

SPACE MANAGEMENT IN MONTREAL'S WARTIME HOMES

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Abstract

The current quest for affordable housing in North America has focused on reducing the size of the housing lot and on downsizing the house itself. The proponents of the small home maintain that given the diminished size of today's family compared with the traditional and larger family household of the post-World War II era, the smaller home does not in fact represent a diminution in space standards. When one calculates available living space on a per-person basis, the smaller family inhabiting a smaller house belies the notion that affordable housing directly signifies any real reduction in living standards.

This paper uses the wartime home as a research model to explore how people meet their spatial needs within a restricted housing space. As a paradigm of the small house (no larger than 1,000 ft²), the wartime home is investigated as a prototype of affordable housing. Interviews were conducted with the owners of 25 wartime houses (whose original dimensions were not expanded), drawn from three areas on the island of Montreal. The field study determined the types of spatial conflicts which arose in these homes and demonstrated how they were resolved. The study also reinforced the proposition that people are willing to make several trade-offs when choosing to live in a smaller home, and that as soon as household finances permit, the owners will modify the layout to suit their lifestyle requirements. The spaces in the wartime home that underwent the most significant degree of change during the household lifecycle (i.e., kitchen, bedrooms, and storage) indicate their critical status in the accommodation of users' needs and suggest that they should therefore become central priorities in the teaching and design of future affordable housing.

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The Wartime Home: Background

The housing supply in Canada following World War II could not accommodate the country's swelling population: 620,000 veterans and war brides returned from overseas in 1945-1946, while 2,000,000 European immigrants arrived in the period ending in 1960 (Wade, 1986). During the war, Canada had already experienced a severe housing problem caused by a shortage of skilled labor and building materials, an overcrowding in large cities due to rural migrants in search of employment, and a deterioration of the existing housing stock (Saywell, 1975; Wade, 1986). In 1945 the Central Mortgage and Housing Corporation was established by the federal government to provide housing for Canadians; builders were subsidized for the construction of affordable units of 800 to 1,100 square feet (Friedman & Van Niessen, 1991). During the course of the war, however, the federal government had created the Wartime Housing Limited to contract out the building of emergency housing across Canada. The units were designed as simple living quarters for families, to be rented to the occupants and dismantled following the wartime emergency, but the postwar housing shortage compelled authorities to grant the residents of these homes the option to purchase after the war; this same option also became available to returning veterans.

Wartime houses are found in a number of areas on the island of Montreal: Ville St-Laurent, Montreal-East, and Snowdon. Three basic types of single, detached homes were built: a single-story, 24-x-24-foot unit with a living room, two bedrooms, kitchen and bath; a single-story, 24 1/2-x-28-foot unit with a larger living room and porch; and a one-and-a-half story, 24-x-28-foot unit with two additional bedrooms on the upper floor (Coon, 1942) (Figures 1a & b). Each of these housing types was also equipped with an unheated coal shed, typically 100 square feet in area, intended for storage, and built with a low, sloping roof. All the homes had modest interior finishes, were built on sizable lots, typically 40 x 100 feet, and were supported on temporary footings of cedar posts; after the war, however, permanent foundations were added before the units were sold. Basement installations were very popular in the 1950s as an answer to a family's need for additional living or storage space. The interiors of these wartime houses were laid out to meet the needs of the typical family household of the 1940s: a husband, wife, and children. The new homeowners happily accepted the small, mass-produced houses because they considered this purchase as merely their first home. Many of the young buyers looked forward to increased buying power in later years, and most retained enough money to make improvements as soon as they moved in. Some added a porch or extra room, while others modified the bathroom or rearranged the kitchen. Altering the layout of their home helped to ease the discontent of inhabiting a restricted living space and instilled the hope that if the house was not their dream home they could at least make future modifications to make the space more acceptable. As lifestyles and technology evolved over the subsequent years, the owners of wartime homes adapted their dwellings to suit changing family needs. This "do-it-yourself" trend helped to develop the later housing improvement industry and had a substantial impact on middle-class housing (Clark, 1986).

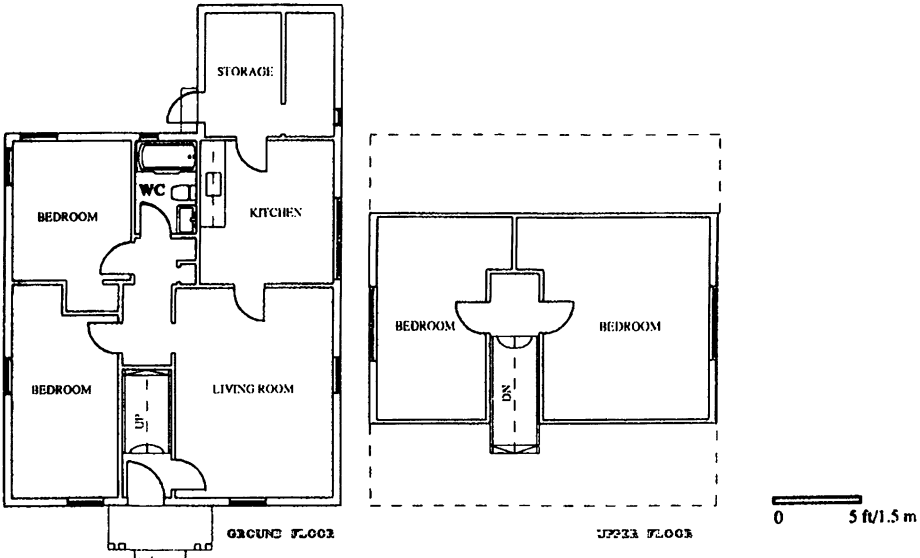


Figure 1a. Original layout of wartime homes: One-and-a-half-story, 24-x-28-foot (Cape Cod) unit.

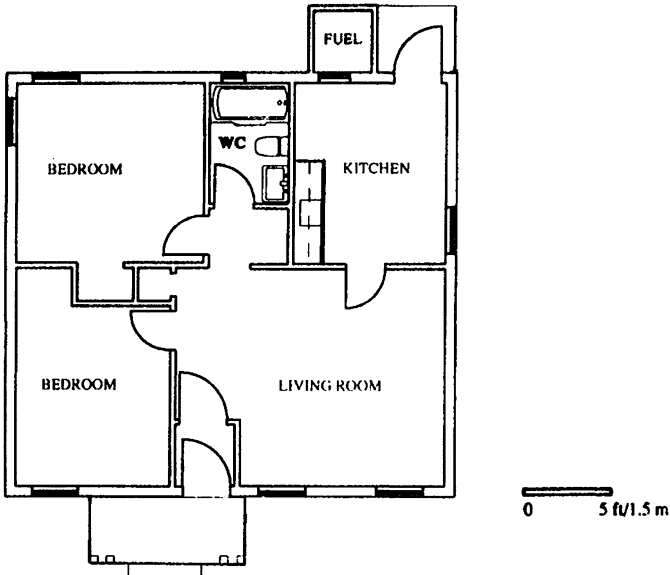


Figure 1b. Original layout of wartime homes: 24-x-24-foot bungalow.

Methodology

The collection of data for this study in space management was based on in-depth interviews in the summer of 1992 with the owners of 25 wartime Montreal houses which had retained their original footprint and which were no greater than 1,000 ft² in area. Data were collected from households with a minimum of two members. Although the potential for conflict over the use of space in two-person households may be considered marginal, the authors assumed that information on the capability of a small house to meet the long-term needs of residents could in fact be obtained from elderly couples (44% of the sample group) who had resided in their homes since the beginning of their family lives. The study did include, however, a variety of representative household types such as retired and near-retirement couples, families with older children (over 13 years of age), families with young children (under 12 years of age), single-parent households, and disabled elderly (Appendix).

The houses chosen for investigation were selected after maps with building footprints of the study areas (known neighbourhoods of wartime houses) determined which houses were suitable in terms of size. Recent voting lists from the municipalities were instrumental in indicating the size of the household and the length of its residency; the lists also facilitated contact with the residents by telephone. Letters were forwarded to the owners of the homes describing the research project and asking them to participate in the interviews; telephone contact was then made to ascertain which of the recipients of the letter were willing to become active participants in the study. The 25 willing participants answered a comprehensive questionnaire, followed by personal interviews to close information gaps and to gather interior photographs and drawings. With reference to the original plans of the houses, information was collected on how the interiors had been modified or adapted over time in order to meet the changing lifestyle needs of their inhabitants.

The questionnaires and interviews were formulated on the research undertaken by proponents of Environmental Behavior Design studies (Teasdale & Wexler, 1986; Zeisel, Welch, Pilkington, Ertel, & Gill, 1981) which have contributed to an understanding of the psychological, social, and behavioral aspects of home environments. Background information was collected on each household in order to facilitate the analysis of space management for each case study; such information included the ages of the owners and their children (if any) at the time of moving into the home (to determine the functional relationship between the stage of the family lifecycle upon occupancy and the demand for space required by the household), the type of housing previously occupied by the owners of the wartime homes, the changes in household composition and important life events over the course of their residence and the effect of these changes on their spatial needs, the type and location of leisure activities within the home, the aspects of design layout found to be particularly likable or unlikable, the adaptability of the house in meeting the spatial needs of the household, and, optionally, the total annual household income. The findings were then organized and arranged according to the following guidelines: a summary of key characteristics detailing the type of house, household description, and length of residence for each case study was

drawn up in tabular form (Appendix); floor plans were drawn of each case study, including furniture layout, to illustrate how residents resolved their spatial needs; photographs of interiors were taken in cases that demonstrated innovative solutions conceived by the owners; and such factors were analyzed as how changes in the households and lifestyles influenced spatial needs and the solutions employed.

The objectives of the questionnaires and interviews of the study were to investigate space management in the wartime home and to focus on the solutions sought by residents in order to meet their diverse spatial demands. Through an analysis of the findings, the knowledge gained from the study is to be integrated into future design criteria for small affordable housing. Insofar as the 25 participants represent typical residents of a small housing type who faced and found solutions to the challenges inherent in living in a small space, the authors intend the findings to contain solutions that can be generalized and made applicable to the current residents of contemporary small-size housing units.

Findings and Analysis

The findings are organized according to the various spaces in the home: the kitchen, bedrooms, living room, and bathroom. Additional consideration is paid to the significance of storage areas, and windows and stairs.

The Kitchen

The kitchens in wartime homes were designed to be small work zones (averaging 120 ft²) rather than social areas, leaving the household with only one public area, the living room (Madigan & Munro, 1991). If residents had subsequently enlarged the kitchen, the fact that the house possessed a larger kitchen was regarded as one of the most positive features. Where the kitchen was not enlarged, the owners complained about its inadequate size and its lack of space for movement and eating. In one case study (a retired couple in a bungalow without a basement; originally a household of seven; 40 years in residence), weekday meals were taken in shifts depending on the work schedules of the family members. In four of the 25 wartime homes studied, the kitchen area had been expanded to create a larger dining area (Figure 2). In three of the case studies, the coal shed had been renovated to become a dining room.

The wall separating the kitchen and the living room was either altered or removed entirely in 32% of the cases in an effort to make the two rooms more spacious. An open kitchen leading directly off the living room meant that work in the kitchen could proceed without contact being lost with the rest of the household (Madigan & Munro, 1993). Today, as women increase their public profiles and as gender roles become more egalitarian, it has been argued that women will seek more open spaces in the home to accommodate multiple uses, particularly in the kitchen, where a number of tasks and activities are shared by all members of the household (Peatross & Hasell, 1992).

One of the central shortcomings in these small kitchens was the lack of storage space for appliances and utilities. Such a consideration was originally not deemed

relevant in the wartime house since they were designed to be of only temporary use. However, the acquisition over time of new domestic technology (i.e., large appliances such as washers, dryers, and freezers, as well as small appliances) created storage problems which rendered these tiny kitchens obsolete. Most owners built extra storage units, such as cupboards and pantry closets, in the coal shed. Laundry was done in the kitchen (16% of households), in the coal shed (28%), in the basement (44%), or, as in the instance of one case study, in the bathroom. These findings correlate with Friedman and Cammalleri's (1992) post-occupancy evaluation study of narrow-front rowhouse projects based on the Grow Home concept, where the majority of residents suggested improvements to storage space in the kitchen.

Children's Bedrooms

Space standards in housing have improved considerably in the last century, particularly in those areas relative to children. Parents concerned with traffic and crime encourage younger children to invite their friends in, rather than send them out to play (Madigan & Munro, 1993). One must also bear in mind that the smaller the house, the greater the use of each room by children (Johnson, Shack, & Oster, 1980). The notion of Zeisel et al. (1981) that bedrooms are only for sleeping has been refuted by research undertaken by Becker (1974), Cooper (1970), and Saile (1972). In addition to needing a place to sleep, children require privacy to pursue personal and social activities. Conventional size requirements for children's bedrooms used to be calculated on the num-

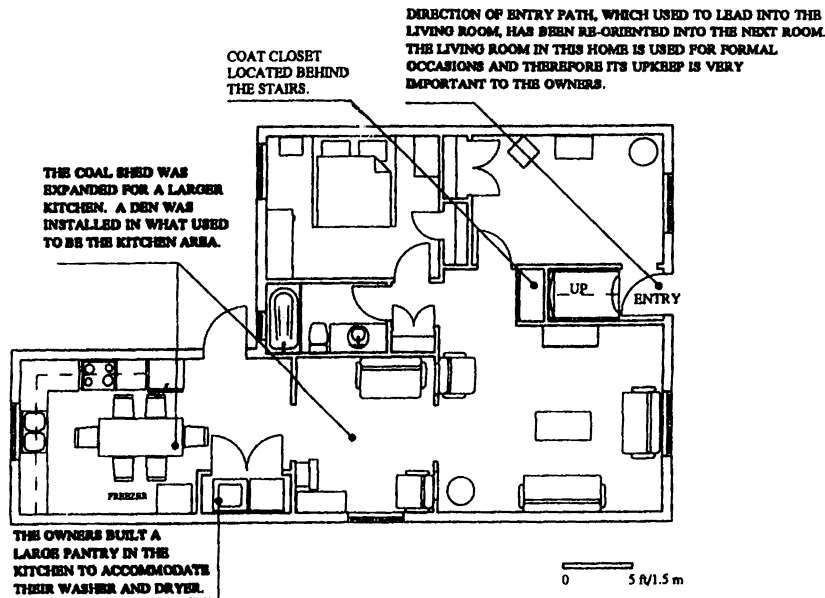


Figure 2. Ground-floor plan of case study 6: expanded kitchen.

ber of necessary pieces of furniture combined with sufficient circulation space. Research indicates, however, that in family households a comfortable bedroom must also include play and study areas. Given the choice of which area to expand, parents would opt to enlarge bedrooms in order to confine the activities of children to the less formal sections of the house (Zeisel et al., 1981).

Bedrooms in the wartime homes were the sole locations for children's activities: doing homework, reading, playing, listening to music, or watching TV. In 45% of households where children were present at one time, bedrooms either had to be shared or additional bedrooms were added. Siblings of the same sex and older than 12 years frequently shared the same room. Findings indicate that the majority of such arrangements were made in bungalow-type homes. In the two-bedroom bungalow (with basement) of one case study (widow with three daughters; 15 years in residence), all three children shared a single bedroom; the use of a bunk-bed allowed space for other furniture. Wherever possible, additional bedrooms for children were added. In 16% of the homes, the coal shed was finished to be used as a bedroom, and in two homes extra bedrooms for children were installed in the basement. In some of the cases, the space demands of the household were eased by the timing of the owners' initial occupancy in relation to the ages of the children. Wide age differences among siblings also alleviated some of the families' spatial needs vis-a-vis bedrooms. Finally, a number of owners modified the layout of their homes to include individual bedrooms for older children who demanded privacy. In one case study, a bungalow with basement (couple approaching retirement; original household included three children; 14 years in residence), the owner built an extra half-story to add two additional bedrooms for his daughters. The largest attic bedroom was found in the Cape Cod unit of one of the case studies (retired couple; original household included four children; 41 years in residence), divided into two rooms for similar purposes (Figure 3).

The slope of the ceiling in the attic bedrooms of the Cape Cod (one-and-a-half-story) units was found to be inconvenient since standard-size closets could not be incorporated; existing closets are half-size in height. The residents in four case studies resolved this problem by building closets in front of the stairs landing. In one case study (widow living alone; originally a household of five; 48 years residence), storage units were built in the attic bedrooms against the wall where the ceiling is lower (Figure 4).

Public space in the wartime homes was found to be less adaptable to the needs of the family in the case of adolescent children. Older children tend to imitate their parents while entertaining visitors: the occasion is formalized with the offering of food and other conventional hospitalities. The basement is best suited to this purpose since it is the one space in the home that can be claimed as the domain of teenagers (Teasedale & Wexler, 1986). Without a basement, there were few options for teenagers seeking personal space, as was pointed out by the daughter of the owner in one case study (couple with two grown children in Cape Cod cottage; 15 years in residence), who voiced her regret at not having had a basement. The daughter of the owner in another case study (elderly mother with two middle-aged children in bungalow with basement;

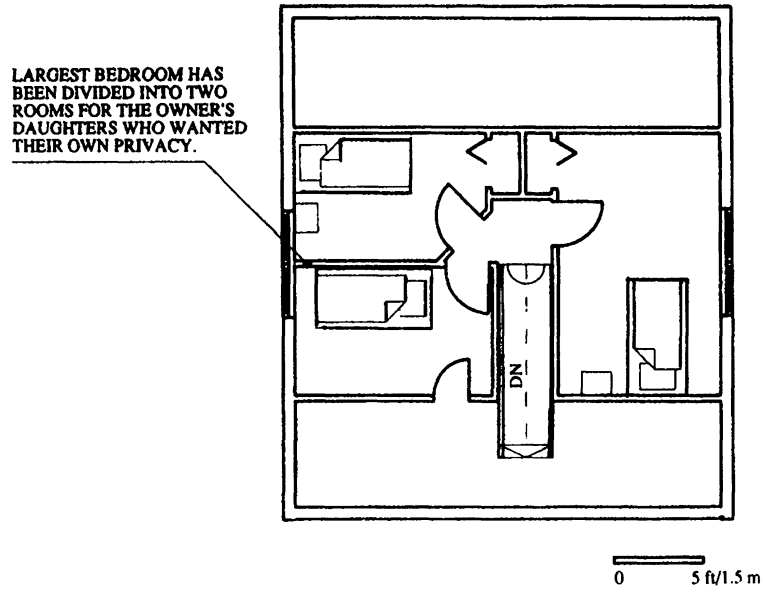


Figure 3. Upper-floor plan of case study 23: Cape Cod attic bedrooms (divided).

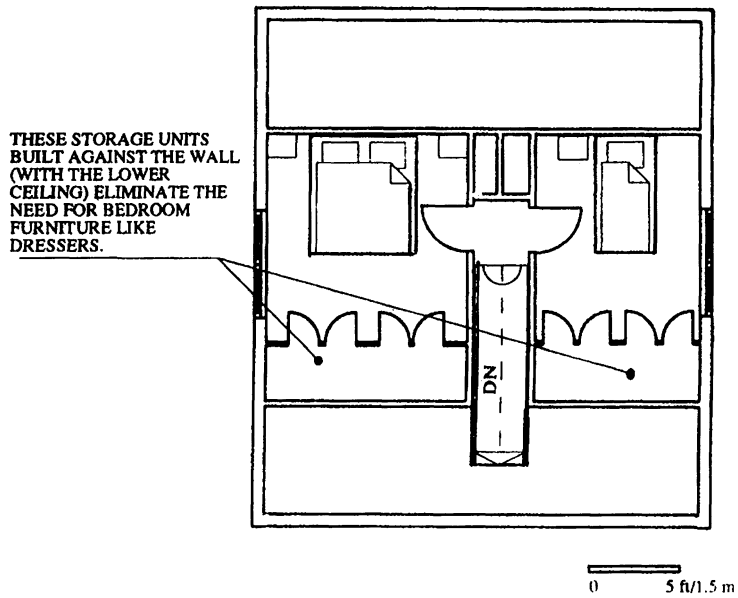


Figure 4. Upper-floor plan of case study 24: Attic bedroom storage units.

50 years in residence) raised the matter of privacy, emphasizing the fact that the activities of all family members could be heard throughout the house. Sound control or insulation, which would establish a greater degree of privacy and improve the quality of living in a small house, was not a consideration in the wartime house.

Master Bedrooms

The largest bedroom in the one-and-a-half-story Cape Cod wartime house measures 13x16 feet, whereas in the bungalow unit the largest bedroom is only 12x10 feet in size. When a double bed with its night tables and dresser are introduced, very little space is left for movement in the room. Although a wide range of cheap furniture exists for children's and teenagers' rooms, the options for the master bedroom are generally circumscribed by what Madigan and Munro (1993) refer to as the "staunchly conservative" nature of the room, "the furnishings and decor dictated by ritual/symbolic criteria rather than functional considerations." The formality traditionally ascribed to the master bedroom frequently minimizes alternative use.

The owners of Cape Cod units in two of the case studies tried to resolve the problem of limited space by combining the two bedrooms on the lower floor (by removing the two closets that divided the rooms) in order to obtain one large master bedroom. The owner in one case study (couple with two teenaged children; 7 years in residence) replaced the original closet space by building a large closet in the corner of the room; the new location was awkward, the room lost its square/rectangular shape, and the overall space was used inefficiently (Figure 5). This new arrangement was the result of choosing not to eliminate a window by building a closet across the narrow span of the wall. In another case study (retired couple; originally a household with two sons; 24 years in residence), the owner chose to use the span of the narrow wall at the front end of the house in an innovative manner which did not necessitate the removal of the window. This particular space, measuring 3x10 feet, was divided into two unequal parts: the section measuring 3x3 feet was used as a bedroom closet, while the section measuring 3x7 feet (in which the window was located) was used as a small vestibule outside the master bedroom, directly off the main entry (Figure 6).

Most women interviewed in the study complained that the storage spaces provided in the master bedrooms were insufficient and could easily have been double the size. In 25% of all homes, the existing closets were modified (expanded). In one case, the basement was used to store extra clothing. In one of the single-story units, the owner installed an additional closet for seasonal clothing in the corner of an unused bedroom.

Nearly all owners claimed that they did not consider privacy to be a problem in relation to the layout of the bedrooms in their homes. One must note that it was difficult to distinguish whether adults were self-conscious about this need for general privacy or simply that their expectations were not very high in this regard.

Master bedrooms were found to be one of the highest-ranking expandable spaces in the wartime home. Wherever possible, adults enlarged their bedrooms to satisfy a need for extra space for furniture and storage. In two case studies where children were absent, an empty bedroom had been converted into a den.

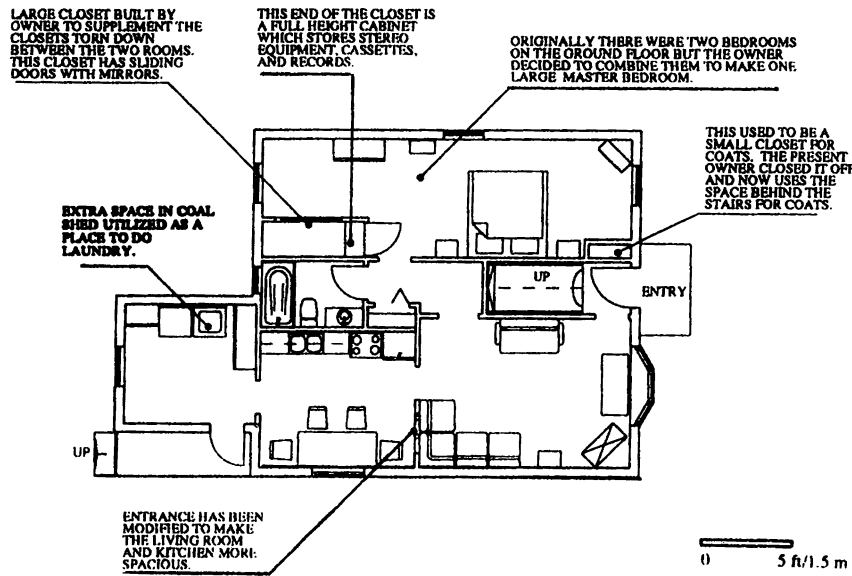


Figure 5. Ground-floor plan of case study 1: expanded master bedroom.

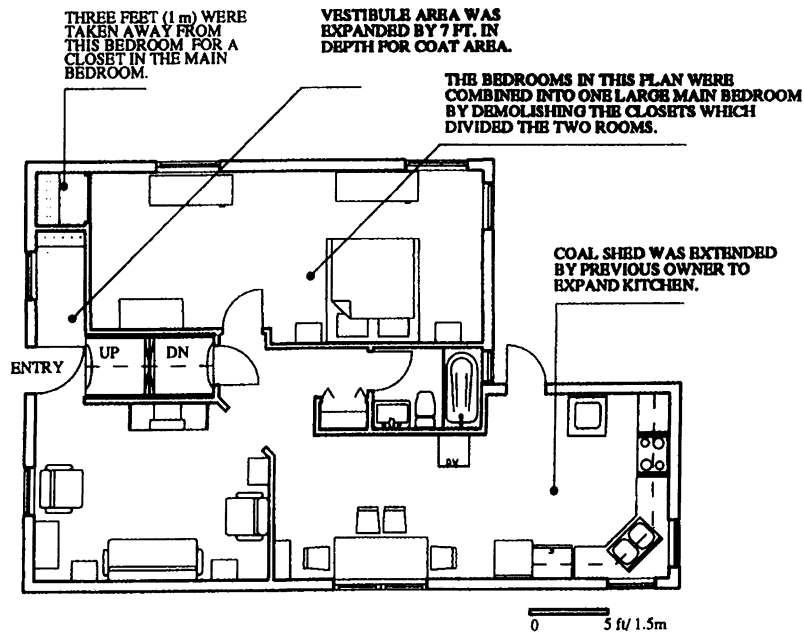


Figure 6. Ground-floor plan of case study 8: expanded master bedroom (vestibule with window).

The Living Room

The living room was the least problematic of all the spaces in the wartime house. In the majority of homes studied, the living room served an informal function; family leisure, childrens' homework, and entertainment. The fact that TVs, and in some cases fireplaces or stoves, were added underscores the status of the living room as the hub and focus of the home.

Housing evaluation studies undertaken by Adams, Ash, and Littlewood (1969), Zeisel and Griffin (1975), and Cooper (1975) consistently demonstrate that homeowners prefer a "showcase living room," with the decor considered as an expression of the owners' personalities and identities. As a further indication of this room's formal status, these studies also reveal that residents are bothered by entry doors that lead directly into the living room. The findings of the study support these observations. Of the owners interviewed, 20% stated that they disliked the fact that their living room was a circulation space and transitional zone to other rooms. In three homes where the living room was formally furnished, the owners preferred that family members did not come into the house through the front entry; in two of these homes the coal shed entry in the rear was used, and, in one case study, the front entry was reoriented away from the living room and towards an adjacent room used as a large vestibule (Figure 2).

Zeisel et al. (1981) notes that the provision of an informal living room or den must not be overlooked in housing design, since families require a space for informal activities. In the homes lacking a basement, two owners renovated or enlarged the coal shed (by bringing the walls to full height and adding a roof), and two renovated an unused bedroom, all four converting the original space into dens.

The Bathroom

The bathroom in the wartime home measures 5x7 feet. In the vast majority of households, fixtures were updated and storage facilities such as cabinets and medicine chests were added. All homes had storage for linen adjacent to the bathroom in the area where the chimney shaft once stood. Although a second bathroom would have been welcomed as a very convenient addition, most households managed with only a single bathroom. In families with many children, the use of the bathroom in the morning was allocated, as one resident put it, on a "first-come, first-served" basis.

In two of the three homes possessing a second washroom, the additions were a matter of household necessity. The small washroom in one case study (couple with two young children in Cape Cod cottage; 4 years in residence) was installed on the upper floor between the two bedrooms; the owner stated that this bathroom was not only a great convenience for her 5-year-old son, but an elimination of the potential hazard of the child having to use the stairs at night (Figure 7). The extra washroom in the corner of the attic bedroom of another case study (retired couple in Cape Cod cottage; 13 years in residence), with a mid-wall for privacy, was required by the physically disabled elderly couple who both have difficulty climbing stairs (Figure 8).

The small size of the bathroom is not as critical as the restricted spaces in other areas of the wartime house, but in the instances where laundry is done in the bathroom,

the situation becomes more dire. In one bungalow the owner had no choice but to install laundry equipment in the bathroom since the coal shed was being used as a den (and previously as a children's bedroom), the home had no basement, and the kitchen was too small to accommodate laundry machines.

Storage

Storage was found generally to be a major problem for most residents of wartime homes. Storage of tools and recreational and home maintenance equipment was often located either in the basement (where available), a cabin in the backyard, or the coal shed. In the homes without basements that had all the other available storage areas filled to capacity, the owners had to invent alternate methods of storage. In one case study (household of three in a bungalow without a basement; 23 years in residence), the owner's daughter had no place to store her cross-country skis, so she chose to hang them above her bedroom door. The owners, her father, had storage shelves for small tools built into the wall of the living room (relocated to where the coal shed stood), inside the same storage unit where the fuse box was concealed. He also built storage for wines and canned goods into the 4-inch partition wall between the kitchen and dining room (Figure 9). In another case study, where the owner used the coal shed area for expansion of the kitchen, storage problems were encountered with the bicycles and lawnmower; the owner temporarily resolved his difficulties by storing the lawnmower in the trunk of his car, while he kept the bicycles in a neighbor's shed. Clearly, this lack of storage space in the coal shed was a significant trade-off made by the owner in order to have a larger kitchen.

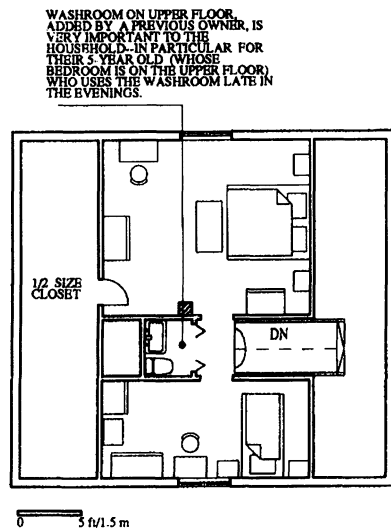


Figure 7. Upper-floor plan of case study 7: Second washroom.

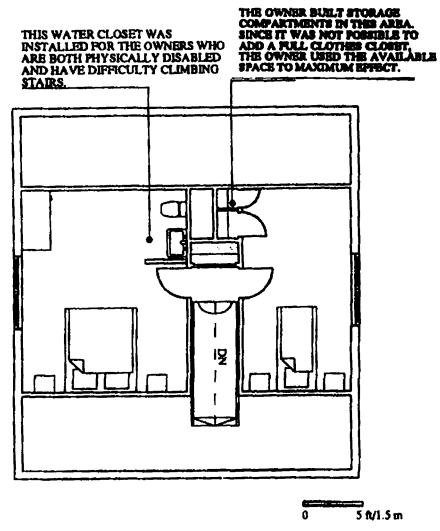


Figure 8. Upper-floor plan of case study 13: Additional water closet.

Windows and Stairs

Natural lighting was found to be a very important element in wartime homes. Of the households interviewed, 36% considered window lighting to be a high-ranking feature of the house, especially in the kitchen area. One resident explained the value of natural lighting in her home, stating, “The house is not oppressive...even if it is cluttered, it does not feel so due to the lighting.”

Although the provision of good lighting is an asset, large expanses of glass can sometimes be counter-productive in a small house. Studies by Cooper and Sims (1978) and Saile (1971, 1972) demonstrate that residents found odd-shaped bay windows, tall narrow windows that reach almost to the floor, and sliding glass doors to be inconvenient in furniture arrangement. This observation was confirmed by the study’s findings

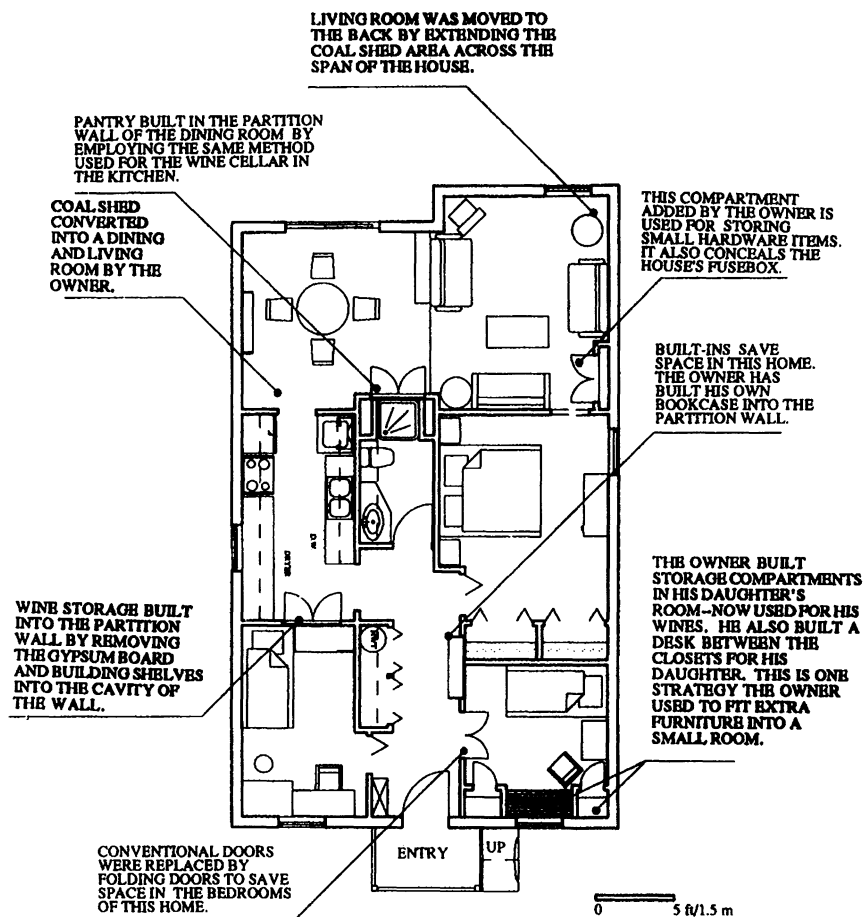


Figure 9. Floor plan of case study 19: living room moved to former coal shed.

that 16% of the householders chose to block one window in the bedrooms of the Cape Cod units to accommodate furniture arrangements. In one home in particular, the owner converted her coal shed into a dining room because she felt uncomfortable eating by the large kitchen window opposite her neighbor's house.

Stairs were modified in some of the houses in order to make the entry area more spacious. In one home, the direction of the stairs was re-oriented to lead into the living room for the sake of the owner, who was blind. In another home the walls on the sides of the stairs were demolished to open up the space between the living room and the den (a former bedroom). In homes where basements were not added, the space behind the stairs was used for storage; in 25% of cases, this space was used as a coat closet. In two homes with basements, the space under the stairs leading down was used for storing household items. One consistent finding in the bungalows was that elderly residents favored the single-story format because they did not have to cope with stairs.

Conclusions

Although both wartime house owners and small-lot housing residents must devise ingenious methods for dealing with their limited amount of interior space, there is a marked difference between the small wartime house and current small-lot housing. The wartime house was built during a period when land was cheap and plentiful, and therefore each unit was granted ample outdoor living space. Owners could add extra rooms in the rear of the dwelling without compromising their private outdoor space. Small-lot housing does not share this same flexibility of horizontal expansion; apart from vertical growth, there are very few options in expanding these homes. Furthermore, the square plan of the wartime home provides far more flexibility in the incorporation of additional rooms.

All wartimes homes were adjusted to meet the needs of each household. One must note that in making adaptations in order to cope with the smallness of their homes, the owners either had to have some building skills of their own or they had to invest in professional renovations. Without such a commitment and investment, these homes, particularly the bungalow, could not adequately meet the changing needs of *family* households. The study demonstrated the owners' innovativeness in efficiently using the space in a small house without significantly increasing the floor area. Some of the decisions taken by owners in renovating their homes did not take into consideration the ultimate marketability of the unit should they choose to sell. Subsequent research on the wartime house could determine how factors relating to renovation and resale value might be used in designing for user-adaptability in small-lot housing.

The interior layout of the wartime house was modified primarily to accommodate the need for more storage and larger work areas. The kitchen was the area where most renovations were made or desired, followed by the children's bedrooms. The coal shed was one of the most versatile areas in the wartime house in meeting the changing spatial needs of the household; located in the rear of the house, it was adapted for use as additional living space. Storage problems were resolved by employing unused spaces in the home such as the hollow area beneath a staircase.

On the subject of conventional furniture in a small house, the case studies demonstrated the difficulties involved in trying to find compact furniture with dual functionality, which would save considerable space. Although manufactures have downsized a number of appliances such as ovens and laundry equipment, their designs for today's market have yet to catch up with the new space standards of affordable housing.

Of the wartime housing types, the one-and-a-half-story Cape Cod unit proved most suited to families with children. On the other hand, the single-story bungalow was found to be more suitable for less mobile elderly residents. The field study also revealed that families with wide age differences between the children eased their spatial demands as the older children moved out, and rearrangements of living space among the remaining residents were made.

Overall, the finding that more than 86% of residents felt satisfied with their homes (48% reported that they were *very* satisfied with the manner in which the house met their lifestyle needs, while 38%, were *somewhat* satisfied) is an indication of the willingness of people to make trade-offs in a small house in exchange for home ownership. The wartime house owners could take advantage of their inexpensive accommodation by directing surplus household finances elsewhere. The "self-help" aspect of modifying wartime housing, combined with a government policy that facilitates home ownership, makes the wartime house an interesting model for affordable housing in North America. Current and prospective owners, as well as the designers of small-lot affordable housing, have many valuable lessons to learn on how to reside in small spaces without a reduction in living standards.

References

- Adams, E., Ash, B., & Littlewood, J. L. (1969). *The family at home: A study of households in Sheffield*. London: Ministry of Housing and Local Government.
- Becker, F. (1974). *Designed for living: The residents' view of multi-family housing*. Ithaca: Center for Urban Development Research, Cornell University.
- Clark, C. E. Jr. (1986). *The American family home 1800-1960*. Chapel Hill: University of North Carolina Press.
- Coon, B. R. (1942, January). Wartime housing. *Journal of the Royal Architectural Institute of Canada*, 19 (1), 3-9.
- Cooper, C. (1970). *Resident attitudes towards the environment at St. Francis Square, San Francisco: A summary of initial findings*. Working Paper No. 126. Berkeley: Institute of Urban and Regional Development, University of California at Berkeley.
- Cooper, C. (1975). *House as a symbol of self*. Berkeley: Institute of Urban and Regional Development, University of California at Berkeley.
- Cooper, C. & Sims, B. (1978). A post-occupancy evaluation of fourplex condominiums. *Housing & Society*, 5 (1): 32-46.
- Friedman, A., & Cammalleri, V. (1992). *Evaluation of affordable housing projects based on the Grow Home concept*. Research Paper No. 10. Montreal: McGill University.

Friedman, A., & Van Niessen, C. (1991). *Postwar housing innovation: Changes in the North American home 1945-1959*. Research Paper No. 7. Montreal: McGill University.

Johnson, C., Shack, J. & Oster, K. (1980). *Out of the cellar and into the parlour: Guidelines for the adaptation of residential space for young children*. Ottawa: Canada Housing and Mortgage Corporation.

Madigan, R., & Munro, M. (1993). Privacy in the private sphere. *Housing Studies*, 8 (1), 29-45.

Madigan, R., & Munro, M. (1991, Summer). Gender house and "home": Social meanings and domestic architecture in Britain. *The Journal of Architectural and Planning Research*, 8 (2), 116-132.

Peatross, F. D., & Hasell, M. J. (1992, Autumn). Changing lives changing spaces: An investigation of the relationships between gender orientation and behaviors, and spatial preferences in residential kitchens. *The Journal of Architectural and Planning Research*, 9 (3), 239-257.

Saile, D. G. (1971). *Activities and attitudes of public housing residents*. Rockford, Illinois: Housing Research and Development Program, University of Illinois at Urbana-Champaign.

Saile, D. G. (1972). *Families in public housing: An evaluation of three residential environments in Rockford, Illinois*. Rockford, Illinois: Housing Research and Development Program, University of Illinois at Urbana-Champaign.

Saywell, J. T. (1975). *Housing Canadians: Essays on the history of residential construction in Canada*. Discussion Paper No. 24. Ottawa: Economic Council of Canada.

Teasedale, P., & Wexler, M. (1986). *Dynamique de la famille, ajustements résidentiels, et souplesse du logement*. Montreal: Université de Montréal.

Wade, J. (1986, June). Wartime Housing Limited, 1941-1947: Canadian housing policy at the crossroads. *Urban History Review*, 15 (1), 41-59.

Zeisel, J., & Griffin, M. (1975). *Charlesview housing: Diagnostic evaluation*. Cambridge, Mass.: Architecture Research Office, Graduate School of Design, Harvard University.

Zeisel, J., Welch, P., Pilkington, C., Ertel, M., & Gill, P. (1981). *Housing designed for families: A summary of research*. Washington, DC: National Bureau of Standards.

Appendix

Summary of Key Characteristics of Case Studies

Case Study Number	Type of House	Description of Household	Years Resident
1	1-1/2-story Cape Cod cottage	Husband (46), wife (42), daughter (19), son (16)	7
2	2-story Cape Cod cottage with basement	Retired couple with adult son (30's)	29
3	Bungalow with basement	Widow with twin daughters (10) and younger daughter (9); original household included owner's husband	15
4	Bungalow	Retired couple; original household included two daughters and two sons	18
5	1-1/2-story Cape Cod cottage with basement	Husband, wife, two sons (12 and 14), daughter (9)	18
6	1-1/2-story Cape Cod cottage	Husband, wife, son (24), daughter (21)	15
7	1-1/2-story Cape Cod cottage	Husband (37), wife (35), son (5), daughter (3)	4
8	1-1/2-story Cape Cod cottage with basement	Retired couple; original household included two sons	24
9	1-1/2-story Cape Cod cottage	Elderly woman and daughter; original household included owner's husband, three daughters, and son	50
10	Bungalow with basement	Retired couple; original household included a daughter and two sons	42

(continued)

Case Study Number	Type of House	Description of Household	Years Resident
11	Bungalow	Retired couple; original household included four daughters and a son	40
12	Bungalow with basement	Elderly woman with daughter (50) and son (40); original household consisted of a husband and daughter	50
13	1-1/2-story Cape Cod cottage	Retired couple; original household included a daughter	13
14	Bungalow with basement	Woman living with her baby and boyfriend	10
15	1-1/2-story Cape Cod cottage with basement	Couple; upper floor is rented as an accessory apartment by a single man	4
16	Bungalow with basement	Husband, wife, mother-in-law, three sons (11, 10, 9), daughter (6)	5
17	Originally a bungalow with basement; a half-story has been added	Couple approaching retirement; original household included two daughters and a son	14
18	1-1/2-story Cape Cod cottage with basement	Husband, wife, daughter (18); original household included another daughter	22
19	Bungalow	Husband, wife, son (19); original household included a daughter	23
20	Bungalow	Couple approaching retirement	50
21	Bungalow with basement	Woman (66) living with mother (85); original household included husband and two sons	13

(continued)

Case Study Number	Type of House	Description of Household	Years Resident
22	1-1/2-story Cape Cod cottage	Woman living with son (35) and granddaughter (13); original household included husband, nine children and wife's parents	50
23	1-1/2-story Cape Cod cottage with basement	Retired couple; original household included two daughters and two sons	41
24	1-1/2-story Cape Cod cottage	Woman (80) living alone; original household included husband, two sons, one daughter	48
25	1-1/2-story Cape cod cottage with basement	Retired couple; original household included two daughters and two sons	41