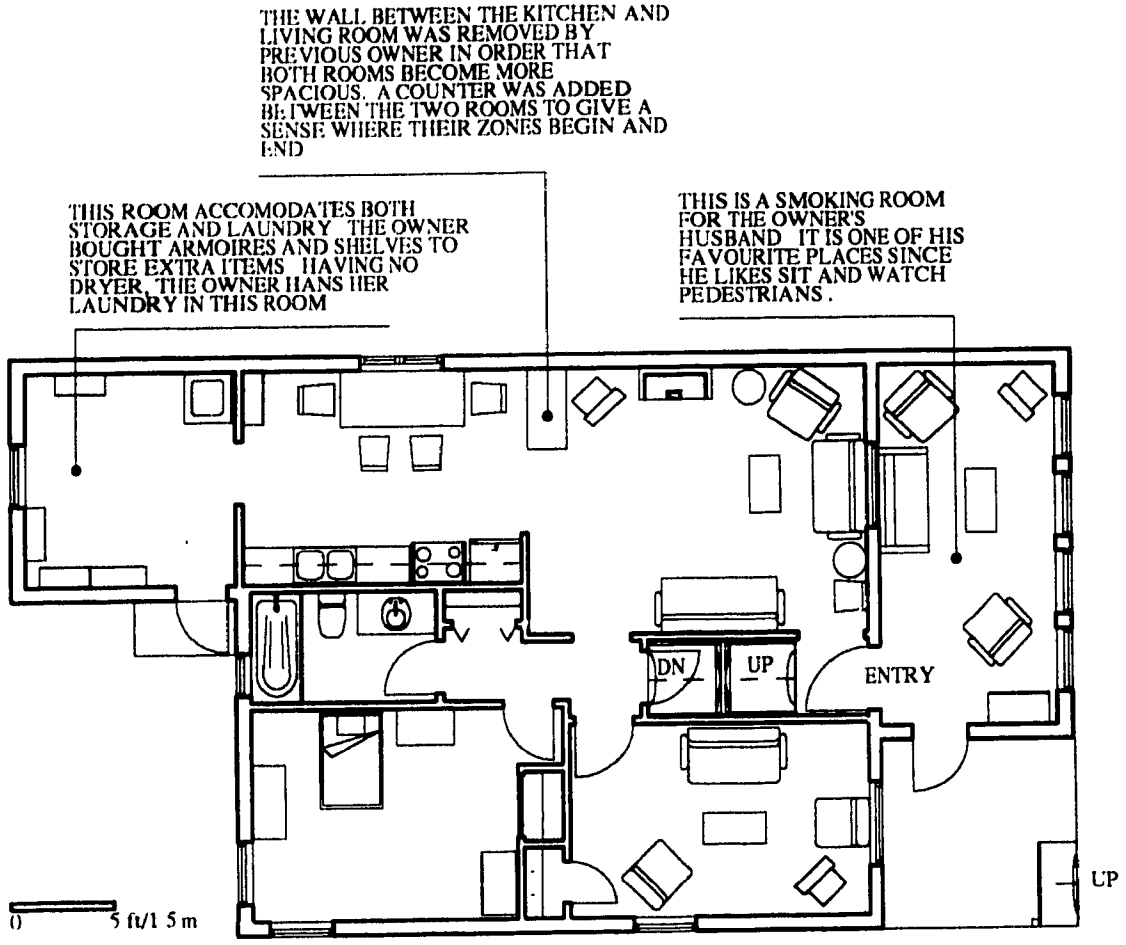

Figure 4.5 Ground floor plan of Case Study 7.

It was also observed that in thirty-six percent (36%) of wartime houses, the wall which separated the kitchen from the living room has been entirely or partly removed to make the two rooms more spacious (case studies 1,5,6,7,9,15,20, and 21). This modification appears to have been made by the previous owner(s) whose family settings may have called for open kitchen plans. According to the owner interviewed in case study 7, this was a positive feature since it allowed her, while she is working, to monitor her small children who usually play in the living room. An open kitchen which leads directly off the living room, means that work can be continued without losing contact

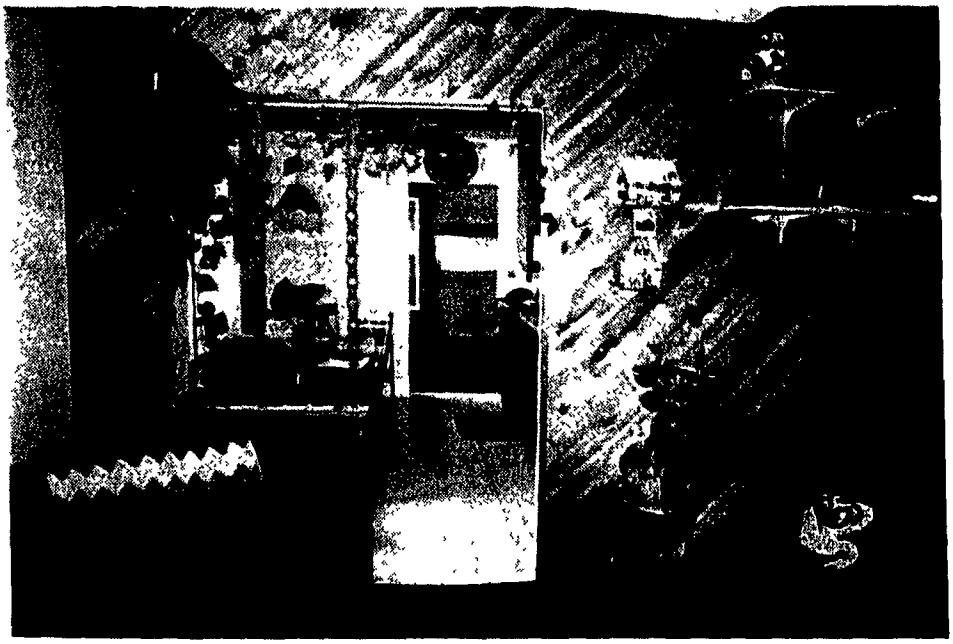

Figure 4.6 View of modified entrance between the kitchen and living room area in Case Study 1. This entrance makes both rooms look more spacious and brings the kitchen out of isolation.

with the rest of the household (Figures 4.5 and 4.6).[1] Furthermore, it has been argued by a number of theorists like Rock, Torre and Wright (1980) that as women increase their public profile and gender roles become more egalitarian, they will seek more open home spaces that allow multiple uses particularly in regard to kitchens where a number of tasks are shared by all members of the household.[2]

One of the major shortcomings of a small kitchen is the lack of storage space for a variety of utilities (i.e. microwaves, blenders, dishware, cookware, and shelf food). In case study 2, as a trade-off for the few storage areas available in the kitchen, pots, pans

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[1] Madigan and Munro. Privacy in the Private Sphere, p. 27.

[2] Peatross and Hasell. "Changing Lives/Changing Spaces: An Investigation of the Relationships between Gender Orientation and Behaviours, and Spatial Preferences in Residential Kitchens." Journal of Architectural and Planning Research, Autumn 1992: 240.

and other kitchen utilities were moved to other locations such as the linen closet in the owner's bathroom. In case studies 7 and 15, an armoire was purchased or built-in for extra pantry and cupboard space in the kitchen. Additional storage units like cupboards and pantry closets used in the kitchen were frequently added in the cold shed area by the owner as encountered in case studies 11, 18, and 20. One innovative way of storing pantry items was observed in the kitchen in case study 2, where the owner's dining set has custom built benches and table. The box-like bench was designed by the owner to store canned food and supplies. Its seat is raised so that these items can be stored underneath (Figure 4.7). These findings also correlate with Friedman's post occupancy study on affordable housing based on the Grow Home concept. His study showed that the majority residents suggested improvements in storage space for the kitchen area.[1]

The kitchen is also a place where laundry is done, especially when there is no basement in the house. In the wartime house, laundry was either performed in the kitchen (case studies 6,8,9,19), in the cold shed (case studies 1,7,13,14,17,20), in the basement (case studies 2,3,4,5,10,12,15,16,18), or in the bathroom (case study 11). A large kitchen is mostly needed in a small house where there is no expansion spaces such as a basement. In case study 6, the owner built a pantry large enough to store his washer and dryer inside (Figure 4.3).

A large kitchen was not considered relevant in the design of the wartime house mainly because these homes were of temporary use and therefore catered to the needs of

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[1] Friedman and Cammalleri. Evaluation of Affordable Projects Based on the Grow Home Concept, p. 51.

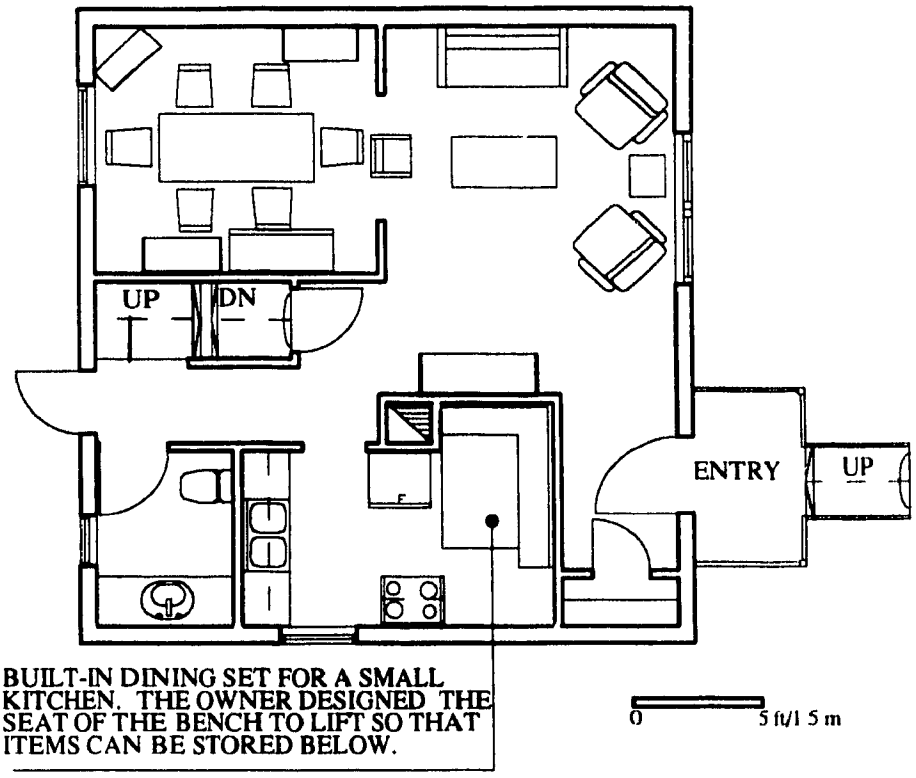

Figure 4.7 Ground floor plan of Case Study 2.

people at the time. When these homes became permanent, their owners' acquisition of domestic technology (i.e. washing machines, dryers, freezers) created storage problems and soon their kitchens became obsolete. The living experiences of residents demonstrate that kitchen is a versatile space and therefore its size is an important criteria in the design of small housing.

Children's Bedrooms and Personal Space[1]

Zeisel (1981) writes that the notion that bedrooms are only sleeping areas has been rebuked in light of research undertaken by Becker (1974), Cooper (1970), and Saile (1972).[2] Apart from having a place to sleep, children require privacy to pursue personal activities, and a place for entertaining friends. In a small wartime house, bedrooms are the only places where these activities can take place. They provide children space in which they can do their homework, read, play, listen to music or watch T.V. either on their own or with their siblings or friends, and sleep. This corresponds to the author's own study where 15% of households personally interviewed or responded to the pilot questionnaire stated to have a T.V. in one of the children's bedrooms.

Conventional size requirements for children's bedrooms used to be calculated by the number of pieces of furniture required in them with sufficient circulation space.[3] Research shows, however, that in family households, a comfortable bedroom must include

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[1] Personal space is defined in Teasedale's study (1986), as a place where a child's independence can be experienced: "to be able to watch television late; to go and come in or listen to music, receive friends, decorate to one's own tastes...Closely associated with the need for independence is the need for greater privacy." (Teasedale and Wexler. Dynamique de la Famille, Ajustements Residentiels, et Souplesse du Logement, pp. 51, 52.)

[2] Franklin Becker. Designed for Living: The Residents' View of Multi-Family Housing. (Ithaca: Center for Urban Development Research, Cornell University, 1974); Clare Cooper. Resident Attitudes towards the Environment at St. Francis Square, San Francisco: A Summary of Initial Findings. Working Paper No. 126. (Institute of Urban and Regional Development, University of California at Berkeley 1970); David G. Saile et al. Families in Public Housing: An Evaluation of Three Residential Environments in Rockford, Illinois. Housing Research and Development Program, University of Illinois at Urbana-Champaign, 1972. All references quoted from Zeisel's, Housing Designed for Families, pp. 107-108.

[3] Zeisel. Housing Designed for Families, p. 107.

play and study areas.[1] Zeisel (1981) points out in his study that given the choice families would opt to enlarge bedrooms to confine the activities of children to the informal part of the house:

> *When residents were asked where they would add space in their apartment if they could, most indicated they would prefer enlarging either the bedroom or the kitchen, followed by the living room. Because most bedrooms of residents surveyed are often small, it is not surprising that these are what residents often choose to enlarge first.*[2]

In forty-one percent (41%) of households where children are or were present at one time, bedrooms either had to be shared or additional bedrooms were added. Siblings aged 12 years or older and of the same sex were usually set up in common quarters (i.e. brothers shared one room and sisters another). In the two bedroom bungalow house in case study 3, where the household is comprised of a widowed mother with three young daughters (twins aged 10, and youngest aged 9), the children had to share one bedroom. Their mother managed to fit-in three beds in a small room with the aid of bunk-bed. Her decision to purchase this type of furniture saves considerable space in her daughter's bedroom for other furniture.

Additional bedrooms for children were added in the wartime house wherever possible. In case studies 4, 10, 11, and 19 the cold room was used as a bedroom. Owners would not hesitate to install an extra bedroom for their children in the basement

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[1] Bed places, furniture and storage units should be set up so that a maximum amount of open floor space is left open for other activities such as play for young children. Johnson, Oster and Shack (1980) recommend in their studies that this open area should be at least 5 feet wide (1.5 m) and as square shape as possible. (Johnson, Oster and Shack. Out of the Cellar and into the Parlour, p. 53.)

[2] Zeisel. Housing Designed for Families, p,107.

Figure 4.8 A teenager's bedroom in the basement of Case Study 21. This is a typical solution in homes where there was not enough bedrooms for all the children in the household.

as observed in cases studies 17 and 21 (Figure 4.8).[1] The owner of the one-storey bungalow in case study 17, added an extra half storey to accommodate two bedrooms for the owner's daughters.

One noteworthy observation made was that the timing of owners initial occupancy in relation to their children's ages eased space demands. This is best demonstrated in case study 4, where the owners moved into their present home in 1974 with their four children: the eldest child was 20 years of age and the youngest 11. The wide differences in the children's ages alleviated the family's spatial needs--particularly in relation to bedrooms. Two years after the owners moved into their home, their eldest child, a

[1] In the large household of case study 16, it was the parents who installed their bedroom in the basement. Refer to case study drawing in Appendix I.

daughter, moved out. Her bedroom was claimed by other children in the household and eventually, after more children departed, it was converted into a dining room. With the parting of the last child, the cold room which was served as a bedroom was changed into a den and a spare room for guests.

In case studies 5 and 7, the owners of Cape Cod units found that the slope of the ceiling in the attic bedrooms on the upper floor inconvenient because standard size closets could not fit inside these rooms (existing closets are half size in height). In case study 7, the owner found that she could not add enough armoires for clothing in her son's bedroom. In case studies 8, 9, 13, and 18, the residents resolved this problem by building a closet in front of the landing of the stairs between the attic bedrooms (Figure 4.12).

Space standards in housing have improved over the last century yet households have chosen to use these gains largely for the benefit of children.[1] This is coupled with the fact that parents' concern for security from crime and traffic have curtailed many children's outdoor freedoms. Children who were once set out to play are now likely to invite their friends in.[2] Therefore, the smaller the house, the more each room is likely to be used by children.[3] Public space in the wartime home becomes even less adaptable for the needs of family with adolescent children. Older children begin to imitate their parents when entertaining visitors: the occasion becomes more formal with the offering of food and other conventional hospitalities. The basement is more suitable for this

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[1] Madigan and Munro. Privacy in the Private Sphere, p. 32.

[2] Ibid., p. 32.

[3] Johnson, Shack, and Olster, Out of the Cellar and into the Parlour: Guidelines for the Adaptation of Residential Space for Young Children, p. 18.

purpose being the one space in the home which is claimed as the domain of teenagers.[1] The importance of a basement in a small house lies in the fact that it also serves as an outlet for adolescents who require more personal space. Teasedale and Wexler (1986) write in their study that symbolically, the basement is the most distinct part of the house which is generally underused as a living space. The fact that it is often left unfinished makes it a 'no man's land' thereby allowing itself to be claimed by any member of the household."[2] Without it, there are very few options as pointed out by the owner's daughter in case study 6 saying that, *"we would have liked to have a basement...it's difficult when friends come over, you can't send your parents to their room!"* In case study 17, the owners' son had his bedroom in the basement where his sisters' leisure activities would also take place. As a trade-off, he would spend time in the kitchen whenever his sisters and their friends wanted some privacy.

Problems with privacy between children and adults were non-existent in nearly all houses studied with the exception of case studies 12 and 22.[3] In case study 12, the owner's daughter perceived that privacy was a problem because of noise in the house stating that, *"the fact that you can hear the noise you lack the privacy...it's hard to read when you hear the rest of the house."* Sound control or insulation is paramount in improving liveability and establishing a greater degree of privacy. The smaller the

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[1] Teasdale and Wexler. Dynamique de la Famille, Ajustements Residentiels et Souplesse du Logement. p. 48.

[2] Idid., p. 180.

[3] It must be noted that in 19 out of 22 interviews were conducted in absence of the owners' children. This study therefore lacks the perspective of the children residing in a war-time house.

house, the greater need to pay attention to this factor which was completely overlooked in the wartime house.

Adults' Bedrooms and Accommodation for Privacy

Bedrooms are one of the remaining spaces in the home where adults can gain some privacy from their children or from each other. Although in a small house the possibility of having one's own exclusive retreat (i.e. a den or a boudoir) is not possible, Madigan and Munro (1992) affirm that "even a shared bedroom does offer an important escape route," particularly for women in family household.[1] The main bedroom however, is the least flexible space in the house to provide this escape route. In regards to the wartime house, the largest bedroom in the 1-1/2 storey Cape Cod unit measures 13 x 16 feet (3.9 x 4.8 meters) whereas in the bungalow unit type, the biggest bedroom is roughly 12 x 10 feet (4 x 3 meters). Once a double bed is installed with its night tables and dresser, there is very little movement space in the room. Although there exists a whole range of cheap furniture for children and teenagers rooms which combine bed, desk, bookshelves, sitting areas, the master bedroom remains staunchly conservative, the furnishings and decor dictated by ritual/symbolic criteria rather than functional considerations.[2] The formality ascribed to the "master bedroom" often minimizes the possible patterns of use.[3]

In case studies 1 and 8, the owners of Cape Cod units have tried to resolve this

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[1] Madigan and Munro. Privacy in the Private Sphere, p. 22.
[2] Ibid., p. 22.
[3] Ibid., p.22.

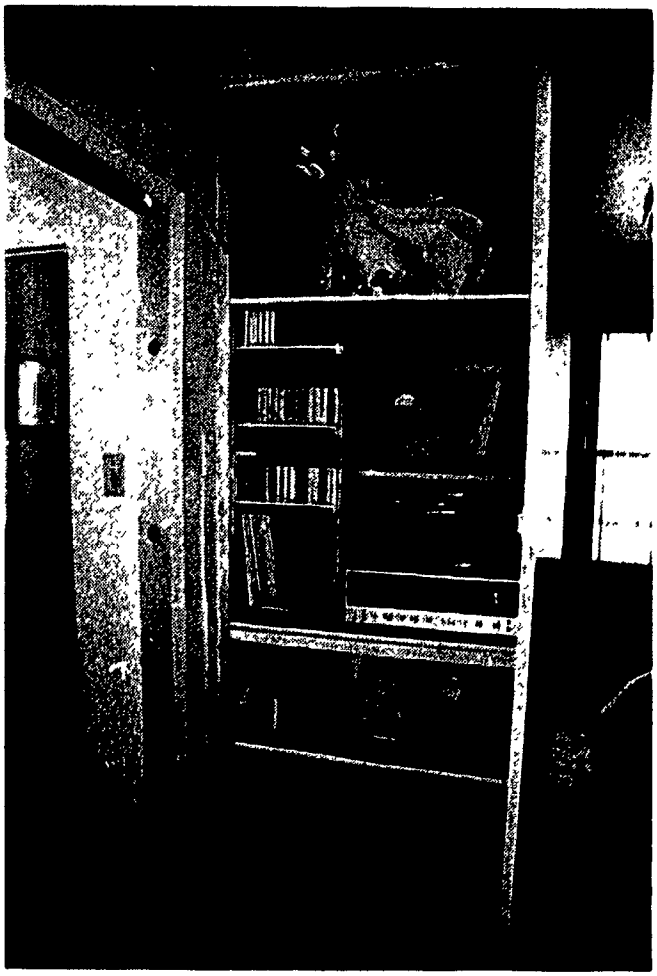

Figure 4.9 Northern wall of main bedroom in Case Study 1. In order to compensate for the two closets that were removed in renovations, the owner built a large closet for his bedroom, shown above. The wall on the side of this closet opens to another closet which stores the owner's stereo, records and cassettes.

problem by combining the two bedrooms on the lower floor (by removing the two closets that divided the two rooms) to achieve one large "master bedroom" (Figure 4.9). The owner in case study 1 substituted the closet space by building a large closet in the corner of the room. The closet's new location is awkward, the room looses its square/rectangular shape and space is used inefficiently. This is a result of the fact that narrow wall spans in bedrooms have windows and owners have to choose either to eliminate a window and add closets across the span of the wall or build a closet in the corner of the room (as noted in case studies 1 and 20). In case study 8, the owner opted to use the span of the narrow wall on the front end of the house in innovative way without the need to remove any window. This space measuring 3 x 10 feet (1 x 3 meters) was divided into two unequal parts: the shorter section measuring 3 x 3 feet (1 x 1 meter) was used as a bedroom closet; whereas the longer section measuring 3 x 7 feet (1 x 2 meters) in which the window was located, was employed as a small vestibule for coats (Figure 4.10).

Most women who were interviewed complained about the storage spaces provided in their bedrooms as being insufficient and would have liked "double of what [already] exists". In case studies 1,2,3,7,8, and 9, the existing closets were modified by changing their size. It was also noted that in case study 18, the basement was used for storing their extra clothing. In the single-storey unit of case study 20, the owner installed an additional closet in the corner of an empty bedroom for seasonal clothing.

Nearly all owners stated that they did not find privacy to be a problem in relation to the layout of bedrooms in their home. Yet in terms of general privacy, it was difficult

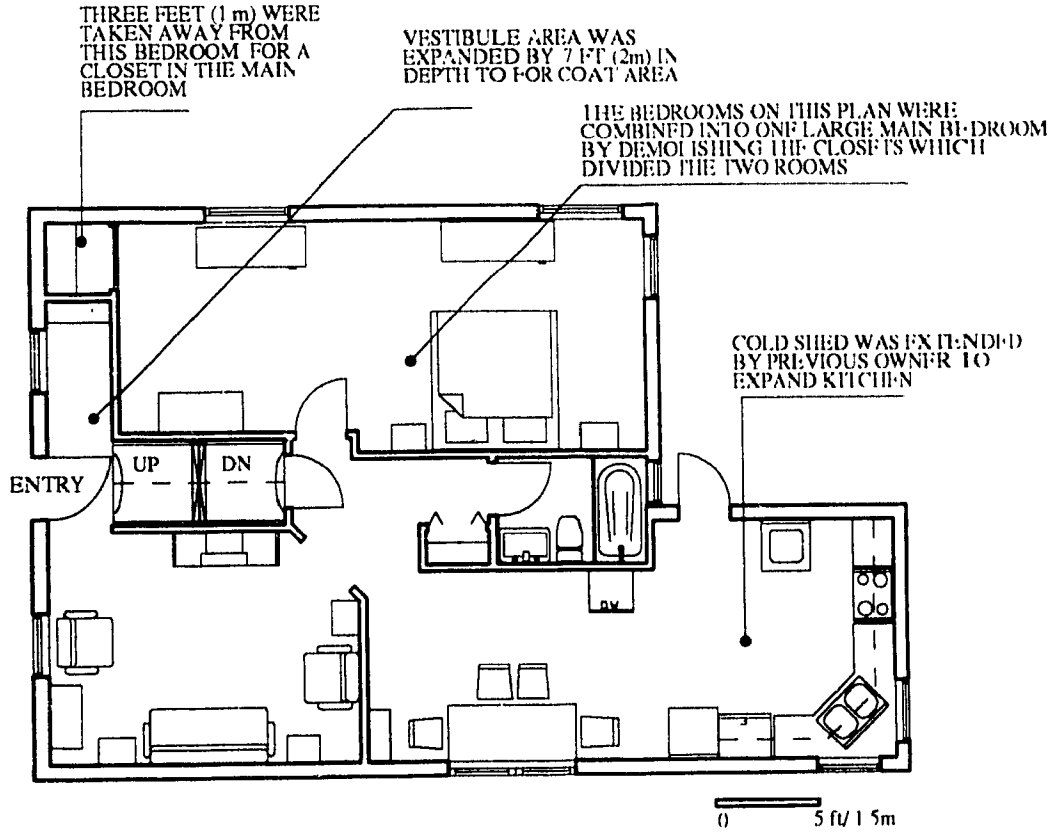

Figure 4.10 Ground floor plan of Case Study 8.

to distinguish whether adults were self-conscious about this need or their expectations were not so high. For example, in the large household of case study 22, the owner's daughter mentioned in the interview how her father would spend long hours during the weekend in the bathroom reading his newspaper. To her it always seemed odd and never realized that this manifested the need for privacy for one parent in the home.

Bedrooms are one of the highest ranking expandable spaces in the wartime house. Where it was possible, it was found that adults expanded their bedrooms due to the need

for extra space for furniture and storage. In households where children were absent, an empty bedroom was converted into a boudoir or a den as seen in case studies 13 and 15.

The Parlour and Family Room

The living room was the least problematic of all spaces in the wartime house. In the majority of homes studied, this room had an informal function: it was used for family leisure, the place where children did their homework, and for entertaining. The fact that the T.V. and in some cases (7,18 and 19), fireplaces or stoves were added demonstrates that the living room in the wartime house has a less specialized role and is the hub of the home.

Housing evaluation studies undertaken by Adams, Ash and Littlewood (1969), Zeisel and Griffin (1975), and Cooper (1975) consistently show that people prefer a "showcase living room". The decor found in this room expresses the owner's personality and identity.[1] Moreover, these studies show that residents were bothered by entry doors that lead into the living room thus reinforcing the fact that this room is treated as formal place. The author's own observations also supports these findings. The owners in case studies 2,5,6,11,14, and 21 disliked the fact that their living room was also circulation space (transitional zones) to other rooms. In case studies 5 and 6 in which the living

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[1] B. Adams et al. The Family at Home: A Study of Households in Sheffield. Ministry of Housing and Local Government (London: Her Majesty's Stationary Office, 1969); John Zeisel et al. Charlesview Housing: Diagnostic Evaluation. Architecture Research Office, Graduate School of Design, Harvard University (Cambridge, Mass., 1975); Clare Cooper. House as a Symbol of Self. Berkeley: Institute of Urban and Regional Development. University of California (Berkeley), 1971. Working Paper #120. All references are quoted from Zeisel's Housing Designed for Families, pp. 95-96.

room was furnished formally, its owners preferred that their family did not come through the front entry. The upkeep of tidiness of this room was very important to the women. The owner in case study 6, closed off circulation into the living room from the front entry. The front entry was reoriented to lead into the adjacent room (which is used as a large vestibule) rather than the living room (Figure 4.3). In case studies 5 and 18, the owners had rules that their family did not come directly through the front door but use the coal shed entry in the back.

The living room in the wartime house also has an informal function. Where it was possible, residents tried to separate informal and formal activities by installing a "family room" or "den". Zeisel (1981) writes in his study that the provision of an informal living room must not be overlooked in housing design since families require space for informal activities.[1] This need was pointed out by the owners in case studies 2 and 3. There were a few cases in which the owners of houses which lacked a basement, renovated the cold room of the home (i.e. by bringing all the walls in the room to full height and adding a roof as seen in case study 11) or enlarged it to be used as a den (case study 11) or combination of a den and bedroom (case study 21). In case study 6, the cold room was enlarged to accommodate a bigger kitchen and in lieu of the previous kitchen area, a den was installed (Figure 4.3). In case study 18, the owner converted an unused bedroom into a den.

The living room in the wartime house has both a formal and informal role. Where it was possible, residents tried to separate these roles by installing a den in the coal shed

[1] Zeisel et al. Housing Designed for Families, pp. 98, 99.

or in an unused bedroom.

The Bathroom

The bathroom in the wartime house measures 5 x 7 feet (1.5 x 2.1 meters). In the large majority of cases, fixtures were updated and storage compartments like cabinets and medicine chests were added by the sink. All homes had storage for linen next to the bathroom in the area where the chimney shaft once stood. In case studies 2 and 12, where major renovations of the unit resulted in the relocation of the bathroom, storage for linen was added inside the bathroom.

Most households have managed without an extra bathroom albeit that in family households, this would have been a very convenient addition (case studies 3,4,6,8,10,11,12,17, and 18). In households with many children, the use of the bathroom in the morning was on a "first come, first served" basis, as one resident pointed out. In case study 10, the owners and their children coped with some comic relief by installing a knocker on the door of the bathroom. The owner in case study 17 would joke about it saying that, *"when company used to come over I would tell them, I'm going to put numbers on the bathroom door!"*

Case studies 5, 7, and 13 were one of the few homes that possessed additional washrooms. In case studies 7 and 13, these additions were an absolute necessity to the household. The small washroom in case study 7 was added on the upper floor between the two bedrooms. The owner stated that this was very helpful for her 5-year old son whose bedroom is on the upper floor (Figure 4.11) for it limits the potential risk of him

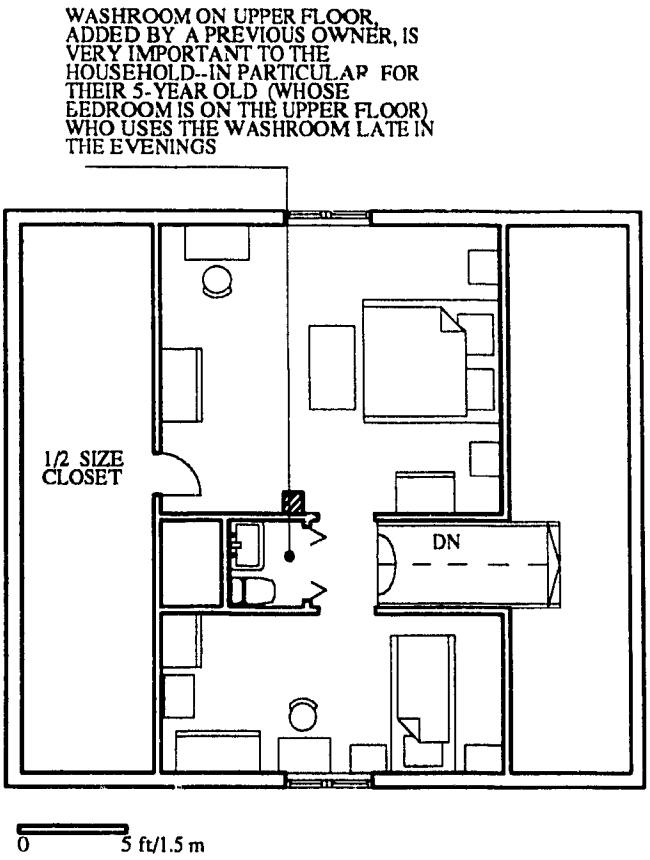

Figure 4.11 Upper floor plan of Case Study 7.

having to use the stairs at night to use bathroom on the main level. An extra washroom in the attic bedroom of case study 13 was needed by the elderly couple who are physically disabled. Since both husband and wife have difficulty climbing stairs, they arranged to have a washroom (with a mid-wall for privacy) installed in the corner of their room (Figure 4.12).

The small size of the bathroom in the wartime house is not as critical as other spaces but in some cases, it can be important when it must also serve as the place where laundry is performed. The case study 11, the owner had no better alternative than to install laundry equipment in the bathroom since the coal shed was used as a den

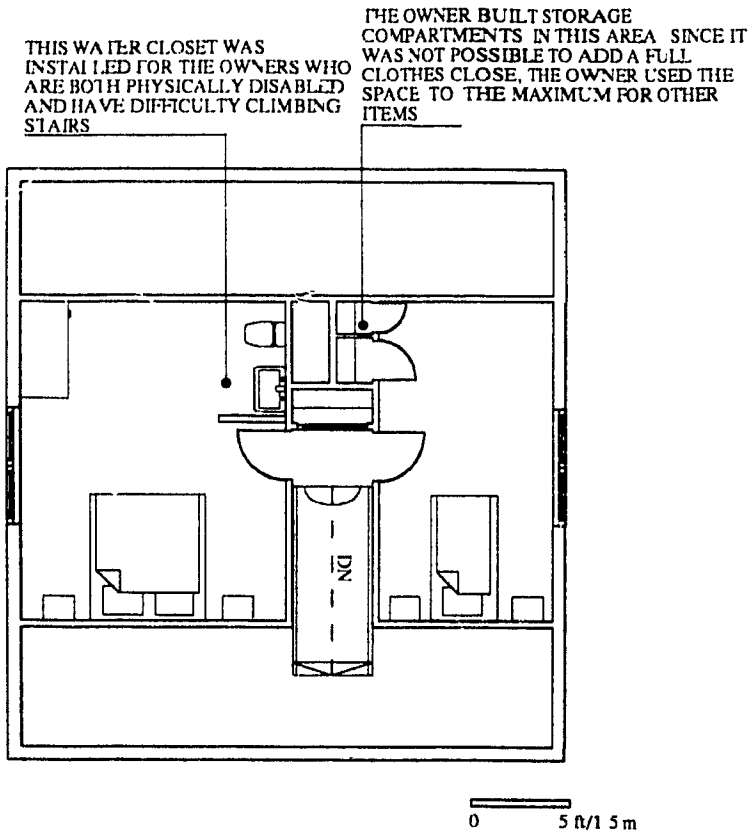

Figure 4.12 Upper floor plan of Case Study 13.

(previously a bedroom for the children). This bungalow home had no basement and the kitchen was too small to accommodate laundry machines.

(c) Storage

Storage was found to be a major problem for most residents of wartime homes. Room for large bulky items is even more difficult to accommodate since owners often require to compromise their storage needs in the coal shed with the need for more living space. Judging by the renovations made to these homes, most residents opted for more living space at the expense of storage. Storage for tools, recreational and home maintenance

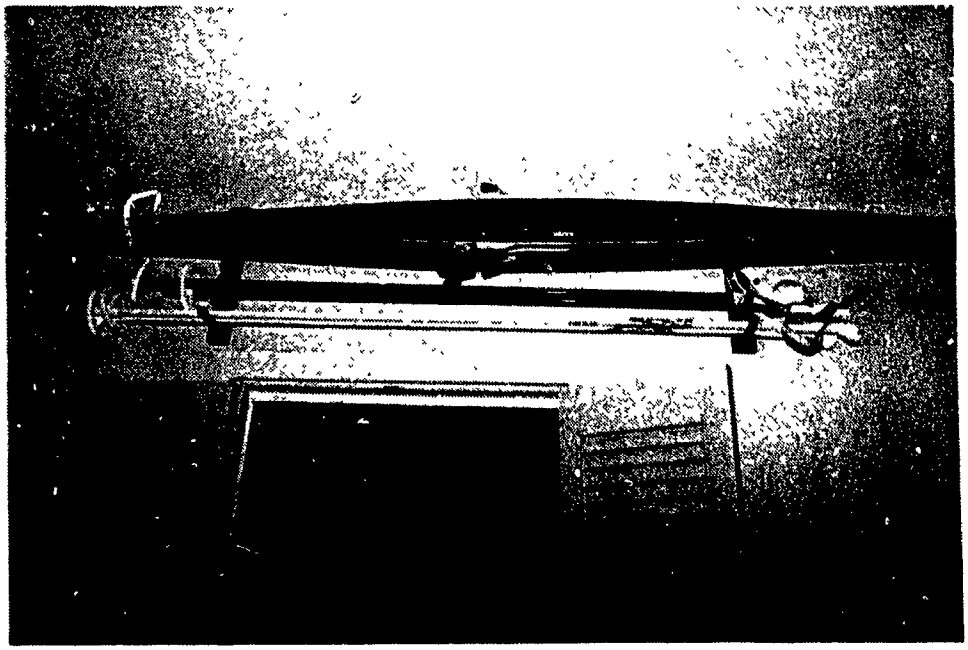

Figure 4.13 With all available storage areas filled to capacity, the daughter of the owner in Case Study 19, had no other alternative but to hang her skiis above her bedroom door.

equipment was often located either in the basement (where available), a cabin in the backyard, or in the coal shed. In homes without basements which had other available storage areas filled to capacity, owners had to invent alternative methods of storage. For example, the owner's daughter in case study 19 had no place to store her cross country skiis so she chose to hang them above her bedroom door (Figure 4.13). The owner of the same house built inside the wall of his living room storage shelves for his small tools (Figure 4.14). The fusebox of his home, which is located in the living room (this room has been re-located where the coal shed stood), is concealed in this storage unit.

In case study 6 where the owner utilized the cold shed area to expand his kitchen, storage problems were encountered for his children's bikes and his lawnmower. Without a cabin in his backyard, the owner now stores his lawnmower in the trunk of his car and the bikes are kept in the next door neighbour's shed. This was a trade-off the owner had

to make for using the cold shed area to build a larger kitchen.

As homes increasingly shrink in size and their layouts frequently incorporate basements and attics as living spaces (which were traditionally used for storage), builders must replace these with equivalent storage spaces. This problem was studied in detail by Nelson and Wright during the boom period of postwar housing. They suggest to the builder of small homes in their book, *Tomorrow's House: A Complete Guide For the Home-builder (1945)*, that storage space, if sufficiently specialized, can hold anything in the house that has to be put away.[1] For bulky objects (i.e. bikes, skiis, luggage, summer furniture, lawnmowers) they recommend that the garage is excellent since these types of items are moved only once a year. It can also be solved independently from the garage by building a garden shed

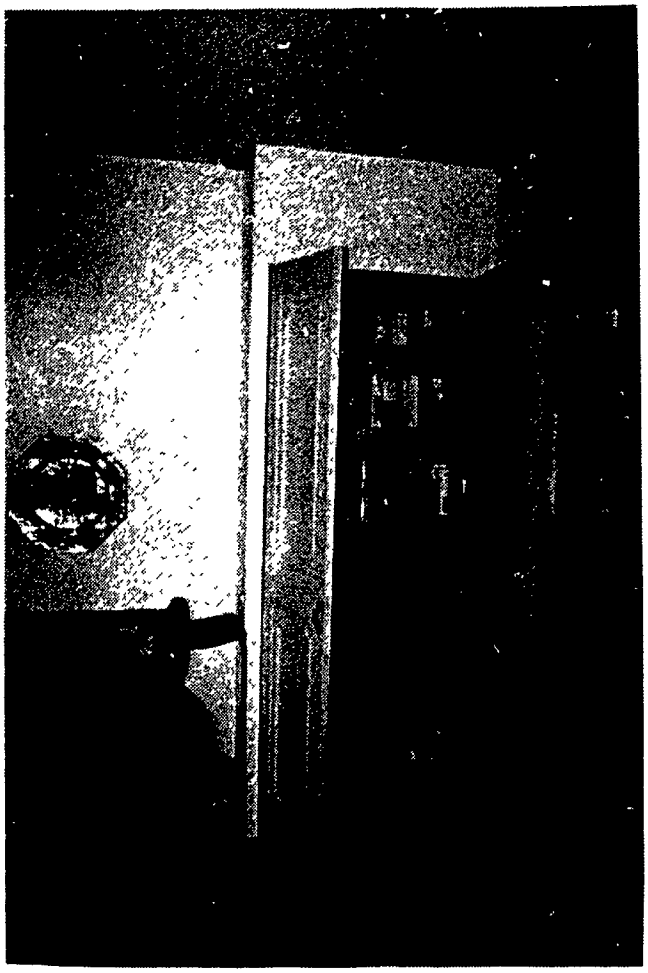

Figure 4.14 Built-in storage for small hardware items located in the living room of Case Study 19. This storage unit also conceals the fuse-box.

[1] Nelson and Wright. Tomorrow's Home: A Complete Guide for the Home-builder, p. 139.

out in the yard similar to the cabins that came with the wartime houses.[1] Nelson and Wright assert that ordinary closets cannot serve as "active storage" (i.e. storage which covers everything that is used frequently in the house) since they cannot be organized efficiently. Instead, they point out to the mode of storage applied by the shopkeeper:

> *A shopkeeper may stock hundreds of individualized items, yet he can find them in an instant. If he had to sell his stock out of closets, he would go crazy...Just a few days ago, one of us went down to the local hardware store and talked to the owner. How many items did he have in his store? "Well" he said rubbing his chin, "I don't know, I have never looked at my inventory that way, but I would guess that if you counted everything it would be between six to eight thousand items." Checking over this impressive array of stock we made another discovery; aside from a few bulky pieces, like wheelbarrows and baskets, garden tools and rope, everything fitted very comfortably on shelves not more than ten inches wide. Let us keep this fact in mind, because it is the greatest importance in working out a really efficient storage scheme.*[2]

By using the example of the shopkeeper who employs narrow shelves, they demonstrate in their guidebook how this method can work at home. Their theory of essential storage is the replacement of certain wall partitions by units that are cupboards 12 inches (25 mm) wide.[3] These partition-cupboards would be dispersed throughout the house according to which rooms have the greatest demands for storage. They could be made up of either open shelves, as in the living room where one would like to display books; drawers, as in the dining room or kitchen where one has to store linens, silver, and dishware; or solid doors which look like nothing more than wood panelling where one

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[1] Nelson and Wright. Tomorrow's House, pp. 136-137.
[2] Ibid., p. 136.
[3] Ibid., p. 139.

would want to keep items like brooms, umbrellas, or shoes.[1] They believe that this system is extremely efficient, explaining in their guidebook that:

> *If you take the plan of an average three-bedroom house and put all non-bearing partitions in a straight line, you would probably find that you had 150 feet of wall in a straight line...Now let us assume that this length of wall has been flattened out from 6 inches to 11 or 12 inches so that there is about 10 inches of clear space inside...if these thick walls we installed an average of six shelves, out three bedroom house would have in its non-bearing partitions a total of 900 running feet of shelf space.*[2]

Nelson and Wright also looked at some of the objections that people might have in applying their method of storage. First, they saw that people would dislike the appearance of a wall covered with knobs and handles. They emphasize that although one can find in some old Colonial homes built-in bureaus and cupboards that take up large expanses of the wall and where the knobs and handles on doors are patterned attractively, spring catches (a device which doors can be opened by pushing lightly on their surface) remedy this problem.[3] Drawers and sliding doors too, can be designed so they can be pulled out without the use of handles thus these walls can be designed with very few hints of what is going on behind their surfaces.

Another objection to this system of storage is the loss of wall space for furnishing. Nelson and Wright argue that this can be resolved by employing flexibility in the storage wall. They state that "these storage spaces are accessible from either side of the wall." If the storage wall was located for example, between the living room and corridor, the

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[1] Nelson and Wright. Tomorrow's House: A Complete Guide for the Homebuilder, p. 139.

[2] Ibid., p. 139.

[3] Ibid., p. 139.

space above height could be open on the living room side whereas, the space below could be open in the corridor side.[1] Furthermore, this storage wall can replace some furniture commonly found in bedrooms (i.e. bureau and chiffonnier), living room (i.e. bookcases or wall units) or the dining room (i.e. buffet or drawers). The storage wall is just a framework and there are many possibilities of incorporating furniture into the system such as hinged table units (Figure 4.15).

A third factor taken into consideration by Nelson and Wright is the cost which to them, "forms the real basis of objection". This type of partition is obviously more expensive than its former counterpart. They point out in their guidebook that in the long run, "the benefits outweigh the costs since they make it up form savings on furniture (i.e. drawers and armoires) and on maintenance. The house planned on this basis will have more storage than one of average size and yet because there will be a place for everything and much useless furniture will be eliminated thereby leaving more space for unencumbered living".[2] The conventional closet is eliminated from the floor plan of the house making way for storage walls which can easily keep even clothing.

The ideas discussed by Nelson and Wright were encountered in case study 19 with striking similarity. The owner, who had very few storage options in his bungalow home (which had no basment), built into the 4-inch (100 mm) partition wall in his kitchen and dining room storage for his wines and canned goods (Figures 4.16 and 4.17).

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[1] Nelson and Wright. Tomorrow's House: A Complete Guide to the Homebuilder, p. 139.

[2] Ibid., p. 141, 142.

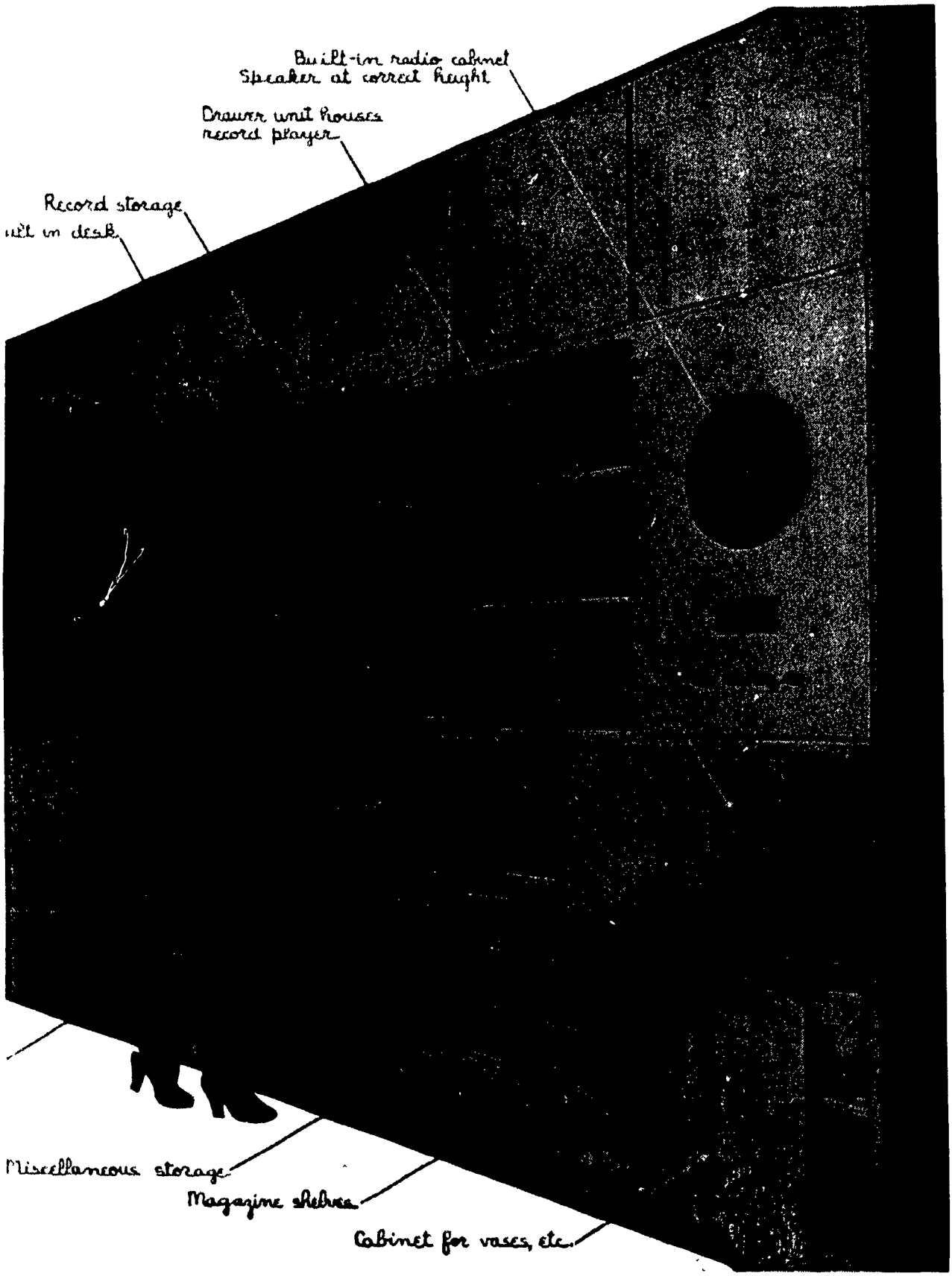


Figure 4.15 A 12-inch thick storage wall Nelson and Wright designed for LIFE magazine.

Figure 4.16 The owner in Case Study 19 has built into the partition wall in his kitchen storage for his wines. Above is a view of the doors of his "wine cabinet" (wall in the center) and below is a view inside. Nelson and Wright in their guidebook to home-builders of postwar housing strongly advocated the storage wall as a means of resolving storage problems in the small postwar home.

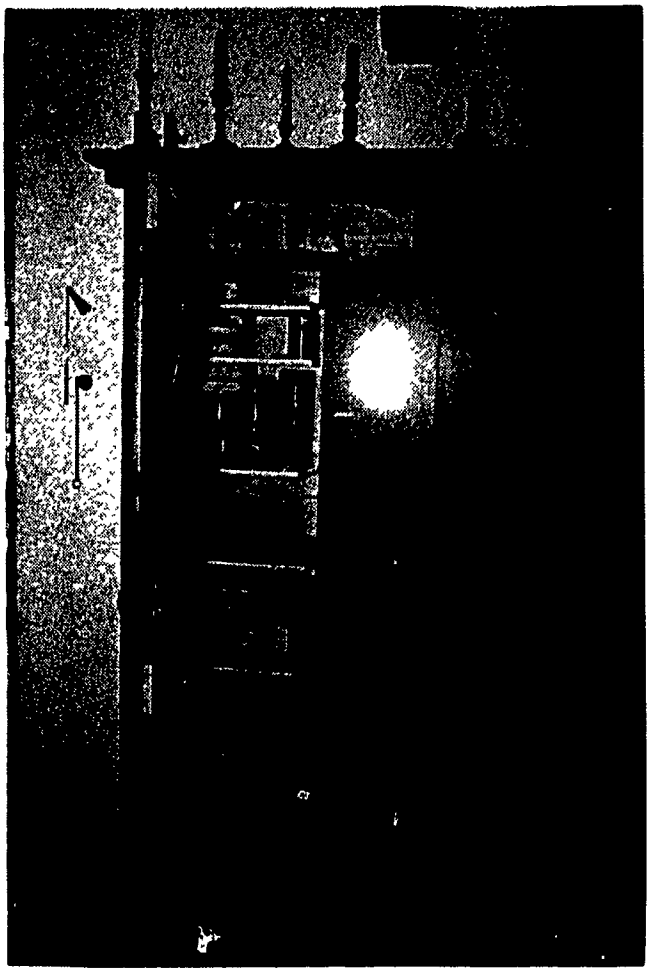


Figure 4.17 Pantry built into the wall in the dining room of Case Study 19. The photograph above is a view of the pantry closet on the left side. On the right is a view inside.

(d) Furniture in a Small House

The size of rooms in the small wartime house poses difficulties insofar as furniture is concerned. As it was discussed earlier, children's bedrooms are the most resourceful areas for undertaking leisure activities by children. The majority of leisure activities recorded in the cases studies, took place in the bedrooms, whether it was reading, watching television, listening to music, or working on the computer. The size of the bedrooms in the smaller, single storey unit makes it difficult to add the required furniture to support a variety of activities. In case study 12, both the respondent and her brother complained they could not fit a desk and chair into their bedrooms to do their work on their computer (which is presently located in their living room) or reading. The problem of the size of the rooms was repeated many times in this interview (it was also regarded a major dislike by owners in case studies 2,7,8,15,19, and 22). Both spoke how difficult it is to find compact furniture that would fit in a small house like theirs:

> *Someone should start designing furniture for small houses. We can never find furniture the right size. We need a type of compact furniture to fit in a small house. I dislike the fact of being unable to get nice practical furniture with the ability to have dual functionality (i.e. bed with storage drawers below)...standard furniture make rooms look even smaller...Its difficult not to have a table and chair to do my reading (ie. in bedroom). I cannot add one since it takes up much space.*
> *Shelving units should be designed to fit in corners...One should make cupboards in spaces that are always wasted such as in the corner and high up on the walls near the ceilings.*

In fact this was done in their new bathroom where they added cupboards for linen above the medicine cabinet.

Although difficult to find, corner units are very practical in the small, wartime home. The kitchen in case study 12 had one. The owner in case study 3 had a corner

unit in the living room for her television and other items. This practical piece of furniture saves her small living room a significant amount of space simply by making the best possible use of what otherwise would have been unusable space.

Figure 4.18 The owners in Case Study 19 placed a dresser inside the closet in their bedroom since it could not fit in the room.

New occupants of wartime houses often encountered that their large or extra pieces furniture from their previous residence did not fit their small home. This was observed in case study 15, where a couple who possessed extra furniture from their previous marriages, stored the extra items in the basement. The same also occurred in case study 2, in which the owner's extra furniture has been stored in the basement. In case study 19 the owner placed a dresser which he could not adequately fit into his bedroom inside the large closets in the room. In order that the space taken up by the dresser is not wasted, the owner hangs above it his shirts (Figure 4.18). His kitchen, being the only place where laundry can be done, has been renovated to include more counter space and accommodate the extra equipment. Despite the modifications made, the equipment is so tightly fitted in the

kitchen it poses some inconveniences as shown in the photograph in Figure 4.19. As mentioned earlier, the owner in case study 6 also expanded his kitchen for similar purposes by building a pantry closet large enough to store the laundry equipment which would have occupied considerable space in the room (Figure 4.1).

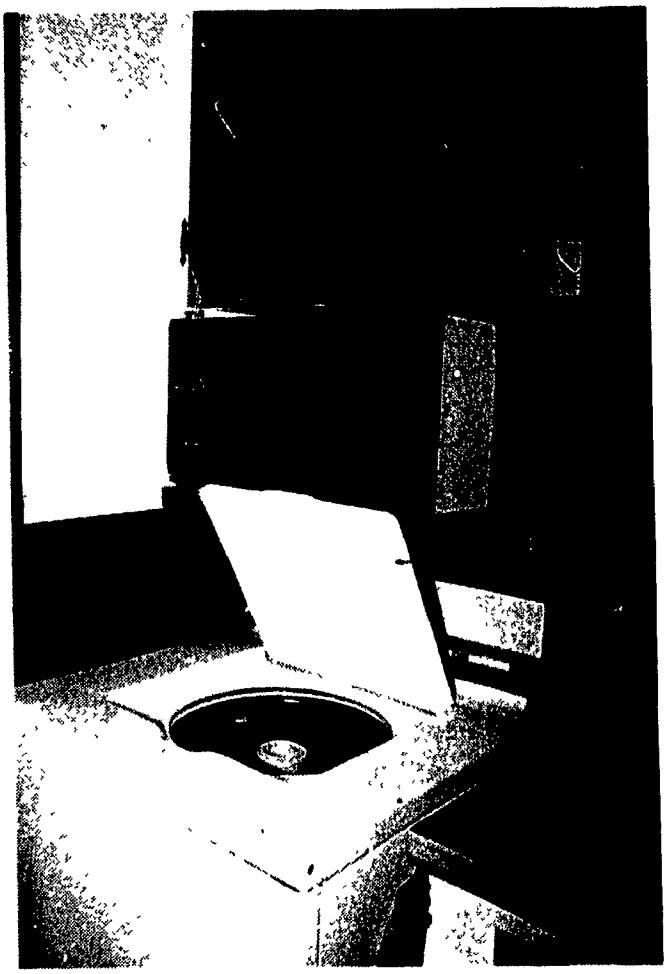


Figure 4.19 One solution to keeping the door of the tightly fitted washing machine in the small kitchen of Case Study 19, was using a hooking device.

Built-in furniture such as bookcases and desks were one innovative solution in making the best use of small spaces. The kitchen in case study 2 has a dining set built into an alcove in the corner of the room with one side open. It was not only designed to save space but also for providing pantry storage with its removable solid seat covers. It was found in both case studies 18 and 19, the owners had resorted to custom designing their own bookcases for their home (Figures 4.20 and 4.21). The owner in case study 19 also built a desk into the layout of his daughter small bedroom. Another effective technique used to save space for furniture in a small room was replacing conventional pivoting doors with folding doors (or bi-folding doors), as encountered in case study 19. The owner used folding doors in all bedrooms

in his home (Figure 4.22 and 4.23).

The small rooms in the wartime house restrict furnishing options. Bedrooms cause more problems than other parts of the house, particularly those in the attic of Cape Cod units where sloping ceilings restrict tall standing furniture (Figure 4.24). Nelson and Wright (1945) in their guidebook for home-builders recommend in their designs that beds

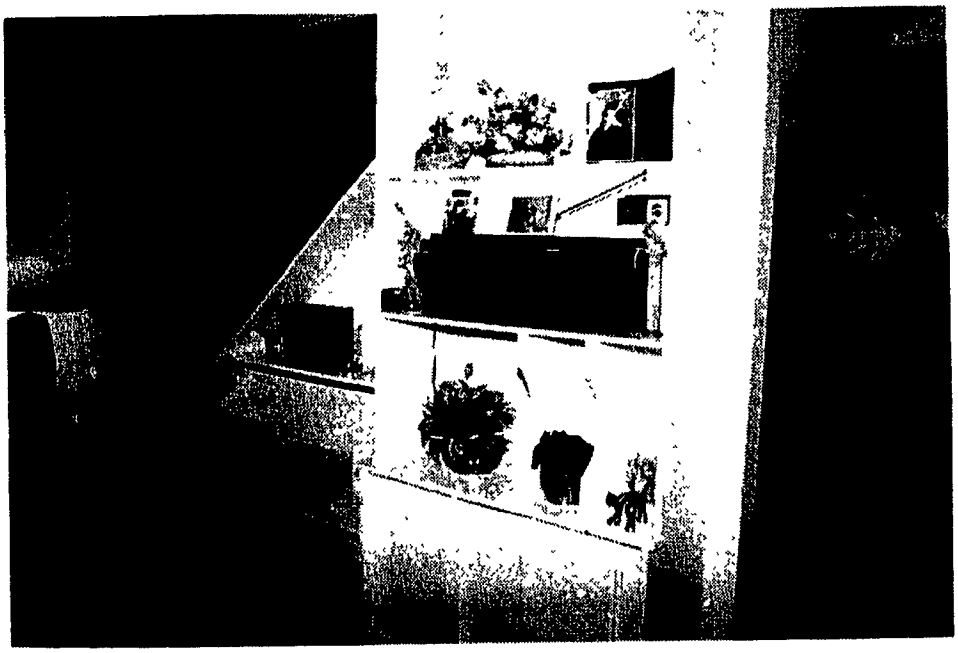


Figure 4.20 The owner in Case Study 18 has built in the wall in his living room these bookcases. He also took advantage of the wall that was cut open, adding more bookcases.

be placed in an alcove when space limitations are stringent. They emphasize that architect designed equipment can solve the problem of storage, add floor space, and improve appearance. A variety of built-in furniture (such as space saving chests and drawers) and their popular versions of double bunk beds including one which is offset to take advantage of the space below an attic ceiling designed save space and increase comfort in bedrooms (Figures 4.25 and 4.26). One of their designs also include a

lavatory with storage compartments tailored to fit in the corner of a bedroom (Figure 4.27).

Figure 4.21 Bookcase built into the partition wall by the owner in Case Study 19. Located in the corridor area of the home, this bookcase does not obstruct traffic.

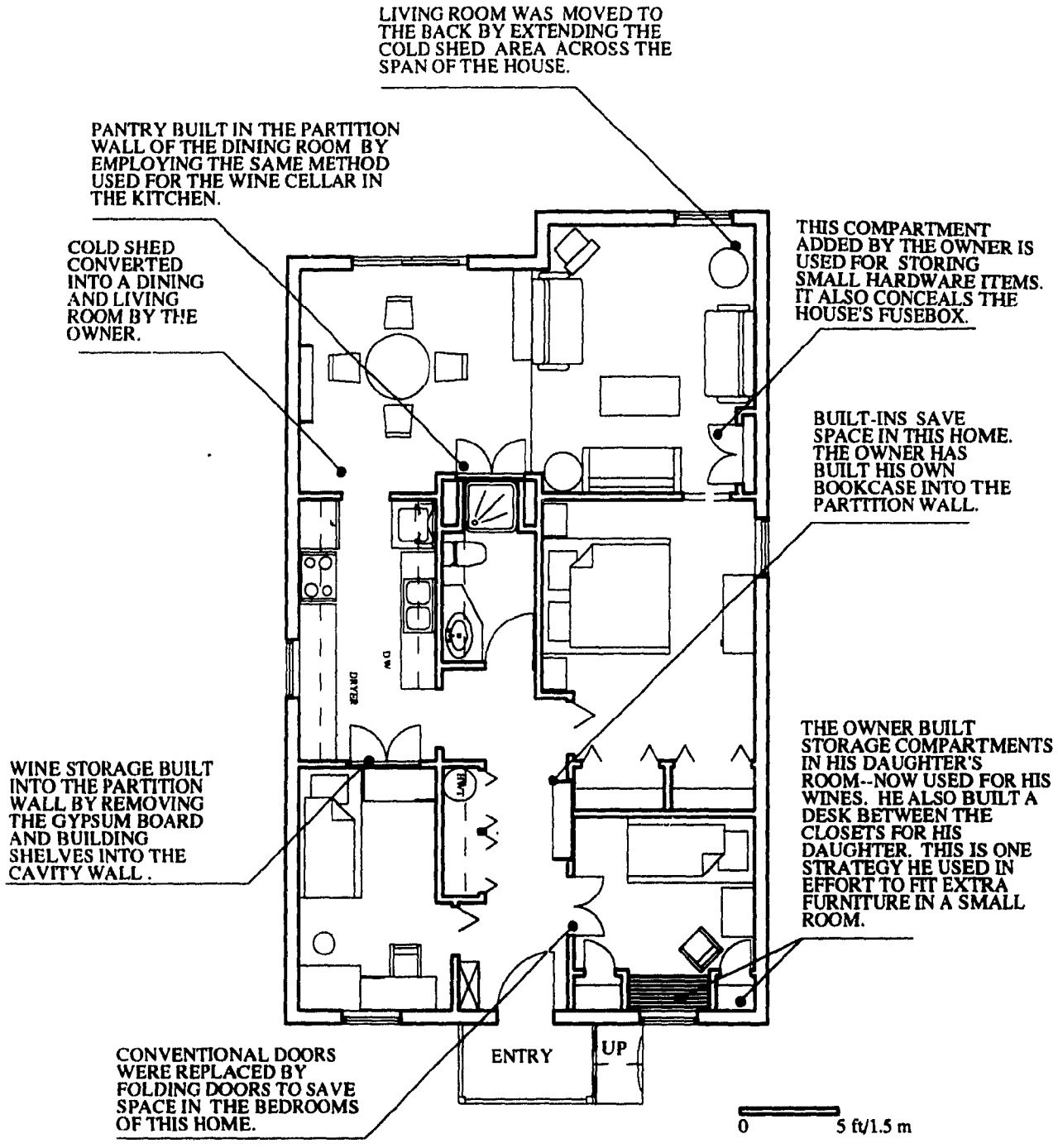
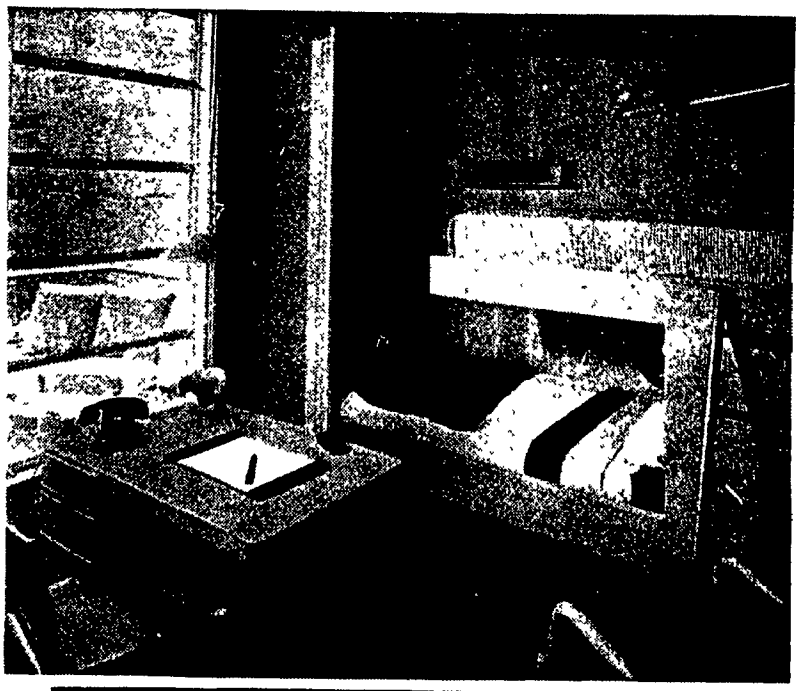


Figure 4.22 Floor plan of Case Study 19.

Figure 4.23 Entrance into the main bedroom in Case Study 1. The owner modified the entrance by replacing the conventional pivoting door with a sliding one in order to save space.

Figure 4.24 Attic bedrooms such in this one in Case Study 1, cannot accommodate tall standing furniture like an armoire used to compensate for the absence of a full height closet.



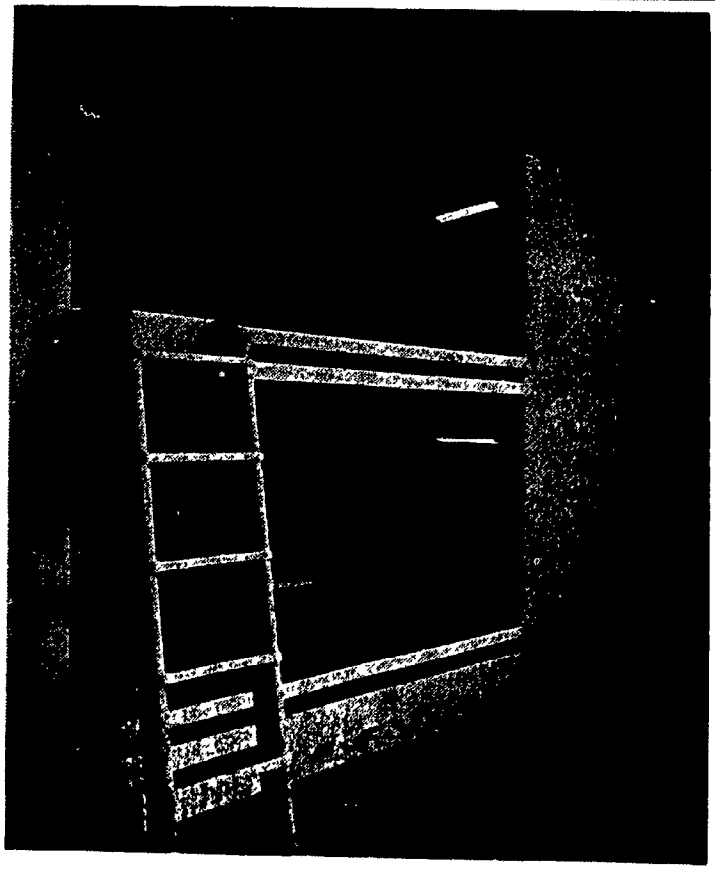


Figure 4.25 Nelson and Wright's popular double bunk bed shown below incorporates various storage whereas the one above has an upper bunk offset to take advantage of the sloping ceiling.

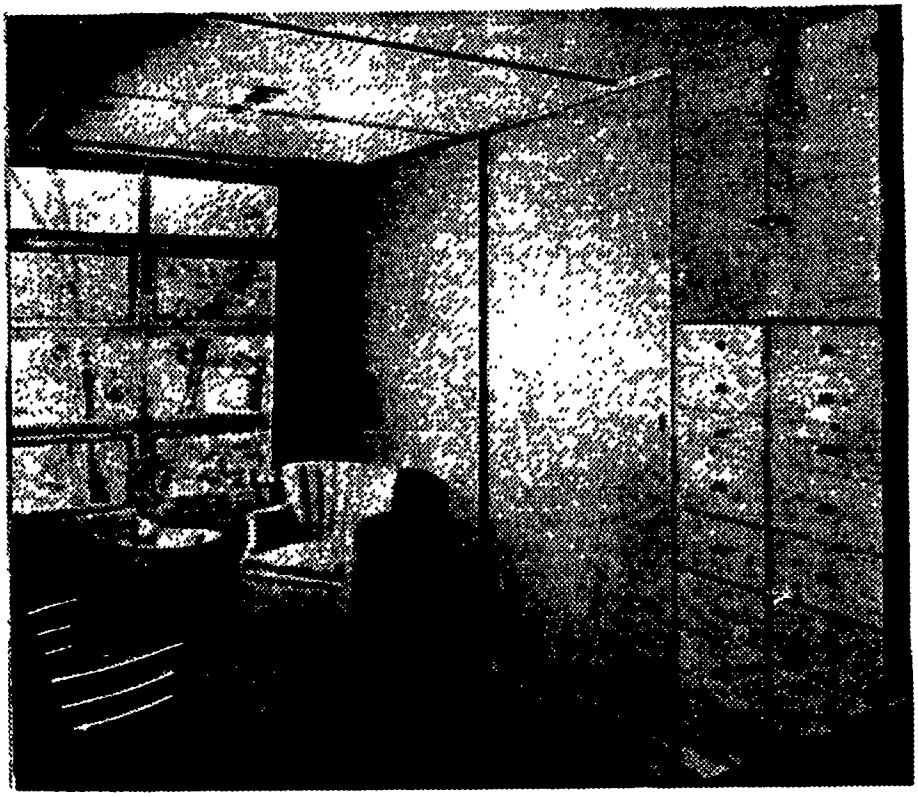


Figure 4.26 Nelson and Wright's chests and drawers built into the wall are designed to save space in this bedroom by eliminating traditional furniture such as dressers.

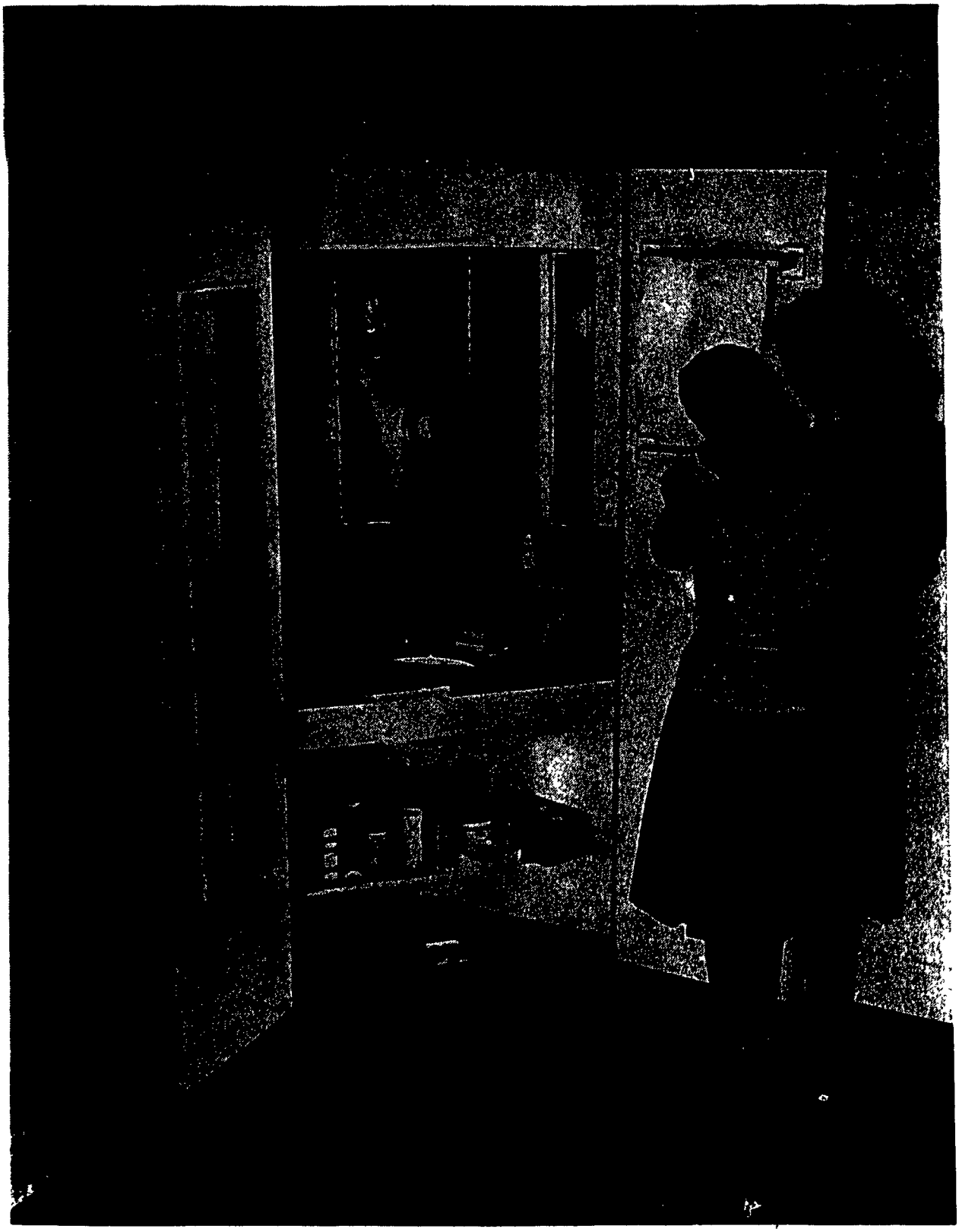


Figure 4.27 Lavatory by designed in the 1940s to fit in the corner of a bedroom.

(e) Windows

Natural lighting is a very important element in wartime homes for it gives one the perception of spaciousness. Thirty-six percent (36%) of households interviewed found window lighting to be a high ranking favourite in the wartime house, especially in the kitchen area (case studies 2,5,8,9,10,12,13, and 17). One resident explained the value of lighting in her home stating that, *"the house is not oppressive...even if it is cluttered, it does not feel so due to the lighting."* In case study 13, the bay windows in the living room and kitchen were enticed the owners to buy their home.

Although the provision of good lighting is an asset, large expanses of glass that can sometimes be counter-productive in a small house. Studies by Cooper and Sims (1978) and Saile (1971, 1972) show that residents found odd shaped bayed windows, tall narrow windows which almost reach to the floor, sliding glass doors cause inconveniences in furniture arrangement.[1] This was also found in the author's own observations where one window in the bedrooms of Cape Cod units was closed off to allow alternative furniture arrangements (case studies 6, 13, 18 and 22). In case study 2, one window was closed off in the living room to gain additional wall space for furniture and privacy. In case study 14, the owner converted her coal shed into a dining room because she felt

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[1] Carla Cooper and Bill Sims. "A Post-Occupancy Evaluation of Fourplex Condominium", in Housing and Society (Journal of the American Association of Housing Educators, Volume 5, No. 1, 1978); David G. Saile et al. Activities and Attitudes of Public Housing Residents. Rockford, Illinois, Urbana-Champaign, 1971; Same author. Families in Public Housing: An Evaluation of Three Residential Environments in Rockford Illinois. Housing Research and Development Program, University of Illinois at Urbana-Champaign, 1972. All references from Zeisel's, Housing Designed for Families, pp. 114, 115.

uncomfortable eating by the large window in her kitchen (where the dining table is placed). The close proximity of the window of her neighbour's home made it easy to be viewed by neighbours.

Figure 4.28 Window and furniture design can be integrated in a way that provides maximum glass and storage space as shown in this bedroom by Nelson and Wright.

In an effort to compromise the competition that exists between wall space for furniture and large windows, Nelson and Wright (1945) suggest in their guidebook that furniture design can be intergrated to provide a maximum of both glass and storage units. Their plans call for large expanses of glass with customized built-in furniture to fit beneath them (Figure 4.28).

(f) Stairs

Stairs were modified in some houses in order to make the entry area of the house more spacious. In case study 9, the direction of the stairs was re-oriented to lead into the living room for the sake of the owner's safety who was blind (refer to case study drawing in Appendix). In case study 18, the walls on the side of the stairs were demolished to open up the space between the living room and the den (Figure 4.29).

In homes where basements were not added, the space behind the stairs was used

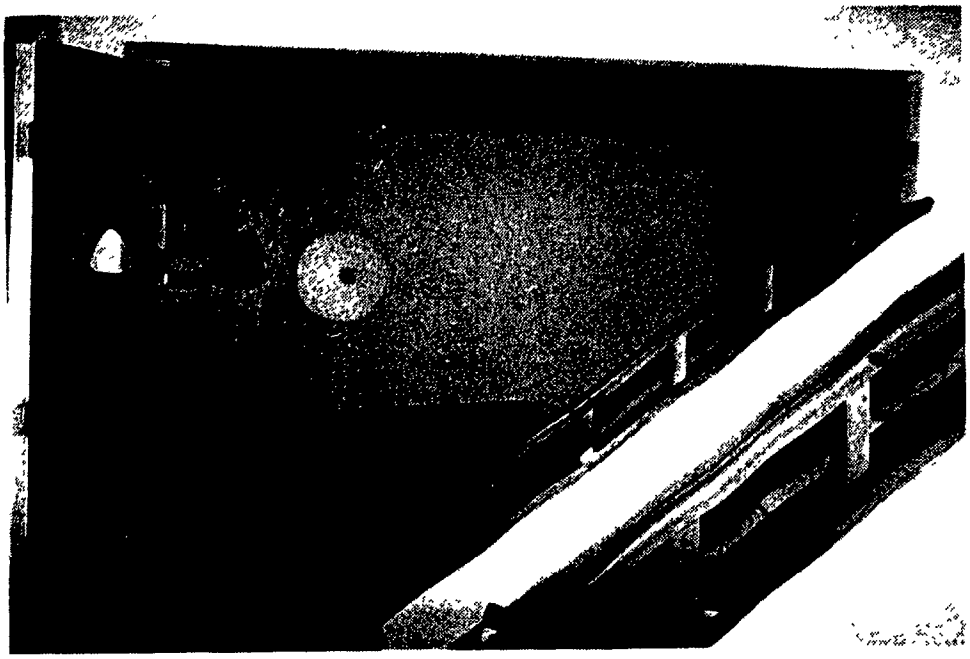

Figure 4.29 View of the stairwell in Case Study 18. This opening links the living room with the family den.

for storage (Figure 4.30). In case studies 1,6 and 7 utilized this space as a coat closet. In case study 14, the space underneath the stairs leading into the basement was used for storing household items.

One consistent finding was that single storey bungalows were favoured by elderly residents because they did not have to climb stairs. In case study 8, the owners who are retired stated in the interview that they were willing to trade their Cape Cod unit for a bungalow.

Figure 4.30 Temporary closet for coats, shoes, and vacuum machine located behind the staircase of Case Study 1. The owner uses a curtain to conceal items.

Conclusion

All wartime homes were adjusted to the needs of each household. It was also noted that in coping with the smallness of these homes through adaptation, the owners' either themselves had to have some building skills or invest from time to time in professional renovations. Without this commitment in mind, these homes, especially the bungalow unit, could not adequately meet the changing needs of *family* households. This was evident in case study 7 whose owners were not capable of contributing to the upgrading

of the house and therefore believed that they would be better off moving into a larger unit.

The interior layout of the wartime house was modified mainly for the need of more storage and bigger work areas. The kitchen was where the bulk of renovations frequently took place or desired to be improved spatially, followed by the need for additional bedrooms for children. The kitchen needs to be as spacious and as flexible as possible in order to serve comfortably the entire household and accommodate a variety of activities in the home like watching T.V., working, or entertaining friends.[1] Advances in domestic technology since the postwar period have (i.e. freezers, microwaves, laundry machines, and dishwashers) have created more storage demands in the kitchen of the wartime house. In meeting these changes, owners would expand either the kitchen in the coal shed by incorporating the two rooms into one, or by converting the coal shed into a separate dining room (case studies 14,19 and 21). Pantry storage was often built into the coal shed (cases studies 11,13,14,18, and 20). Household appliances like freezers and laundry machines were either set up un the coal shed (case study 1,7,13, and 20), the kitchen (case studies 4,6,8,9, and 19) or in the basement when the coal shed was intended for other uses (case studies 2,3,5,8,10,12,14,15,16, and 18). Case study 11 was the only home where laundry was performed in the bathroom.

The coal shed (or cold room) was the most expandable space in the wartime house. It was used for storage, a laundry/utility room, a dining room or part of the

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[1] Madigan and Munro, Privacy in the Private Sphere, pp. 33-34.

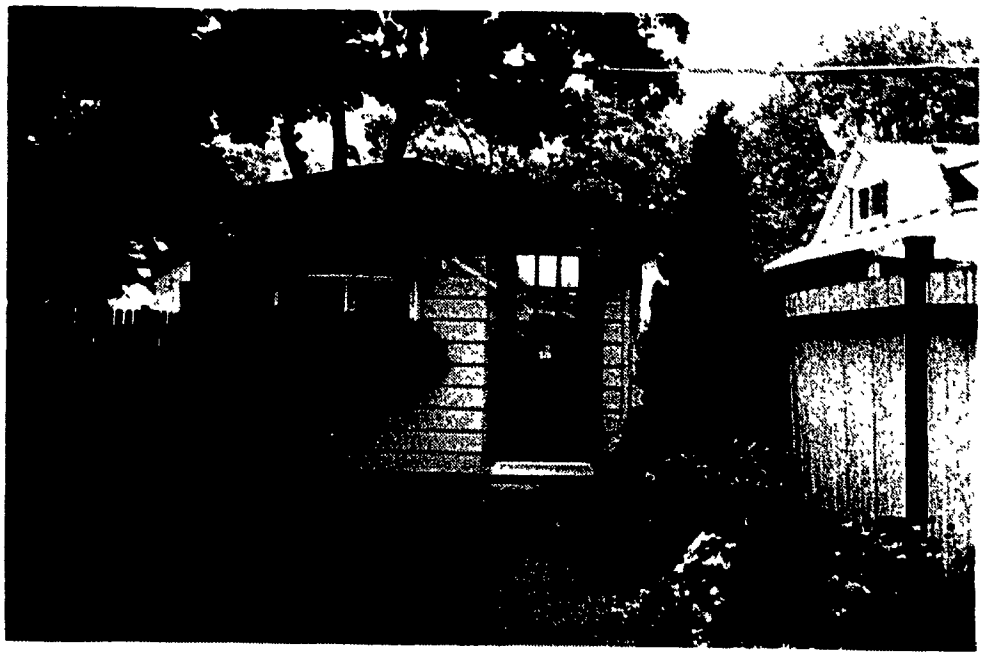


Figure 4.31 With no space available in the house for an office and workshop, the owner in Case Study 19 converted his outdoor cabin for this purpose.

kitchen, or a den.

Storage provided in the wartime house inevitably proved to be inadequate. Women expressed the need for storage perhaps more strongly than men since they in most cases, deal on a day to day basis with household items and look after clothing. This problem was found to be more acute in homes without basements in which the coal shed was used for living space (i.e. a bedroom, dining room, or laundry room). Extra storage built in bedrooms (case studies 2,8,12,13,18 and 19) and the kitchen; or owners purchased armoires or portable storage units (case studies 7 and 15). In case studies 9 and 21, the owners expanded their coal shed area across the span of their home for storage purposes. The wooden shed in the backyard was useful in homes without basements to store large bulky items such as bikes, home maintenance equipment, outdoor furniture, and tools. These sheds were in some minor cases employed as extra rooms

in homes without basements: in case study 19, the owner converted his cabin in his backyard into his office (Figure 4.31) whereas in case study 1, the family used the cabin as a den and workshop.

Bedrooms in the wartime house take on a variety of roles where family households are present. Apart from being a place for sleep, it is where one can "get way from it all" to contemplate, read, or study. In meeting these different functions, required furniture needs to tailored to the size of these small bedrooms. This is something that needs to be taken into account with down-sized, affordable housing: there also needs to be a market which produces the right furniture. Bedrooms in the attics of wartime homes pose even greater problems with tall standing furniture like armoires and were moreover, even less practical in terms of storage. One solution found in supplying additional storage for clothing in these rooms was adding a full size closet in the small corridor space between the bedrooms (case studies 8,13, and 18).

The majority of bedroom additions were made in bungalow units occupied by family households with two or more children. The coal shed was the primary space to renovated into an extra bedroom (case studies 4,10, and 11). If the coal shed of the home was used for some other purpose, the extra bedroom was installed in the basement (case studies 16, 17 and 21). Case study 17 was the only exception where the owner installed a half storey above his bungalow to add two bedrooms for his daughters. Another form of renovation was combining the two bedrooms were into one large "master suite" for the owners. This type of renovation was found in 1-1/2 storey, four bedroom Cape Cod unit (case studies 1 and 8) occupied by family households with two children.

In regards to accommodating furniture in the wartime house, owners would either design their own built-in furniture (case studies 18 and 19), close off a window (case studies 2,6 and 18) to allow more wall area, or move their extra furniture in the basement (case study 15).

Overall, the Cape Cod unit proved to be best suited for family households with children. On the other hand, the one-level bungalow unit was found to be more suitable for the elderly residents who were less mobile. The field analysis also showed that the wide age differences of children in some households eased the spatial demands of residents as older children moved out.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

Wartime housing was believed to guarantee efficient employee production in the war industry and it therefore played essential role in national defense. These modest shelters were designed to meet the needs of normal family life so their standards of comfort had to be based on the minimum residential requirements at the time. In meeting the need for veteran housing after the war, wartime homes were transposed from temporary to permanent tenure. Consequently, their layouts did not conform to the spatial demands of households (led by the baby boom, rise of consumerism, and wider access to domestic technology) in the postwar period and had to be adapted namely in the kitchen, storage, and bedrooms. This study has demonstrated the innovativeness on the part of owners in using space in a small house without expanding its floor area significantly. This is not to say that all solutions employed by owners are ideal: it appears that some of the decisions owners undertook in renovating their home did not account whether their unit would be marketable in the event they plan to sell it. Case study 19 is one notable example where questions are raised regarding whether the owner's judgement to move the living room to the back of the dwelling was correct. Subsequent research on the wartime house might determine how such factors can be controlled in designing for user adaptability in small housing. By examining the owners' experiences in wartime homes, this thesis focused on drawing conclusions in regards to what spaces in small affordable housing require extra emphasis on their design layout.

There is a marked difference between the wartime house and small-lot housing today. The wartime house was built during a time when land was cheap and plentiful so

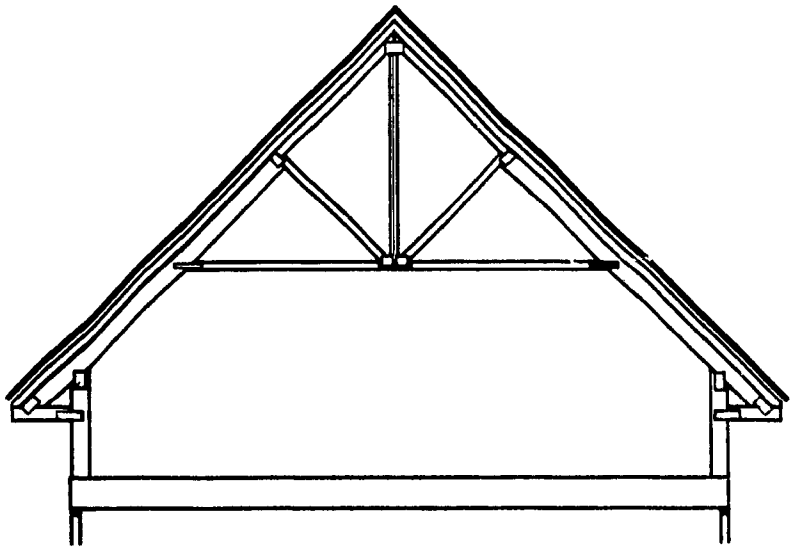
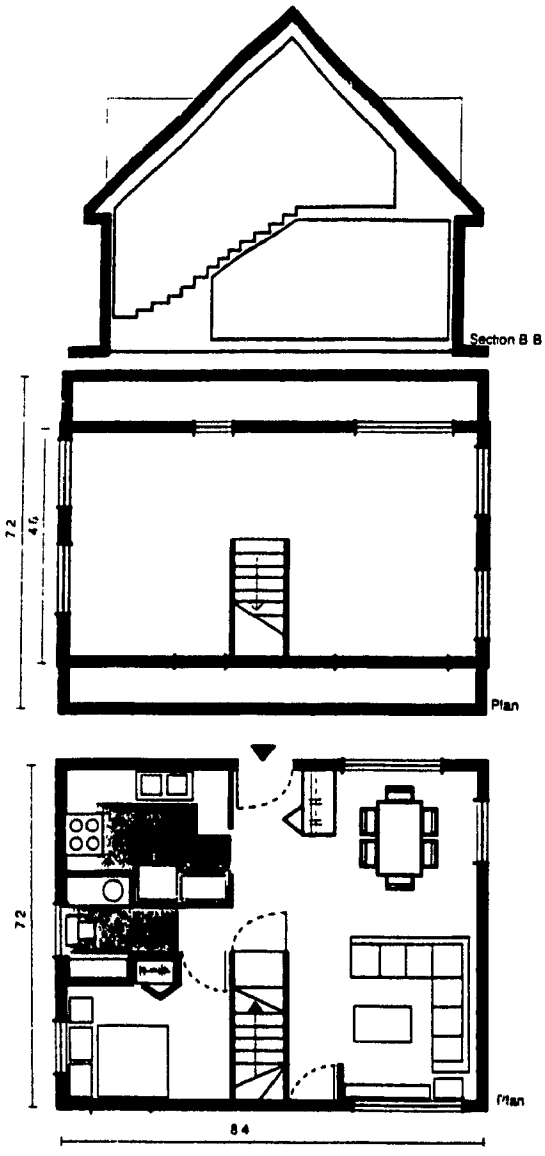
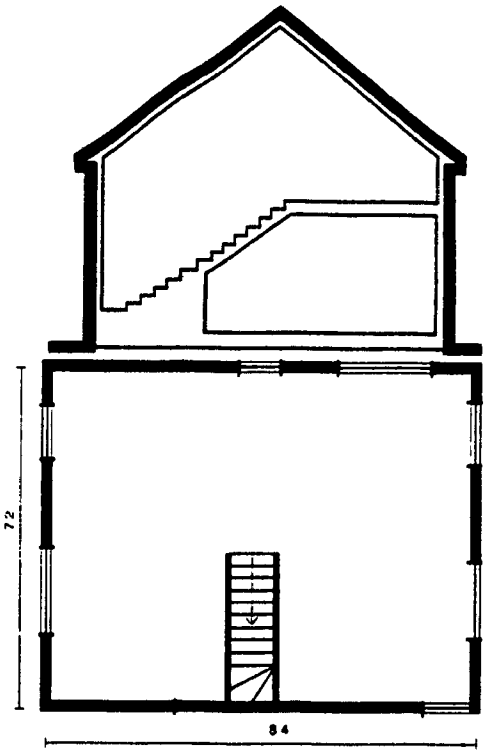


Figure 5.1 One notable example of an alternative truss system used for attic construction. System "A" (truss with integral pony walls) can be used in semi-detached units or rowhousing.

every unit had ample outdoor living space. Their large lots allowed owners to add extra rooms in the back of their dwelling without compromising the space in their yards. On the other hand, small-lot housing like the *Grow Home* (built on narrow lots in a row form) does not incorporate this potential for horizontal expansion. Employing the basement as additional living space (i.e. namely bedrooms) is not a viable solution due to problems with ventilation and moisture. The expandable attic found in the wartime home provides not only a higher quality living space but is also a less expensive alternative than adding floor space to the existing layout of a house. In a report by CMHC, *Habitable Attics: New Potential For An Old Idea (1992)*, modern roof trusses which allow the use of the attic as living space are advocated in the design of small housing (Figures 5.1 and 5.2). Technological advances made in roof trusses have lowered



Alternative 1: main floor area
60 m²; potential attic area 40 m²;
total area 100 m².

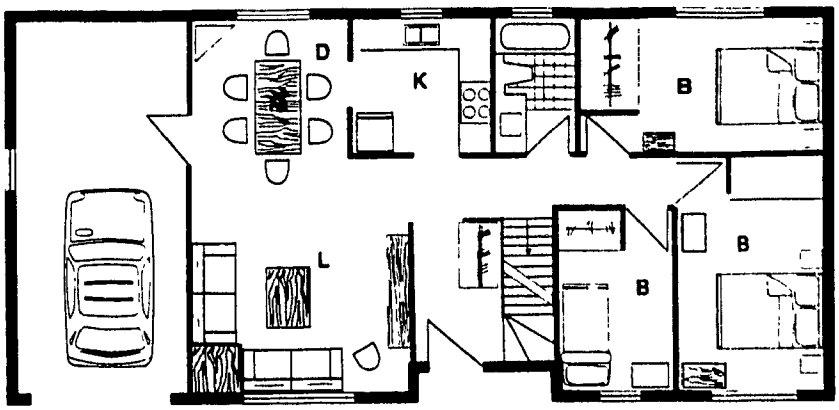


Alternative 2:
potential attic
(System "A") area 60 m²;
total area 120 m².

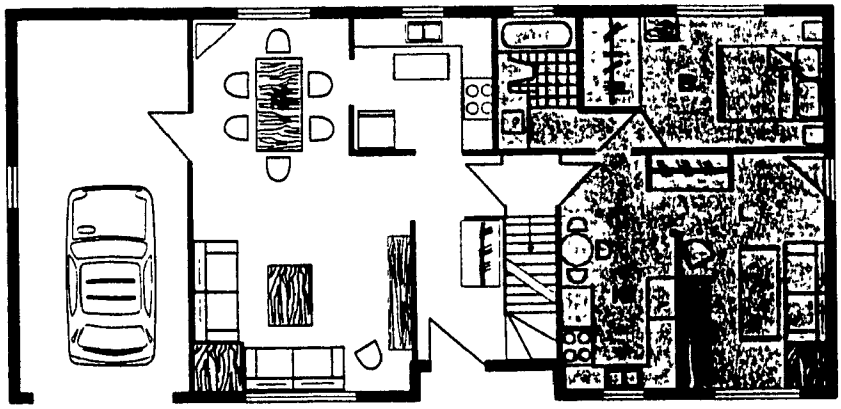
Figure 5.2 Comparison of two alternative truss systems for a one storey house. Truss system "A" is best suited for attic construction since it allows the use of an entire attic floor.

construction costs thereby making the use of a "habitable attic" economically feasible.

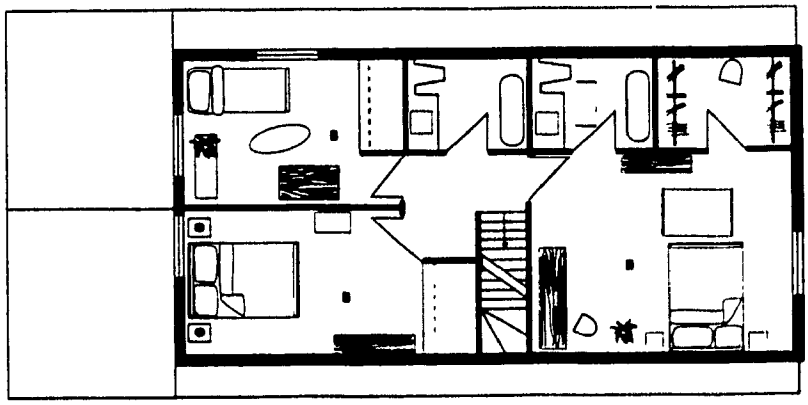
Such attics not only improve tenure flexibility for families but, according to CMHC, also



UNCONVERTED (WITH ATTIC POTENTIAL)



CONVERTED (GROUND FLOOR)



CONVERTED (HABITABLE ATTIC)

Figure 5.3 The added attic in this bungalow permits a variety of living arrangements for many households: independent living for adult children or an accessory apartment for elderly.

increase the home's resale value.[1] Moreover, they grant the possibility of having separate living quarters for teenage and adult children moving back into their parental home (as discussed in chapter 3) or can be used for earning extra rental income in elderly households (Figure 5.3).

One cannot over-emphasize the importance of storage particularly in regards to small-lot housing. In review of several notable designs affordable housing projects like the original *Grow Home* layout, the need for indoor bulk storage (i.e. seasonal clothing, holiday decorations, window air conditioner, sports equipment, luggage, lawnmower, outdoor furniture, snow tires, barbecue) has been highly underestimated.[2] Zeisel's study (1981) advises that distinctions must be drawn between storing items used on a daily basis such as a vacuum cleaner, outdoor items like bicycles and barbecue which need to be secured stored indoors, and seasonally stored items like holiday decorations and lawnmowers--in order that designers can determine where storage will be located.[3] Expandable spaces like unfinished attics and basements are best suited for large items that are used only seasonally. Closets designed to keep clothing and blankets, are not recommended for storing vacuum machines or other house maintenance items used on a daily basis. Organized storage units discussed by Nelson and Wright (chapter 4) should be considered in the design of the bathroom, bedroom and kitchen. Storage compartments can be built in unusable spaces such as the corner of a room or near the ceiling. Case

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[1] Canada Mortgage and Housing Corporation. Habitable Attics: New Potential for an Old Idea, p. 4.

[2] It should be mentioned that all Grow Homes today include a basement.

[3] Zeisel et al. Housing Designed for Families, p. 113.

study findings also show that the space behind a staircase can also be used for storage. Built-in furniture for storage purposes in bedrooms can also eliminate the use of drawers and dressers thereby liberating the floor space for other uses.

Kitchens in small housing need to be large enough to account for adequate storage and counter space, utility equipment (laundry machines and freezers in homes without basements), and a comfortable sitting area. In-line kitchen cabinetry which does not include some area for household appliances (i.e. refrigerator, oven, laundry machine) should be avoided since it uses space inefficiently and causes all kinds of obstructions between furniture and utilities. The case studies have shown that the kitchen is also an important social space and where the household's informal activities are most likely to occur. Open plan layouts which combine an eat-in kitchen with a second living-area allow more possibilities for numerous households. This second living area should have at least 80 ft^2 (8 m^2) of floor area for dining room furniture and easy chairs.[1]

This study has reinforced the fact that the living room is regarded a formal space and that designers should avoid putting entrances that lead directly into this room. Entrances should therefore be separate from the living room area and include adequate coat storage. Friedman's (1992) own post-occupancy studies on the *Grow Home* show that the absence of a vestibule or separate entrance space alone is not the cause of disappointment for residents since some units were equipped with such features did not rate much higher than the others. He explains that the entrances' small size and the lack of adequate closet space may be presumed to be the cause and therefore must be taken

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[1] Zeisel et al. Housing Designed for Families, p. 105.

into account in housing.[1] Relative to its use, the size of the living room should not to be as critical and can be reduced at the cost of having a larger, multi-use kitchen. The need for two separate entries in the home discussed in chapter three should also be considered in single-family housing. As public working life increasingly encroaches in the home via home office technology, new boundaries between the private and public sphere are redefined by incorporating two distinct entry areas into the dwelling. Separate entrances also permit autonomous living in households with teenage or adult children.

The few owners who added an extra washroom in their wartime home were those who occupied the larger 1-1/2 storey Cape Cod cottage units. This addition was installed in the small space in corridor area (which is in fact located directly above themain bathroom of the home) between the bedrooms on the upper floor. In meeting the needs of a family household, a small home can come equipped with a *"2-passenger or 3-passenger bathroom"* (Figure 5.4). This three-fixture bathroom takes up more space thanthe 5 by 7 feet (1.5 by 2.1 meters) minimum bathroom only because the room itself is designed to leave the lavatory and water closet both free and private. The water closet has its own compartment and its own door. Likewise, the bath and lavatory compartments also have a door for privacy when dressing after a bath. When the bath is being used by one member of the household, other members can employ the lavatory or the washroom. This reduces the need for an additional washroom. An extra washroom

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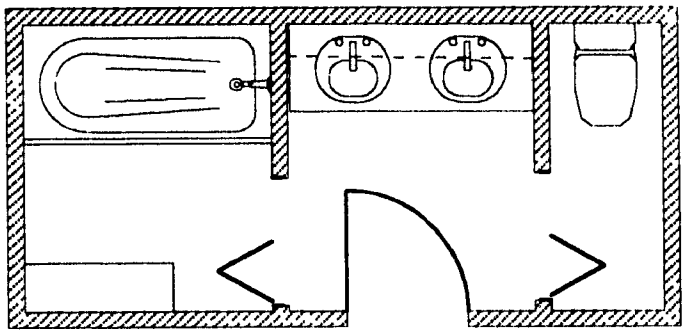
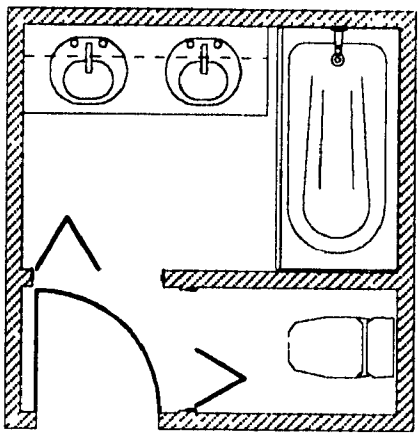
[1] Friedman and Cammalleri. Evaluation of Affordable Housing Projects Based on the Grow Home Concept, p. 49.

can otherwise be installed in the unused space behind a "straight-run" staircase (Figure 5.5).

3-PASSENGER BATHROOM





2-PASSENGER BATHROOM

Figure 5.4 Two-three passenger bathrooms, although larger than a minimum sized bathroom, eliminate the need for installing an extra washroom.

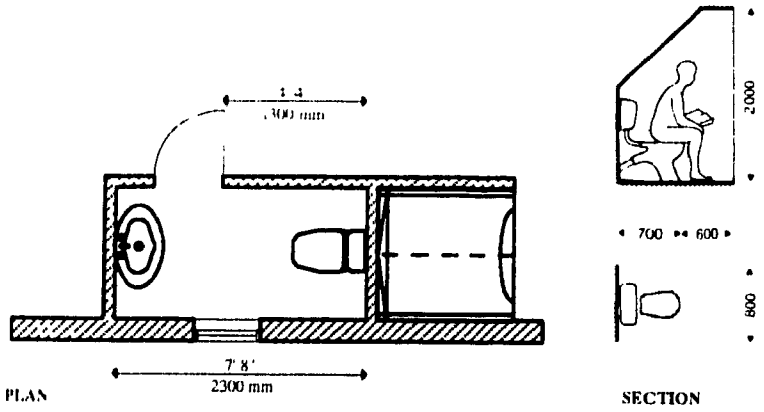


Figure 5.5 Plan and section of a washroom installed underneath a staircase.

The case findings in this study have shown that large expanses of glass should be minimized in small houses because a greater portion of the wall space is employed by furniture. Although windows give a perception of spaciousness in a small home, too many raise the cost of the house itself and its heating. Builders and designers should therefore follow the same guidelines in providing windows for smaller homes as they do for standard housing (i.e. orientation for southern exposure, smaller windows on the northern exposure, locate windows for cross ventilation). Rooms in a small home need to be insulated for acoustic privacy within the household. A bank of closets are good barriers to sound as well as insulating materials which can deaden noise to some degree. Being a detached unit, the problem of acoustic privacy between neighbouring wartime homes was not encountered in this study.

A multi-purpose, unfinished room should be provided particularly in small homes without basements. This room permits residents to use it according to their needs. The

coal shed/cold room in the wartime house proved to be the most versatile space in accommodating the changing spatial needs of the household. The coal shed, having the advantage of being located on the back end of the house, was could be easily adapted either by extending its floor area or renovated to be used as additional living space.

Space management in wartime homes that have retained more or less their original dimensions was made possible by family households whose finances could not afford undertake major renovations which would increase their living space substantially. Instead, they took advantage of their affordable accommodation (which was also inexpensively maintained) by directing their household income elsewhere (as pointed out interviewee in case study 10 who was quoted at the beginning of chapter 2). The wartime house was successful in that it provided opportunity for homeownership for low-income families whereas today this prospect is largely reserved for higher income groups. Thus, it is not surprising to find the children of the early owners of wartime homes, who did not enjoy the same opportunity like their parents, in search of a unit to buy (i.e. case study 1). The "self-help" aspect of this type of housing combined with the government policy which facilitated ownership, makes the wartime house one of the earliest models of mass-produced affordable housing in North America. Moreover, its 50 year history warrants the fact that ownership pride in itself will never allow affordable housing developments to turn into slums decades after their production. The level of satisfaction of a large majority of residents in this study, is an indication of the willingness of people to make trade-offs to live in an inexpensive accommodation they would own.

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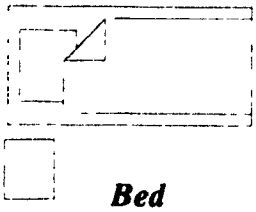
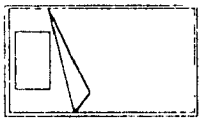
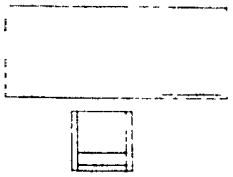
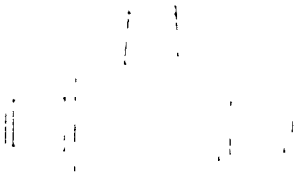
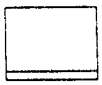
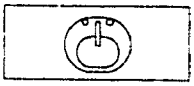
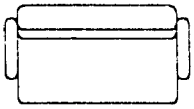
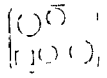
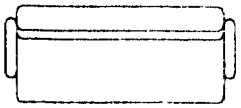
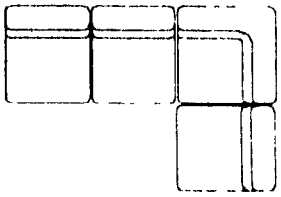
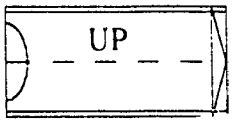
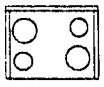
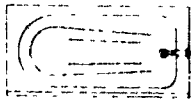
APPENDICES

APPENDIX I

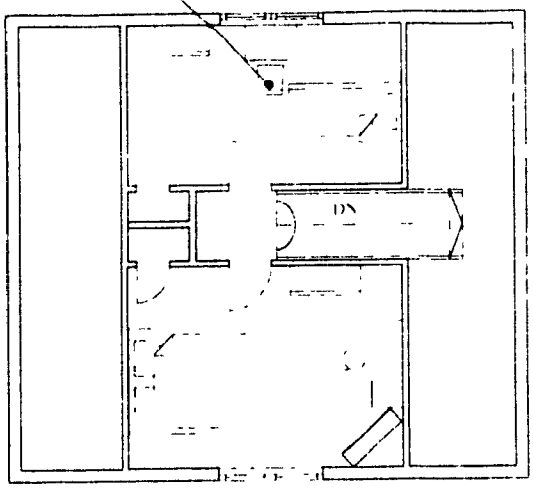
SYNOPSIS OF CASE STUDY INTERVIEWS AND DRAWINGS

Please note that all drawings are scaled in feet (0-5 feet / 0-1.5 meters)

TABLE A.1: FURNITURE CODE

 *Armoire*	 *Bed*	 *Bookcase*	 *Chair*
 *Computer*	 *Crib*	 *Desk*	 *Dining Set*
 *Dishwasher*	 *Drawer*	 *Dresser*	 *Fireplace*
 *Lavatory*	 *Loveseat*	 *Oven (built-in)*	 *Range Top*
 *Refrigerator*	 *Shower*	 *Sofa*	 *Sofa (corner)*
 *Stairs*	 *Stove*	 *Television*	 *Tub with Shower*
 *Wall Unit (Corner)*	 *Washbasin*	 *Washer and Dryer*	 *Water Closet*

SON'S BEDROOM IS ALSO USED AS A SEWING ROOM BY THE OWNER. IN THE SUMMER HER SON TAKES HIS BED INTO THE CABIN IN THE BACK YARD SO HE CAN SLEEP MORE COMFORTABLY IN COOLER SURROUNDINGS



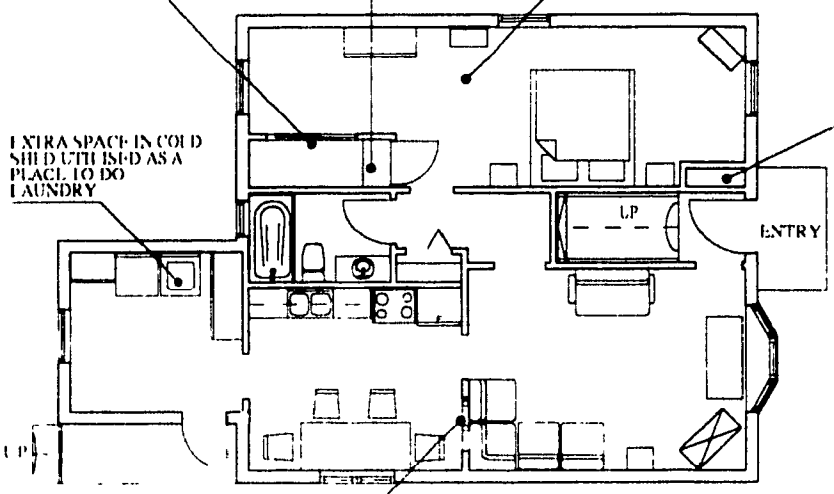
LARGE CLOSET BUILT BY OWNER TO SUPPLEMENT THE CLOSETS TORN DOWN BETWEEN THE TWO ROOMS. THIS CLOSET HAS SLIDING DOORS WITH MIRRORS

THIS END OF THE CLOSET IS A LOW HEIGHT CABINET WHICH STORES STEREO EQUIPMENT, CASSETTES AND RECORDS

ORIGINALLY THERE WERE TWO BEDROOMS ON THE GROUND FLOOR BUT THE OWNER DECIDED TO COMBINE THEM TO MAKE ONE LARGE MASTER BEDROOM

THIS USED TO BE A SMALL CLOSET FOR COATS. THE PRESENT OWNER CLOSED IT OFF AND NOW USES THE SPACE BEHIND THE STAIRS FOR COATS

EXTRA SPACE IN COLD SHED UTILISED AS A PLACE TO DO LAUNDRY



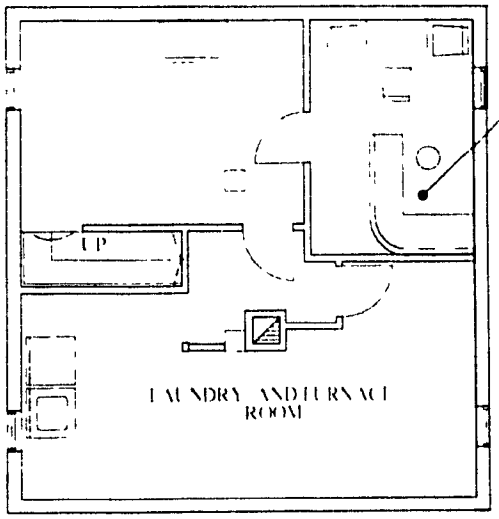
ENTRANCE HAS BEEN MODIFIED TO MAKE THE LIVING ROOM AND KITCHEN MORE SPACIOUS

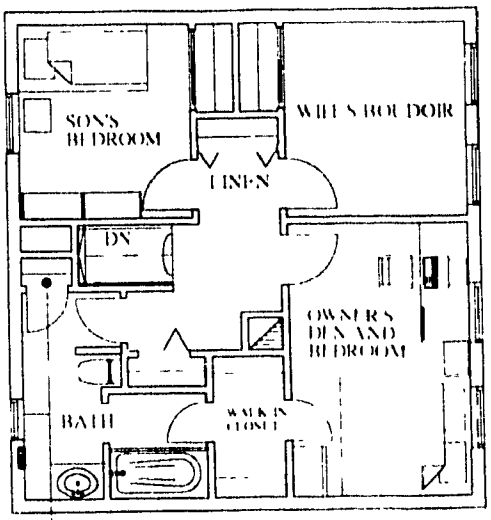
PLAN

1

Scale:

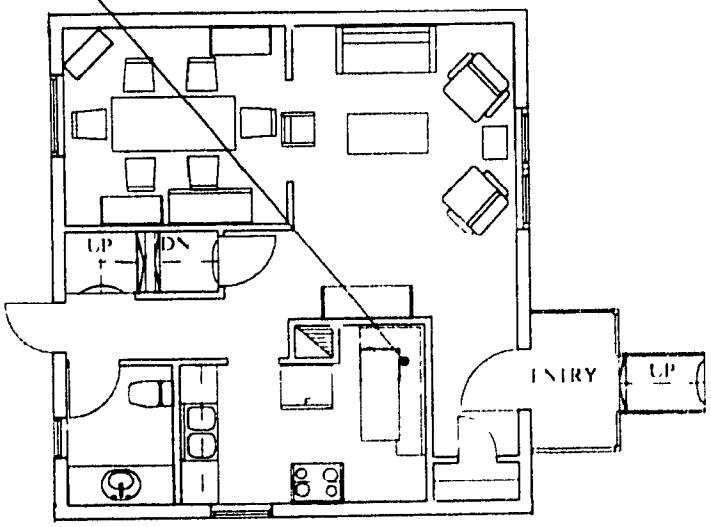
A SMALL PUB WAS BUILT BY THE OWNER FOR ENTERTAINING FRIENDS. IT IS DECORATED WITH PARAPHERNELIA FOUND IN PUBS IN GERMANY





EXTRA KITCHEN ITEMS OFTEN END UP STORED IN THIS CLOSET WHEN THERE IS NOT ENOUGH ROOM IN THE KITCHEN

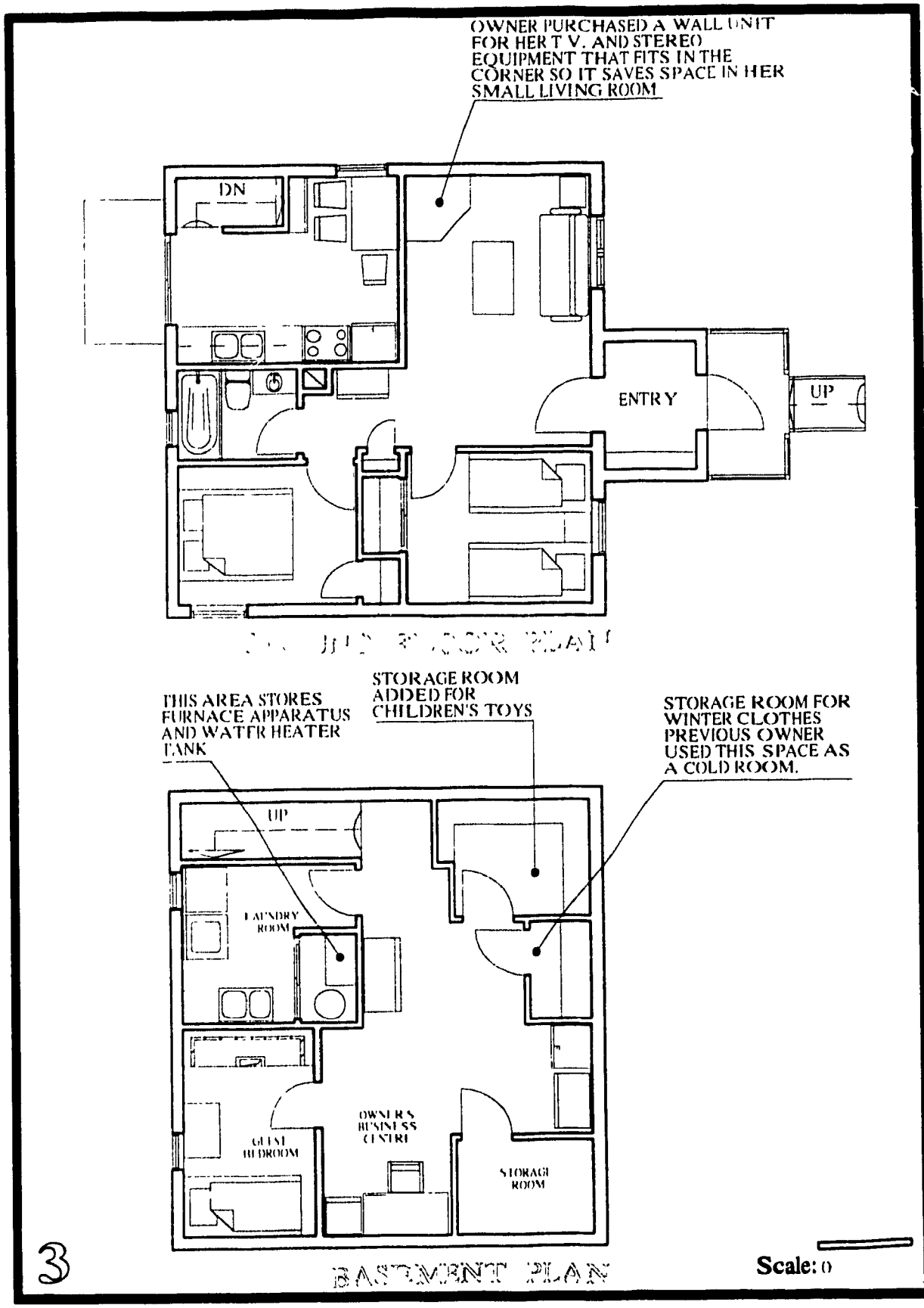
BUILT-IN DINING SET FOR A SMALL KITCHEN. THE OWNER DESIGNED THE SEAT OF THE BENCH TO LIFT SO THAT ITEMS CAN BE STORED BELOW

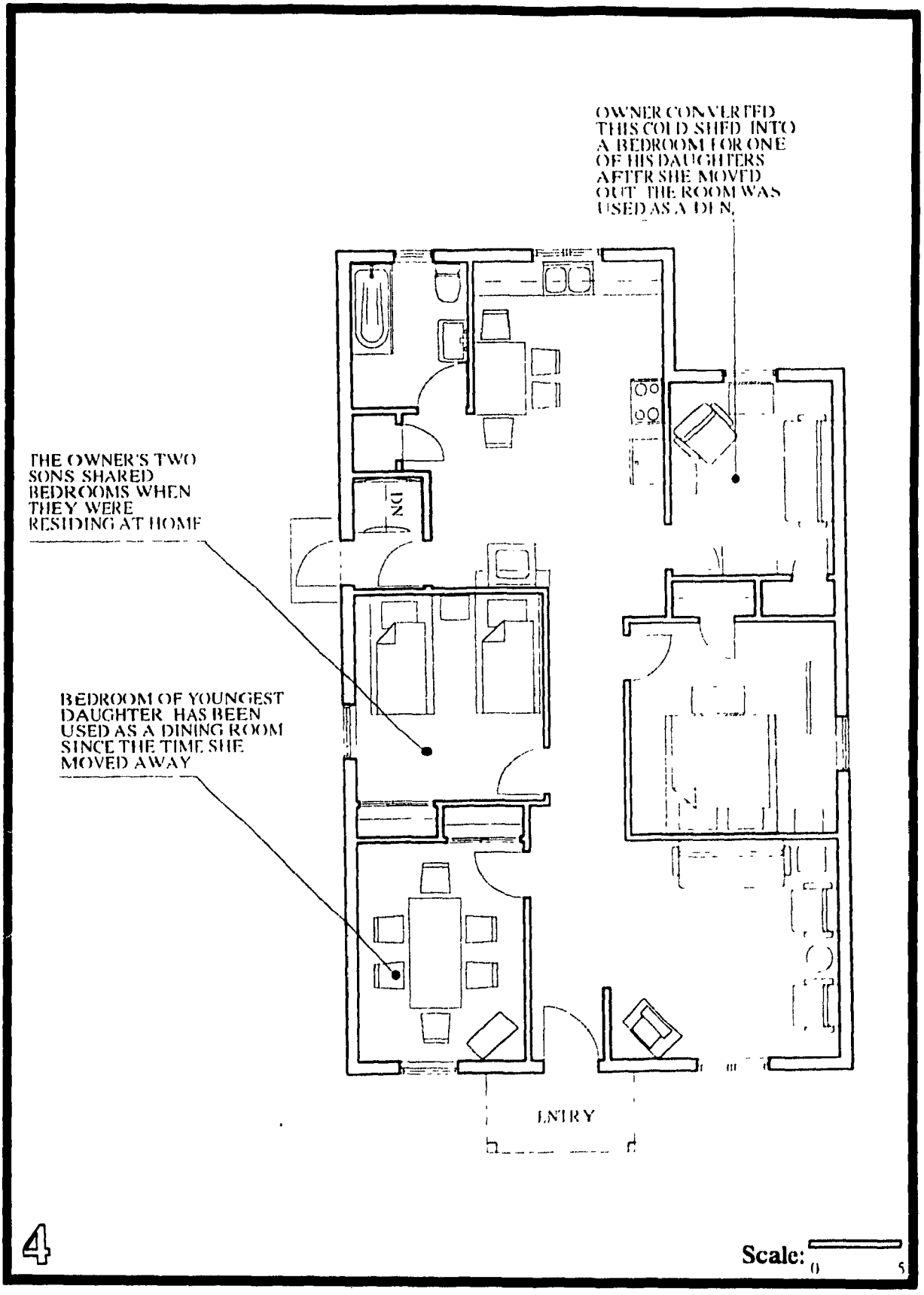


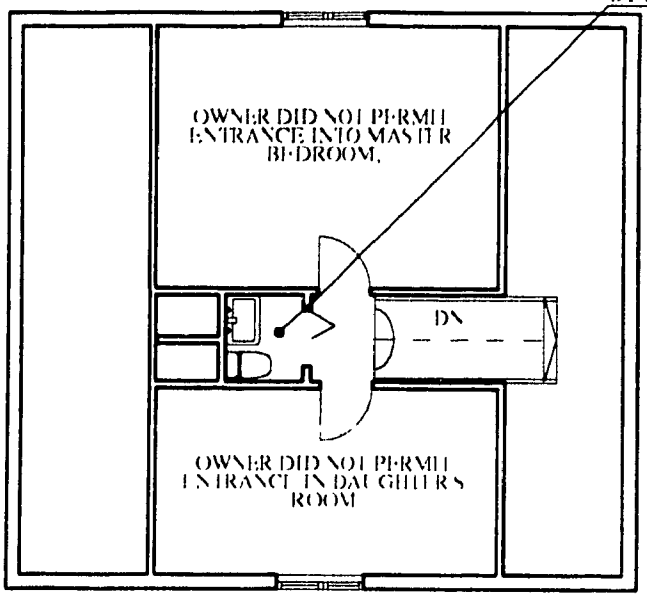
2

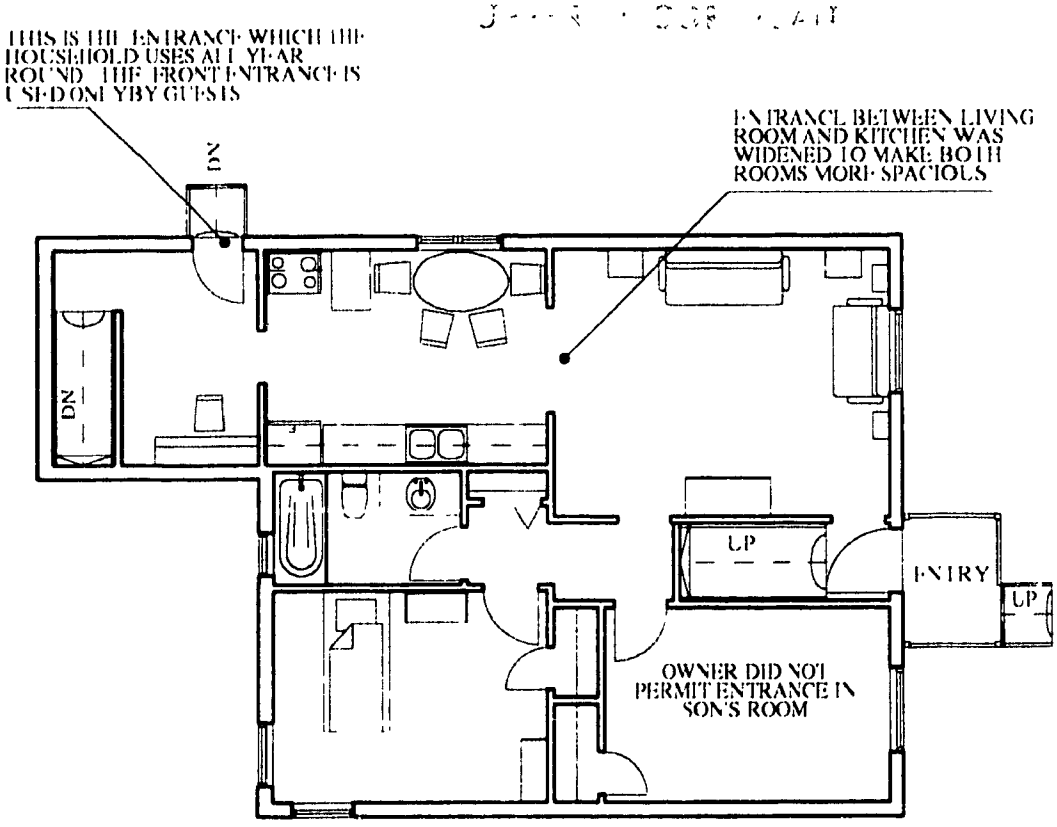
GROUND FLOOR PLAN

Scale:


OWNER PURCHASED A WALL UNIT FOR HER T V. AND STEREO EQUIPMENT THAT FITS IN THE CORNER SO IT SAVES SPACE IN HER SMALL LIVING ROOM
DN
ENTRY
UP
STORAGE ROOM ADDED FOR CHILDREN'S TOYS
THIS AREA STORES FURNACE APPARATUS AND WATER HEATER TANK
STORAGE ROOM FOR WINTER CLOTHES PREVIOUS OWNER USED THIS SPACE AS A COLD ROOM.
UP
LAUNDRY ROOM
OWNERS BUSINESS CENTRE
GUEST BEDROOM
STORAGE ROOM
3
BASEMENT PLAN
Scale: 0


OWNER CONVERTED THIS COLD SHED INTO A BEDROOM FOR ONE OF HIS DAUGHTERS AFTER SHE MOVED OUT THE ROOM WAS USED AS A DEN.
THE OWNER'S TWO SONS SHARED BEDROOMS WHEN THEY WERE RESIDING AT HOME
BEDROOM OF YOUNGEST DAUGHTER HAS BEEN USED AS A DINING ROOM SINCE THE TIME SHE MOVED AWAY
LIN
ENTRY
4
Scale:
0
5

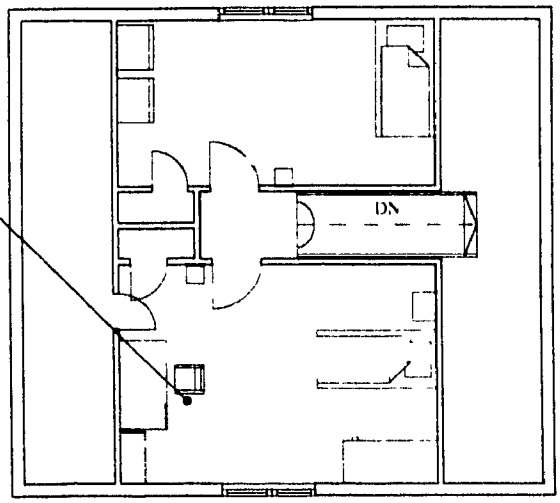

WASHROOM WAS ADDED BY PREVIOUS OWNERS
OWNER DID NOT PERMIT ENTRANCE INTO MASTER BEDROOM.
DN
OWNER DID NOT PERMIT ENTRANCE IN DAUGHTERS ROOM


THIS IS THE ENTRANCE WHICH THE HOUSEHOLD USES ALL YEAR ROUND. THE FRONT ENTRANCE IS USED ONLY BY GUESTS
ENTRANCE BETWEEN LIVING ROOM AND KITCHEN WAS WIDENED TO MAKE BOTH ROOMS MORE SPACIOUS
DN
DN
UP
ENTRY
UP
OWNER DID NOT PERMIT ENTRANCE IN SON'S ROOM

5

Scale: 0 5

DAUGHTER'S BEDROOM WAS AT ONE TIME HER PARENT'S ROOM. AS CHILDREN GROW OLDER IN THE HOUSEHOLD THEIR SPACE CONSUMPTION ALSO INCREASES

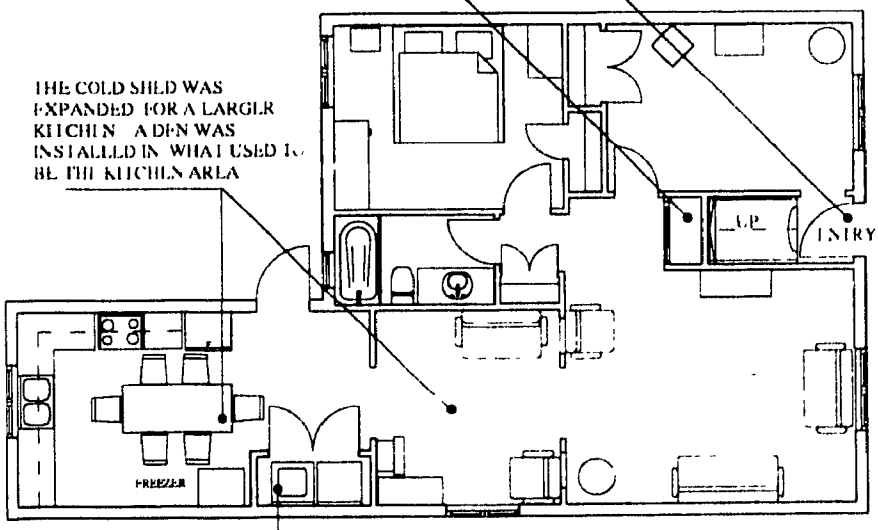


UPPER FLOOR PLAN

DIRECTION OF ENTRY PATH, WHICH USED TO LEAD INTO THE LIVING ROOM, HAS BEEN RE-ORIENTED INTO THE NEXT ROOM. THE LIVING ROOM IN THIS HOME IS USED FOR FORMAL OCCASSIONS AND THEREFORE ITS UPKEEP IS VERY IMPORTANT TO THE OWNERS

COAT CLOSET LOCATED BEHIND THE STAIRS

THE COLD SHED WAS EXPANDED FOR A LARGER KITCHEN. A DEN WAS INSTALLED IN WHAT USED TO BE THE KITCHENS AREA

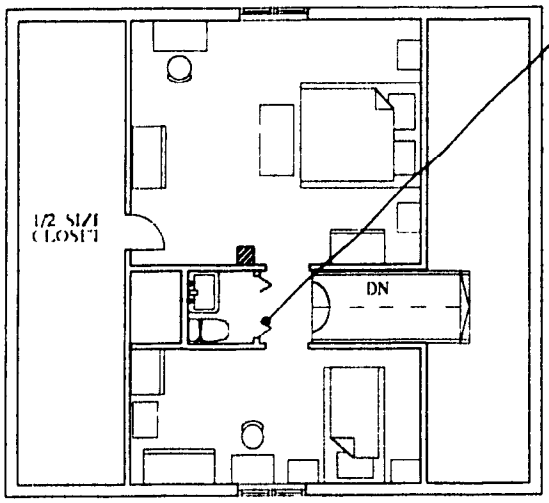


THE OWNERS BUILT A LARGE PANTRY IN THE KITCHEN TO ACCOMMODATE THEIR WASHER AND DRYER

GROUND FLOOR PLAN

Scale: 0 5

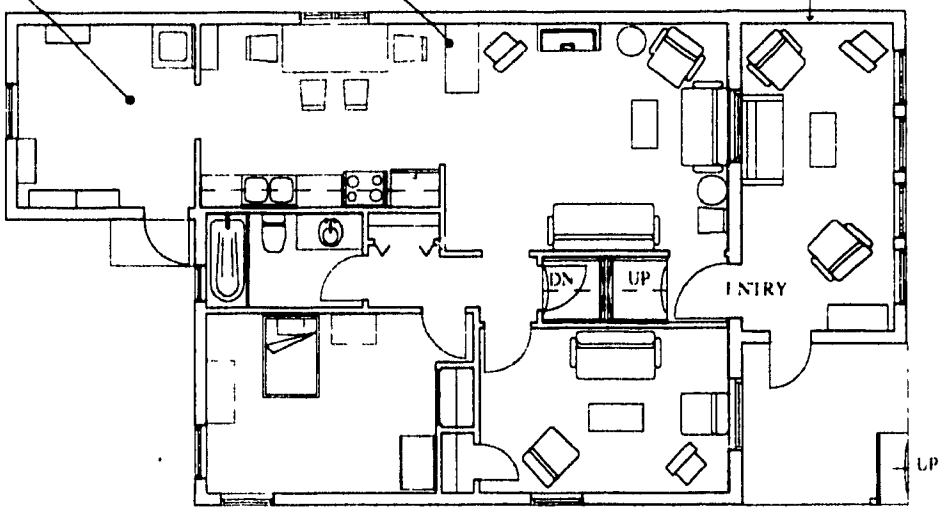
WASHROOM ON UPPER FLOOR ADDED BY PREVIOUS OWNER, IS CONSIDERED A VERY IMPORTANT FOR THIS HOUSEHOLD-ESPECIALLY FOR THEIR 5-YEAR OLD SON WHOSE BEDROOM IS ON THE UPPER FLOOR AND NEEDS THE WASHROOM LATE IN THE EVENINGS



THE WALL BETWEEN THE KITCHEN AND LIVING ROOM WAS REMOVED BY A PREVIOUS OWNER SO AS TO MAKE BOTH ROOMS MORE SPACIOUS. A LOW COUNTER WAS ADDED BETWEEN THE TWO ROOMS TO GIVE A SENSE OF CLEAR DEFINITION

THIS IS A SMOKING ROOM FOR THE OWNER'S HUSBAND

THE COAL SHED IS USED BOTH FOR STORAGE AND LAUNDRY. THE OWNER BOUGHT ARMOIRES AND SHELVES TO STORE EXTRA ITEMS. HAVING NO DRYER, THE OWNER HANGS HER LAUNDRY IN THIS ROOM

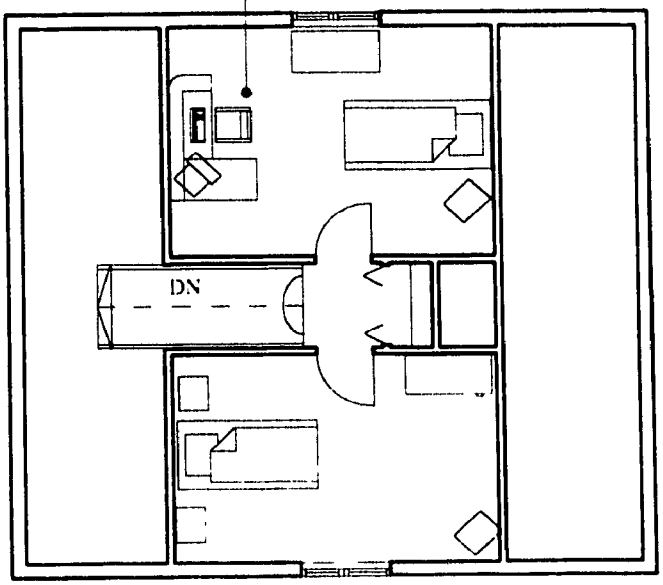


GROUND FLOOR PLAN

7

Scale: 0 5

BEDROOM UTILIZED AS A GUEST BEDROOM AND A DEN FOR THE HUSBAND. IT IS ALSO A SEWING ROOM FOR HIS WIFE.

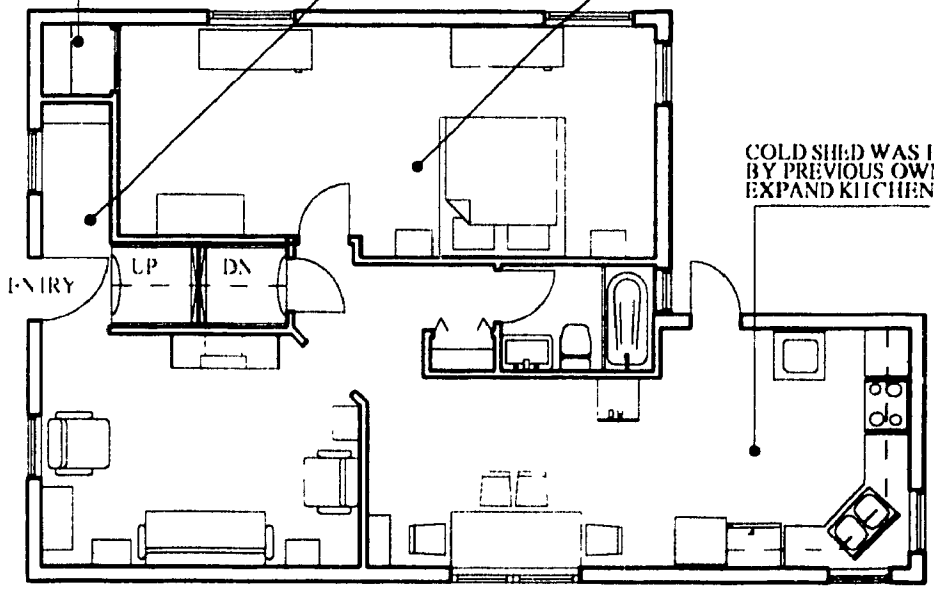


THREE FEET (1 m) WERE TAKEN AWAY FROM THIS BEDROOM FOR A CLOSET IN THE MAIN BEDROOM

VESTIBULE AREA WAS EXPANDED BY 7 FT (2m) IN DEPTH TO FOR COAT AREA.

THE BEDROOMS ON THIS PLAN WERE COMBINED INTO ONE LARGE MAIN BEDROOM BY DEMOLISHING THE CLOSETS WHICH DIVIDED THE TWO ROOMS

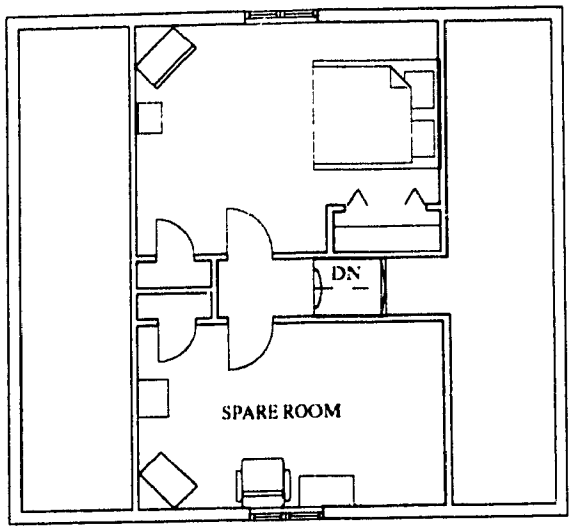
COLD SHED WAS EXTENDED BY PREVIOUS OWNER TO EXPAND KITCHEN



8

GROUND FLOOR PLAN

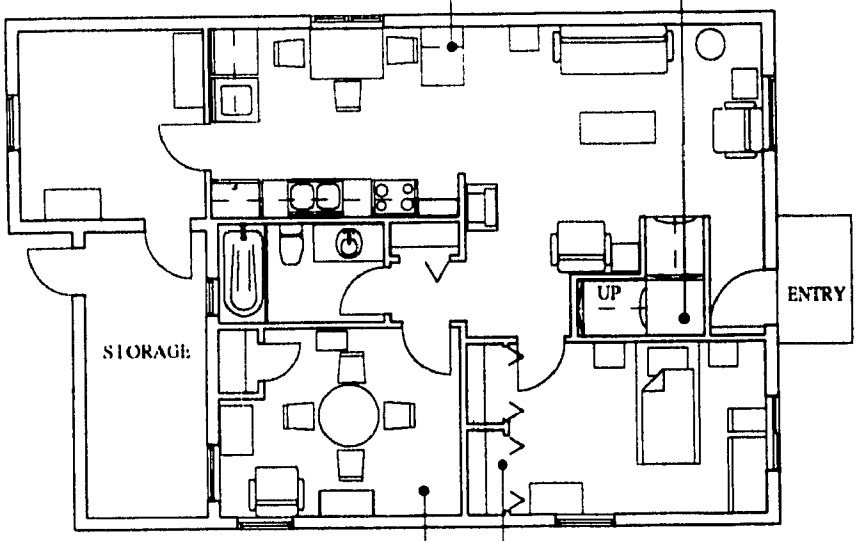
Scale: 0 5



UPPER FLOOR PLAN

A BOOKCASE WAS BUILT OVER THE COUNTER BY THE OWNER. THE OWNER ALSO REMOVED THE WALL BETWEEN THE LIVING ROOM AND KITCHEN TO MAKE BOTH ROOMS MORE SPACIOUS

THE DIRECTION OF THE STAIRS WAS ALTERED SO THAT THE ENTRANCE WAY CAN BE CLEAR FROM HINDERANCES. THIS IS AN NECESSARY MODIFICATION SINCE THE OWNER IS ALMOST BLIND

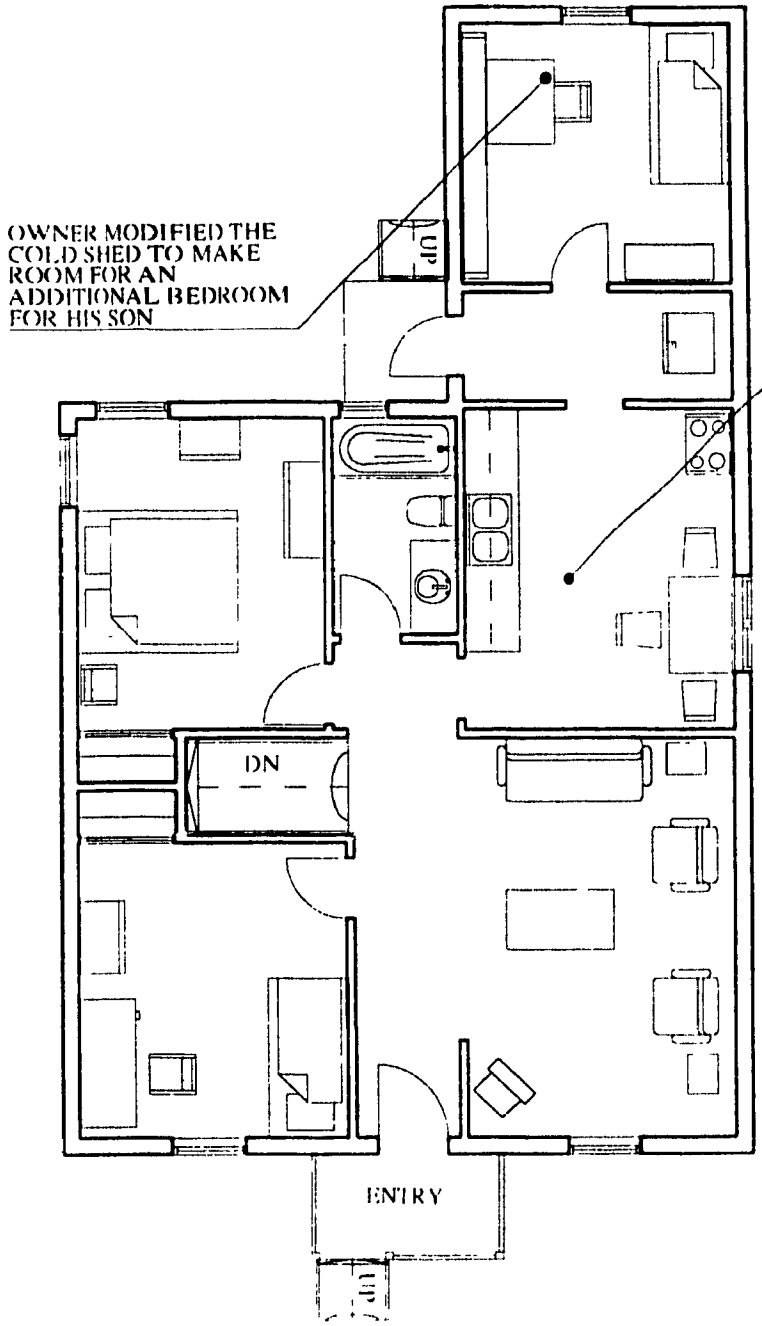


THIS ROOM WHICH USED TO SERVE AS A BEDROOM FOR THE FAMILY HOUSEHOLD, HAS BEEN TURNED INTO A GAME ROOM FOR THE OWNER AND HER FRIENDS. AN EXTRA CLOSET WAS INSTALLED SINCE THE ONE ALREADY PROVIDED IS NEEDED BY THE OWNER IN HER BEDROOM

CLOSETS HAVE BEEN MODIFIED SO BOTH ARE UTILIZED IN OWNER'S BEDROOM

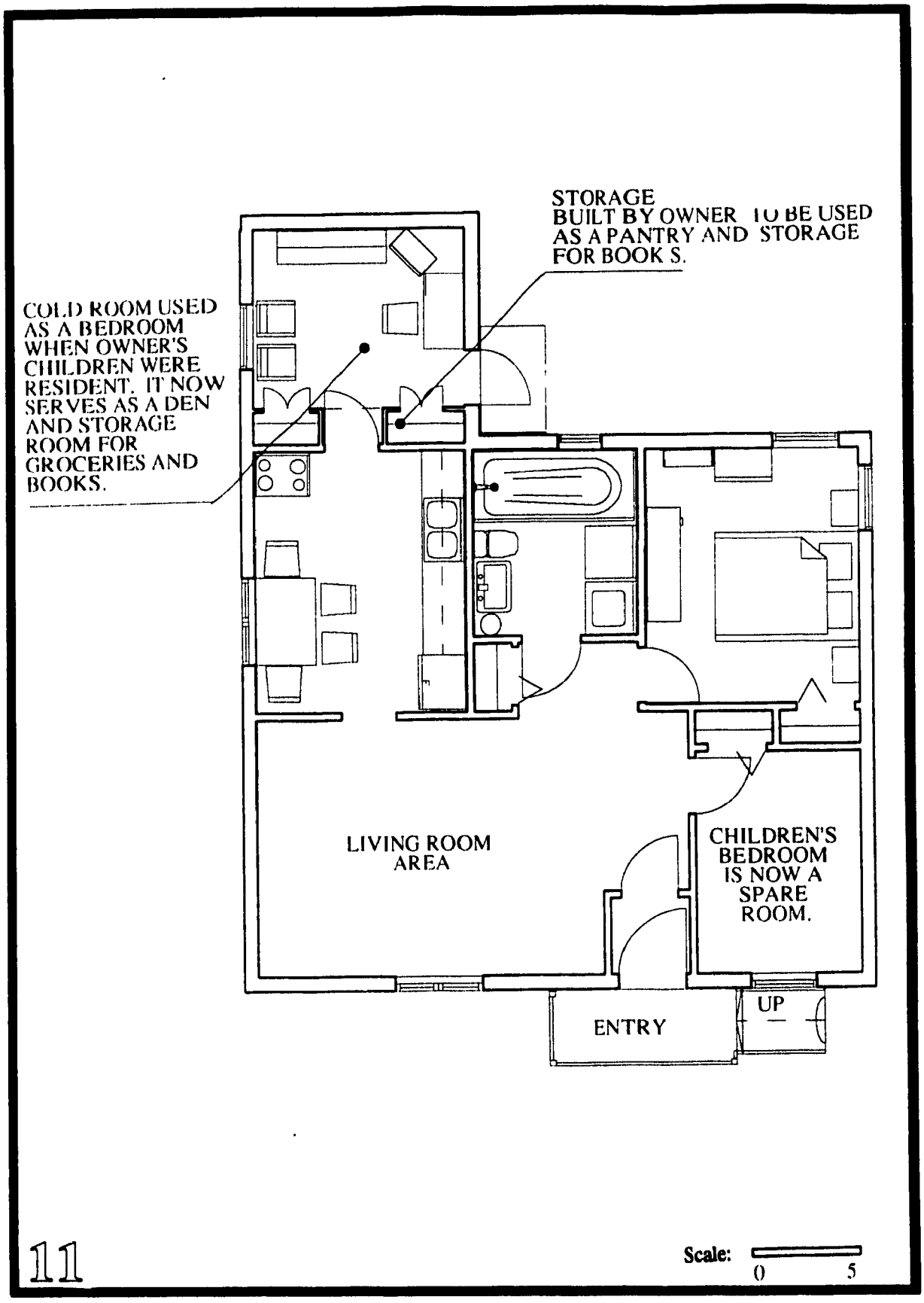
GROUND FLOOR PLAN

Scale: 0 5

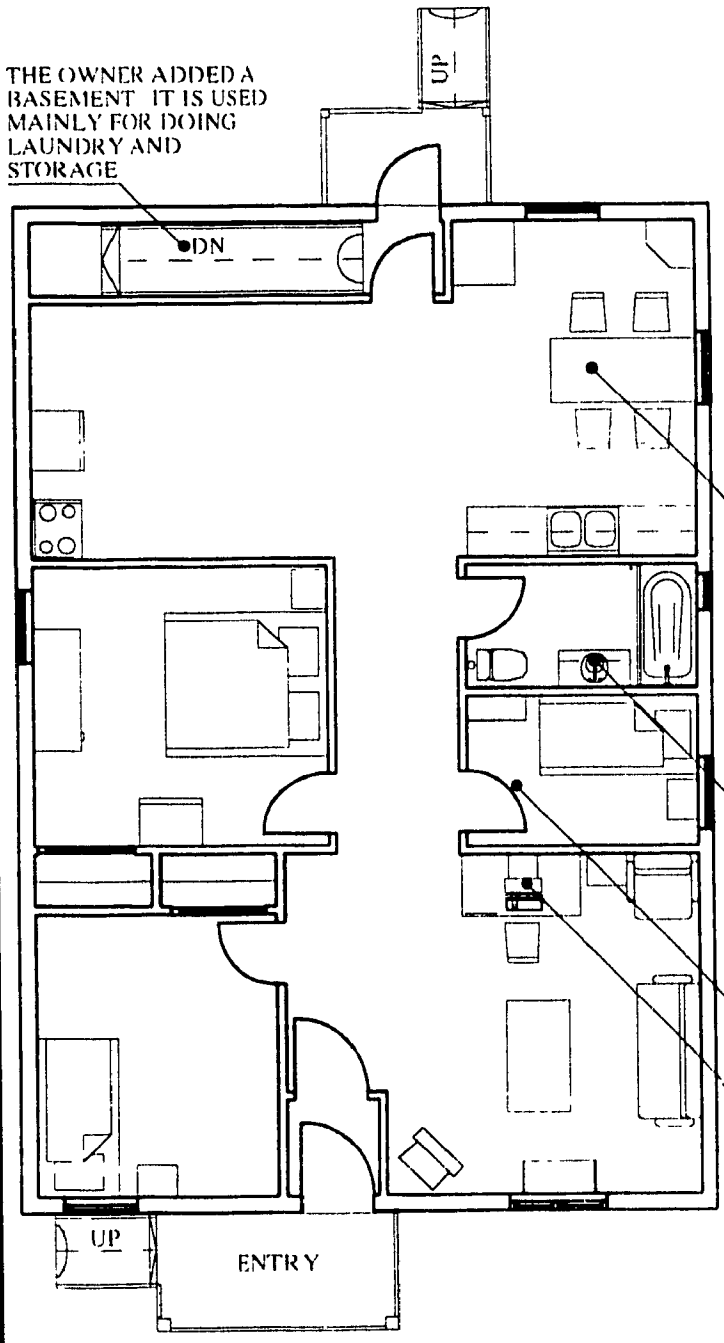

OWNER MODIFIED THE COLD SHED TO MAKE ROOM FOR AN ADDITIONAL BEDROOM FOR HIS SON
APART FROM A PLACE FOR PREPARING FOOD, THE KITCHEN BECAME PART OF THE SEWING ROOM WHEN CHILDREN WERE RESIDENT. AFTER THE DEPARTURE OF THE CHILDREN, THEIR BEDROOMS WERE USED BY THE OWNER'S WIFE FOR DOING HER SEWING
UP
DN
ENTRY
UP

10

Scale: 0 5

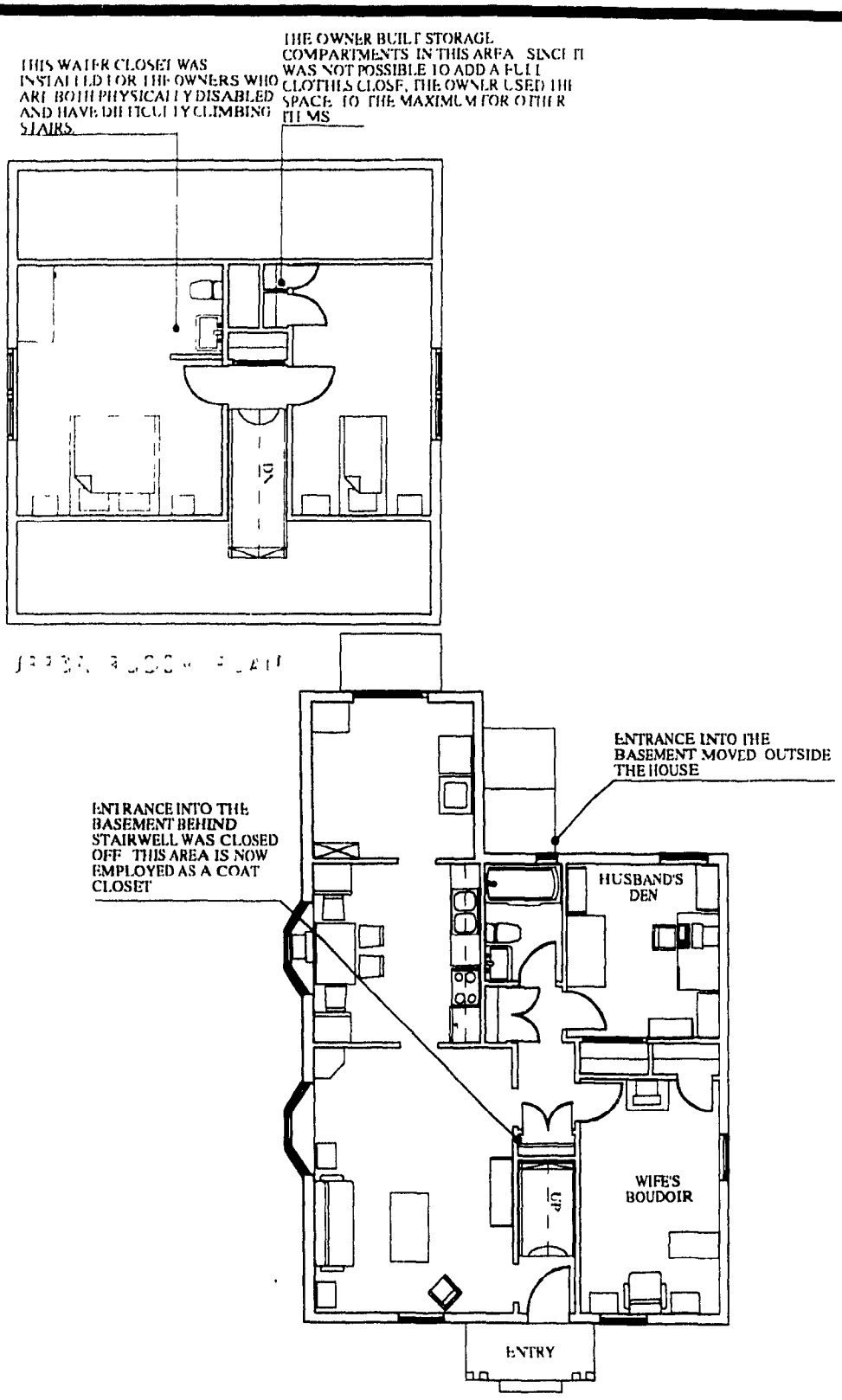

STORAGE
BUILT BY OWNER TO BE USED AS A PANTRY AND STORAGE FOR BOOK S.
COLD ROOM USED AS A BEDROOM WHEN OWNER'S CHILDREN WERE RESIDENT. IT NOW SERVES AS A DEN AND STORAGE ROOM FOR GROCERIES AND BOOKS.
LIVING ROOM AREA
CHILDREN'S BEDROOM IS NOW A SPARE ROOM.
ENTRY
UP
Scale:
0
5

11


THE OWNER ADDED A BASEMENT IT IS USED MAINLY FOR DOING LAUNDRY AND STORAGE
UP
DN
THIS PART WAS ADDED TO THE LAYOUT OF THIS HOME THE COAL SHED WHICH WAS USED AS A BEDROOM BY THE OWNER'S SON, WAS DEMOLISHED TO MAKE WAY FOR A LARGER KITCHEN
A BATHROOM WAS INSTALLED IN ONE PART OF THE AREA WHICH USED TO BE THE KITCHEN CABINETS FOR LINEN WERE BUILT ABOVE THE WASHBASIN ACCORDING TO THE OWNER'S DAUGHTER, BEING PLACED NEAR THE CEILING, THEY MAKE THE BEST USE OF WHAT HAVE BEEN WASTED SPACE
THE AREA WHERE THE KITCHEN STOOD WAS CONVERTED INTO A BEDROOM FOR THE OWNER'S SON AN ARMOIRE WAS ADDED TO SUPPLEMENT THE MISSING CLOSET
THE LIVING ROOM IS ALSO THE PLACE WHERE THE COMPUTER IS KEPT THE BEDROOMS WERE TOO SMALL TO ACCOMODATE IT
UP
ENTRY

12

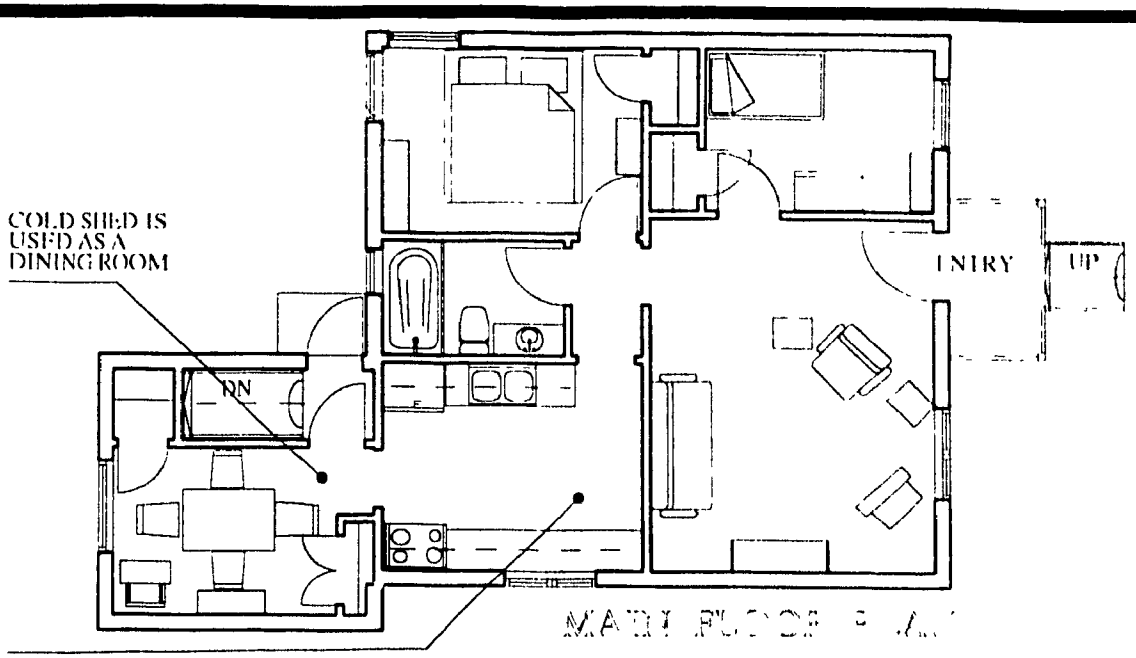
Scale: 0 5



13

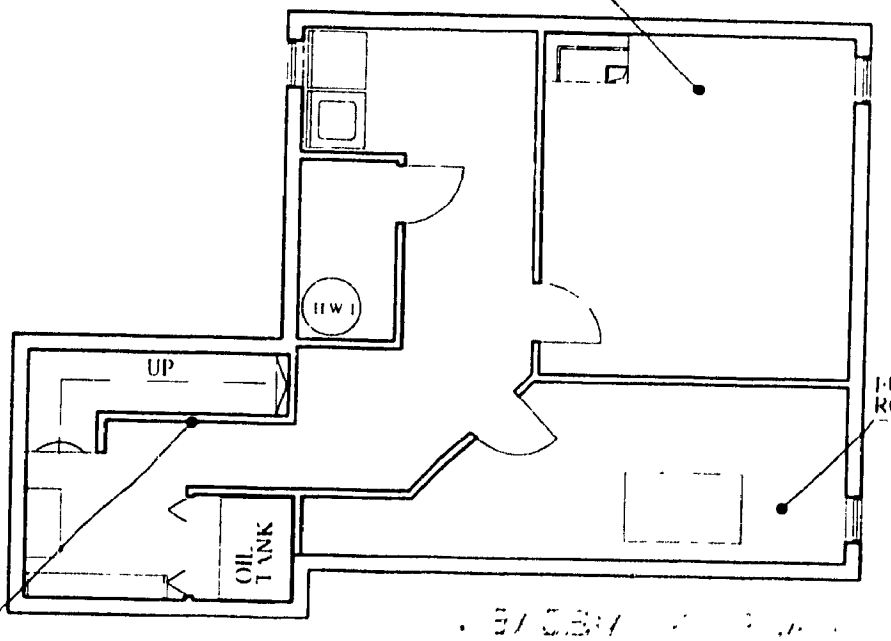
GROUND FLOOR PLAN

Scale: 0 5



THE OWNER RENOVATED THE KITCHEN BECAUSE SHE DID NOT HAVE ENOUGH SPACE TO STORE HER UTILITIES AND ITS LAYOUT DID NOT ALLOW PRIVACY WHEN SHE TOOK HER MEALS. THE LARGE WINDOW IN THE KITCHEN LACKED PRIVACY SINCE SHE COULD VIEW THE KITCHEN OF THE HOUSE ADJACENT TO HERS AND IN TURN, COULD ALSO BE VIEWED BY HER NEIGHBOUR

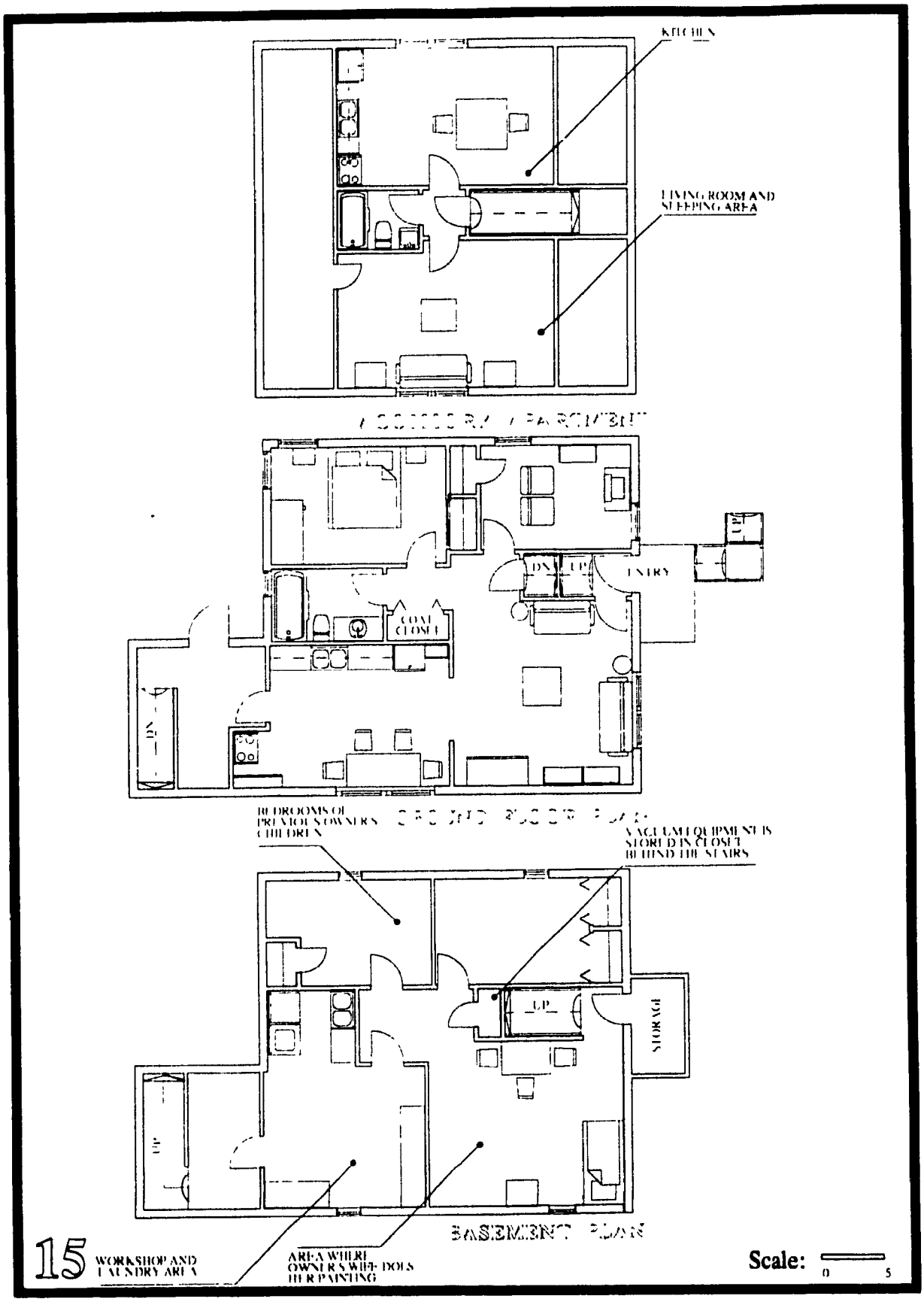
BASEMENT SPACES FUNCTION AS PLACES FOR STORAGE AND PERSONAL OFFICE WORK. IN THIS ROOM, THE OWNER'S FRIEND LISTENS MUSIC



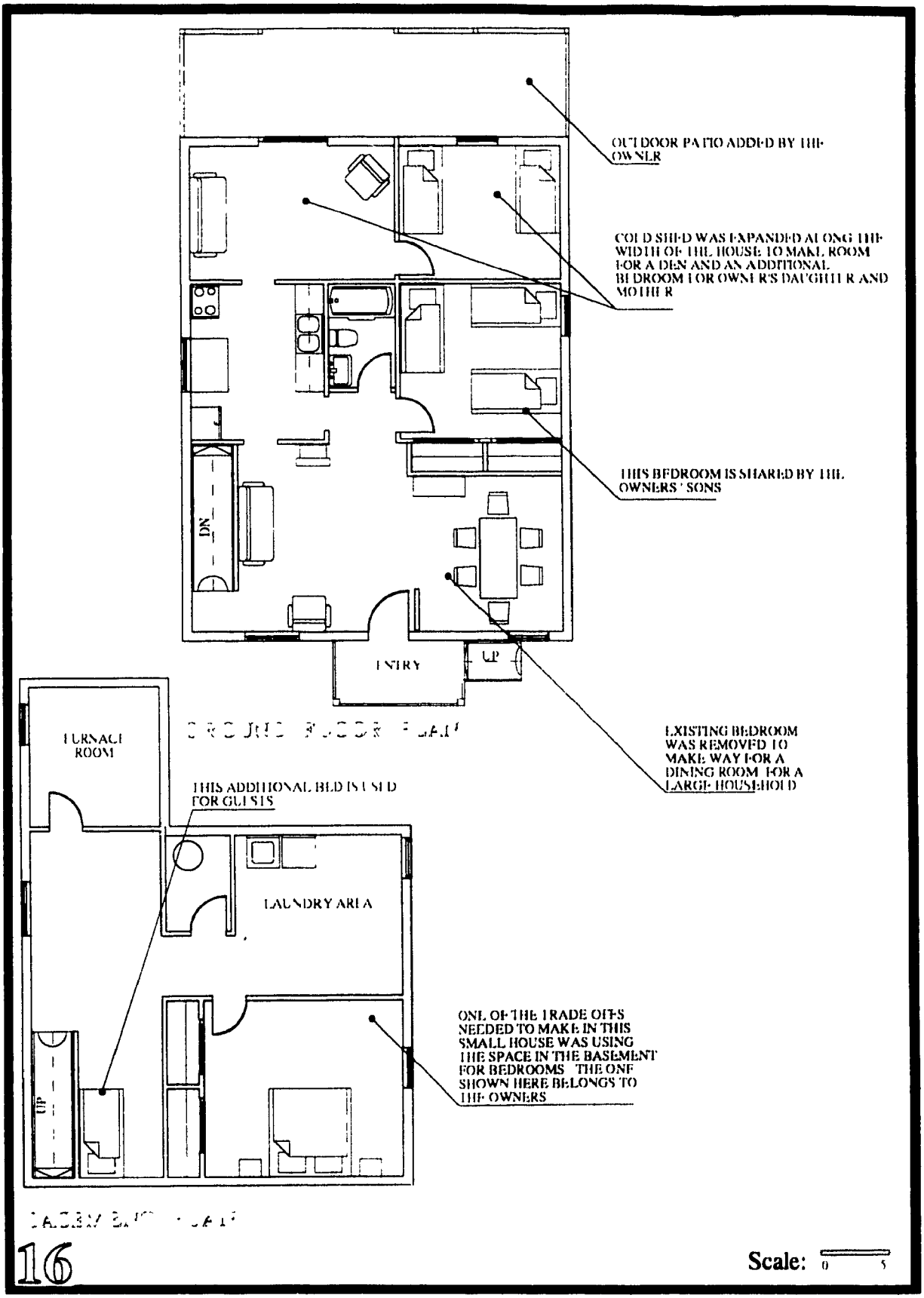
OWNER UTILIZES THE SPACE BENEATH THE STAIRCASE FOR STORAGE.

14

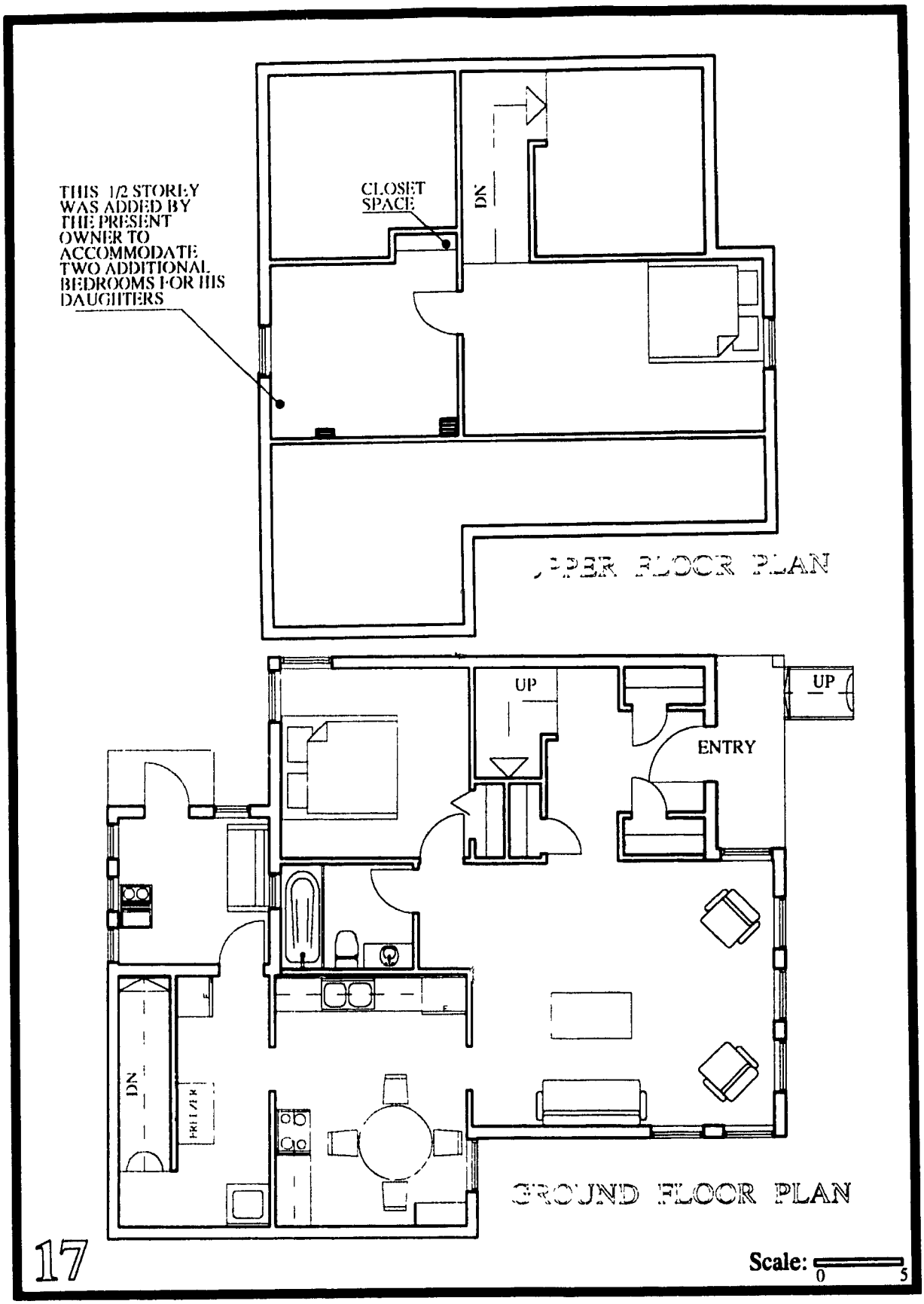
Scale: 0 5

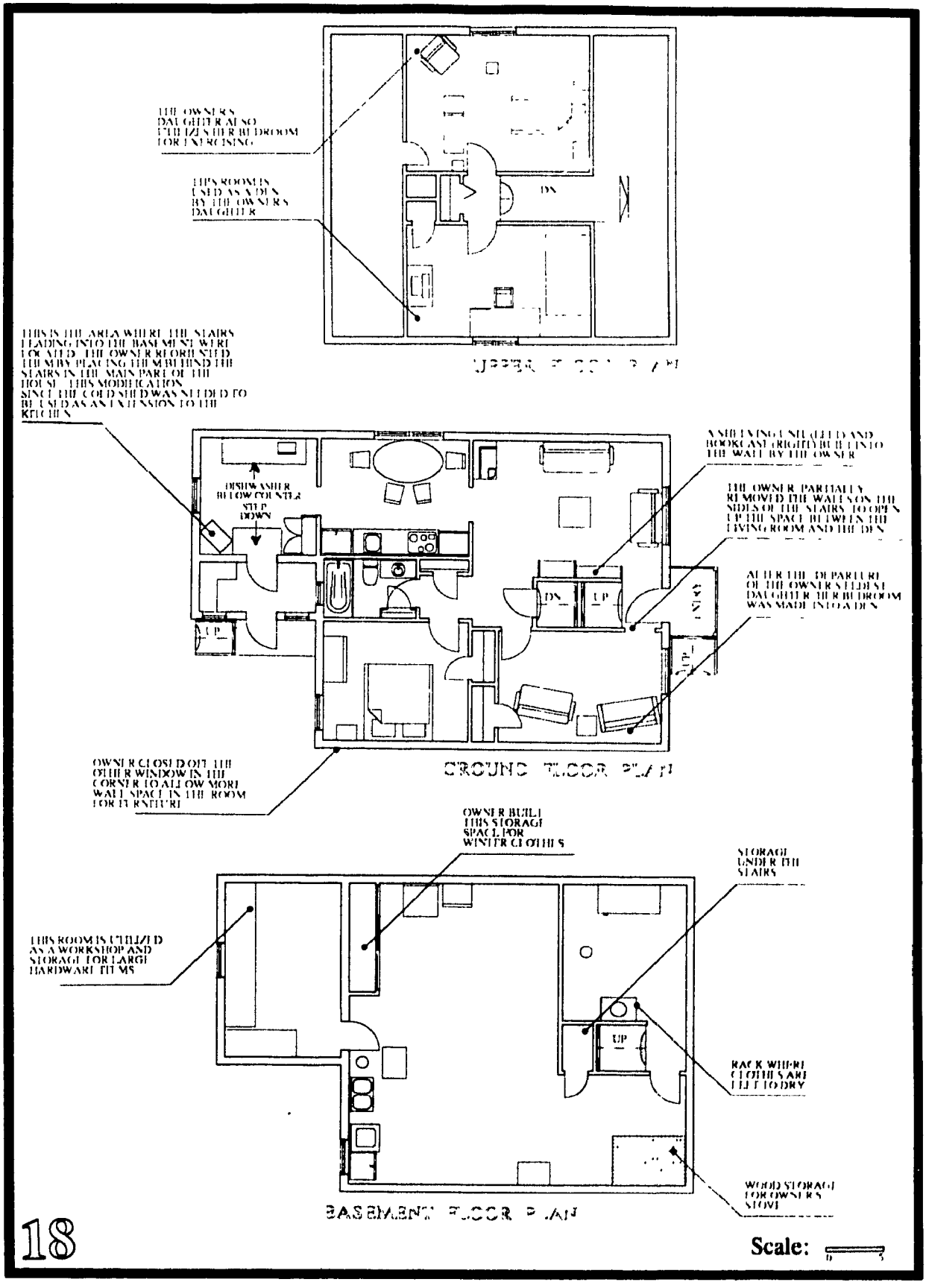


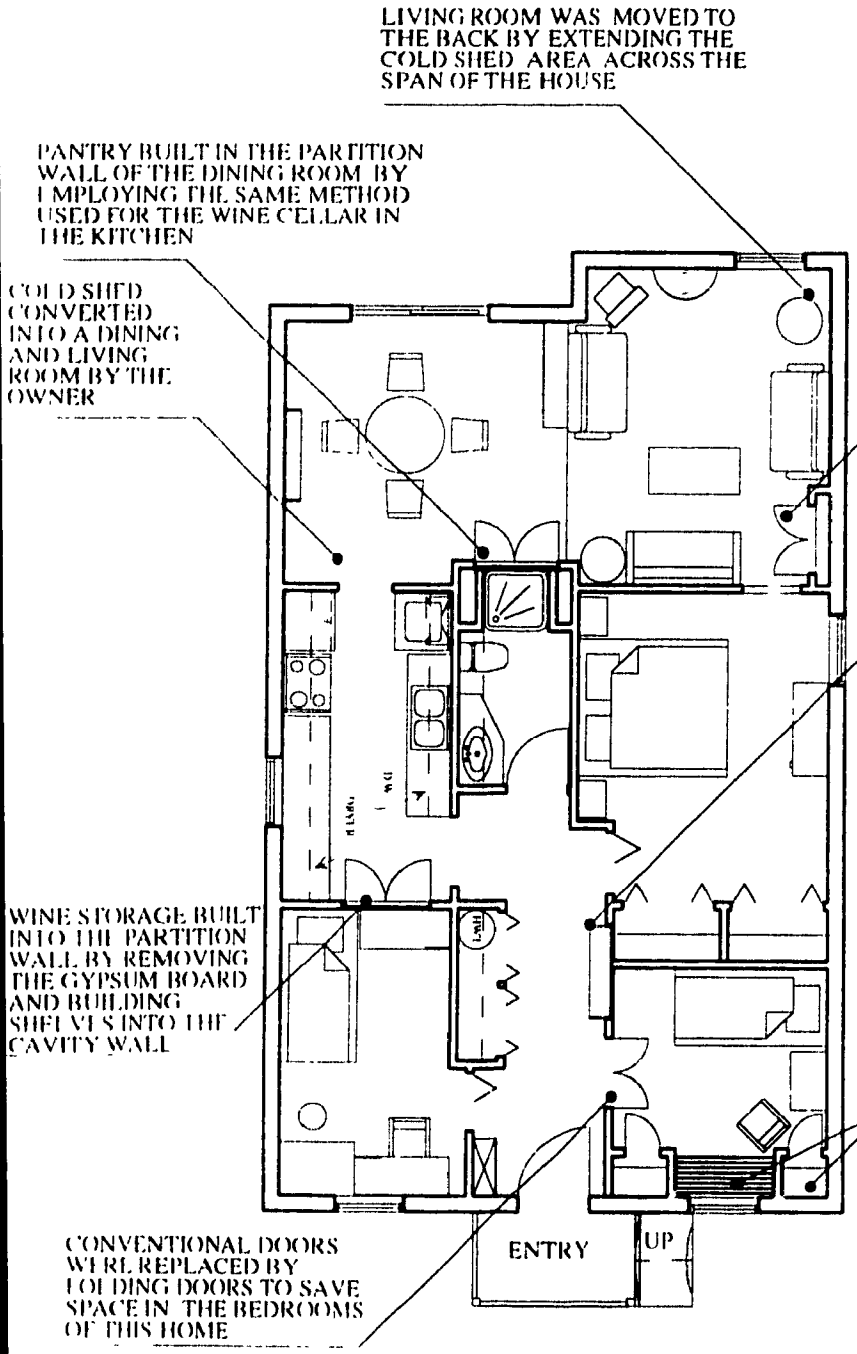
15 WORKSHOP AND LAUNDRY AREA


OUTDOOR PATIO ADDED BY THE OWNER
COLD SHED WAS EXPANDED ALONG THE WIDTH OF THE HOUSE TO MAKE ROOM FOR A DEN AND AN ADDITIONAL BEDROOM FOR OWNER'S DAUGHTER AND MOTHER
THIS BEDROOM IS SHARED BY THE OWNERS' SONS
DN
ENTRY
UP
EXISTING BEDROOM WAS REMOVED TO MAKE WAY FOR A DINING ROOM FOR A LARGE HOUSEHOLD
FURNACE ROOM
THIS ADDITIONAL BED IS USED FOR GUESTS
LAUNDRY AREA
UP
ONE OF THE TRADE OFFS NEEDED TO MAKE IN THIS SMALL HOUSE WAS USING THE SPACE IN THE BASEMENT FOR BEDROOMS THE ONE SHOWN HERE BELONGS TO THE OWNERS
Scale: 0 5

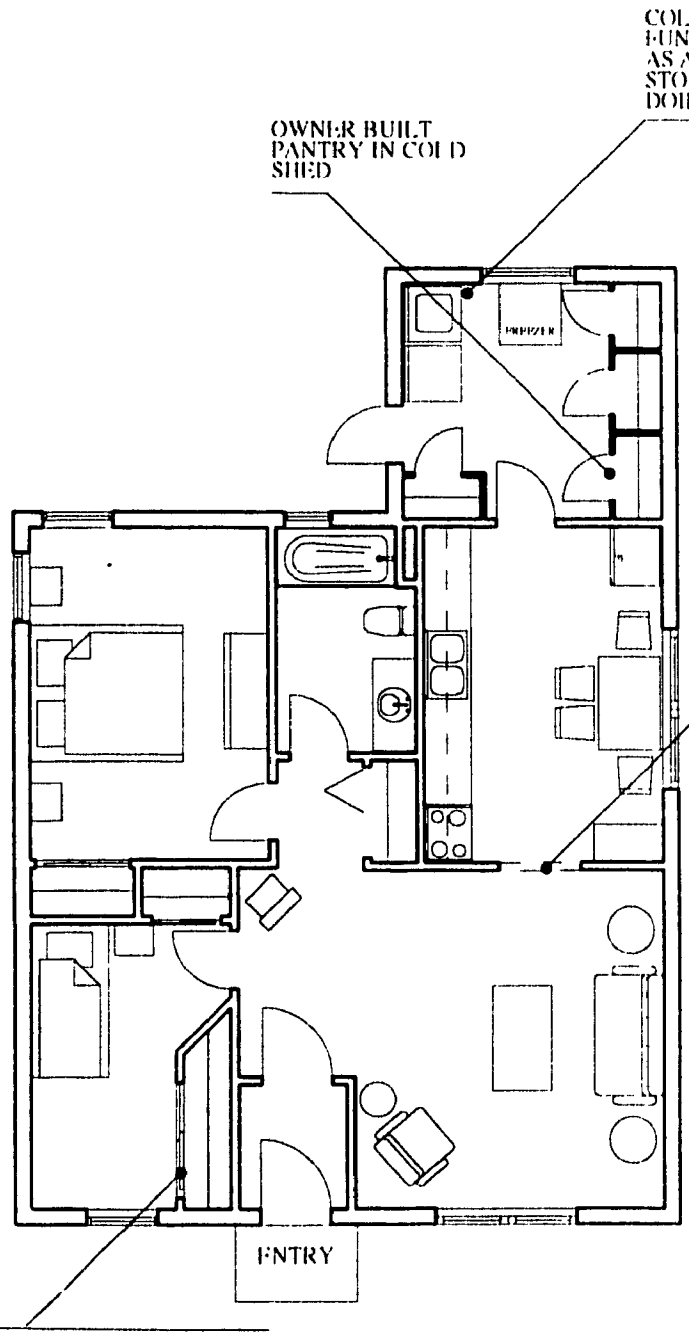
16


THIS 1/2 STOREY WAS ADDED BY THE PRESENT OWNER TO ACCOMMODATE TWO ADDITIONAL BEDROOMS FOR HIS DAUGHTERS
CLOSET SPACE
DN
UPPER FLOOR PLAN
UP
UP
ENTRY
DN
FREEZER
GROUND FLOOR PLAN
17
Scale: 0 5

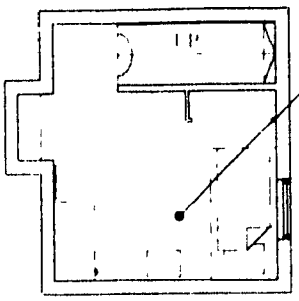

THE OWNERS DAUGHTER ALSO UTILIZES HER BEDROOM FOR EXERCISING
THIS ROOM IS USED AS A DEN BY THE OWNERS DAUGHTER
DN
UPPER FLOOR PLAN
THIS IS THE AREA WHERE THE STAIRS LEADING INTO THE BASEMENT WERE LOCATED. THE OWNER REORIENTED THEM BY PLACING THEM BEHIND THE STAIRS IN THE MAIN PART OF THE HOUSE. THIS MODIFICATION SINCE THE COLD SHED WAS NEEDED TO BE USED AS AN EXTENSION TO THE KITCHEN
DISHWASHER BELOW COUNTER
STEP DOWN
A SHELVING UNIT (LEFT) AND BOOKCASE (RIGHT) BUILT INTO THE WALL BY THE OWNER
THE OWNER PARTIALLY REMOVED THE WALLS ON THE SIDES OF THE STAIRS TO OPEN UP THE SPACE BETWEEN THE LIVING ROOM AND THE DEN
AFTER THE DEPARTURE OF THE OWNER'S EldEST DAUGHTER HER BEDROOM WAS MADE INTO A DEN
DN
UP
OWNER CLOSED OFF THE OTHER WINDOW IN THE CORNER TO ALLOW MORE WALL SPACE IN THE ROOM FOR FURNITURE
GROUND FLOOR PLAN
OWNER BUILT THIS STORAGE SPACE FOR WINTER CLOTHES
STORAGE UNDER THE STAIRS
THIS ROOM IS UTILIZED AS A WORKSHOP AND STORAGE FOR LARGE HARDWARE ITEMS
UP
RACK WHERE CLOTHES ARE LEFT TO DRY
WOOD STORAGE FOR OWNERS STOVE
BASEMENT FLOOR PLAN
Scale:


LIVING ROOM WAS MOVED TO THE BACK BY EXTENDING THE COLD SHED AREA ACROSS THE SPAN OF THE HOUSE
PANTRY BUILT IN THE PARTITION WALL OF THE DINING ROOM BY EMPLOYING THE SAME METHOD USED FOR THE WINE CELLAR IN THE KITCHEN
COLD SHED CONVERTED INTO A DINING AND LIVING ROOM BY THE OWNER
THIS STORAGE COMPARTMENT BUILT BY THE OWNER IS USED FOR STORING SMALL HARDWARE ITEMS AND HIDES THE FUSEBOX INSIDE
BUILT-INS SAVE SPACE IN THIS HOME HERE THE OWNER HAS CUSTOM BUILT HIS OWN BOOKCASE IN THE HALLWAY INSIDE THE PARTITION WALL
THE OWNER BUILT STORAGE COMPARTMENTS IN HIS DAUGHTER'S ROOM--NOW USED FOR HIS WINES. HE ALSO BUILT A DESK BETWEEN THE CLOSETS FOR HIS DAUGHTER THIS IS ONE STRATEGY HE USED IN EFFORT TO ACCOMODATE FURNITURE IN A SMALL ROOM WHICH OTHERWISE WOULD HAVE BEEN IMPOSSIBLE WITH COMMERCIAL FURNITURE
WINE STORAGE BUILT INTO THE PARTITION WALL BY REMOVING THE GYPSUM BOARD AND BUILDING SHELVES INTO THE CAVITY WALL
CONVENTIONAL DOORS WERE REPLACED BY FOLDING DOORS TO SAVE SPACE IN THE BEDROOMS OF THIS HOME
ENTRY
UP

Scale: 0 5


COLD SHED FUNCTIONS BOTH AS A PLACE OF STORAGE AND/OR DOING LAUNDRY
OWNER BUILT PANTRY IN COLD SHED
ENTRANCE BETWEEN LIVING ROOM AND KITCHEN HAS BEEN WIDENED BY THE OWNER TO MAKE BOTH ROOMS MORE SPACIOUS THE TOP SIDE OF ENTRANCE HAS ALSO BEEN ARCHED
ENTRY
CLOSET ADDED BY OWNER FOR ADDITIONAL STORAGE FOR WINTER CLOTHES

Scale: 0 5

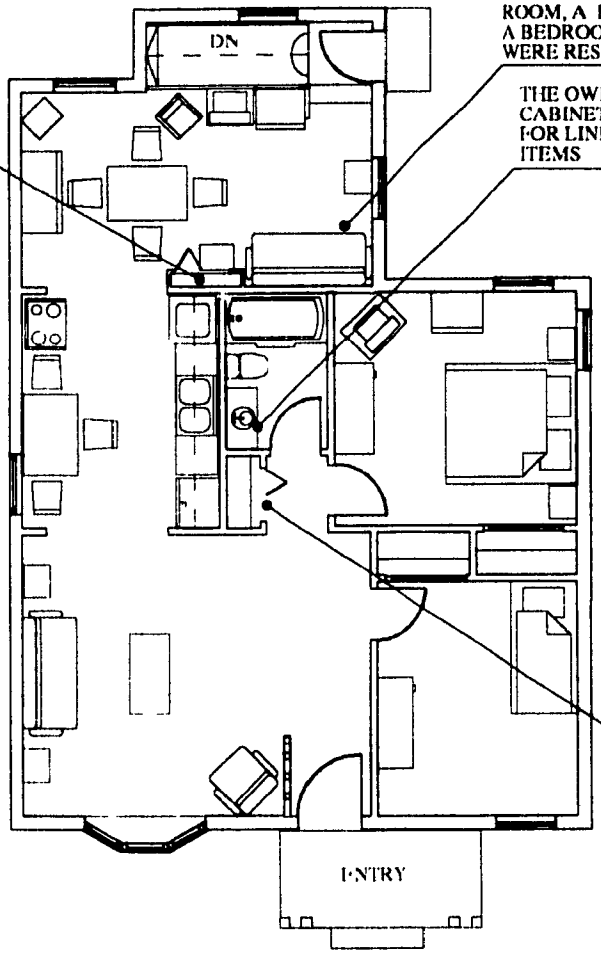


BASEMENT USED AS A BEDROOM BY THE OWNER'S SONS

THE COLD ROOM, EXPANDED BY PREVIOUS OWNER (S), FUNCTIONS AS A DINING ROOM, A FAMILY ROOM, AND A BEDROOM WHEN CHILDREN WERE RESIDENT

THE OWNER ADDED A CABINET WITH STORAGE FOR LINEN AND OTHER ITEMS

STORAGE FOR IRONING BOARD

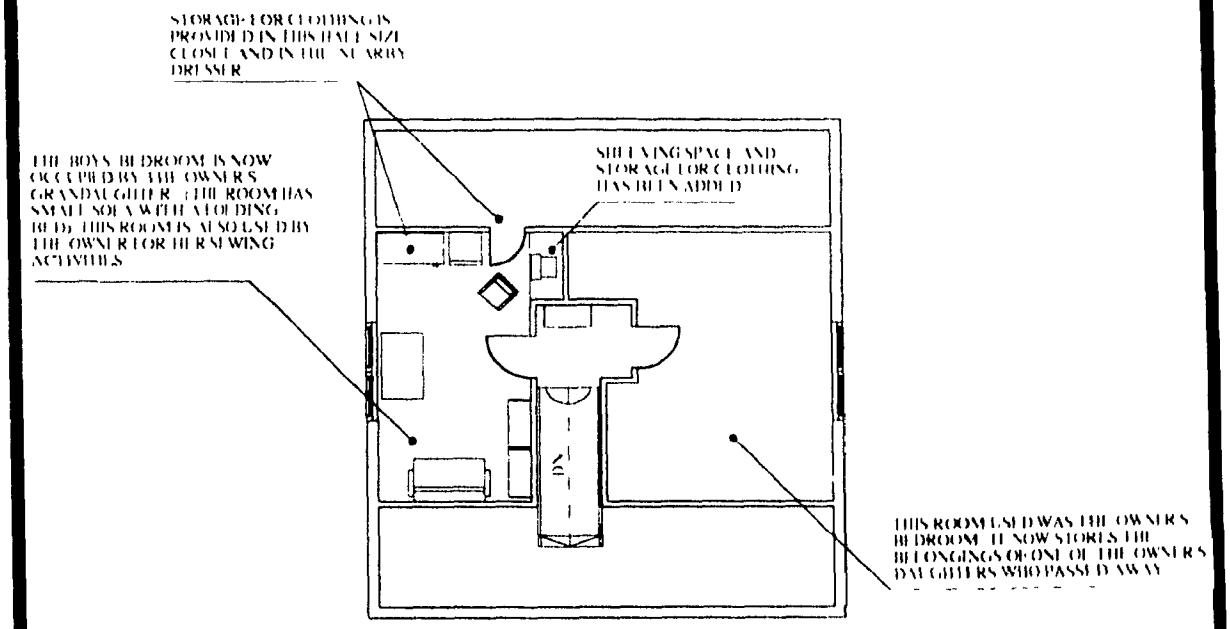


CLOSET NEXT TO BATHROOM IS USED FOR STORING COATS

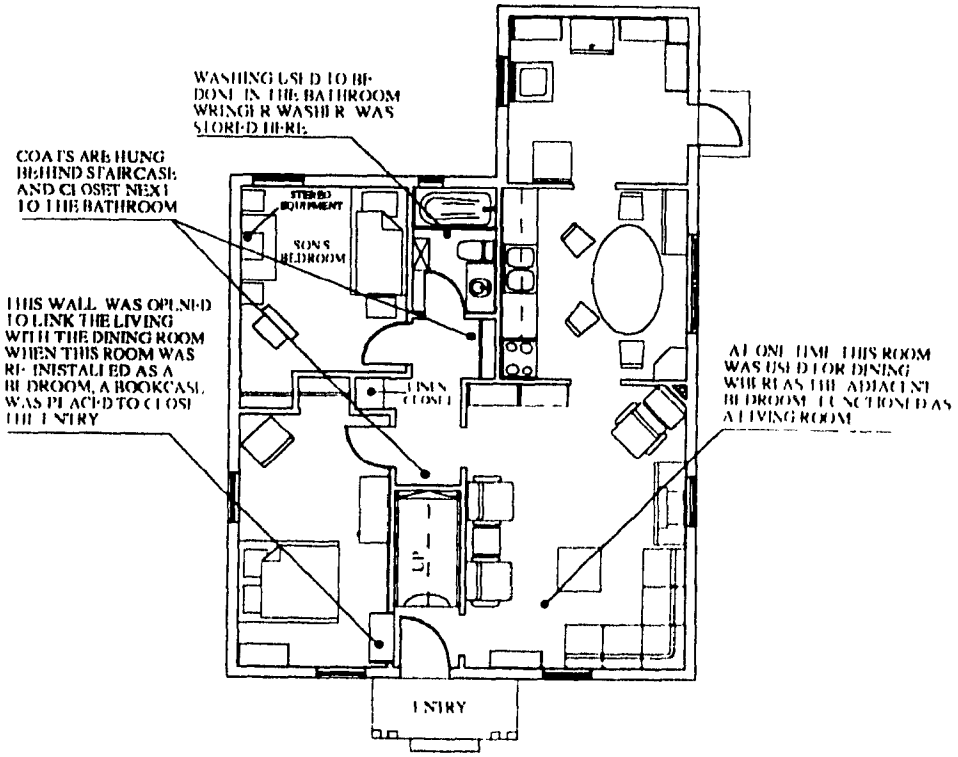
MAIN FLOOR PLAN

21

Scale: 0 5



UPPER FLOOR PLAN



GROUND FLOOR PLAN

Scale: 0 5

TABLE A.2: SUMMARY OF KEY CHARACTERISTICS OF CASE STUDIES

CASE NUMBER	TYPE OF HOUSE	DESCRIPTION OF HOUSEHOLD	YEARS RESIDENT
1	1-1/2 storey Cape Cod Cottage.	Husband (46), Wife (42), daughter (19), and son (16).	7 years.
2	2 storey Cape Cod Cottage with basement.	Retired Couple with adult child (in his 30s).	29 years.
3	Bungalow with basement.	Widow and two twin daughters (10) and youngest daughter (9). Original household included the owner's husband.	15 years.
4	Bungalow.	Retired couple. Original household included four children: two daughters and two sons.	18 years.
5	1-1/2 storey Cape Cod Cottage with basement.	Husband, wife, two sons (12 and 14), and a daughter (9).	18 years.
6	1-1/2 storey Cape Cod Cottage.	Husband, wife, son (24), and daughter (21).	15 years.
7	1-1/2 storey Cape Cod Cottage.	Husband (37), wife (35), son (5), and daughter (3).	4 years.
8	1-1/2 storey Cape Cod Cottage with basement.	Retired couple. Original household included two sons.	24 years.
9	1-1/2 storey Cape Cod Cottage.	Elderly woman and her daughter (59). Original household included owner's husband, three daughters, and a son.	50 years.
10	Bungalow with basement.	Retired couple. Original household included a daughter and two sons.	42 years.
11	Bungalow.	Retired couple. Original household included four daughters and a son.	40 years.
12	Bungalow with basement.	Elderly woman with daughter (40) and son (50). Original household consisted of a daughter and a husband.	50 years.
13	1-1/2 storey Cape Cod Cottage.	Retired couple. Original household included a daughter.	13 years.
14	Bungalow with basement.	Woman living with her baby and boyfriend.	10 years.
15	1-1/2 storey Cape Cod Cottage with basement.	Couple. Upper floor is rented as an accessory apartment by a single man.	4 years.

CASE NUMBER	TYPE OF HOUSE	DESCRIPTION OF HOUSEHOLD	YEARS RESIDENT
16	Bungalow with basement.	Husband, wife, mother-in-law, three sons (11, 10, 9), and a daughter (6).	5 years.
17	Bungalow with basement with 1/2 storey added by owner.	Couple nearing retirement. Original household included two daughters and a son.	14 years.
18	1-1/2 Cape Cod Cottage with basement.	Husband, wife, daughter (18). Original household included another daughter.	22 years.
19	Bungalow.	Husband, wife, and son (19). Original household also included a daughter.	23 years.
20	Bungalow.	Couple nearing retirement.	50 years.
21	Bungalow with basement.	Woman (66) living with her mother (85). Original household consisted of two sons and her husband.	13 years.
22	1-1/2 Cape Cod Cottage.	Woman living with her son (35) and her grand-daughter (13). Original household consisted her husband, their nine children and her parents.	50 years

( ) Denotes age of household member.

Case Study 1

The house in study is a 1-1/2 storey Cape Cod Cottage measuring 26 x 30 feet (7.8 x 9 meters) occupied by a family of four: husband (46 years), wife (42 years), daughter (19 years), and son (16 years). Their household composition has remained unchanged since they moved in seven years ago.

There are a few minor modifications executed in this home in effort to suit the needs or preferences of the owners. The partition wall with its closets between the two small bedrooms on the main level was demolished so that the rooms could be merged together into one large main bedroom for the owners. A large double closet was built in this bedroom to supplement the closets removed by renovations. One innovative addition to this closet is its side wall which although looks like a permanent wall, is actually a door which opens to a full height cabinet that stores stereo equipment and cassettes.
According to the owner, the biggest problem in this home is coping with the lack of storage. There were storage additions made in all bedrooms, notably in the children's where there are half size closets.

Another type of renovations in this house are those made to give rooms a feeling of spaciousness. Some entrances were modified to achieve this effect: The owner removed the conventional pivoting door of the main bedroom and replaced it with a sliding door to save space in the room. The partition wall between the kitchen and living room was converted into a mid-wall with columns. The bay window in the living room which was installed by the previous owner(s) also appears to have been added for the same purpose. A small coat closet which was located next to the main entrance was closed off completely and became part of the wall in effort to remove any obstructions in the small entry area. As a trade-off, the area behind the stairs now serves as a temporarily as a coat closet.

The backyard in this case study being furnished with outdoor (patio) furniture, is an extension of living space. The owners have also added a swimming pool and built a large cabin which is used as a workshop, for playing darts, for storage, and a bedroom for the owner's son during the hot summer nights. The husband uses the cabin all year round for his personal pursuits. His wife the other hand likes to spend her own free time sewing in her son's bedroom where she also keeps her sewing machine.

The interviewee stated that she and her husband never required to make major adaptations to their home to meet their changing needs and those of the children. Bedrooms for the children were suitable places both for private study and leisure. The owners are generally satisfied with their home with the minor exception of the kitchen and bathroom which were found them to be too small for a family household.[1] Overall, they believe that their home has been a good investment since they are paying between $300 to $400 monthly for their own home.[2]

Case Study 2

This house has been slightly modified, converted from a 1-1/2 storey Cape Cod Cottage into two stories. Its outer dimensions are intact, roughly 24 x 25 feet (7.2 x 7.5 meters), however its living space area has increased to 1200 ft^2 (120 m^2--excluding basement). The lower floor consists of a living room, a dining room, a washroom, and an eat-in kitchen. The upper floor has three bedrooms, a larger bathroom and a walk-in closet. The basement which is used for storage, laundry, also incorporates a small wine cellar the owner built for entertaining friends. The household is a family of three: the owner (over 55 years of age); his wife (also over 55 years of age); and his son (in his thirties). The owner stated that he moved into this home for reasons of price suitability, close proximity to work; and good location. Dominion Structural Steel

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[1] It should be noteworthy to add her that this is not the first time she has lived in a wartime house. Her parents acquired a home like this and raised a family of six children. It is not uncommon to find the children of the owners of wartime homes returning to the neighbourhood to acquire a house of their own. This was encountered twice in the Montreal-East survey.

[2] Total household income is between $40,001 and $60,000.

Limited, where the owner worked, used to be located in the neighbourhood area. Resident for 29 years, the family moved in after the birth of the second child.

The household composition changed when owner's step daughter moved out in the mid-1960s. Shortly after her departure, the owner proceeded with renovations on his home by largely modifying the roof/attic space on the upper floor and changed the layout of the ground floor: Three bedrooms, more closet space, and a larger bathroom, were fitted on the upper floor whereas on the ground floor the master bedroom was converted into a dining room and alterations were made to the existing bathroom. All renovations were laid out by the owner who by trade is an engineer's apprentice.

Despite the changes made to his home, the owner still considers its size to be an inconvenience. Storage remains to be the biggest problem for the owner's family. In rooms where it was available, it was found to be insufficient inspite the added storage areas. The kitchen which was not renovated lacked storage and pantry space and according to the owner, another "10 linear feet (3 meters)" was necessary for his family needs. The owner's bedroom which had a large walk-in closet, also needs another "10 linear feet (3 meters)". Furthermore, it was also pointed out that even the other bedrooms in the home require an additional 5 linear feet (1.5 meters) for clothing, boxes, and bedding". As a trade-off for the lack of storage space, many storage articles were moved to new locations: Extra storage spaces in the bathroom on the upper floor were used for pots and pans and other utilities that could not be fitted in the kitchen. The closets in the corridor and basement are the areas were used by the owner's son to store his extra clothing and other personal items.

Smallness of rooms was another high ranking problem. The kitchen (13 x 8 feet or 3.9 x 2.4 meters) was considered "too small" and had very little movement area between appliances. The occupants would have preferred a larger and more spacious kitchen with a logically designed working space (the in-line shape counter installed in this small kitchen does not have room to allow these appliances, like a refrigerator and a stove, to be tucked into "out-of the way" spaces without wasting floor area--refer to case study floor plan), more cupboards, a pantry, and a broom closet. A bench and table area was built into an alcove in one corner of the kitchen. It would be noteworthy to mention here that this box-like bench was designed by the owner to store canned food items and supplies. Its seat can be raised and items can be hidden underneath.

With the absence of a much needed family or quest room, the living room serves both a informal and formal room (he disliked the entrance into the house for reasons that circulation traffic passes through the living room). Watching television, listening to music, and playing with dogs are typically the activities that take place in that part of the house. Bedrooms although they too were regarded too small, is where the majority of residents' leisure time was spent. Five out of six leisure type activities mentioned by respondent took place in bedrooms. Whether it was reading; watching television; listening to music; personal hobbies; and playing with dogs; bedrooms were the most resourceful areas. The basement was considered too small to fulfil the family's spatial needs for recreation since a large part of it is used to store clothing and furniture that cannot be fitted on the main areas of the home.

The owner stated that if he had the opportunity to purchase another home he would acquire one that would meet his storage needs; possess a larger den, family, and quest room to pursue different personal activities; a large modern kitchen; and a garage for storing away the family car from the weather. The owner expressed that he is somewhat unsatisfied with his home and has tried on one occasion to sell it. The large-scale renovations performed in this home demonstrates the sentiment that most owners share about their modest wartime home. Although this home is not what they really wanted, they could invest money to improve it to their own liking through time.

Case Study 3

This one-storey bungalow home measures less than 1000 ft^2 (100 m^2--excluding the basement). The four person household consists of a widowed mother and her three daughters (a pair of twins aged 10 and a the youngest aged 9). Resident for 15 years, the owner bought this type of house for reasons of price and

location. After having moved into this home recently after marriage, a number of notable changes have taken place in her household, namely the birth of the children and the illness and subsequent death of the owner's husband. During the course of these events, the minor modifications were made to this home such as updating the bathroom and kitchen facilities. The sizes of the rooms have retained their original dimensions, with the only change being that the common entrance between the living room and kitchen has been widened to make both rooms more spacious.

The main problem encountered by owner of this home is the smallness of the rooms, namely the kitchen. She would have been more satisfied with a larger kitchen with more dining space. Basic appliances alone take up most space in the kitchen. The owner has been considering to extend the kitchen further in the back yard to make it larger for a dining room. The problem of the smallness of the rooms would develop as her daughters grow into teenagers and require more personal space. At the moment these girls share one small bedroom in which their mother has managed to fit in a bunkbed and a standard bed for them. The owner would have also preferred to have the bedrooms located the upper level of the home so that the private and public spheres do not overlap. An extra bedroom in the basement was also an necessity for the family. According to the respondent, *"there's always someone that needs it"*--this is especially relevant in households where children are present.

The family's leisure activities are centred around the kitchen and living room areas. Their basement has a laundry room large storage compartments which compensate for extra items. It also a possess enough space for personal office where the owner looks after her finances and an extra (guest) bedroom with a full size fireplace. The owner stated in the interview that she lacked enough space for a recreation room in her the basement for the children.

Several conclusions can be drawn form this analysis. Observing the difficult financial situation which often characterizes single parenthood, the owner has little means to improve her home insofar as space demands are concerned or move into a larger accommodation. Secondly, the lifestyle of the members of this household is that which is largely focused outside the home. The mother is a full time worker and her daughters are either in school or at a babysitter. Therefore only a small part of their daily lives is spent at home, mainly in the early part of the day and later in the evenings. Their space needs at this stage in their life are not as large as may be expected in a large family. The owner is also gets the opportunity to enjoy some privacy since she remains at home alone after work alone with enough time to prepare evening meals for the children (who are at a babysitter's) and relax.

Case Study 4

This is a one-storey bungalow measures 24 x 38 feet (7.2 x 11.4 meters). The occupants of this home are a retired couple, both over 65 years of age, who have been resident for 18 years. In 1974, the year the couple moved, there were a total of six persons in their household: the owner, his wife, their two daughters, and two sons. The main reason why this owner had chosen this particular home was because landlords would refuse him rental accommodation for his large family.

Initially this was a three bedroom house but since occupancy, the owner has made some minor modifications to the layout. The cold shed which is located next to the kitchen was converted into a bedroom for his youngest daughter. It was arranged so that the largest bedroom would be reserved for two children (of same sex) and the smaller bedrooms by one child. His sons shared the largest bedroom and the eldest daughter had the bedroom next to the living room. At that time, their eldest child was 20 years of age and the youngest, being 11 years of age. Hence, the wide differences in ages eased the family's spatial needs particularly in relation to bedrooms. Two years after the owner and his wife settled in their home, the eldest child (a daughter) moved out. Her bedroom was passed down to the other children in the household and eventually after everyone's departure, it was converted into a dining room. Also, with the parting of their last child, the cold shed which was used as a bedroom was remodelled to a den or a spare room for guests. Therefore, the age differences between children made bedrooms very adaptable and according to the owner's wife, *"bedrooms were a good source for the children"*.

The owner's wife disliked the design of the bathroom and kitchen. In reference to the kitchen, she stated that she would have liked to remodel it. Its in-line type layout and the shape of the room leaves the stove and refrigerator in an awkward position which hinders the drawers and cupboards (refer to the floor plan of this case study). The same can be said about the design of the bathroom. Like most bathrooms found in war-time housing, it measures 5 feet wide by 7 feet deep (1.5 x 3.5 meters). What sets this one apart is the location of the fixtures: the bathtub and sink is placed on the longest wall facing opposite to each other; and the toilet stands on the shortest wall, between the bathtub and sink. This allowed very little movement space or design options (refer to plan of this case study).

Leisure activities for the couple are mainly centred in the living room area. The couple were satisfied with their home and believed that it is more suitable for them in their retirement years. The fact that everything is on one level makes it very convenient for elderly who grow less mobile with age.

Case Study 5

This is 1-1/2 storey Cape Cod Cottage measures 25 x 25 feet (7.5 x 7.5 meters) and has a basement. Its household is a family of five: owner, husband, her two sons (aged 14 and 12), and a daughter (aged 9). A resident for 12 years, the owner moved into this home because she liked the Ville St-Laurent district and wartime housing in her neighbourhood. The owner has not made any major modifications to the layout of the home apart from adding more room in the basement by removing its second staircase. Additions such as the basement and extra washroom were installed by a previous owner. As observed in other homes, the entrance of the kitchen through the living room was also widened so that both rooms will appear more spacious.

Some of the most positive aspects of this home for the owner and her family was the fact that the kitchen was big and possessed enough storage for their needs. This is even a more important to the owner since it is where she spends the most of her time working. Another was the good lighting given off by the windows of this home. Bedrooms were deemed the most resourceful areas for the children in the family. With each child possessing his/her own bedroom, more personal space is available to undertake their own activities. Apart from accommodating for sleep, these rooms provide a place for play: one will find in them an extra television set, Nitendo game apparatus and a computer. The owner however is not fully satisfied with the bedrooms in this house because they are "small" particularly those in the attic. Their sloped ceilings hinder the arrangement of furniture.

The owner also pointed that she would have preferred that all bedrooms were on the upper floor in order that the private zones are separated from the public zones in the house. The main entrance of the home leading into the living room is reserved for guests only. Since the living room functions as a parlour, family members are obliged to use the entry from the shed behind the kitchen.

The basement is used as a den and laundry area. It is also mainly the husband's domain. This is the area where he watches television and pursues his personal hobbies. Storage was a problem as observed in other wartime homes namely in the attic bedrooms where there exists only half size closets. The owner stated that her family requires double of what is already available.

Case Study 6

This 1-1/2 storey three bedroom Cape Cod Cottage is owned by a family of four: owner (over 55 years), wife (45 years), son (24 years), daughter (21 years). They have been living in their present home for 15 years. According to the owner's daughter (who was the interviewee) the sole reason which motivated her father to purchase this home was because her uncle lived nearby. The reputable Ville St-Laurent district was yet another incentive.

In 1991 the owner modified his home by demolishing the shed behind the kitchen and in its place, he re-built a room to accommodate a bigger eat-in kitchen. He also added a pantry closet large enough to

store his washer and dryer. The new kitchen is regarded as one of the most positive aspects by the resident of this home. The small room next to the living room which used to be kitchen was converted into a family den. It is where the family watches television and the mother of the interviewee does her sewing. The living room is furnished very formally and functions as a parlour for special occasions. Another typical modification made to this wartime house was widening the entrance into the den (the former kitchen area) from the living room to give both rooms the appearance of a larger space.

In terms of entertainment, the wartime house is very limited Both parents and children encounter this difficulty and have expressed their need for a place in the home for this activity: The parents would like to have a formal dining room for special occasions whereas the latter, a basement where the youth can do their own entertaining would be ideal. Without a basement, the interviewee reflected, *"it's difficult when friends come over"* since *"you can't send your parents to their room."* Aside from entertaining, accommodating friends and relatives at home for extended periods of time poses even a greater problem--as was experienced by this family when an aunt had stayed with them for a year.

Storage space was also found to be a problem for this household. Bedroom closets of wartime houses are often filled to capacity particularly in cases where there exists a family scenario such as this one. Furthermore, the removal of the cold shed created more storage problems and now the owner has no place for storing the large equipment like the lawnmower or bicycles. The lawnmower is now kept in the trunk of his car and the bikes are left in *"the neighbour's shed, next door"*. This was one trade-off the owner had to make for a larger kitchen it can however, be remedied with the installation of a large cabin in his large backyard.

Case Study 7

This is a 1-1/2 storey Cape Cod Cottage whose household is a young family of four: owner (35 years), husband (37 years), son (5 years), and daughter (3 years). They moved into their home four years ago, after the birth of the first child. They purchased this home for reasons of price, location and the fact wanted to have a home with a backyard their children could have access to play in. This home has additional features such as a sun room at the front entry, a washroom on the upper floor, and a wood burning stove in the living room. The partition wall between the living room and the kitchen was eliminated by a previous owner to combine the two rooms. This feature is necessary for the owner because she needs to monitor the activities of her small children while working in the kitchen.

The owner found the eat-in kitchen small with very little movement space and room for seating. She also encountered it to be even more difficult to accommodate guests for dinner, birthday parties and holiday entertaining. Usually for these events, if it is summer, children's parties will be held outdoors in the owner's yard. During the winter however, she uses both the living room and kitchen.

According to the owner, the lack of storage was the most difficult aspect in coping with the smallness of this home. The fact that attic bedrooms have no standard closets built in them (the main bedroom has a half size closet) is a major inconvenience for her. When she initially moved into her home, she did not anticipate that their storage needs for children's clothes and toys would double with time. The owner pointed out although she purchased armoires to store children's clothing, the slope of the ceiling in the attic bedrooms makes furniture arrangement difficult. In her opinion, bedrooms are generally small and *"become very cluttered once furniture comes in"*. Finding storage for bigger equipment proves to be even more difficult. The tool shed available in the backyard can only accommodate her husband's tools and a lawnmower. She had no other option but to leave her gas barbecue and toys (i.e. slide, plastic bikes) outside all year round which consequently, incur damage from weathering.

There are however, some aspects which the owner liked about her home. The extra bathroom on the upper floor is very convenient for her son at night since it is located next to his bedroom. She also likes the fact that her laundry room is located in the cold shed behind the kitchen and does not have to go to another level of the house to do her washing. Her husband also favours the enclosed veranda since is a suitable place for him to smoke and relax. He also enjoys watching pedestrians from there.

The owner does not plan to remain in this house in the near future because overall it does not meet the growing needs of her young family. Instead, she would like to have a home with generous closet space, a bigger kitchen, a finished basement, and larger bedrooms that would accommodate all sizes of furniture. She also stated that she and her husband do not possess the skills to improve this home through renovations.

Case Study 8

This is 1-1/2 storey Cape Cod Cottage measuring 24 x 30 feet (7.2 x 9 meters). Its occupants are a retired couple who have been the owners of this home for 24 years. When they moved in 1968, they brought with them their two sons. Their household composition changed when each son began leave home: the eldest in 1975 and the youngest in 1982. The owner purchased this home primarily because of price and the fact that there was no downpayment required at the time; and secondly, because he was a worker at Canadair and wanted to reside near his job.

There have been two major modifications made to this home: The cold shed in the back of the kitchen was expanded to accommodate a larger kitchen. The fact that its now bigger is very much favoured by the owner's wife. After the departure of the eldest child the owner combined the two bedrooms on the main level into one to create a sizeable "master bedroom". He replaced the two closets in this bedroom with a larger closet with sliding doors. He also modified the shape of the room where next to the closet of the master bedroom is a 3 x 7 feet (1 x 2.1) deep coat area (refer to floor plan for case study).

Insofar as storage was concerned, the owner feels that what already exists has been adequate for his needs. This can be attributed to the presence of a basement (used as a den for his children especially when they did their own entertaining--the owner and his wife make very little use of it) that provides the opportunity to store large items such as home maintenance equipment or tools. As observed in case study 6, the basement proves to be a very resourceful place especially when one needs to use the cold shed to add more room in his/her kitchen. Things may have turned out differently had a basement not existed in this home: a trade-off like expanding the kitchen into the cold shed area would have resulted in a substantial loss of storage space for large bulky items that could not have been stored in other parts of the house.

The owners are satisfied with their home since it has been able to meet their family needs. They did express however that now in their senior years they would have preferred to have lived in a bungalow home where all rooms are on one floor.

Case Study 9

In this 1-1/2 storey Cape Cod Cottage lives a elderly woman (in her early 80s) with her daughter (aged 59). Being one of the few original owners of wartime houses in Ville St-Laurent, it is of the most interesting cases whereby an entire lifecycle takes place in one residence: from the child-bearing stage to retirement and old age.

The owner's late husband was a worker at Canadair during the war who granted this home initially on a rental basis. His household was much larger at the time totalling six persons: owner, wife, three daughters (one died earlier on) and one son. At one time, the owner's father was even given accommodation. Inspite of the size of the family, the owner has made very little changes to this home and its original dimensions have been retained.

One of the most apparent changes made to the home is the direction of the stairs which lead to the upper bedrooms. Shortly before he passed away, the owner's husband changed the straight-run staircase of to an L-shaped one so that one need not to have access to it from the front entry but rather from the living room. (refer to plan of this case study 9) This was done for the owner's safety since her sight was failing considerably. The original configuration would have lead to accidents for the owner upon entering her home.

During this interview it was realized that the owner's living experience demonstrated the difference

between the space demands of people in the past in comparison to today. It was not because people's expectations were not high but rather that these times were not marked with the high consumerism of our own times. Furthermore, not everyone was in a position to afford extra clothing or other amenities. According to the owner there were no problems with storage even in regards to bedrooms and the kitchen. The fact that one bathroom was shared among six or seven people did not bother them either. The prospect of having another bathroom was regarded by the owner as more housework rather than a convenience.

This is also a case whereby the age of the children and time in their own lifecycle helped to ease strain on space within the home. In the mid-forties one daughter was married and left home. By 1969 her sons also married and moved into his own place. Since that time the owner has been living with one unmarried daughter. In her retirement stage, activities around the house have been limited and therefore, her expectations have grown even less.

Case Study 10

In this one-storey cottage reside an retired elderly couple since 1950. Upon their arrival to this home (at the early stage of their marriage) they were a family of three: owner, wife and son (aged 3), followed later by the births of two more children (a daughter in 1950 and a son in 1964). This case also exemplifies how wide age differences among children played a significant role in making a small house more manageable.

Apart from upgrading the finishes of this home, the owner has made few additions such as installing a basement (the house was originally standing on wooden posts and therefore was extremely cold in the winter). This basement now serves as a storage space for their lawnmower, washing machine and hot water heater. It is also the place where the owner's wife hangs her laundry and stores old clothing. When the children were resident, they built a den in the basement which the owner's wife also used as a sewing room. The cold shed was also converted into a bedroom to accommodate the owner's youngest child (a son) who occupied it until he left home in 1987.

The difference between the space consumption of children of the postwar period in comparison to the present is also evident in this case. When owner was asked in the interview where did his children spend their leisure time in various stages of their life, the owners responded that *"(they)...made up little games to play that did not require so much space...[and that] you made room when you needed it....When children began dating they managed without a parlour."* Their activities took place either in the basement (ping-pong playing), in the living room (such as listening to music, t.v., reading, or homework), the bedrooms, kitchen (such as studying), and the back yard (playing). The backyard often acted as an extension of their living space and was even used to host their youngest child's wedding reception. Due to its large size, the owner's daughter once contemplated on building a granny flat behind for herself to be near her aging parents.

The need for storage was especially demanding when children were present in the household. Owner's wife clearly expressed this in the interview when she was asked what would be her ideal type of home her response was: "if I moved, I would like to go to a house full of closets."

The owner and his wife are very satisfied with their home for reasons that it has not been expensive for them to decorate or heat. It allowed them to use their left over income to invest in their children's future as was pointed out by the owner in his own words: *"by working bit by bit on the house, it gave us the opportunity to save money and put our children through school (i.e. university)."* Moreover, the fact that they live in a home where they need not to climb stairs makes it very convenient for the owner who went permanently blind (five years ago) and his wife.

Case Study 11

This is a one-storey three bedroom cottage measuring approximately 24 x 35 feet. Its owners are a retired couple. The owner's wife who is twice married has been a resident in this home for forty years. When

she moved in her home with her first husband, she had three children: two daughters and a son. After she remarried her household increased to seven persons: owner, wife, four daughters (two from her second marriage) and her son from her previous marriage. There was a seven year age difference between the eldest and youngest child.

Although the size of the family posed problems with space management, the owner did not find it necessary to enlarge his home. The only modification made was converting the cold shed into a bedroom for the owner's daughters. The owner's wife stated in the interview inspite of this addition, it was not sufficient and that an extra bedroom could have eased the space needs for her children.

In regards to their kitchen, the owners found its small size inconvenient when their family had dinner together. Nevertheless, they managed with their small dining area since everyone eating at different shifts due to the varying schedules of each member. Owner's wife however would have preferred a larger kitchen at the time her children were present. Storage was a problem in the kitchen, bedroom and bathroom when the children were present. The conversion of the shed into a bedroom also left very little accommodation for owner's wife to do her laundry. Since this home does not contain a basement, she had no other option but to do her washing in the bathroom where she would also dry part of her laundry.

Entertaining and leisure activities took place in the living room when the children were present in the household. The cold shed which acted as a bedroom was turned into a den after the children moved away. The owner's wife disliked the layout of the front entry which lead into the living room for reasons that the living room which was used both formally and informally required constant upkeep.

Case Study 12

In this a one-storey, three bedroom cottage bungalow an elderly woman (who is the original owner of this home) with her daughter (aged 40) and son (aged 50). The owner's husband was a first-class mechanic at Canadair who was offered this house for rent. Both owner and husband moved in after the birth of their first child. Since that time there have been a number of household changes: the births of two other children, the departure of children, and the demise of the owner's spouse.

Several notable changes were made to the layout of this house in effort to accommodate the needs of this family. A basement was added shortly after the war. This home initially possessed two bedrooms but as children were growing older, the owner's husband converted the coal shed into an extra bedroom for his son. The two daughters had to share one bedroom all through young adulthood. According to the older daughter, sharing bedrooms was very difficult since both girls preferred to have their own space and privacy.

The owner's husband proceeded with investments through time to make another major change to his home by demolishing his cold shed/son's bedroom and building an large room across the span of the back facade of his home which would serve as a kitchen. The original kitchen (which was directly behind the living room) was renovated into a bedroom for the owner's son.

Inspite the fact that the kitchen is the largest room in the house, this family is disappointed because they feel its been badly designed. Instead of installing an in-line counter, the daughter thought that it would have been more practical if the stove, refrigerator and sink was located in one place instead of being dispersed (refer to plan for this case study 12). Also, they would have liked the dining area separate from the working areas of their kitchen. Furthermore, the owner's husband did not take advantage of his large kitchen by providing adequate storage space.

The bedrooms in this home have not managed to suit the needs of the family. The owner's daughter found the small size of bedrooms difficult to add extra furniture (i.e. computers) required to do personal hobbies or studies stating that *"its difficult not to have a table and chair when I read (i.e. in bedroom). I cannot add one since it takes up a lot of space."* The problem of the size of rooms and furniture was repeated many times in this interview. Both the owner's daughter and son complained how difficult it is to find compact furniture that would fit in a small house: *"Someone should start designing furniture for small houses. We can never find furniture the right size...[or] type of compact furniture to fit*

in a small house. I dislike the fact of being unable to get nice practical furniture with the ability to have dual functionality (i.e. bed with storage drawers below). Standard furniture makes rooms look even smaller" They also had some suggestions such as *"shelving units could be designed to fit in the corner...and cupboards should be fitted in spaces that are wasted like in the corner and high up on the walls, near the ceilings"*

Bedrooms had another deficiency owing to the absence of sound insulation between them. As pointed out by the owner's daughter *"the fact that you can hear the noise [other people] you lack privacy. The house could be adapted for more privacy by adding insulation [between rooms]."* Since this home does not have a den, individual bedrooms constitute as the sole place where one can pursue personal activities and therefore their design is critical. It should be mentioned that the owner's daughter did not consider the basement a suitable place for a family room or den and would have preferred an additional room.

One of the positive aspects of this home was the lighting. According to the owner's daughter, *"the house is not oppressive [since] it has generous lighting. Even if its cluttered, it does not feel so due to the lighting."*

Of the three residents, the daughter was the least served by this home. This is probably due to the differing social status of members in the family. Her brother and mother are persons with the least expectations and therefore have become accustomed to their home.

Case Study 13

In this 1-1/2 Cape Cod Cottage reside an elderly couple since 1979. Initially, they had their daughter living with them until she moved out in the late 1980s. Although they favoured the Ville St-Laurent neighbourhood for its "small community feeling", they did not anticipate to keep the house for long. Unfortunately, a series of illnesses for forced them to remain.

The house has been renovated largely by improving some of the finishes. The kitchen counter, cabinets and drawers have been modernized recently, however the size of the kitchen has remained intact. The owners hired someone to rebuild the cold shed behind the kitchen to use as a laundry room. They preferred not to have their laundry equipment in the basement because they have difficulty in climbing stairs. It was therefore important to them that everything was easily accessible.

The size of windows has been increased to bring in more lighting into the home. The bay windows added into the kitchen and living room by a previous owner is a feature which enticed the owners to purchase this home.

The bedrooms on the lower floor have added storage space and the owner's bedroom has a toilet and a sink added at a corner for both the owner and his wife who have difficulty walking and climbing stairs. This serves as a better solution than having to descend to the lower floor to reach the main bathroom of the home.

The owner uses the two bedrooms below for den for him and his wife. They have no problems with storage since the added basement is used solely for the purpose of storing extra material. When asked whether the smallness of their home had any negative affect on their lifestyles, the owner responded by saying *"space is a matter of perception and that people make mistakes in housing since they do not look into their long-term use. For example, the size of the living room and kitchen is not logical in terms of use. People are now going out to entertain, they never use the living room. The design of the house should be consistent with the actual living of the household."*

Case Study 14

The owner of this one-storey, two bedroom house resides with her boyfriend and their six month old infant. She has been living in her present home for ten years wherein this time she has experienced very minor changes to her household composition.

The owner purchased this home largely for reasons of price. Its small size was also suitable for her needs at the time. Her home has additional features like a basement (which also includes a stove) and a separate dining room.

The owner converted her eat-in kitchen into a kitchenette for two reasons: First, it did not possess enough storage space for her utilities so she made plans to install additional counter space and shelving (original plan only had two cabinets). Another reason was that she disliked to eat in the kitchen area because the windows near the dining area did not allow enough privacy. The close proximity of neighbours' houses facilitated views between kitchens and it made it uncomfortable for the owner to have her meals in her own. Consequently, she renovated the coal shed in the back of the kitchen into a small dining area.

Storage has not been a problem in this home probably because the added space of a basement provides adequate room. It was interesting to note that the space beneath the stairs (leading into the basement) was also used for storage. The owner disliked that the vestibule area in the living room did not have a closet for coats and boots.

In terms of activities taking place in the house, the ground floor is mainly preoccupied by the owner where she looks after the housework and does sewing in her leisure time. Although she works as a secretary on a part-time basis, the owner spends more time at home looking after her child. The basement area is dominated by her boyfriend who uses the space to hear his music after work.

The owner is generally satisfied with her home for reasons that it is easy to maintain, its located near public amenities which is very convenient for her, and that it possessed a large terrain. Its small size however has now posed some difficulties with the arrival of her baby. Because the baby's room is located next to the living room, both the owner and her boyfriend have to rearrange their activities in order not to disturb the baby while asleep. (i.e. the television or radio in the living room is not used when the baby is sleeping).

Case Study 15

This is a 1-1/2 storey Cape Cod Cottage in which the upper floor serves as an accessory unit. The occupants are a couple moved into their home after they married (both are divorcees) in 1988. They purchased this particular home for reasons that they liked the Ville St-Laurent neighbourhood and worked in the area. They plan trade-in their unit after retirement for a home in the country. The owners have not made any modifications to his home. This case is unique in that the previous owner converted the upper floor into an accessory apartment to earn extra income. The present owners continue to rent this apartment to singles.

Storage is a difficult problem for the owner and his wife. The kitchen and their bedroom lack enough storage for their belongings. In meeting their storage needs in the kitchen, they purchased an armoire for extra dishes. The owner's wife would have preferred to have a walk-in closet in her bedroom.

Another problem encountered is the smallness of the rooms. When the owner moved in with his new wife, they both brought with them the furniture from their previous homes. Most of it did not fit inside the rooms and as a result they are partly stored in the basement.

Case Study 16

In this one-storey bungalow resides a family of eight: husband, wife, mother-in-law, three sons (aged 11, 10, 9), daughter (aged 6), and a friend (aged 55). Since their five year occupancy, there have been no major changes to their household apart from the arrival of a friend who has been offered limited hospitality. Although this house is too small for a sizeable family, the owner bought it for reasons that he could not find rental accommodation for his large family thus forcing him to purchase a home he could afford at the time.

There have been a number of renovations performed in this home in meeting the space demands

of this family: a bedroom was demolished to make way for a large dining room; the cold shed area was also demolished to add a family room and a bedroom behind the kitchen; and a wooden deck patio was built next to the family room. There are of course several functional trade-offs which the owner and his wife had to make. Their children are required to share bedrooms with their siblings and grandmother. The couple sleep in a makeshift bedroom in the basement. Although this home has managed to meet his family's needs but as the children will grow older, the owner will be looking for a bigger accommodation.

Case Study 17

This bungalow has been converted into a 1-1/2 storey home. The owners are a couple who are nearing retirement. They have been resident in their home for fourteen years. Initially, the couple moved in with their children: two daughters (aged 16 and 18) and son (aged 12). The owner was previously living in a similar house which they were renting. They eventually decided to buy a house since they felt that the money that they were putting in for renovations in the place they were renting could have been used for a home of their own.

This home has additional features such as a covered back porch and a finished basement added by the present owner. This home originally had two bedrooms. By removing one bedroom on the ground floor, the owner added two bedrooms for his daughters in the attic space (refer to plan of case study). His son's bedroom was located in the basement where he also added a living room suite or recreation room for the children.

During the time when the children were present, the family experienced the inconveniences of a small home. The fact that they had one bathroom its use needed to be regimented, *"when company came over I would tell them: I'm going to put numbers on the bathroom door."*

Children's entertaining or other leisure activities often took place in the basement. Sometimes the owner's daughters would spend their time with friends in the basement without any objections from their brother. Although this was his own "space" in the home, he would leave his sisters and their friends in their own privacy while he stayed on the main floor. The living room and kitchen was used for more formal entertaining. Personal activities such as reading or listening to music would take place in the bedrooms. Storage was most problematic in bedrooms. This was resolved by supplementing the owner's bedroom with an armoire for seasonal items and adding storage for extra clothing and footwear in the basement.

Case Study 18

The occupants in this 1-1/2 storey Cape Cod Cottage are a family of three residing since 1970: owner, husband, and daughter (aged 18). The owner purchased this home for reasons of price affordability. The household has changed since their occupancy which used to include another daughter and the owner's mother. The owner's mother passed away in 1977 and eldest child of the home left in 1986.

Since occupancy, the owner has made a few renovations like updating the fixtures in her home. The house has not been adapted in terms of accommodating their storage needs of children's space demands. In terms of meeting their storage requirements, their large basement serves as added space for seasonal clothing and other extra items that cannot be fitted in other parts of the house. The owner would have liked to have a larger closet in her bedroom for clothing.

When the oldest child moved away from home, the owner's youngest daughter occupied the room of her sister by converting it into her private living room suite. The bedroom on the main floor that used to be occupied by the youngest daughter is now converted into a den by the owner. This is an indication that for a family of this size and the type of house has been sufficient for the needs of the family and did not impose any difficulties insofar as space needs are concerned.

The owner has also opened the stair area by removing the side doors so the entry into the living room and den are open. He has also built in a bookcase and entertainment unit on one side of the stairs

wall facing the living room area.

Case Study 19

This one-storey bungalow which used to measure 25 x 25 feet (7.5 x 7.5 meters) has been expanded to 25 x 39 feet (7.5 x 11.7 meters). The residents of this home are a family of three: owner, wife, and their son (aged 20). During the 23 years of occupancy, their household composition changed when the owner's eldest daughter moved out in 1991. He purchased this particular home for his family mainly for price suitability. Since residency, a number of modifications have been made to this house.

The owner has not enlarged his kitchen as noted in other case studies however, he has used the cold shed area behind his kitchen as a dining room. He added more floor space in the coal shed, rebuilt its roof and brought all walls to full height. He used the space besides the coal shed to build a larger living room for his family. The room which was once designated as a living room was converted into a bedroom for the owner's son. The owner has also added extra storage space in the kitchen by building counter space on both sides of the room and added a wine cabinets. A pantry was also built into the wall of the dining room area. Inspite of these additions, the owner feels that more pantry space is required since the pantry he has added himself is not deep enough to sufficiently store away items.

Although storage is limited in a home of this size it has been dealt with much ingenuity by its owner. In the living room where the fuse box is located, the owner has built a closet with elegant panel doors to conceal the box and has added shelves where he can also store his tools. The cabin which was used for storage has been converted into the owner's office where he undertakes most of his work (he is an electrician by profession and does most work for customers at home). This has left them with very few options insofar where large recreational equipment can be stored around the house. His daughter for example, having no place to keep her cross country skiis, has hung them above her bedroom door.

Smallness of rooms has been dealt in a variety of ways when it came to furniture. In the master bedroom, the owner's extra dresser which could not be fitted in the room was placed in the large closet of the room. Above it, the owner hangs only his shirts. The owner has built into the wall of the main corridor a bookcase.

Case Study 20

This is a one-storey bungalow occupied by the owner (aged 61) and his wife (aged 53). He has been resident in his house since his childhood, some 50 years ago. He has not make any important changes other than upgrading the fixtures and finishes in his home.

As encountered in other cases, the owner's wife was unhappy about the smallness of her kitchen. She would have preferred a bigger kitchen or a separate dining room for entertaining friends. The owner has supplemented the kitchen's storage space by constructing additional cabinets for pantry in the cold room. The owner's wife would have also liked to have more separate storage for seasonal and informal with formal clothing.

The couple spend most of their leisure time outdoors. When entertaining friends, rules have to be set out about taking shifts at the dinner table. Owner and his wife would also go out to entertain friends and often at a relative's house. They also have a hide-away bed for overnight guests in their living room.

The owner's wife also commented how she disliked the fact that the layout of this house allows very little privacy since "you can see the other person in the next room". She also did not like how one room flows into the other.

Case Study 21

This one-storey, two-bedroom house is shared by a woman (aged 66) and her mother (aged 85). They have

been residing in their home for a period of 13 years. During that time a number of changes have occurred to their household composition. In 1979 there were five persons: daughter, her mother, her husband and two sons (aged 16 and 19). In 1986, the eldest child left home followed after by the youngest in 1990. This past year, the owner's husband passed away. Prior to moving to this unit, the owner and her family were renting a two-room, plex type of home. The owner stated that she always wanted her own home and it took several years until she could convince her husband consider homeownership (cost of buying a house was a major disincentive to her husband). The fact that their mortgage payments would not be higher than renting a larger accommodation motivated them to buy a wartime house.

All renovations made to this home were performed by the previous owner. This home also possesses a half-basement (basement does not run the full span of the house) and a dining room (also functions as a family room) in what used to be the coal shed. The two bedrooms in the house were occupied by the adults, leaving no alternative for the children in the household but to make arrangements in the basement and the coal shed in which a couch with a pull-out bed was installed. In terms of storage, the children kept their clothing in bureaus and a closet added in the basement. When the eldest moved away, the basement bedroom was claimed by the youngest.

The dining/family room is the hub of the house since it flexible enough for every kind of use. It is the place where both adults and children would spend their bulk of their time at home in private: knitting, sewing, playing cards, reading, entertaining friends, doing homework, or a bedroom for one of the children. The dining room which is furnished more formally is where adults would do their entertaining whereas the TV room, furnished with easy chairs set around the TV, was where the children entertained their friends. The outdoor spaces are employed in the summer as an extension of the living room and are typically furnished with patio furniture. The owner's grandchildren are usually found playing in the backyard in the summer.

Although the kitchen has a small informal eating area (which was also used by the children when doing homework), daily family meals were mainly taken in the dining room when the owner's husband and the children were present. The kitchen as opposed to the dining room, is more of a work area. The owner would have preferred a larger sized kitchen since preparation of meals and laundry are performed in the same place. The owner found the narrow distances between the table and counter/cupboards caused all types of obstructions while working in the kitchen. Storage in the kitchen was not considered a problem and owner felt what was available is sufficient for her needs. According to her, additional cupboards and cabinets would have meant extra cleaning work.

When the owner was asked if she and her household required another bathroom, she responded that at another washroom was important to her. She has added in the bathroom in her home has a new a counter with drawers below the sink for storing towels other items. This modification was made because the small closet next to the bathroom which is normally used for linen and towels, stores coats. With the absence of an enclosed vestibule or a coat closet near the entry, the owner had found no better arrangement. Shoes and boots are kept in a boot tray near entrance.

The owner disliked one aspect of layout of the house: The living room which functions as a parlour or showcase room of her home acts also as a circulation space and therefore requires constant upkeep. Generally, she favours her compact home because it is not too difficult to maintain and that the layout incorporates everything on one level. Storage was not found to be as problematic as in other case studies.

Case Study 22

In this 1-1/2 storey Cape Cod Cottage resides an elderly woman (aged over 65) with her son (aged 35) and her grand-daughter (aged 13). The original household consisted the owner's husband, their nine children, and her parents. The owner has been resident in her home since 1948. Prior to coming to this home (with their four children), she and her husband lived in a duplex. Price was the single-most factor that motivated them to purchase a wartime house.

Inspite of the large size of the household, the owner did not undertake any renovations on her home in effort to cope with her family's spatial needs. The age differences between children did not help in easing the household's spatial demands since there was on average year difference between each child. Children slowly started leaving home as early as 1955. In regards to bedrooms, the owner stated that people were grouped into rooms with bunkbeds. Children not only had to share rooms with siblings but also with adults. According to the owner's daughter who also participated in the interview, the youngest usually slept with their mother until the arrival of the next baby. She also remembers having to share one bedroom with sister and her grandmother (her grandfather had a room of his own). When the grandparents passed away, the oldest child was installed in their bedroom.

The owner did not find storage in bedrooms troublesome since there was never extra clothing around the house. Children received new clothing only on special occasions and whatever could not be fitted in closets were transferred to the attic of the house. The owner's daughter also found that with a large family, there was constant frustration with noise and lack of privacy. She recalled how the bathroom was the sole retreat for her father who would read his newspapers there on weekends. According to her, privacy was the most difficult to cope with namely in the bathroom and bedrooms. The owner stated that a bigger bathroom was definitely needed in this household. At one time it was also used for doing laundry and was the only place for the wringer washing machine to be located.

Since family meals could not be taken in the small wartime kitchen, the owner was forced employ the living room as a dining room. The living room was relocated in one of the bedrooms on the ground floor until 1964 when the household size decreased (from thirteen to ten persons). The owner's daughter reflected saying that: *"when the older children were gone, they could sit down and eat at the table."* The owner stated that the idea of renovating their home to include a sizeable kitchen was not considered at that time, since she and her husband thought in terms of what they could afford. *"Money was a problem"*, she recalled, *"so you had to make the best of what you had."* Storage in the kitchen was never enough for their needs especially when the extra space in the cold room could not be used for some time because it stored coal for heating. When the heating system was updated, the coal shed was used for laundry hookups. The wooden shed supplied in the backyard was mainly used for storing additional items like bikes or the lawnmower.

When the living room was located in the front bedroom on the ground floor, the owner had the room's partition wall near the entrance opened up to bring the living room out of isolation and link it with the dining room. Coats were stored in the small closet located next to the bathroom and behind the stairs. In lieu of a linen closet, the owner built one by using part of the closets between the bedrooms on the ground floor (refer to case study floor plan).

Leisure activities in the house was focused in the kitchen. Children did their homework there and entertained their friends. During the holidays men would occupy the living room meanwhile the women would spend time in the kitchen. Outdoor spaces were used largely for recreation by the children during the milder seasons. The owner considers her home as "a half-way house" with her children coming and going. After her son divorced, he moved in and after a long custodial battle at court he managed to get his daughter to live with him. They now occupy the empty bedrooms around the house.

APPENDIX II

QUESTIONNAIRE

■ McGill University■ School of Architecture■
■ Graduate Studies■ Affordable Homes Program■

A SURVEY OF WARTIME HOUSING IN MONTREAL

Part A: General Information of Household

1. Gender of head of household:

   ❑ Male
   ❑ Female

2. Are you presently:

   ❑ Married
   ❑ Single
   ❑ Widowed
   ❑ Living with someone

3. How old are you? Are you between:

   ❑ 20 to 35 years of age
   ❑ 35 to 54 years of age
   ❑ 55 or older

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

5. How many people live with you permanently in this house?_____
(Please specify number . If you are presently living alone, please go to question #8)

6. List each the relationship of each member living with you, their age and occupation. **Please specify on the next page** For example:

Relationship to Respondent	Age	Occupation
Wife	42	Nurse
Daughter	15	Student

Relationship to Respondent	Age	Occupation

7. Has your household composition changed over the years since you moved in this house? For example, has someone permanently moved in with you in the past few years or has a member of your house moved away?

❑ Yes ❑ No ☞ *go to question #9*

8. Specify below the various changes in your household composition you have experienced over the years since you moved into your house? For example:

Period	Number of Persons	Relationship of Persons to Owner
1970-79	3	owner, wife, daughter
1980-85	4	owner, wife, daughter, mother-in-law
1985-91	3	owner, wife, daughter
1992	2	owner, wife.

List changes below:

Period	Number of Persons	Relationship of Persons to Owner

Part B: General Information about the Occupancy of Unit

9. Are you the original owner of this house?

❑ Yes ☞ *go to question 9 a.* ❑ No ☞ *go to question 9 b*

9.a. If yes, was this house designed by:

- ❑ Yourself
- ❑ Architect
- ❑ Other: _____ *(please specify)*
- ❑ Do not know

☞ *Go to question # 10*

9.b. If no, how long have you been living in this house?_____*(please specify in years)*

9.c. What were the reasons that motivated you to purchase this home? *Check below as many applicable to you.*

- ❑ Price
- ❑ Close proximity to work
- ❑ Good location
- ❑ Other:_____ *(please specify)*

10. What type of house were you living in before you moved into this home?

- ❑ Single family home
- ❑ Apartment with four floors or less
- ❑ Apartment with more than four floors high
- ❑ Plex (duplex, triplex, etc.)

11. At what stage in your life did you move into this house?

- ❑ Recently after marriage
- ❑ After the birth of the first child
- ❑ After the birth of the second child
- ❑ After children left home
- ❑ Other:_____*(please specify)*

12. Which of the following features do you have in your home? *Check off as many as applicable*

- ❑ Additional washroom
- ❑ Basement
- ❑ Front porch
- ❑ Fireplace
- ❑ Dining room
- ❑ Garage

Part C: Adaptability of House, Space Needs, and Lifestyle Patterns

13. Since you moved in this home has there been:

	Yes	No	Year of Event
A birth	❑	❑	_____
An illness	❑	❑	_____
A death	❑	❑	_____
Leaving of a child	❑	❑	_____
Leaving of a spouse	❑	❑	_____
Return of a spouse	❑	❑	_____
Change of a spouse	❑	❑	_____
Change of employment	❑	❑	_____

14. In the course of these events that have happened in you home have you found it necessary to make modifications to the layout of this house to accommodate for each event?

❑ Yes ☞ *record changes below* ❑ No ☞ *go to question # 15*

14.a. Please record any changes/ renovations you made to your house for each event and your reason. For example:

Event	Corresponding change	Rational
Daughter married	Her bedroom converted into an office	Owner needed a place to work

Please record changes on the next page.

Event	Corresponding Change	Rationale

15. What type of kitchen do you have in your home?

- ❑ Eat-in Kitchen (kitchen with space for table and chairs)
- ❑ Kitchenette (eat separately in a dining room)

16. Do you find that the type of kitchen provided in your home accommodates your lifestyle needs?

❑ Yes ☞ *go to question #17* ❑ No

16.a. Please briefly explain why this type of kitchen is not suitable for you and your household?_____

_____

16.b. What type of kitchen do you feel is best suited for you? *Please briefly specify below.*

_____

_____

16.c. Would you prefer a larger kitchen at the expense of a smaller living room?

❑ Yes ❑ No ☞ *go to question #16 d.*

16.d. Please explain why a large living room is important to you?

_____

_____

_____

17. In reference to the storage space provided in your home , I would like to know if storage is available in your kitchen?

❑ Yes ❑ No ☞ *go to question # 18*

17.a. If yes, please list below the type of storage space which exists?

_____

_____

_____

17.b. Do you find that the amount of storage space in your kitchen is sufficient for your needs?

❑ Yes ☞ *go to question # 18* ❑ No

17.c. If no, briefly state below how much more storage space you require and for what purpose?

_____

_____

_____

18. How many bedrooms are available in this house?

❑ 1 bedroom
❑ 2 bedrooms
❑ 3 bedrooms
❑ 4 bedrooms

19. Is the size and number of bedrooms available in your home suited to your needs?

❑ Yes ☞ *go to question # 20* ❑ No

19.a. If no, briefly explain why?_____

_____

_____

_____

_____

_____

_____

20. In terms of location or layout of bedrooms in this house do you experience problems with:

- ❑ Noise
- ❑ Privacy
- ❑ Other:_____*(please specify)*
- ❑ No problem experienced

21. Is storage space available in your bedrooms?

❑ Yes ❑ No ☞ *go to question # 22*

21.a. If yes, briefly list what type of storage exists for what items?

_____

_____

21.b. Do you think that the amount of storage space available in your bedrooms is enough?

❑ Yes ☞ *go to question # 22* ❑ No

21.c. If no, briefly state how much more storage space you require for what purpose?

_____

_____

22. In reference to the number of bathrooms available in your home, have you added additional features like:

- ❑ Separate shower
- ❑ Whirlpool bath
- ❑ Other:_____*(please specify)*
- ❑ No additions made ☞ *go to question # 23*

22.a. Briefly explain below why such additions were made:

_____

_____

_____

_____

23. Do you or did you require an extra bathroom in your home?

❑ Yes ❑ No ☞ *go to question # 24*

23.a. If yes, briefly state reasons below why you require an extra bathroom/washroom?

_____

_____

24. Is storage available in your bathroom?

❑ Yes ❑ No ☞ *go to question # 25*

24.a. If yes, briefly list what type of storage exists for what items?

_____

_____

_____

_____

24.b. Do you feel the amount of storage available in your bathroom is enough?

❑ Yes ☞ *go to question # 25* ❑ No

24.c. If no, briefly state below how much more storage space you require for what purpose:

_____

_____

_____

25. What is the main function of your living room?

❑ Used informally as a family room.

❑ Used as a formal room for guests and special occasions.

❑ Other:_____*(please specify)*

26. Is storage available in your living room?

❑ Yes ❑ No ☞ *go to question # 27*

30. Is storage available for large items like recreational and home maintenance equipment?

❑ Yes ❑ No ☞ *go to question # 30.d*

30.a. If yes, briefly list what type of storage exists for what items?

30.b. Do you feel the amount of storage available for such items is sufficient?

❑ Yes ☞ *go to question # 31* ❑ No

30.c. If no, briefly state below how much more storage space you require for what purpose:

---

31. In reference to your lifestyle, how do you and the members in your home spend most of your leisure time at home (the time when you are not working). Please give type of activity, frequency and duration of activity, and where the activity takes place in the home. For example:

Activity	Frequency	Duration	Place of event in the home
Reading	daily	one hour	bedroom
Watching t.v.	daily	3 hours	basement

Please record activities below:

Activity	Frequency	Duration	Place of event in the home

32. Everyone has their likes and dislikes about the layout or design of their home. In your opinion what would you say are the most positive aspects of the layout of this house for you and other members in your house.

Some examples that could be applicable in your case: Good location of bedrooms for privacy from active areas in the home; large eat-in kitchen is the favourite area to be in the house; basement provides extra space for a den; formal living room is screened from traffic areas such as the entrance into your home.

33. What would you say are the aspects of this house that you and your household dislike most? Please also state your reason.

Some examples that could be applicable in your case: Long corridors; shape of rooms not flexible enough to accommodate some variation in the layout of furniture; windows lack privacy; design of house is not suitable for the physical limitations of the elderly.

Part D: Functional tradeoffs

34. Have you been able to adapt your house (for example, change the size or layout of the rooms) in the course of years to the changing needs of every member of this household?

- ❑ Yes ☞ *go to question 34.a*
- ❑ No ☞ *go to question 34 b*
- ❑ Never was a need to adapt house.

34.a. If yes, briefly explain how were these needs were adapted?

_____
_____
_____
_____
_____
_____

34.b. If no, state who are the members of this household and what were their needs that were not fulfilled?

_____
_____
_____
_____
_____

34.c. How have each of these persons been able to deal with their needs? For example: Wife always wanted a sewing room for herself but there was no room in the house for this activity.

Member	Alternate means chosen
Wife	Kitchen became part of the sewing room.

Please details below:

Member	Alternate means chosen

35. Briefly state below which of these mentioned above do you and your family find it most difficult to tolerate and why?

_____
_____
_____

Part E: Aspirations

36. Do you find that this house suits your lifestyle?

❑ Yes ☛ *go to question #37* ❑ No

36.a. If no, please give reasons why do you find that this house does not reflect nor suit your lifestyle?

_____
_____
_____

36.b. What do you imagine to be your ideal home?

_____
_____
_____

36.c. Do other members in your household agree with your notion of an ideal house?

❑ Yes ☞ *go to question #37* ❑ No

36.d. If no, briefly state what others conceive as the ideal dwelling:

_____
_____
_____

37. Do you plan to move in the near future?

❑ Yes ❑ No ☞ *go to question #38*

37.a. Please briefly explain why do you plan to move from your present home?

_____

_____

_____

38. Overall how satisfied are you with this house in meeting your lifestyle needs?

- ❑ Very satisfied
- ❑ Somewhat satisfied
- ❑ Somewhat unsatisfied
- ❑ Very unsatisfied

39. **Optional**: If you would not mind, how much would you say is your total annual household income?

- ❑ less than $20,000
- ❑ between $20, 000 and $40, 000
- ❑ between $40, 001 and $ 60, 000
- ❑ between $60, 001 and $ 80, 000
- ❑ over $ 80, 000

APPENDIX III

LETTER TO RESIDENTS

McGill

January 27, 1993

Dear Sir/Madame:

For the past few years the Graduate School of Architecture at McGill University has been involved in research on affordable housing. The ***Grow Home*** which has appeared on several occasions in the media and has become a successful form of housing in Quebec for first-time buyers, is connected to the research done at McGill University. At the present moment, your neighbourhood is the focus of a study on war-time housing. The aim of this study is to investigate how people manage to meet their space needs in small houses so we can gain a better understanding in how to improve their design to suit today's lifestyles. You and your neighbours have been selected to be part of this research since you have retained the original dimensions of your home.

I am therefore writing to ask for your assistance in a personal interview with me at your home which will be brief, lasting no more than one hour. I assure you that all information you provide will be treated strictly as confidential and used only for academic purposes. There will be no mention of names or addresses in publications and your case, as others, will be treated as anonymous.

Your participation in this study will be of great benefit to graduate researchers at McGill University. I await for your decision early next week when I will be contacting you by phone. I thank you in advance for your kind cooperation.

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