

**FAMILY
DYNAMICS AND
DWELLING
ADAPTABILITY**

Prepared for the

*Research Division of
Canada Mortgage and Housing Corporation*

by

*Pierre Teasdale and Martin Wexler
School of Architecture
Faculty of Planning and Urban Studies
(Faculté de l'aménagement)
University of Montreal*

CMHC Project Manager, Luis Rodriguez

This project was funded by the Canada Mortgage and Housing Corporation under Part IX of the National Housing Act. The views expressed are those of the authors and do not represent the views of the Corporation. Cette publication est aussi disponible en français sous le titre Dynamique de la famille et adaptabilité du logement.

November 1993

NOTE: DISPONIBLE AUSSI EN FRANÇAIS SOUS LE TITRE:

DYNAMIQUE DE LA FAMILLE ET ADAPTABILITÉ DU LOGEMENT

ABSTRACT

This study explores the relationship between the various events that occur during the family life cycle and the **changes in use or physical modifications** that occupants make to their dwelling in order to adjust it to their changing needs. The basic research design involves a comparison of Montreal region families mainly composed of teenagers and young adults having owned and lived in the same single-family dwelling or plex for approximately seventeen years. The study documents how residential needs evolve while households continue to live in the same dwelling and identifies the types of pressure that these needs exert on the dwelling. The study also identifies architectural dwelling components that either inhibit or support adaptations responsive to life cycle changes. It provides guidelines to architects, builders, regulatory officials, realtors, and the public for the internal design of dwellings that are adaptable to long-term occupancy.

TABLE OF CONTENTS

	<u>Page Number</u>
ABSTRACT	iii
LIST OF FIGURES	xi
ACKNOWLEDGEMENTS	xxi
EXECUTIVE SUMMARY	xxii
1.0 CHAPTER 1: INTRODUCTION	1
1.1 GENERAL INFORMATION CONCERNING THIS STUDY	1
1.2 FIELD OF RESEARCH	1
1.3 OBJECTIVE OF THE RESEARCH	1
1.3.1 General Objective.....	1
1.3.2 Particular Objectives.....	1
1.3.3 Particular objectives and structure of the report.....	2
1.4 RELATIONS BETWEEN THE OBJECTIVES OF THIS STUDY AND CANADA MORTGAGE AND HOUSING CORPORATION'S INTERESTS	3
1.5 INNOVATIVE ASPECTS OF THIS STUDY	5
1.5.1 Type of phenomena studied.....	5
1.5.2 Type of population studied.....	6
1.5.3 Types of dwellings studied.....	6
1.5.4 Research methodology.....	6
1.6 THEORETICAL FRAMEWORK	7
1.6.1 First Stage: Becoming aware of one's needs.....	8
1.6.2 Second Stage: Reflection.....	10
1.6.3 Third Stage: Identification of components relevant to one's situation and action planning.....	10

1.6.4	Fourth Stage: Action.....	11
1.6.5	Fifth Stage: Evaluation.....	12
1.7	POPULATION STUDIED: DEMOGRAPHIC CHARACTERISTICS AND ATTITUDES IN RELATION TO FORMER, CURRENT AND IDEAL DWELLING.....	13
1.7.1	General Characteristic of the Population Studied and Reasons for our Selection Criteria.....	13
1.7.2	Average number of children occupying the dwelling during the study.....	15
1.7.3	Average number of children having already left the dwelling.....	15
1.7.4	Average number of children who occupied the dwelling.....	15
1.7.5	Average number of people per dwelling during the study.....	15
1.7.6	Average number of people per dwelling before departure of children.....	16
1.7.7	Average age of children occupying the dwelling during the study.....	16
1.7.8	Average age of the master of the house.....	16
1.7.9	Average age of the mistress of the house.....	16
1.7.10	Age pyramid of children occupying the dwelling during the study.....	16
1.7.11	Types of households occupying the dwellings during the study.....	16
1.7.12	Occupation.....	18
1.7.13	Annual income of occupants.....	18
1.7.14	Owners of secondary residences.....	18
1.7.15	Attitude: former dwelling.....	18
1.7.16	Attitude: current dwelling (positive elements).....	20
1.7.17	Attitude: current dwelling (negative elements).....	23

1.7.18	Attitude: ideal dwelling.....	23
1.7.19	Environmental competence of the participants.....	24
1.8	TYPES OF DWELLINGS STUDIED.....	28
1.8.1	General characteristics of the types of dwellings studied and reasons determining our selection criteria.....	28
1.8.2	Dwelling plans.....	31
1.8.3	Breakdown of dwellings based on housing model.....	31
1.8.4	Breakdown of dwellings by relation with neighboring dwellings.....	31
1.8.5	Particular single-family housing model.....	31
1.8.6	Breakdown of dwellings by number of bedrooms (prior to occupancy by current occupants).....	32
1.8.7	Breakdown of dwellings by number of bedrooms (after occupancy by current occupants).....	32
1.8.8	Average number of bedrooms per dwelling.....	33
1.8.9	Municipal assessment value of the buildings in which the dwellings studied are found.....	33
1.8.10	Breakdown of dwellings by construction year.....	33
1.8.11	Breakdown of dwelling by location.....	34
1.8.12	Complementary spaces to the essential spaces in the dwellings studied.....	34
1.8.13	Average liveable area ⁹ in the dwellings studied.....	35
1.9	RESEARCH METHOD.....	35
1.9.1	The Interview (see appendix 2).....	35
1.9.2	Graphic and photographic study of each of the dwellings.....	36
1.10	CHOICE OF THE SAMPLE.....	36
1.11	ANALYSIS METHOD.....	37

2.0	CHAPTER 2: LIFE EVENTS, NEEDS AND ADJUSTMENTS.....	39
2.1	CHANGES AND MODIFICATIONS RELATED TO LIFE CYCLE EVENTS.....	39
2.1.1	Creating/rearranging space for newborn and young children.....	41
2.1.2	Upstairs/downstairs -- transfer of basement areas into the domain of adolescent or young adult children.....	45
2.1.3	Other changes in spatial behavior associated with adolescence and young adulthood.....	77
2.1.4	Recovery of space vacated by departing children.....	91
2.1.5	Nonrecovery of "vacated" space.....	100
2.1.6	Taking care of elderly parents.....	102
2.1.7	Planning for the "empty nest".....	104
2.1.8	Redefining space at home when the wife (or husband) returns to work or study.....	115
2.1.9	Bringing work home.....	121
2.1.10	Unemployment.....	127
2.1.11	Reconstituted household space (part I) -- changes resulting from family fusion.....	129
2.1.12	Reconstituted household space (part II) -- changes resulting from divorce and separation.....	141
2.2	CHANGES OR MODIFICATIONS WITH NO EXPLICIT REFERENCE TO LIFE EVENTS.....	145
2.2.1	Updating or modifying the kitchen.....	158
2.2.2	Changing the location of the basement stair or its railing/balustrade.....	162
2.2.3	Decorating the basement play/family room with brick, stucco or wood.....	162
2.2.4	Adding woodwork.....	168
2.2.5	Changing furniture style.....	171
2.2.6	Adding a room.....	171

2.3	CONCLUSIONS.....	174
2.3.1	Chain reactions.....	174
2.3.2	Gain for children is often at parents' expense.....	175
2.3.3	Need for two types of bedrooms.....	176
2.3.4	Why the basement.....	176
2.3.5	Multiple time schedules.....	177
2.3.6	Plexes.....	177
2.3.7	Reconstituted families.....	178
3.0	CHAPTER 3: ARCHITECTURAL CHARACTERISTICS WHICH FACILITATE ADJUSTMENT.....	179
3.1	CHARACTERISTICS OF THE DWELLING.....	180
3.1.1	The dwelling is an architectural framework which foster major adjustments ¹⁵	180
3.1.2	The spaces within the dwelling are organized so as to foster minor adjustments.....	183
3.1.3	The spaces within the dwelling are organized to allow for the creation of activity zones with separate visual and acoustic areas for each.....	192
3.1.4	The fixed features in the dwellings such as the stairways, utility rooms, bathrooms, chimneys, and plumbing stacks are concentrated in one area.....	199
3.1.5	There are a minimum number of columns and load bearing partitions and the exterior envelope, the frame and the partitions can be easily perforated without affecting the structural integrity of the building.....	199
3.1.6	The dwelling contains two full-size bathrooms.....	205
3.1.7	The dwelling contains two distinct eating areas.....	206
3.1.8	The dwelling contains two distinct living room areas.....	207
3.1.9	The dwelling contains spaces for storing bulk articles.....	209

3.1.10	The main entrance and the secondary entrance do not provide direct access to living areas.....	215
3.1.11	The dwelling contains open unfinished spaces.....	216
3.2	CHARACTERISTICS OF THE ROOMS WITHIN THE DWELLING.....	222
3.2.1	Each of the rooms has a neutral and ambiguous shape as well as an area and dimensions above normal standards.....	222
3.2.2	Each of the rooms has a simple shape and the doors and the windows in the rooms are located to maximize the possibility of rearranging the furniture.....	223
3.2.3	The corridors are considered and designed as living spaces rather than simple access ways.....	231
3.2.4	The partitions between the rooms as well as those between rooms and corridors have doors of varying widths.....	232
3.3	CONCLUSIONS.....	241

**APPENDIX 1: DESCRIPTION OF MODELS AND DEFINITION OF CONCEPTS
BASED ON WHICH THE THEORETICAL FRAMEWORK WAS DEVELOPED**

1.0	RESIDENTIAL SATISFACTION.....	244
2.0	ENVIRONMENTAL COMPETENCE.....	245
2.1	Obstacles of an idiosyncratic and psychological nature.....	247
2.2	Obstacles of a social nature.....	248
2.3	Obstacles of an architectural nature.....	248
3.0	NEEDS.....	249
3.1	Elementary needs.....	250
3.2	Functional needs.....	250
3.3	Psychological needs.....	250
3.4	Social needs.....	251
4.0	EVENTS.....	251
5.0	SPACE APPROPRIATION.....	251
5.1	Organizing the dwelling and use assigned to the rooms.....	252
5.2	Modification or adjustment of a dwelling.....	252
APPENDIX 2: INTERVIEW GUIDE.....		254
APPENDIX 3: BIBLIOGRAPHY.....		255
APPENDIX 4: NOTES.....		264

LIST OF FIGURES

		<u>Page Number</u>
1.0	CHAPTER 1: INTRODUCTION	
	Figure 1.1 Dynamics of the family, residential adjustments and dwelling adaptability. Outline of theoretical framework.....	9
	Figure 1.2 Age pyramid of children still occupying the dwelling during the study.....	17
	Figure 1.3 Number of occupants by category of occupation.....	19
	Figure 1.4 Photos showing a few examples of the plexes which we have studied (1250-1, 1750-1, 1950-1).....	30
	Figure 1.5 Photos showing a few examples of the single-family houses which we have studied.....	31
2.0	CHAPTER 2: LIFE EVENTS, NEEDS AND ADJUSTMENTS	
	Figure 2.1 Ground-floor plan of triplex, Household 12 (1271). ^a Scale 1:100.....	44
	Figure 2.2 Photograph of basement family room, Household 13 (1316-1). In a less finished state, this area served as a playroom and, with the passage of the children on through to adolescence, was gradually finished to its present form.....	48
	Figure 2.3 Photograph of basement area used as the listening room, Household 05 (0516-4). With the passage of the children on through to adolescence, a sound system and a television were added and an acoustic wall was installed.....	51
	Figure 2.4 Photograph of shelving added to basement bedroom, Household 03 (0314-1). Additional storage space was needed by the adolescent son upon moving his bedroom to the basement.....	53
	Figure 2.5 Photograph of garage used for storing bicycles, ski equipment and a host of other objects, Household 07 (0725-6).....	54

Figure 2.6	Photograph of basement family room, Household 17 (1716-1). This space, which was alternatively used as a playroom, study area (note the desks still there), bedroom and family room, was able to absorb the expanding needs of adolescent children. At a certain time the space was also used by the children for practicing piano and to receive their friends.....	56
Figure 2.7	Photograph of formal living area, Household 11 (1104-2). This formality is communicated in the selection and positioning of furniture, the decor and the orderliness (the living room is always tidy) of the room.....	58
Figure 2.8	Photograph of informal living area in basement, Household 11 (1116-3). The gathering and casual positioning of furniture of different styles, of objects and even the basement location all contribute to a feeling of informality.....	59
Figure 2.9	Photograph of Daughter 2's basement workshop she arranged herself, Household 15 (1529). The basement area which was previously unsubdivided and used as a playroom is also used occasionally by her younger brother and his friends to play.....	61
Figure 2.10	Photograph of the esthetic services studio set up by eldest daughter within the basement family room, Household 10 (1016-1).....	62
Figure 2.11	Basement plan of duplex, Household 17 (1770). Scale 1:100.....	64
Figure 2.12	Ground-floor plan of duplex, Household 17 (1771). Scale 1:100.....	65
Figure 2.13	Basement plan of triplex, Household 12 (1270). Scale 1:100.....	67
Figure 2.14	Photograph of oldest boys' bedroom installed in basement, Household 12 (1217-1).....	68
Figure 2.15	Photograph of father's basement workshop converted to son's bedroom, Household 03 (0317-1). This was done to provide separate bedrooms for younger sons.....	69
Figure 2.16	Photograph of duplex facade, Household 18 (1850-3). A first attempt at adding a basement bedroom was unsuccessful because natural light was blocked by the balcony over window. A second attempt in the basement area with an unobstructed window was successful.....	71

Figure 2.17	Photograph of "successful" basement bedroom (1812-2). The room was installed by Father 18 and decorated and used by the daughter as she passed from adolescence to young adulthood.....	72
Figure 2.18	Ground floor plan of duplex, Household 19 (1971). Scale 1:100.....	75
Figure 2.19	Photograph of basement in which the son camped, (1917-3). Now the area is being renovated by Father 19	76
Figure 2.20	Plan of first floor of cottage, Household 08 (0872). Scale 1:100.....	79
Figure 2.21	Photograph of son's bedroom showing disciplined self-expression, Household 05 (0515). Most personal markers are attached to a bulletin board installed for this purpose.....	80
Figure 2.22	Photograph of daughter's bedroom, Household 08 (0813-3). The room, with bed and intergrated work area, maximizes the use of a small area in a personalized way.....	81
Figure 2.23	Photograph of son's bedroom showing supergraphics, Household 10 (1015-2).....	82
Figure 2.24	Photograph of son's bedroom in which the wall decoration testifies to a set of "mixed" values, Household 14 (1414-2).....	83
Figure 2.25	Photograph of daughter's bedroom in which the entire wall has become the bulletin board, Household 19 (1913-2).....	84
Figure 2.26	Photograph of corner recess with dispensary installed by Father 17 in the bathroom used by the parents and three daughters (1709-2). The son uses the basement toilet.....	86
Figure 2.27	Ground floor plan of duplex, Household 14 (1470). Scale 1:100.....	87
Figure 2.28	Ground floor plan of split level, Household 10 (1071). Scale 1:100.....	89
Figure 2.29	Ground floor plan of bungalow, Household 13 (1371). Scale 1:100.....	90
Figure 2.30	Ground floor plan of bungalow, Household 04 (0470). Scale 1:100.....	94

Figure 2.31	Photograph of duplex façade, Household 16 (1650-1). Basement bachelor apartment, with separate entrance next to garage, was used by two daughters for a certain period and then rented again when no longer needed.....	99
Figure 2.32	Photograph of kitchen in basement accessory apartment (0219-1). Father 02 added the unit in order to accommodate his adult daughter and her family. Their "return" was due to a financial crisis.....	108
Figure 2.33	Photograph of formal dining room, Household 12 (1205). Although not used on a daily basis for eating, it is used when adult children, their spouses and grandchildren visit.....	111
Figure 2.34	Photograph of "dinette", Household 17 (1706-2). When adult children, their spouses and grandchildren visit, this space is inadequate.....	113
Figure 2.35	Photograph of "spare" bedroom (1717). Mother 17 uses the room to care for her grandchildren which she does on a fairly regular basis.....	114
Figure 2.36	Photograph of chair used by Mother 06 in corner of master bedroom (0612-2). Unable to secure her own room in which to work, Mother 06 had to be satisfied with the purchase of a comfortable chair and a corner of her (and her husband's) bedroom.....	117
Figure 2.37	Photograph of work table and storage-area set up by Mother 13 in a bedroom which had been used by her daughter (1313-3).....	118
Figure 2.38	Photograph of basement "hobby corner" installed by Father 08 (0827-2). A total of eight households have such work areas.....	119
Figure 2.39	Photograph of sewing room, Household 08 (0826).....	120
Figure 2.40	Photograph of basement garage, Household 16 (1625). At various times, this space was used as a printshop, as a billiards room, for storage and, as well, for keeping the car.....	123
Figure 2.41	Photograph of basement office installed by Father 06 (0627-1). He uses it during evenings to prepare courses, work exams and for giving private lessons....	124
Figure 2.42	Photograph of work area in Father 03's bedroom (0312-1). This area replaced his basement office which was ceded to his eldest son.....	125

Figure 2.43	Photograph of Father 05 's drawing room located in furnace room (0526).....	126
Figure 2.44	Photograph of daughter's bedroom furnished as sitting room/bedroom, Household 08 (0817). This furniture was brought from her previous apartment.....	131
Figure 2.45	Basement showing conversion into an accessory apartment for daughter and granddaughter, Household 02 (0270). Scale 1:100.....	132
Figure 2.46	Ground floor plan with accessory apartment in basement for daughter and granddaughter, Household 02 (0271). Scale 1:100.....	135
Figure 2.47	Photograph of master bedroom (0112-2). Mother 01 used her bedroom suite to furnish the master bedroom after remarrying.....	136
Figure 2.48	Photograph of Father 01 's son's bedroom (0113). Father 01 gave his bedroom suite to his son to furnish his room.....	137
Figure 2.49	Plan of basement of duplex, Household 01 (0171). Scale 1:100.....	138
Figure 2.50	Ground floor plan, Household 01 (0170). Scale 1:100..	139
Figure 2.51	Photograph of shelving in garage (0123). Shelving was first installed to store Mother 01 's possessions after remarrying.....	140
Figure 2.52	Photograph of younger child's bedroom door enter sign indicating private, Household 03 (0315-2).....	143
Figure 2.53	Photograph of the living room used as a painting studio by Mother 16 (1604-2).....	144
Figure 2.54	Photograph of family room addition, Household 09 (0916-2). This addition was first considered when the house was purchased, although realized years later.....	149
Figure 2.55	Schematic diagram showing changing connections between kitchen, dining and living areas in Household 08 (0881).....	150
Figure 2.56	Photograph of new front doors, Household 06 (0602-1)..	152
Figure 2.57	Photograph of shelving suggested by Mother 07 and built by Father 07 in bathroom counter doors (0709-2).....	154

Figure 2.58	Photograph of rice paper and tiffany lamps, made by Mother 20 and her daughter (2003-2). These are displayed in the entry hall and elsewhere in the house.....	155
Figure 2.59	Photograph of completely remodeled kitchen, Household 19 (1906-2).....	159
Figure 2.60	Photograph of remodeled kitchen, Household 10 (1006-1).....	160
Figure 2.61	Photograph of new kitchen counter added under window, Household 05 (0506-1).....	161
Figure 2.62	Schematic diagram of relocation of basement stair, Household 04 (0480). The original basement stair, adjacent to the "guest room" was removed in order to create a "living room" and the stair, adjacent to the "kitchen" was modified to create a stronger link between the new "sitting room" and the "kitchen". Not to scale.....	163
Figure 2.63	Schematic diagram of relocation of basement stair, Household 05 (0590). This was done in order to free up a portion of the basement to create a family room. Not to scale.....	165
Figure 2.64	Photograph of series of arches which Father 16 used to replace wrought iron banister of stair leading to the basement (1604-5).....	166
Figure 2.65	Photograph of basement family room showing common use of brick and wood, Household 06 (0616-2).....	169
Figure 2.66	Photograph of wood decorative walls installed in the daughter's bedroom, Household 13 (1313-2). The installation of wood and wood trim in this house is especially important.....	170
Figure 2.67	Father 14's leather chair is prominently displayed in the living room (1404-2). Exceptionally, the living room in this household is used on an everyday basis.....	172
Figure 2.68	Ground floor plan of "split-level", Household 09 (0971). Scale 1:100.....	173

CHAPTER 3: ARCHITECTURAL CHARACTERISTICS WHICH FACILITATE ADJUSTMENT

- Figure 3.1 The plexes: A few examples of the possibilities of exchange, conversion and growth. Drawings not to scale.....184
- Figure 3.2 The single family houses: A few examples of the possibilities of exchange, conversion and growth. Drawings not to scale.....186
- Figure 3.3 The ground floor plan of the split-level unit occupied by **Household 09** showing Bedroom 1, which was formed by combining two rooms (0971). The broken line indicates the location of the doors and partitions prior to conversion. Scale 1:100.....187
- Figure 3.4 These two layout plans have the same area and the same number of rooms. It should be noted, however, that the topology of layout B allows for a larger possible number of combinations of room groupings when compared to layout A. Drawings to scale.....188
- Figure 3.5 For it to be possible to combine or to separate rooms, certain rules must be respected as pertains to horizontal and vertical proportions. Drawings not to scale.....190
- Figure 3.6 Photograph of one of the bedrooms in LeBreton Flats demonstration project built in Ottawa in 1978.....191
- Figure 3.7 The layout of the rooms based on a linear rather than a concentric concept fosters the creation of activity zones and visual and acoustic areas for each family member. Drawings not to scale.....195
- Figure 3.8 The organization of the rooms around a clearly defined corridor makes it possible to separate the incompatible areas and to establish a progression, starting from the main entrance way, going from the more public area to the more private. Drawings not to scale.....196
- Figure 3.9 Photograph of the living room (front of photograph) and of the dining (back of photograph) of the split-level house occupied by **Household 11** (1104-1)....197
- Figure 3.10 The insertion of buffer zones (visual and sound locks) between certain rooms in the dwelling considerably reinforces the degree of visual and acoustic privacy of these rooms. Drawing not to scale.....198

Figure 3.11	Basement plan of Household 05 showing how it is difficult to make full use of a floor area where the fixed features such as the laundry room, furnace room, toilet, stairways and two columns in this case are not concentrated in the same area (0570).....	200
Figure 3.12	Basement plan of the split-level house occupied by Household 10 . In this house, grouping together the bathroom laundry room, stairs, cold room, sauna and furnace room, made it easier to install the family room and bedroom 3 (1070). Scale 1/100.....	201
Figure 3.13	Basement plan of the triplex occupied by Household 12 in which a "sitting room" and a bedroom were installed (Other 1). The exaggerated depth of these two rooms was dictated by the presence of two rows of columns along the length of the dwelling (1270). Scale: 1/100.....	202
Figure 3.14	Photograph taken in the kitchen of the one-storey house occupied by Household 04 . In the background, you can see the "sitting room" which was created using the bedroom which became free after the marriage and departure of one of the girls. Initially this room was completely closed in (0406-4).....	203
Figure 3.15	Ground floor plan of the two-storey house occupied by Household 03 . As can be seen on the plan, having two distinct eating areas does not necessarily involve a substantial increase in the total area of the dwelling. In addition, in this case, the presence of a very small eating area in the kitchen makes it possible to use the dining room as a work room (0371). Scale: 1/100.....	208
Figure 3.16	Basement plan of the duplex occupied by Household 18 The garage for this unit, as is the case for a certain number of dwellings which we studied, is taken over by a whole gamut of objects other than automobiles (1870). Scale 1/100.....	211
Figure 3.17	The spaces reserved for storing articles in bulk should be located in areas which are easily accessible and organized so that one has easy access to all the articles stored. Avoid for example:.....	212

- Figure 3.18 Photograph of the main entrance way to the duplex occupied by **Household 07**. This entrance way opens directly onto the living room and, for reasons of privacy and for climatic reasons, its presence substantially limits the function of this space. For this reason the occupants of this dwelling use the garage entrance way (Figure 3.19) more often than the main entrance way (0704-2).....213
- Figure 3.19 Photograph of the garage and of the secondary entrance door which was installed as part of the garage door of **Household 07**. This entrance way is more frequently used than the main entrance way because it better complies with climatic imperatives (0725-1).....214
- Figure 3.20 Photograph of the basement in the dwelling occupied by **Household 19** showing the work being done to install a bachelor apartment including a bedroom, toilet, laundry room and kitchenette, at the time of our visit. It is important to point out that eighteen of the twenty dwellings which we studied contained an unfinished basement when the current occupants moved in and that in each one of these 18 cases, the residents themselves finished the basement (1917-1)...218
- Figure 3.21 Basement plan of the plex occupied by **Household 12**. In this dwelling, the shape of each of the rooms is neutral and ambiguous so that the function of each of these rooms may vary (1271). Scale: 1/100.....224
- Figure 3.22 Basement plan of the one-storey house occupied by **Household 06**. In this dwelling, the "Other I" is so small (7.0 m²) that its function is limited to that of a dressing room or a baby's room. According to Teasdale (1984), bedrooms intended only for one person and to be used only for sleeping, dressing and personal care should have an area of at least 8.5 m²; bedrooms which are to be used for other activities should have an area of at least 11.5 m² (0671). Scale 1/100.....225
- Figure 3.23 Basement plan of the duplex occupied by **Household 19** showing the dining room, the function of which is predetermined by the presence of two doors, two built-in china cabinets as well as an overhead lighting fixture (1971). Scale 1/100.....226

Figure 3.24	Basement plan in the duplex occupied by Household 07 . The living room in this dwelling offers very little possibility for re-arranging the furniture since two walls contain openings and since a third wall separates the living room from a traffic space (0771). Scale 1/100.....	227
Figure 3.25	Basement plan of the duplex occupied by Household 01 . The dining room in this dwelling offers very little possibility for re-arranging the furniture due to the traffic needs and to the virtual absence of walls against which furniture can be placed (0170). Scale 1/100.....	228
Figure 3.26	Having to cross rooms is to be avoided.....	229
Figure 3.27	Photograph of the corridor in the one-storey house occupied by Household 13 . Corridors with widths not exceeding minimal dimensions are usually impersonal and unoccupied areas (1303-3).....	233
Figure 3.28	Photograph of the entrance hall of the two-storey house occupied by Household 05 . This space creates a buffer zone between the entrance way and the rest of the house and is personalized by the presence of a bookcase, pictures, knick-knacks, and a mirror. There is abundant lighting due to the glazing in the entrance way door, which no doubt had fostered use of this space as a play area when the children were young (0502).....	234
Figure 3.29	Photograph of the entrance hall of the two-storey house occupied by Household 03 showing the pivoting partition system separating this room from the dining room. This system makes it possible to adjust the visual relationship between these two rooms and is particularly appreciated by the father who can isolate himself in the dining room and keep an eye on the small children who are playing in the neighboring rooms (0302).....	236
Figure 3.30	To maximize the flexibility of the dwelling, the partitions separating rooms as well as the partitions separating rooms and corridors should have doors with varying widths. Here are a few examples of doors as well as their main advantages and disadvantages. Drawings not to scale (also see the following pages)..	237

ACKNOWLEDGEMENT

CMHC's Steering Committee included Luis RODRIGUEZ, the project manager, Jim WHITE and Brian GRAY.

Francine DANSEREAU, a researcher with l'Institut national de la recherche scientifique, INRS-Urbanisation, also collaborated on this study in developing a research methodology.

The surveys, inventories, retranscription of interviews and drawings of house plans were all done thanks to the collaboration of France DUHAMEL, Johanne GUERTIN, Gabrielle LÉGER and Patrick PRETTY.

This project was funded by the Canada Mortgage and Housing Corporation under Part V of the National Housing Act.

The opinions and conclusions expressed, as well as the recommendations which are made, are the authors' and are not in any way binding on Canada Mortgage and Housing Corporation.

Pierre Teasdale and Martin Wexler, 1986.

EXECUTIVE SUMMARY

The main purpose of this section is to summarize the significant findings that are reported in Chapters 1, 2 and 3 of this report.

CHAPTER 1: INTRODUCTION (SAMPLE POPULATION AND DWELLING CHARACTERISTICS)

1.1 CHARACTERISTICS OF THE POPULATION

1.1.1 Household types

Couple with one child (4 households)

Couple with two children (7 households)

Couple with three children (7 households)

Single with plus four children (1 household)

Couple with one child and one grandchild (1 household)

1.1.2 Average number of years during which dwelling occupied by present owner

17 years

1.1.3 Average number of persons occupying the dwelling when study conducted

4.5 persons

1.1.4 **Average number of persons having lived in the dwelling since occupied by present owner**

5.35 persons

1.1.5 **Average number of children occupying the dwelling when study conducted**

2.3 children

1.1.6 **Average maximum number of children having lived in this dwelling at one time since it is occupied by present owner**

3.4 children

1.1.7 **Average age of children occupying the dwelling when study conducted**

19.8 years

1.1.8 **Average age of parents**

53 years

1.1.9 **Occupation**

(See Chapter 1, Section 1.7.12)

1.1.10 **Number of households by category of total household income**

\$20,001 to \$40,000 (3 households)

\$40,001 to \$60,000 (14 households)

\$60,001 to \$80,000 (3 households)

1.1.11 **Owner of a secondary residence**

Yes (5 households)

No (15 households)

1.1.12 **Relatives living within the same building (in a separate dwelling)**

Yes (6 households)

No (14 households)

1.1.13 **Attitudes concerning previous dwelling(s)**

No significant pattern observed

1.1.14 **Attitudes toward present dwelling: most positive aspects**

- quantity and size of rooms
- relationship between rooms
- presence of a basement
- quality of natural lighting

1.1.15 **Attitudes toward present dwelling: most negative aspects**

Few negative aspects were reported and there was no significant pattern among the negative aspects reported.

1.1.16 **Attitudes concerning ideal dwelling**

All 20 respondents said they considered their present dwelling as ideal; 18 of them said they had no intention of moving and 2 of them said they were now considering moving given the fact that their children would soon be leaving.

1.1.17 **Environmental competence of respondents**

We were unable to conduct a detailed evaluation of the environmental competence of respondents within the terms of reference of this study. However, within at least half of the families studied, we observed

individuals we would characterize as having above average environmental competence, i.e. able to make physical changes to their dwelling and to make changes in the use of the various rooms within their dwelling.

1.1.18 **Adjustment behavior: physical changes**

Within each of the 20 dwellings studied, some physical changes had been made to the kitchen; in 9 of these cases, these changes were major. Nearly all respondents (18/20) had finished their basements. The most frequent functional additions to the basement were: family room (15/20), storage space (15/20), laundry (13/20), bedroom (10/20), bathroom (8/20), workshop (8/20).

1.1.19 **Adjustment behavior: changes in the use of the rooms within the dwelling**

Within each of the 20 dwellings studied, some changes had been made in the use of the rooms. These changes were numerous and occurred, on average, 6.6 times per dwelling over the total number of years the dwellings under study were occupied by their present owners.

1.2 **CHARACTERISTICS OF THE DWELLINGS**

1.2.1 **Dwelling types**

Single-family dwelling with basement (10 dwellings)
Ground floor dwelling with basement in a duplex (8 dwellings)
Ground floor dwelling with basement in a triplex
2 dwellings)

1.2.2 **Single family dwelling types**

Bungalow (4 dwellings)
Cottage (3 dwellings)
Split-level (3 dwellings)

1.2.3 **Relationship with adjacent housing**

Detached (10 dwellings)
Attached on one side (9 dwellings)
Attached on two sides (1 dwelling)

1.2.4 **Number of dwellings having three and four bedrooms when respondents first moved into their present dwelling**

Three bedrooms (15 dwellings)

Four bedrooms (5 dwellings)

1.2.5 **Number of dwellings having three, four and five bedrooms when study conducted**

Three bedrooms (7 dwellings)

Four bedrooms (11 dwellings)

Five bedrooms (2 dwellings)

Note: 10 bedrooms were added by the present residents over the period of occupancy (see section 1.1.18 above).

1.2.6 **Average number of bedrooms per dwelling when the residents moved in the present dwelling**

3.25 bedrooms

1.2.7 **Average number of bedrooms per dwelling when study conducted (see section 1.2.5 above)**

3.75 bedrooms

1.2.8 **Average municipal evaluation of dwellings studied by building type**

Single family dwellings (1 unit) \$71,200

Duplexes (2 units) (\$88,125)

Triplexes (3 units) (\$89,000)

1.2.9 **Number of dwellings by period of construction**

(-) to 1920 (1 dwelling)

1921 to 1945 (3 dwellings)

1946 to 1960 (4 dwellings)

1961 to 1970 (10 dwellings)

1971 to 1975 (2 dwellings)

1.2.10 **Average net living floor area of dwellings studied**

Single-family dwellings(180 m²)

Dwellings in duplexes and triplexes (161 m²)

Note: net living floor area means the aggregate area of all floors including the basement within the inner surface of exterior walls or the inner surface of party walls. Space not used primarily for living purposes such as storage areas, utility areas and garages are excluded.

CHAPTER 2: LIFE EVENTS, NEEDS AND ADJUSTMENTS

This chapter deals with changes in the use of space and physical modifications in the home as these result from (1) life events and (2) other factors such as changes in style, enjoyment of or self-expression through environmental manipulation or closing the gap between one's actual and ideal home. Although these two major types of cause represent distinct analytical categories, in reality households may identify both in explaining changes that have occurred.

2.1 CHANGES AND MODIFICATIONS RELATED TO LIFE EVENTS

Two classes of life events are considered. The first type corresponds to developmental stages and are experienced by all households or, stated differently, most households have the potential to experience these events. The following events are considered.

- ° birth
- ° passage from pre-school to childhood
- ° passage from childhood to adolescence
- ° passage from adolescence to early adulthood
- ° departure of children
- ° preparing for the empty nest
- ° caring for aged parents

A second type of life event - more often a rupture - is not a "necessary" part of most household's life history, although this type of event is frequent. Included are the following:

- ° divorce or widow(er)hood
- ° family fusion
- ° women's entry or return to the paid labor force or to school
- ° unemployment

Patterns

The term "pattern" is employed here to describe a standardized relationship between a particular life event and a physical, spatial or behavioral modification. The concept of pattern is used here as a shorthand for summarizing or capsulizing a socio-psychological phenomenon and an associated spatial change. Moreover, rather than focusing on the psycho-social event per se, the use of such patterns allows emphasis to be placed on the spatial ramifications of these events in terms of the organization, use and decoration of space in the home. These spatial ramifications may result from the perception of a problem or a new need and in turn an attempt to resolve the problem or need through a physical or behavioral adjustment, or both. Twelve basic patterns have been identified based on data obtained in this study. They include the following:

2.1.1 Creating/rearranging space for newborn and young children

- ° Finding a room
- ° "Piling" first by age affinity, then by same sex

2.1.2 Upstairs/downstairs - the transfer of basement areas into the domain of adolescent and young adult children

- ° Basements used for entertainment or study by adolescent and young adult children
- ° Basements used for sleeping (as bedrooms) by adolescent and young adult children
- ° Consequences on the space available to parents

2.1.3 **Other changes in spatial behavior associated with adolescence and young adulthood**

- Room modifications
- Decoration
- Rules governing behavior and conduct

2.1.4 **Recovery of space vacated by departing children**

- Recovery of space vacated by departing children who move out and into a different building
- Recovery of space vacated by departing children who move into another unit in the building

2.1.5 **Nonrecovery of "vacated" space**

2.1.6 **Taking care of elderly parents**

2.1.7 **Planning for the "empty nest"**

- The move
- Renting out part of the house or making some part available to an adult child
- Using all of the space available

2.1.8 **Redefining space at home when the wife (or husband) returns
to work or study**

- ° Establishing a space of one's own

2.1.9 **Bringing work home**

2.1.10 **Unemployment**

2.1.11 **Reconstituted household space, Part I - Changes resulting
from family fusion**

- ° Accommodating aged parents
- ° Return of adult children
- ° Remarriage

2.1.12 **Reconstituted household space, Part II - Changes resulting
from divorce and separation**

2.2 **MODIFICATIONS (OR PATTERNS) WITH NO CLEAR OR OBVIOUS
RELATIONSHIP TO LIFE EVENTS**

Possible rationales for such modifications (comparable to life events in the preceding section) are listed below:

- ° Changing tastes or styles, obsolescence, keeping up with the Jones...
- ° Renovate, "long overdue", change for change's sake...
- ° Narrowing the gap between the present and the "ideal" home, e.g., adding extra room, adding woodwork, etc.

- Upgrading present home
- Maintenance, i.e., replacing worn or used elements
- Means of self-actualization or "appropriation" through manipulation of the environment
- Changes in life style

These rationales are not exclusive. Furthermore, in that they follow different time schedules than life events, they produce an extremely complex dynamic.

Some of the types of modifications observed are the following. (They are not "patterns" as used in the preceding section because they are not neatly linked to any single causal argument as in the first part).

2.2.1 **Updating or modifying the kitchen**

2.2.2 **Changing the location of the basement stair location and/or its railing/balustrade**

2.2.3 **Decorating the basement play/family room with brick, stucco**

2.2.4 **Adding woodwork**

2.3 **CONCLUSIONS**

A number of conclusions are drawn from these observations of patterns or modifications in houses occupied by the households studied. These are as follows:

2.3.1 **Chain reactions**

Rather than straightforward causal chains, long, complex chains of causality are very often observed following the passage of the life events considered here.

2.3.2 **Gain for children is often at parents' expense**

The increasing demands of children for space and privacy are often at the expense of the types and quality of space available to the parents.

2.3.3 **Need for two types of bedrooms**

Bedrooms for young children and for adolescent and young adult children are needed to accommodate both children's and parents' needs during both of these periods.

2.3.4 **Why the basement**

The basement in the houses observed serves as the main outlet where the new spatial demands of adolescent and young adult children are realized.

2.3.5 **Multiple time schedules**

Making more complex the timing of these adjustments is the multiplicity of time schedules related to the two major dynamics:

(1) adjustments triggered by changing life cycle needs and (2) other modifications.

2.3.6 **Plexes**

Having both a basement area and other dwellings within the same building, owners of plexes have a wider array of opportunities for adding to or subtracting spaces from their dwelling.

2.3.7 **Reconstituted families**

The needs of reconstituted families to adapt their housing to changing needs of household members and, especially their economic capacity to pay for housing, is especially important today. With varying degrees of success, their housing, as observed in this study, has been able to adapt.

CHAPTER 3: RELATING RESIDENTIAL ADJUSTMENTS TO DWELLING ADAPTABILITY

This chapter deals with the design characteristics of dwellings designed for families in order to be sufficiently adaptable and flexible to respond to desired/necessary **changes in the use** of space and **physical modifications** as these result from life events and other factors described in Chapter 2.

Two classes of design characteristics are identified based on the data obtained in this study. The first class corresponds to design features that should characterize the **dwelling as a whole**.

The second class corresponds to design features that should characterize the **rooms within the dwelling**.

3.1

THE DWELLING AS A WHOLE

3.1.1 The architecture of the building within which the dwelling is located should make it possible for **major expansions** and contractions of activities or household size to occur over time. Single-family dwellings and plexes equipped with basements lend themselves naturally to these types of adjustments when they have direct and ready access to grade and have good natural lighting.

3.1.2 The organization of the rooms within the dwelling should allow a variety of interconnections to make it possible for **minor expansions** and contractions of activities to occur temporarily without physical expansion/contraction of the unit itself. Major design factors contributing to these types of adjustments are: the topology of spaces, room proportions, the number of level differences, the location and the mobility of clothes closets, the location of fixed features such as plumbing fixtures, chimneys and stairs, the size of openings between rooms.

3.1.3 The plan form should allow the **segmentation** of the dwelling and a variety of zoning possibilities in terms of sight and hearing. Major design factors contributing to these types of adjustments are: the presence of partitions and doors, the presence of a primary and of a secondary entrance, the layout of the dwelling, the articulation of circulation spaces, the presence of different levels, the presence of transition areas (locks) between activity zones.

3.1.4 Fixed features of the dwelling such as plumbing fixtures, stairs and chimneys should be concentrated in order to **leave large areas of unimpeded space** to allow potential modifications to occur within the dwelling.

3.1.5 Building construction systems should consist of generally **open frameworks** so that activity spaces may be subdivided or made smaller or larger by adding or removing partitions and portions of walls without affecting the structural integrity of the building.

3.1.6 Dwellings designed for families should contain **two full bathrooms** to allow occupants to carry out their normal bathroom activities in privacy and without queuing.

3.1.7 Dwellings designed for families should have two separate eating areas so that different table related activities such as formal/informal meals, children's play, studying, informal neighboring, etc. may be best accommodated and take place simultaneously without conflict.

3.1.8 Dwellings designed for families should have two separate living areas so that different leisure activities may be best accommodated and take place simultaneously without conflict.

3.1.9 Dwellings designed for families should contain general interior and exterior bulk storage space to prevent the overflow of stored items into activity spaces.

3.1.10 Primary and secondary entrances should open onto vestibules, halls or corridors to maximize the useable floor space of every room.

3.1.11 Dwellings should contain an unfinished and free area such as a basement or an attic which may be used by families for unforeseen activities/changes. Such an area is also important because it provides a place where residents can make improvements in a fundamental way.

3.2 THE ROOMS WITHIN THE DWELLING

3.2.1 Rooms should be designed to allow for the assignment of functions. Major design factors contributing to this type of flexibility are room shape (should be neutral) and room dimensions (should be above minimum standards).

3.2.2 Rooms should be designed so that **different furniture arrangements** are possible. Major design factors contributing to this type of flexibility are room shape (should be simple) and window(s) and door(s) location (at least two walls should be free of openings).

3.2.3 Halls and corridors should be treated as rooms between rooms and not only as access links so that other minor activities may take place there.

3.2.4 Partitions separating rooms or separating rooms and circulation areas where linkages are possible and desirable should be equipped with doors allowing different degrees (broad and narrow) of linkage between spaces.

3.3 CONCLUSIONS

We would have liked to rank the above recommendations in order of

importance but were unable to do so. However, we feel obliged to stress the importance of recommendation 3.1.11 concerning the desirability and the opportunity for family dwellings to "contain an unfinished and free area such as a basement or an attic for unforeseen activities/changes. Such an area is also important because it provides a place where residents can make improvements in a fundamental way." Major design factors contributing to these types of adjustments are: natural light, direct and ready access to grade, unobstructed plan resulting from the concentration of fixed features, adequate electric outlets and plumbing hook-up possibilities, and linkage with the rest of the dwelling.

We need to stress that at the outset of this study we had not anticipated that the presence of an unfinished basement would prove itself to be so important. Yet in all cases, the basement was finished and proved to be the most multi-functional space in the dwelling unit. Perhaps because it was originally unfinished (in 18 of the 20 cases), the basement space seemed to suggest no particular functional definition and offered no functional constraints. Also because they were unfinished, basements

provided an almost ideal setting for personalization and identity reinforcing activities involving decorating and, in many cases, conversion to better accommodate unforeseen events, changes and spill over activities which could not have been accommodated elsewhere within the dwelling.

1.0 **CHAPTER 1: INTRODUCTION**

1.1 **GENERAL INFORMATION CONCERNING THIS STUDY**

This study was prepared for architects, builders, regulatory officials, realtors and for the general public. The analyses, advice and recommendations contained in this report aim at assisting these groups in planning and designing dwellings which are more adaptable to the needs of the occupants.

1.2 **FIELD OF RESEARCH**

This research project fits into the wide field of studies dealing with relationships between man and his environment¹ and which aim at developing residential quality indicators.

1.3 **OBJECTIVE OF THE RESEARCH**

1.3.1 **General Objective**

To formulate advice and recommendations for the renovation or modification of existing housing and for the construction of more adaptable new housing.

1.3.2 **Particular Objectives**

(1) To identify the various types of events (ex.: the arrival of a baby, losing a parent, the transition from childhood to adolescence, a new hobby, an extended stay in the family house by a child who has reached adulthood, sharing the same dwelling with an adult who is not a member of the same family, etc.,) which motivate individuals to become aware of new needs concerning their dwelling;

(2) to identify the various types of needs (ex.: need for privacy, for identification, to be able to personalize one's space, to have social contacts, etc.) which exert pressure on the dwelling's living space;

(3) to identify the various types of adjustments (ex.: assign rooms to new users or give rooms new functions, enlarge the house, add a unit to another unit, enlarge one room, put up new partitions, redecorate a room, etc.) which are made to the dwelling or to its use in order to relieve the pressures caused by change;

(4) to identify the various dwelling characteristics (ex.: shape of the rooms, relations between the rooms, type of construction, etc.) which either promote or inhibit the desired residential adjustments.

1.3.3. Particular objectives and structure of the report

Chapter 1 contains a description of the sample population and dwellings for the study, i.e., the characteristics of the population and the characteristics of the dwellings studied.

Chapter 2 contains the results of the analyses in relation to objectives 1, 2 and 3 above.

Chapter 3 contains advice and recommendations associated with objective 4 above.

**RELATIONS BETWEEN THE OBJECTIVES OF THIS STUDY AND CANADA
MORTGAGE AND HOUSING CORPORATION'S INTERESTS**

In Part V of its 1985-1986 Research Plan - "Housing Performance for Safety, Health and Economic Viability" - CMHC (1985) points out the fact that

"...seventy-five percent of the housing stock expected to exist in the year 2001 has already been built. Therefore, an increasingly larger fraction of new supplies will have to come through renovation or modification of existing units. An adequate knowledge of that existing stock will be vital, so that future actions will lead to an efficient process of renovation and rehabilitation."

The objectives of this study coincide very closely with the importance which CMHC grants to the necessity of understanding the real "behavior" of dwellings since we have tried to find, by analyzing existing dwellings, means to guide future conversions and future residential construction. In particular, we have sought out means to design housing so as to pre-determine at the very least the way in which the dwelling is to be used so as not to inhibit the possibilities of use. We believe that it is important to design dwellings which reflect the following facts:

- ° that the "raison d'être" of a dwelling may change over the course of the life of the first occupant;
- ° that the dwellings inevitably outlive the original occupants;
- ° that often the occupants do not use the dwelling as planned.

Now, we wondered what were the architectural characteristics of existing

dwellings which provide a greater amount of flexibility. The implementation of these characteristics could substantially improve the range of uses to which these existing dwellings as well as new housing units could be put over the long term; in other words, we wondered how the dwelling could adapt to the evolution of its various occupants over the years?

It goes without saying that the development of coherent policies and adequate programs concerning the conversion of existing dwellings and the construction of new dwellings supposes not only a good understanding of the characteristics of the housing stock but also a good understanding of the needs of the individuals. Now, this understanding, according to Ycas (1978) and Archer (1984) does not exist and the research aiming at evaluating the adequacy between the housing stock and the needs of users is, according to them, not very advanced:

"For many years now, the Census and various surveys provide data concerning household facilities and equipment, such as running water, flush toilet, bathtubs or showers, etc. These elements have often been used to determine whether a dwelling is generally "adequate"... This definition of "an adequate dwelling", presents us with a problem since it has now become too elementary; too many dwellings are "adequate" in this sense and this precludes use of this indicator as a general indicator of the quality of housing..." (Ycas, 1978).

Thus we hope that this study, since it has a starting point based on the needs of individuals as well as the events which trigger them off, will contribute to better defining the type of flexibility which a dwelling should have in order for these needs to be met with a minimum amount of inconvenience.

1.5

INNOVATIVE ASPECTS OF THIS STUDY

This study sets itself apart from the preceding research in four ways: (1) the type of phenomena studied; (2) the type of population studied; (3) the types of dwellings studied; (4) the research methodology used.

1.5.1 Type of phenomena studied

Whereas several studies exist concerning the dynamics of the family and in particular concerning the life cycle concept (Gould, 1978; Levinson, 1978; Vaillant, 1977, Sheehy, 1974; Neugarten, (1968), there are very few, however, which attempt to establish the relationship between the dynamics of the family and the flexibility (adaptability) of the dwelling. The question of residential adjustment has almost exclusively been approached in studies of residential mobility (Rossi, 1955; Barrett, 1978; Simmons, 1968; Ilstad, 1978) but, in the case of these studies, the type of adjustment involved is moving.

Now, we are living at a period where certain demographic changes (e.g. growth in the number of people living alone, growth in non-family households, increase in the age of the population, etc.) as well as certain economic changes (for example: the increasingly large number of unemployed youth, impoverishment of the elderly population, etc.) are exerting additional pressure on the dwelling, for example:

- ° an increasingly large number of individuals alone without parental links share the same dwelling in order to reduce the cost of their rent;
- ° an increasingly large number of elderly people are returning to live with their children because they no longer have the means to look after their own needs, or because they are looking for greater security;

- ° an increasingly large number of young adults are delaying leaving their parents' house since they do not have the financial means to live alone.

1.5.2 **Type of population studied**

We have chosen to focus our study on family households made up of adolescents and young adults (see Section 1.7.1) because we had to limit the scope of the study and, in particular, because the requirements of adolescents and young adults as pertains to housing, have been little studied, compared to studies existing on children and on the elderly. In addition, we were particularly interested in the compromises which are essential to healthy co-habitation between adolescents and parents as well as between young adults and parents. To fully understand the requirements of this population it goes without saying that we had to analyze what had happened in the dwelling when the children went from childhood to adolescence and from adolescence to adulthood.

1.5.3 **Types of dwellings studied**

Our study dealt with single-family dwellings and with plexes (see Section 1.8.1). These housing models, compared to highrise multi-family dwellings and row houses, have also been little studied.

1.5.4 **Research methodology**

The research workers Zimring and Reizenstein (1980) report that among approximately 1,000 post occupancy evaluation studies listed by Bechtel and Srivastava (The Environmental Research and Development Foundation, 1977), most aim at measuring the performance of the dwelling at the very moment the evaluation takes place, i.e. in a timely manner.

Our study, on the contrary, is different in that there is a will to retrace the evolution of the relation between the occupant and his/her dwelling over a period of 10 to 20 years (see Section 1.10). Our study stands out therefore due to its dynamic nature.

1.6 THEORETICAL FRAMEWORK

The theoretical framework which was used for development of this study results from the integration which we have succeeded in realizing between the following models and concepts: (Appendix 1 contains the descriptions and detailed definitions of these models and concepts):

- ° The models of residential satisfaction developed by Michelson (1977) and Becker (1977);
- ° The concept of environmental competence developed by the psychologists Jutras and Cullen (1983), Lantermann (1976), Leff (1978) and Steele (1973);
- ° The notion of need as defined by Steele (1973) and adapted by the authors;
- ° The concept of space appropriation analyzed by many research workers as part of the Third International Architectural Psychology Conference (1976) of which the theme was the appropriation of space. Among the numerous researchers participating in this conference, we have chosen to highlight the interventions by Haumont, Graff, Bayazit, Barbey, Lugassy, Leroy, Petit, Mazerat and Latour Dejean. The results of a research carried out by Becker (1977) were also integrated into our concept.

The theoretical framework on which this research proposal is based presupposes that the appropriation² of the dwelling is usually the result of a repetitive process made up of five stages (illustration 1.1):

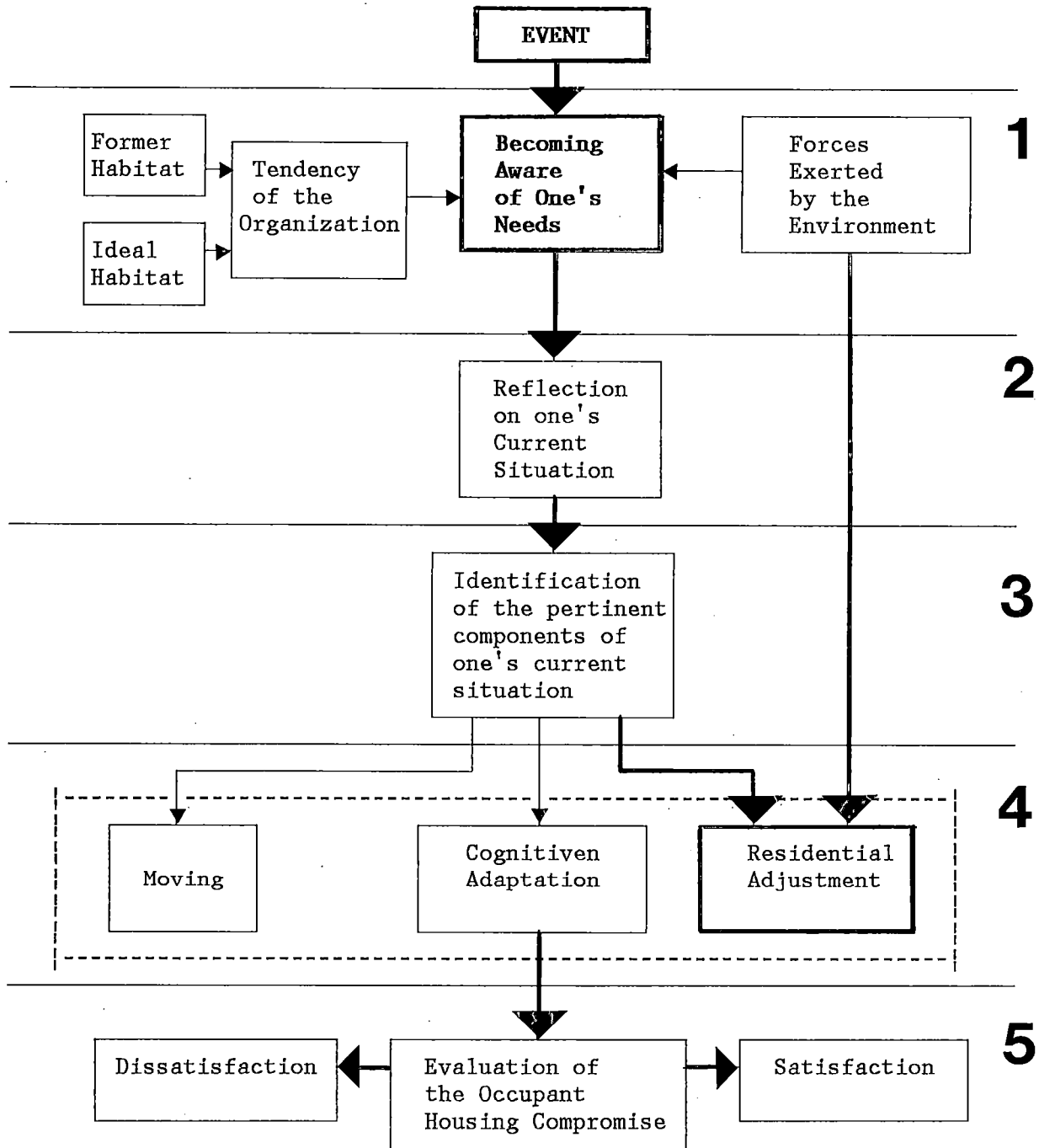
- 1.6.1 becoming aware of one's needs;
- 1.6.2 reflection;
- 1.6.3 identification of the components relevant to the situation and planning the action;
- 1.6.4 action;
- 1.6.5 evaluation.

It is important to note that, in practice, these stages may overlap; we have differentiated them to highlight the critical aspects of the process.

1.6.1 **First Stage: Becoming Aware of One's Needs**

Human beings in general have a tendency to actualize. This tendency can be defined as being the desire to display, to actualize one's potential as a human being. The degree of the individual's environmental competence. Environmental competence is based on two types of aptitudes: (1) being conscious of one's environment as well as its influence on each and every one of us and (2) being able to modify one's environment or the use thereof without destroying the latter, in order to make it more adequate in relation to one's needs.

Figure 1.1. Dynamics of the family, residential adjustments and dwelling adaptability. Outline of theoretical framework.



As for housing, this trend expresses itself in the periodic reviews which individuals make of their relation with their dwelling. The individuals assess their dwelling considering mainly their past experience on one hand and their idea of an ideal dwelling on the other.

This periodic review is activated by a series of events which we have qualified for the purposes of this study as family dynamics. Some of these events are part of the usual developmental stages of all families (example: the transition from childhood to adolescence or from adolescence to adulthood), whereas others are not necessarily part of the history of all families (example: divorce or the return of one of the spouses to the labor market).

This review, once initiated, leads the individual to become aware of certain needs.

1.6.2 **Second Stage: Reflection**

Immediately after this review and after the process of becoming aware of one's needs which we have just described, the individual introduces into his evaluation of his current situation stabilizing factors resulting from his or her thought on the components of this situation. For example: the anticipated length of time during which the individual expects to live in his present dwelling, the existence of housing alternatives at affordable prices, the life cycle which the individual is in at the present time, etc. During this period of reflection, most individuals draw up a list of the pros and cons of their current situation. Subsequent to this reflection, some individuals decide to change something in their life, others decide to change nothing.

1.6.3 **Third Stage: Identification of components relevant to one's situation and action planning**

The choice of an action plan is done by pursuing the thought initiated in

the second stage. The individual arrives at an action plan by identifying, among all the components of his/her current situation identified during the second stage, those which are the most relevant in relation to his/her intention to change something in his/her life. For example, the acknowledgement that more interesting dwellings exist will lead certain individuals to plan on moving and inversely, acknowledgement that no affordable alternate dwelling exists could lead other individuals to revise (change) their attitude of dissatisfaction and to make the best of their current situation by concentrating on the positive aspect of their current dwelling; other individuals, faced with the latter acknowledgement, will begin to plan changes or adjustments in their dwelling. In summary, the strategies which the individual may adopt at this stage to improve his/her relation with his/her environment are as follows:

- (1) moving;
- (2) changing one's attitude (adapting);
- (3) changing one's dwelling;
- (4) changing the use that is made of rooms in one's dwelling.

In this study, when we refer to residential adjustments, we are referring to strategies (3) and (4) above.

1.6.4 **Fourth Stage: Action**

Subsequent to the planning which we have just described, the individual starts to take action;

- (1) Moving can mean two different things:
 - the whole family moves into a new dwelling;
 - one member or a part of the family changes dwelling (example: an adolescent to a boarding school).

(2) Changing one's attitude, i.e., substituting satisfaction for dissatisfaction, can be achieved cognitively in two ways:

- concentrating on the positive aspects of one's current dwelling (example: its site or its relative low cost) and considering the negative factors as being less important;
- concentrating one's energies on the elements of one's life which are gratifying and which have no connection with one's dwelling (example: one's friends, hobbies, cottage, sailboat, etc.).

(3) Modifying or adapting one's dwelling may be done in one of three ways:

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

(4) Changing the use of rooms in one's dwelling, i.e., adapting a new form of allocating or utilizing rooms in one's dwelling.

1.6.5 **Fifth Stage: Evaluation**

This final stage consists in evaluating whether the modification(s) made have produced a more adequate person - environment compromise. The success of this compromise apparently is closely linked to the presence of the potentials or the absence of obstacles of a psychological nature (ex.: lack of self-esteem), social (absence of communication between members of a family), economic (insufficient income), regulatory (painting not allowed),

architectural (the arrangement of the rooms or type of construction which does not lend itself well to adjustment).

In this study, it goes without saying, the analyses are limited to studying the relation between the residential adaptation phenomenon and the presence of potentials or the absence of obstacles of an architectural nature.

1.7 **POPULATION STUDIED: DEMOGRAPHIC CHARACTERISTICS AND
ATTITUDES IN RELATION TO FORMER, CURRENT AND IDEAL DWELLING**

1.7.1 **General Characteristic of the Population Studied and Reasons
for our Selection Criteria**

The study dealt with French Canadian family households (nuclear families or single-parent families) with at least two children. The average age of the children still occupying the dwellings studied at the moment our surveys were carried out was approximately 20. All of these families owned their own houses and had lived in their current dwellings for an average of 17 years.

We chose family households as our observation unit in order to limit the scope of the subject studied and because our previous research work had better prepared us to study family rather than non-family households. We believe, however, that in other circumstances, it would have been just as interesting and useful to study the dynamics and the appropriation of space by non-family households made up of more than one person, since the number of these households has increased substantially over the past few years and because their requirements in relation to their dwellings, as that of the adolescents, moreover, have been little studied.

We have chosen families with adolescents or young adults as an observation unit since our previous research indicated to us that it is during

transition of children from childhood into adolescence that the dwelling is exposed to the most severe pressure; for example, we have been able to observe as part of our research that with adolescents the need for territoriality accentuated itself with the child as well as the parents (who are starting to lose control but want to keep control over their children); and that with adolescence, there is an increasing need to personalize one's space; that with puberty, requirements for privacy become increasingly important, i.e., the child feels like being alone not only to undress but also to take care of his/her person and to study; that the child's quantitative requirements relating to space become equally more important because the child's need to have social contacts, i.e., the need to have friends over at the house and to have parties increased to such a point that, for a certain period of time, the child's space requirement could even exceed that of his/her parents.

The study of the adolescent-dwelling relation also appeared to us to be particularly interesting considering the fact that the needs of adolescents and of young adults have not been widely studied compared to those of children and of the elderly. An initial inventory of studies dealing with adolescents and young adults only made it possible for us to identify approximately 10 documents (Fortier, 1982; Anderson, 1974; Gianturo et al.,

1974; Hansen and Altman, 1976; Jenny, 1967; Karsk, 1977, Lehr and Bonn, 1974; Magder, 1981; Pollowy, 1977; Proshansky and Kaminoff, 1979), whereas we would have been able to identify several times as many studies had our research dealt with the requirements of children and of the elderly in relation to their dwellings.

We have chosen families owning their own dwelling as an observation unit in order to avoid situations where regulations or the absence of motivation, due to the fact that the individuals were tenants, could have limited the appropriation phenomenon.

We also chose families who have lived in the same dwelling for at least 10

years as an observation unit in order to have a sufficiently long period of time to include a large number of events and in particular to be able to include the child-adolescent or adolescent-young adult transition period. This has not prevented us from covering other events, divorce, for example, which influences the appropriation of one's dwelling.

Lastly we chose families where the parents still have a clear recollection of the problems involved (i.e., parent-children-dwelling compromises) during this period as an observation unit for methodological reasons, for example, we feared that elderly people would not be able to remember the details of certain stages of their lives.

N.B.: Given the exploratory and qualitative nature of this research study, we have not limited the scope of our demographic observation unit as pertains to the following variables: marital status, education, occupation, and number of children. We consider these variables important and they are part of our observation universe. However, we have tried to avoid extreme spreads as pertains to the socio-economic characteristics of the participants by choosing households with comparable incomes and living in dwellings with comparable market values.

- 1.7.2 **Average number of children occupying the dwelling during the study: 2.3**

- 1.7.3 **Average number of children having already left the dwelling: 1.10**

- 1.7.4 **Average number of children who had occupied the dwelling: 3.4**

- 1.7.5 **Average number of people per dwelling during the study: 4.25**

- 1.7.6 **Average number of people per dwelling before departure of children: 5.35**

- 1.7.7 **Average age of children occupying the dwelling during the study: 19.8**

- 1.7.8 **Average age of the master of the house: 53 years**

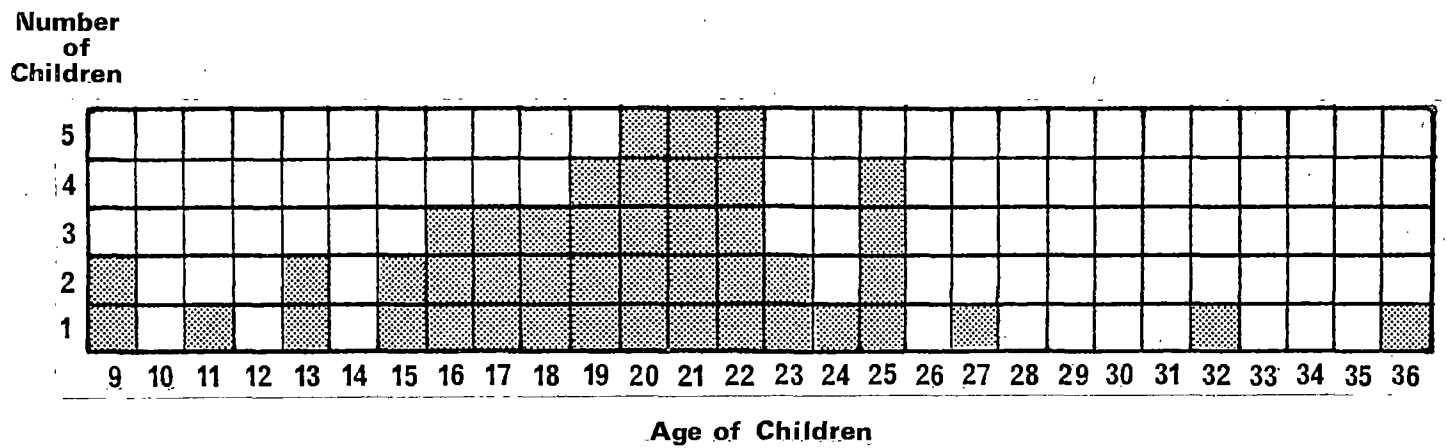
- 1.7.9 **Average age of the mistress of the house: 53 years**

- 1.7.10 **Age pyramid of children occupying the dwelling during the study: refer to Figure 1.2**

- 1.7.11 **Types of households occupying the dwelling during the study**

Couple plus one child.....	4
Couple plus two children.....	7
Couple plus three children.....	7
Couple plus four children.....	1
Couple plus one child plus one grandchild.....	1
	—
TOTAL.....	20

Figure 1.2. Age pyramid of children still occupying the dwelling during the study.



1.7.12 **Occupation: see illustration 1.3**

1.7.13 **Annual income of occupants**

Less than \$20,000.....	0
\$20,001 to \$40,000.....	3
\$40,001 to \$60,000.....	14
\$60,001 to \$80,000.....	3
\$80,001 and more.....	0

1.7.14 **Owners of secondary residences**

Yes.....	5
No.....	15

1.7.15 **Attitude: former dwelling**

To assist us in understanding how the past experiences of each of our participants in other dwellings could influence the perception which they had of their current dwelling, we asked each participant a series of questions (see Appendix 2, Interview Guide, questions 39 to 46). An analysis of the data produced by these observations has not allowed us to detect a significant pattern, however.

Figure 1.3. Number of occupants by category of occupation

	A*	B*	C*
Industrialists and owners of businesses (owners of capital). Senior administrators in the private sector (ex.: President and General Manager, Vice-President and Executive Directors).	2	0	2
Professionals in the private sector (ex.: Engineers, Accountants, Solicitors). Senior Civil Servants and Professionals employed in the Public Service.			
Professors (college and university level) and research workers. Mid-management personnel with private enterprise and with the Civil Service (ex.: Chiefs of Personnel, Administrators, Accountants, Auditors).			
Semi-professional or "professional employees" (ex.: nurses, ergotherapists, teachers, social workers, plus the "intellectual" professions).	10	6	0
Technicians (ex.: laboratory technicians, electronic technicians, pilots, industrial designers, advertising designers, interior decorators).			
	A*	B*	C*
Technical-commercial (staff paid on a commission basis: business representatives, insurance agents, real estate agents).			
Small businessmen, Craftsmen, Farmers Small contractors (construction contractors, electricians, painters).	3	1	1
First line managerial staff (ex.: office chiefs, department heads, inspectors)			
Office and shop workers			
Members of the police force and the army who are not high ranking officers (the latter are classified as public service officials).	3	2	2
Service professions (hotel, and restaurant employees, janitors, taxi drivers and truck drivers, nursing assistants).			
Skilled workers and foremen. Specialized workers and laborers	2	0	3
Housewives (or househusbands)	0	10	0
Students	0	0	38
TOTAL	20	19	46

A*: master of the house B*: mistress of the house C*: child

1.7.16 **Attitude: current dwelling (positive elements)**

To assist us in understanding why the participants have remained for such a long time (on the average 17 years) in their current dwellings, we asked them to identify the most positive elements of these dwellings. We have grouped the replies to this question in various categories:

<u>The most positive aspects of one's dwelling</u>	<u>Identification of Households</u>
(1) Elements related to quantity of space and the dimensions of this space:	
° quantity of space	01, 05, 10, 12, 16, 18
° size of bedrooms	14, 20
° size of master bedroom	17
° size of living room	06
° size of bathroom	17
° size of rooms	20
° number of bathrooms	01
° number of bedrooms	11
° one bedroom per person	18
(2) Elements linked to the horizontal and vertical organization of the space:	
° opening between kitchen-dining room and living room	10, 12, 14, 18
° possibility of closing/opening the doors of the rooms	03, 15
° possibility of zoning facilitated by the presence of several levels	08, 10

**The most positive aspects
of one's dwelling**

**Identification of
Households**

° direct access from the kitchen to the yard	06
° arrangement of the rooms	14
° central location of entranceway	06
° presence of a buffer zone between the bedrooms and the living space	18
° presence of laundry facilities in the kitchen	20
° raised basement	06
(3) Elements related to the presence of a basement:	
° presence of a basement	15, 17
° presence of a basement as a workshop	08
° presence of a basement for laundry equipment	08
° presence of a basement for the children	08, 12
(4) Elements related to the location of the dwelling in relation to the sun:	02, 04, 05, 07, 13, 14
(5) Elements related to the neighborhood:	03, 04, 16, 18, 19
(6) Elements related to the general atmosphere of the dwelling:	
° roomy	17
° friendly	18
° homey	02
° gay	02
° inviting	02
° lively	02

**The most positive aspects
of one's dwelling**

**Identification of
Households**

(7) Elements related to the quantity of storage space:	
◦ quantity of storage space	15, 17
◦ quantity of kitchen cupboard space	06, 20
◦ garage useful for storage	03
(8) Elements related to the quality of the immediate exterior environment	
◦ presence of a yard	03, 05, 15
◦ exterior appearance of the house	06
(9) Elements related to construction quality	07, 17, 18
(10) Elements related to the qualities of certain rooms:	
◦ the particular charm of the bathroom	20
◦ functional kitchen	20
(11) Elements related to various qualities of the dwelling:	
◦ possibility of making changes	02, 04, 08, 09
◦ trim, wood, etc.	12, 13, 19
◦ the dwelling is functional	03, 13
◦ ease of maintenance	10
◦ shape of rooms	17
◦ manner in which the dwelling communicates with the outside	09
◦ presence of a family room	09

The replies which we have classified under categories (1), (2), (3) and (4) above underline in particular the importance of the following elements:

- ° that each of the rooms in the dwelling be sufficiently large to be assigned more than one use (see section 3.2.1);
- ° that the partitions contain the elements necessary (example, doors or screens) making it possible to separate or combine neighboring spaces (see section 3.2.4);
- ° that each dwelling contains an open and unfinished space, such as a basement or garage, in order to accommodate unforeseeable functions (see section 3.1.11);
- ° that the dwelling receive a lot of sun.

1.7.17 Attitude: current dwelling (negative elements)

We asked the participants to identify the negative elements concerning their dwelling. The number of negative elements reported was very low in relation to the number of positive elements reported in section 1.7.16.

Also, we have not been able to detect any significant pattern in the replies to this question. It is also important to point out that among the positive and negative elements reported, we were not able to observe any difference between the replies coming from people occupying plexes and those occupying single-family dwellings.

1.7.18 Attitude: ideal dwelling

We asked the participants what for them would be their ideal dwelling and all replied that they would consider their current dwelling as being ideal. Among these, 18 replied that they had the intention of remaining in their

current dwelling and 2 replied that they were thinking of moving because of the fact that their children would soon be leaving the family home.

In order to test the feeling of belonging that the participants had towards their current dwelling, we subsequently asked whether they would think about moving if their income were higher. Now, among the 18 participants who wanted to remain in their unit under the current conditions, 12 replied that they would not move, 4 replied that they would make improvements in their current dwelling and 2 replied that they would move.

The deep felt feeling of belonging to their current dwelling expressed by all the participants explains the large number of positive remarks (section 1.7.16) and the small number of negative remarks (section 1.7.17) which we reported previously.

It does seem important for us, however, to point out³ the fact that in this case, our 20 participants have been living in their current dwelling for an average of 17 years. This situation is due to one of our sampling criteria (i.e., the necessity of having a time period sufficiently long to contain a large number of events, section 1.7.1). Considering the above-mentioned conditions, the participants could have a tendency to justify their

decision of having spent many years of their life in the same dwelling. Thus one should not interpret their reactions as being an objective evaluation of the 20 dwellings studied.

1.7.19 **Environmental competence of the participants**

It has not been possible for us, within the limits of this study, to measure the environmental competence of each of the participants in relation to the five dimensions⁴ defined by Jutras and Cullen (1983):

(1) ability to become aware of one's needs and objectives;

- (2) ability to understand the environmental components of one's current situation;
- (3) ability to plan action;
- (4) ability to influence the person-environment relation through the physical environment (physical modifications and/or modifications in the use assigned to various rooms);
- (5) ability to evaluate whether a modification made has produced a more adequate person-environment compromise.

To fully understand the influence of this variable on the behavior of the participants, it would have been necessary to develop a whole series of indicators for each of the above-mentioned dimensions. Subsequently, it would have been necessary to develop, for each of these indicators, an instrument to measure them. Lastly, it would have been necessary to use each of these measures on each of the parents (father-mother) in the 20 households studied.

Nevertheless our study made it possible for us to make six very interesting observations:

- (1) The five dimensions defined by Jutras and Cullen (1983) appeared to us as being very relevant since we were able to recognize, for each of the households studied, people having one or more of the skills described by these research workers;
- (2) The skills varied, from one household to another, i.e. certain individuals had the ability to become aware of their needs and of their objectives but did not have the ability to plan action whereas others had the ability to plan action but were not capable of acting in a concrete manner to influence the person-environment relation through the physical environment;

(3) This ability to act or to influence the person-environment relation through the physical environment described by Jutras and Cullen should be sub-divided, according to our observations, into the four following sub-dimensions:

- ° the ability to make technical modifications in order to maintain one's environment (example: changing the windows in one's dwelling);
- ° the ability to make interior changes (example: organizing and decorating the rooms in one's dwelling);
- ° the ability to make architectural modifications (example: make a room larger or a dwelling larger by taking down partitions or walls);
- ° the ability to manage one's environment (example: to organize and modify the use of the rooms in one's dwelling);

(4) In spite of the fact that we were unable to accurately measure the environmental competence of each of our participants, it seems important to us to point out that at least half of the households studied seemed to have individuals with particularly high environmental competence, at least regarding the ability to act to influence the person-environment relation through modifications (see section 5 and 6 below);

(5) Physical changes:

- ° all the households studied had made changes in the kitchen in their dwelling and in 9 out of 20 cases these modifications had been major;

° almost all the households (18/20) had made improvements in the basement of their dwelling, including 15 family and/or playrooms, 15 storage spaces⁵, 13 laundry rooms, 10 bedrooms, 8 bathrooms, and 8 workshops for handymen (N.B.: this list only includes the most frequent improvements);

(6) modifications in the use to which rooms are assigned: in all the dwellings studied there were modifications made as to the use made of the rooms; the average number of this type of modification was 6.6 times per dwelling, (N.B.: the precise nature of these modifications will be described in Chapter 2).

1.8 TYPES OF DWELLINGS STUDIED

1.8.1 General characteristics of the types of dwellings studied and reasons determining our selection criteria

The study dealt with a comparison of space appropriation in two types of dwellings: the single-family unit and the plex⁶. The plexes studied were on the ground floor. The two types of dwellings had basements and moderate and comparable dimensions. Lastly, the two types of dwellings had a comparable market value.

We chose two types of dwellings as the observation unit because we believed that by comparing the two types we would contribute to a better understanding of the phenomena observed in each of the two cases. We believed, particularly, that certain housing models fostered or inhibited certain types of appropriation.

We chose the pléx (illustration 1.4) and the single-family house (illustration 1.5) as an observation unit since these housing models are very common in Quebec and because they have not been studied in as much detail as highrise multifamily dwellings and row-houses.

We limited our study of plexes to those on the ground floor because these are the ones which were most likely to have a basement and consequently to be comparable with the single-family house in terms of their area.

We chose to study dwellings with moderate dimensions (upper-end moderate as opposed to lower-end moderate) in order to avoid situations where the possibility of appropriation would be extremely limited from the outset due to the very small size of the dwelling. Several studies have shown that the scope of the space contributes enormously to extending the range of possibilities of improvements. Thus it would have been fruitless to hope to find the means of fostering appropriation by basing our study on dwellings which would have offered no potential whatsoever from the outset due to their very cramped space.

Thus we have chosen dwellings with comparable market values in order to avoid as far as possible extreme spreads in the socio-economic characteristics of the participants.

We have chosen districts within a radius of approximately 25km from the center of Montreal Island for reasons of accessibility and because the region defined within this radius contained a good sampling of the architectural models which were of interest to us.

N.B.: Given the exploratory and qualitative nature of this study, we did not limit the field of our architectural observation regarding the following architectural variables: shape of the dwelling, layout of the rooms, shape of the rooms, materials, etc. which distinguish one plex from another plex as well as one single-family house from another single-family house.

Since these variables are closely interrelated with the objectives of our study, it goes without saying, they became part of our observation universe.

Figure 1.4. Photos showing a few examples of the plexes which we have studied (1250-1, 1750-1, 1950-1)



Figure 1.5. Photos showing a few examples of the single-family houses which we have studied.

Two-storey house
(0850)



One-storey house
(0450)



Split-level
(0950)



1.8.2 **Dwelling Plans**

A copy of each of the plans for the twenty dwellings studied is shown in appendices 1.2.3 and 4 of the Phase 3 Progress Report.

1.8.3 **Breakdown of dwellings based on housing model**

Located in a single-family house with basement.....	10
Located on the ground floor of a duplex with basement.....	8
Located on the ground floor of a triplex with basement.....	2
	—
Total.....	20

1.8.4 **Breakdown of dwellings by relation with neighboring dwellings**

Located in a detached building.....	10
Located in a dwelling attached on one side.....	9
Located in a dwelling attached on both sides.....	1
	—
Total.....	20

1.8.5 **Particular single-family housing models**

One storey plus basement.....	4
Two storeys plus basement.....	3
Split-level.....	3
	—
Total.....	10

1.8.6 **Breakdown of dwellings by number of bedrooms (prior to occupancy by current occupants)**

	Number of cases	Number of bedrooms
	-----	-----
Three bedrooms.....	15	45
Four bedrooms.....	5	20
	—	—
Total.....	20	65

1.8.7 **Breakdown of dwellings by number of bedrooms (after occupancy by current occupants)**

	Number of cases	Number of bedrooms
	-----	-----
Three bedrooms.....	7	21
Four bedrooms.....	11	44
Five bedrooms.....	2	10
	—	—
Total.....	20	75

The change in the situation between that described in Section 1.8.6 and that described in Section 1.8.7 is based on the fact that the occupants added one bedroom in six of the twenty dwellings studied.

1.8.8 **Average Number of Bedrooms per Dwelling**

Prior to occupancy by current occupants:	3.25
After occupancy by current occupants:	3.75

If one takes into account that the average number of people per dwelling, prior to the departure of the children, was 5.35 (Section 1.7.6), the fact of adding one bedroom in half of the dwellings studied seemed to indicate a trend towards the development of the following ratio between the number of people and the number of bedrooms:

<u>Number of people</u>	<u>Number of bedrooms</u>
x	x-1
6	5
5	4
3	2

1.8.9 **Municipal assessment value of the buildings in which the dwellings studied are found**

Average value of single-family houses	\$71,200
Average value ⁷ of the duplexes	\$88,125
Average value ⁸ of the triplexes	\$89,000

1.8.10 **Breakdown of dwellings by construction year**

(-) @ 1920.....	1
1921 @ 1945.....	3
1946 @ 1960.....	4
1961 @ 1970.....	10
1971 @ 1975.....	2
	—
Total.....	20

1.8.11 **Breakdown of dwellings by location**

Boucherville.....	1
Brossard.....	1
Candiac.....	1
Dollard des Ormeaux.....	1
Laprairie.....	1
Laval (Laval des Rapides).....	1
Laval (Pont Viau).....	2
Laval (St-Vincent-de-Paul).....	1
Longueuil.....	1
Montreal (Ahuntsic).....	3
Montreal (Notre-Dame-de-Grâce).....	3
Repentigny.....	1
Ville St-Laurent.....	1
Ville St-Léonard.....	2
	—
Total.....	20

1.8.12 **Complementary spaces to the essential spaces in the dwellings studied**

Garage.....	15
Laundry Room.....	13
Unfinished Storage Space.....	13
Family Room.....	12
Workshop for the Handyman.....	11
Play Room.....	5
Secondary Entrance Hall.....	3
Accessory Dwelling.....	2
Office.....	2
Powder Room.....	1
Dark Room.....	1

Sewing Room.....	1
Sauna.....	1
Solarium.....	1

1.8.13 **Average liveable area⁹ in the dwellings studied**

Liveable Area in m ²	All the units in m ²	Plexes in m ²	Single-Family Houses in m ²
First Floor and Second Floor ¹⁰	111.18	105.71	116.66
Basement	59.41	55.65	63.16
All Levels	170.59	161.36	179.82

1.9 **RESEARCH METHOD**

Two research instruments were used, i.e., an interview and a graphic and photographic study of each of the dwellings. These two instruments were used during a meeting which was scheduled with each of the households. These meetings lasted approximately 2 hours 15 minutes.

1.9.1 **The Interview (See Appendix 2)**

The interview included two parts. The first part consisted of an in-depth interview with the parents or with the spouse who spent most of his/her time at home; this portion of the interview dealt with the participants' past experiences as well as with their aspirations, values and concerns as pertains to housing. This portion of the interview, in addition, made it

possible for us to collect base demographic data on each of the families.

The second part of the interview consisted of a guided tour by the various members of the family (depending on the room). This tour was prepared in order to make an inventory of the modifications made in the dwelling as well as the events which had generated these modifications.

1.9.2 **Graphic and Photographic Study of each of the Dwellings**

This involved measuring all of the dwelling spaces and preparing a scale drawing of the dwelling plan (1:50); in addition to noting all the spaces, this consisted of drawing up an inventory of the furniture and adding scale drawings of the latter to the dwelling plans; lastly, each of the modifications was photographed in order to complete the information on the architectural elements, the pieces of furniture and the objects (ex: windows, paintings, curtains, etc.) which are difficult to describe on the plan.

A copy of the photos taken and of the sketches of the plans for each of the twenty dwellings studied are found in Appendices 1, 2, 3 and 4 in the Phase 3 Progress Report.

1.10 **CHOICE OF THE SAMPLE**

The criteria used in choosing our sample were outlined in Section 1.7 (Population) and in Section 1.8 (Types of Dwellings). Among these criteria, however; there are four which we considered as particularly important:

- (1) the length of occupancy;
- (2) the composition of the household;
- (3) the type of dwelling; and
- (4) the particular dwelling model (in the case of single-family houses).

In the case of criteria (1) and (2), our preference was to opt for families who had occupied their dwelling for as long as possible and for those with the largest possible number of members. In the case of criteria (3) and (4), we balanced as far as possible the sample between the various types (plexes and single-family) and models (one-storey, split-level and two storey) of dwellings.

The 20-family sample was selected out of 100 families recruited among the student population, in five different faculties at the University of Montreal, who had been asked to provide us with the names of parents, friends, neighbors or other acquaintances who met our selection criteria.

1.11 ANALYSIS METHOD

The data collected during the interviews were transcribed and this produced a data package of approximately 850 pages supplemented by approximately 50 plans and a few hundred photographs.

The "content analysis" method was used to analyze this information. The main themes chosen in this analysis were the following:

- ° Characteristics of the Population Chapter 1
- ° Characteristics of the Dwellings Chapter 1
- ° Type of Events Occurring in the Families Lives Chapter 2
- ° Needs and Problems Generated by these Events Chapter 2
- ° Adjustments Generated by these Needs Chapter 2
- ° Architectural Characteristics Facilitating
the Adjustments Chapter 3

We would like to point out that the study which we carried out on the data was above all qualitative¹¹ since it dealt with a small sample, i.e. 20 case studies. Consequently, the research workers' intuition played an important role in interpreting the data. For this reason, the results of our analyses must be considered as hypotheses.

In spite of everything, we believe that this study has generated important information concerning the needs of the people, their attitudes and their behavior, as well as the characteristics which "adaptable" dwellings should possess.

This chapter examines spatial adjustments and modifications and changes in behavior within the single dwelling. In the first part of this chapter, such adjustments follow or serve as a means of accommodating changes related to important life events. In the second part, other changes are discussed in which there is no apparent link to such life events.

CHANGES AND MODIFICATIONS RELATED TO LIFE CYCLE EVENTS

Two classes of life events are considered in this section. The first type corresponds to developmental stages and are experienced by all households or, stated differently, most households have the potential to experience these events. The following events are considered:

- birth
- passage from pre-school to childhood
- passage from childhood to adolescence
- passage from adolescence to early adulthood
- departure of children
- preparing for the empty nest
- caring for aged parents

While data were collected concerning all of these events, it should be reemphasized that the focus of this study and in turn the selection of the sample was households whose children had passed through adolescence while living in the same home. Consequently, passages from childhood to adolescence and from adolescence to early adulthood and departure are more frequent and often experienced fairly recently.

A second type of life event considered -- more often rupture -- is not a "necessary" part of most households' life histories, although this type of event is frequent. Included are the following events:

- divorce or separation
- family fusion
- women's entry or return to the paid labor force or to school
- unemployment

The distinction between these two classes of events is not, however, always clear cut. On the one hand, the definition of life stages is itself culturally dependent. (As noted in Chapter 1, in selecting mostly French-Canadian homeowners and resident-landlords, an attempt was made to standardize for important variation due to cultural and social class differences). And even within a single culture, there may be important variations sometimes merely due to life circumstances. For example, all adult children are not faced with or face in the same way the care of aged, frail parents. The sequencing of these events may also vary.

On the other hand, events considered here as unique such as divorce are frequent enough today to argue that divorce, especially among recently married households, represents an almost expected occurrence. As will be noted in the discussion of such ruptures, their occurrence is probably underrepresented in this study due to the emphasis here on relatively large, older, stable families (and owners) who had lived in their current homes for a number of years. This bias also reduced more contemporary family styles such as two-wage earner and single parent households.

Pattern

The term "pattern" is employed here to describe a standardized relationship between a particular life event and a physical, spatial or behavioral modification. This usage of the term represents an abridging for summarizing or capsulizing a socio-psychological phenomenon and an associated spatial change. Moreover, rather than focusing on the psycho-social event per se, the use of such patterns allows emphasis to be placed on the spatial ramifications of these events in terms of the organization, use and decor of space in the home. These spatial

ramifications may result from the perception of a problem or a new need and in turn an attempt to resolve the problem or need through a physical or behavioral adjustment, or both.

Twelve basic patterns are identified and described. First, patterns associated with the life cycle following a "typical" life history are considered. Second, patterns associated with ruptures in household life histories are described.

First problems and needs associated with the particular pattern are briefly discussed drawing on a general knowledge of the impact of such events and certain data collected in this study. This is followed by a discussion of observations of the pattern. Finally, a number of more general conclusions concerning the pattern are made. In general, the physical implications of these general conclusions are not discussed here but rather in Chapter 3.

2.1.1 Creating/rearranging space for newborn and young children

The need to accommodate a newborn child often within a given amount of space may necessitate important spatial modifications. Unless previously planned for, the most frequent reaction is to use space more judiciously.

Problems and Needs

- ° Need for a space

The need for an additional bed and an identifiable space is fundamental in our culture. At a very young age, however, a child is unlikely to accede to full spatial status, but instead remain in his parents' room or with a sibling.

- ° Need to be close to the parents' bedroom (and the parents' need to be close to their infant)

Because of a general concern for the infant and the special attention often required by very young children especially during the night, parents frequently wish to have the infant's bedroom nearby. This requirement is not only based on the child's needs, but also those of parents who may wish to be close to their infant child, so poignantly and humorously conveyed by Shirley McLaine in the film Terms of Endearment. This represents only the beginning of a lengthy process. At the other extreme, teenagers are, as discussed later, often "distancing" themselves from their parents and their parents' bedroom. Such distancing is most clearly seen in the move to a basement bedroom as discussed in section 2.1.2.

- ° Need for sexual separation

If not occurring earlier, at about 6-7 years of age, brothers and sisters sharing the same bedroom are generally separated. Although the incest taboo probably is the underlying reason, it is rarely expressed as such.

In **Household 12**, for example, the youngest son and the daughter were separated when the boy started to grow, i.e., when he was about two years old (**Mother 12**, p. 12-16.1).¹² The boy was moved in with an older brother and the sitting room, where both children had been, was made into the daughter's bedroom. This was done by closing off the room from the hall by adding a door and door frame and by adding a closet (Figure 2.1).

Observations

- ° Finding a room

If a bedroom is available, the infant is often placed there assuming it is close to the parents' bedroom. However, if none is available or is too far, the birth may result in a series of changes or a chain reaction

entailing (or co-occurring with) a series of multiple adjustments. In **Household 11**, for example, the newborn daughter was given the eldest son's room. He, in turn, took possession of the father's office. **Father 11**, upon losing his office, was forced to set up a work place in the master bedroom.

In another example, the newborn son in **Household 13** was given the eldest daughter's room who was 13 at the time. She took possession of the father's basement workshop which was converted into a bedroom. And in turn, **Father 13** converted a part of the garage into a workshop.

As will be discussed at length in Section 2.1.4, such chain reactions are complex, tending to respond to the varied needs of different members of the household. In **Household 13** discussed above, for example, the teenage daughter gained greater privacy and independence in moving to the basement, while her brother was able to have his own room. Because of such multiple dependencies, shifts or changes may be retarded or accelerated with respect to the needs of a single individual.

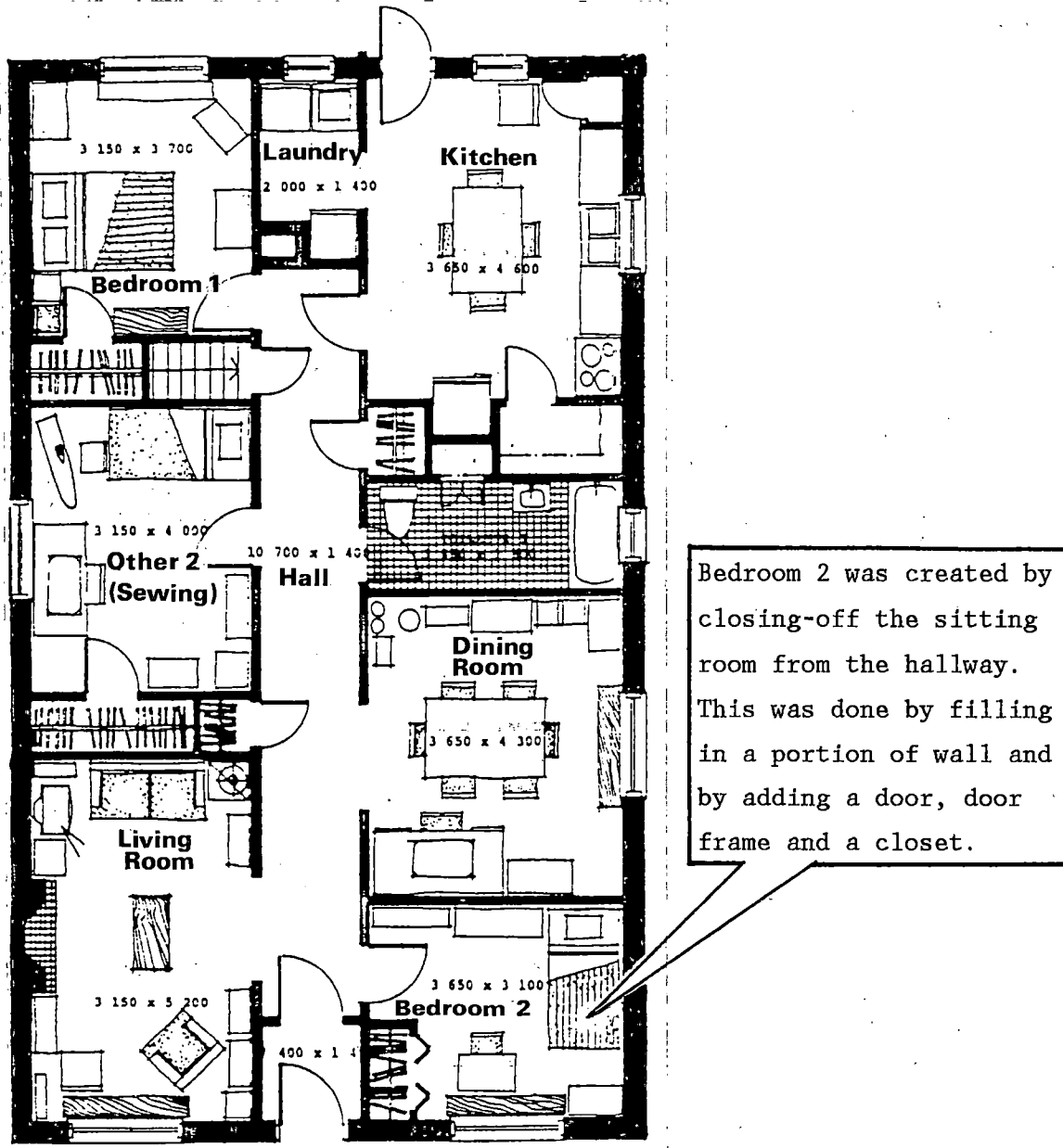
° "Piling" first by age affinity, then by same sex

If a room is not or cannot be made available, the newborn child will be "piled" in with his or her siblings, often the closest in age. In **Household 07**, for example, the newborn daughter was put into the same room as her two older sisters. This was managed by adding a bunk bed.

Household 20 provides two examples of the same pattern. Following the birth of the third son, he was put with his next oldest brother in a basement bedroom.¹³ Four years later, the newborn daughter in **Household 20** was put into her sister's bedroom.

While initially the choice is most likely to reflect affinity in terms of age, if the sex of children sharing a bedroom is not the same, a "correction" or a new sorting will ordinarily be required a few years

Figure 2.1. Ground-floor plan of triplex, Household 12 (1271).^a Scale 1:100



a. Numbers refer to figure numbers used in the data corpus submitted to CMHC as part of the third progress report for this study.

later. This usually occurs when the younger child is about 6-7 years of age, if not earlier. This was the case in **Household 12** as noted previously. In the example of **Household 17**, the youngest daughter and brother were separated as she got older (she was one year old at the time, he was four). The boy remained alone in the bedroom while the daughter was placed in the same room as her two older sisters.

Conclusion

This discussion highlights a number of examples in the selection and sorting of bedrooms. The infant is generally placed near the parents' bedroom, often with his or her youngest sibling. If they are of the opposite sex, there is generally another shift a few years later.

2.1.2 Upstairs/downstairs -- transfer of basement areas into the domain of adolescent or young adult children

Perhaps the most striking and recurring pattern observed in this study is the expansion of the children's territory at about the time of adolescence, or again at young adulthood, and conversely, the shrinking of the parents' domain. While the extent and the way of accommodating this reallocation and readjustment of space varies among households, sometimes affecting the use of "upstairs" space in terms of furniture, and rules of conduct (see section 2.1.3), the most dramatic expression of this phenomenon is the "conquest" by adolescent or young adult children of the basement.

In many instances, this entails finishing the basement at different stages: the first stage as a play area for young children, the second as a family area and the third as an area exclusively reserved for older children for study, leisure (listening to music or receiving friends, etc., or as bedrooms). Fifteen of the 20 households studied used a part of the basement as a play or family room. Ten of the 20 households added at least one bedroom to the basement, eight of these also added an additional toilet.

The full pattern, although not experienced in its entirety by all households, is described by families themselves.

When we bought the house, the foundation wall was there (dividing line between the dining room and the family room on the ground floor). The basement was not finished, except for one room in the center which we used as a family room. And all the space under the living room and the dining room wasn't finished. The very small children played there with walkers, bicycles, roller skates, all kinds of games; and this was on a concrete floor. Then, a little later on, when they became a little older, tiles were put down and lighting was put in because before that, they were young and they played there during the day; there was not any lighting at all - so, we put in the lighting, we put in the ceiling and then we stopped for a while and subsequently we finished the walls, etc... A few years ago, we installed the carpet on the floor because then we needed it. Thus the dwelling evolved slowly over time to adapt to the children's needs. (Mother 09, p. 09-6.1)

Or again in Household 13:

This has always been a play room, but the walls consisted merely of styrofoam sheets between the studs... and children played here, it was really a play room, they wrote on the walls, they played ball, they did everything they wanted to do, they hung up ropes from the beam on the ceiling, they did everything... Then, when they began to grow

older, when they were 13 or 14 years old, I gradually started to finish the room... it was not done over night, but it ended up what it is today. (Figure 2.2). (**Father 13**, p. 13-15.2)

Figure 2.2. Photograph of basement family room, Household 13 (1316-1). In a less finished state, this area served as a playroom and, with the passage of the children on through to adolescence, was gradually finished to its present form.



Problems and needs

What types of problems or needs are reported by households to explain the spatial changes occurring around the time of adolescence or young adulthood? And in particular, how do these changes result in a transfer of the basement area into the domain of adolescent or young adult children?

° Need for greater independence

Independence can be experienced in many different ways: to be able to watch television late, go out or come in or listen to music as one wishes, receive friends, decorate to one's taste, etc. Such "spatial" behavior may represent an end in itself or a means to an end such as creating (and displaying) a different or more autonomous lifestyle -- or, probably more often, both of these.

It was the two older children who started using the basement once it was finished (the children were growing up and they needed space) because the younger children were of school age and we wanted to supervise them when they were doing their homework and studying. Whereas in the basement, they could watch T.V.; here (upstairs), there was no T.V. (**Mother 12**, p. 12-15.2)

Music, for example, is a frequent "problem" in families with adolescent children and illustrates some of the complexity in describing and interpreting what is happening. To the adolescent child, music may represent a form of independence, that is, to listen to the type of music he or she wishes at a desired volume. It thus has the potential of being a symbolic gesture while, at the same time, representing a physical problem in terms of inappropriate or inadequate zoning or sound insulation within the house.

Problems associated with music seems to herald the arrival of adolescence.

All of a sudden, the music stage began... the problem occurred with (my eldest daughter)... it all started with Beau Dommage, a singing group, 12 or 13 years ago. The sound problem disorganized the whole family context. The record player was in the living room... we had to move it to the basement as well as the television... the basement become the listening room, the place for the younger kids, the place where they entertained their friends when they came in late. (Figure 2.3). The problem with rock music also occurred with the son... the house was not designed for loud speakers. (**Father 05**, p. 05-5)

And the music, their music was too loud when they were young, and it wasn't quite as audible upstairs. When they were here with their music, it made my head spin here in the kitchen. That is why I said to the one with the sound system, "go downstairs with your brother". At least with the door closed, we didn't hear them as much. (**Mother 12**, p. 12-15.2)

° Need for privacy (and one's own room)

Closely associated with the need for greater independence is the need for greater privacy. In the simplest most mechanical terms, this means out-of-sight, out-of-sound.

Figure 2.3. Photograph of basement area used as the listening room, **Household 05 (0516-4)**. With the passage of the children on through to adolescence, a sound system and a television were added and an acoustic wall was installed.



The children have new needs, since they are now adults. If we want to keep our children, we will have to do something to improve this potential, for having their friends over and for entertaining them in greater privacy. For this reason we could use the basement and the bachelor unit at the side. (Mother 14, p. 14-11)

Such privacy may be achieved in many ways. Upstairs, for example, new rules governing the use of doors, as discussed in section 2.1.3, may be applied. But the basement, generally the most distant and separate part of the house, is most often used by adolescents to achieve this. When they wanted more privacy, they would go downstairs. It was a bit like having their own home during their spare time and for studying (Father 17, p. 17--10).

And where there is a separate entrance, this allows for access and egress without being "public". Furthermore, by bringing friends over, playing music loudly, etc., access to parents is often restricted or made them seem invited.

- ° Need for more space (including more storage space) and a toilet if bedroom is in basement

As children grow, they require more space -- space to study, receive friends, listen to music, etc. Their storage needs also grow as they accumulate possessions (Figure 2.4). Garages are also frequently used to store sports equipment (Figure 2.5).

Finishing the basement became mandatory..., since bedroom 3 had become too small (9.4 m^2) for two big girls. (Father 18, p. 18-6)

Figure 2.4. Photograph of shelving added to basement bedroom, Household 03 (0314-1). Additional storage space was needed by the adolescent son upon moving his bedroom to the basement.

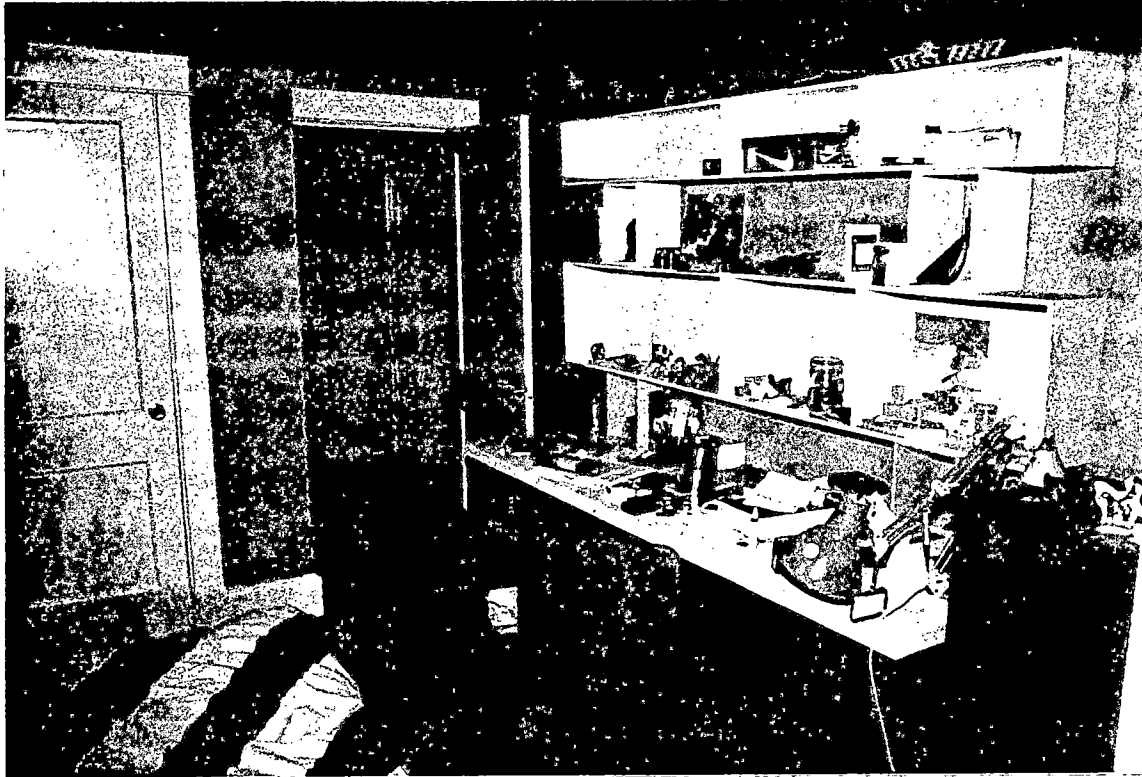
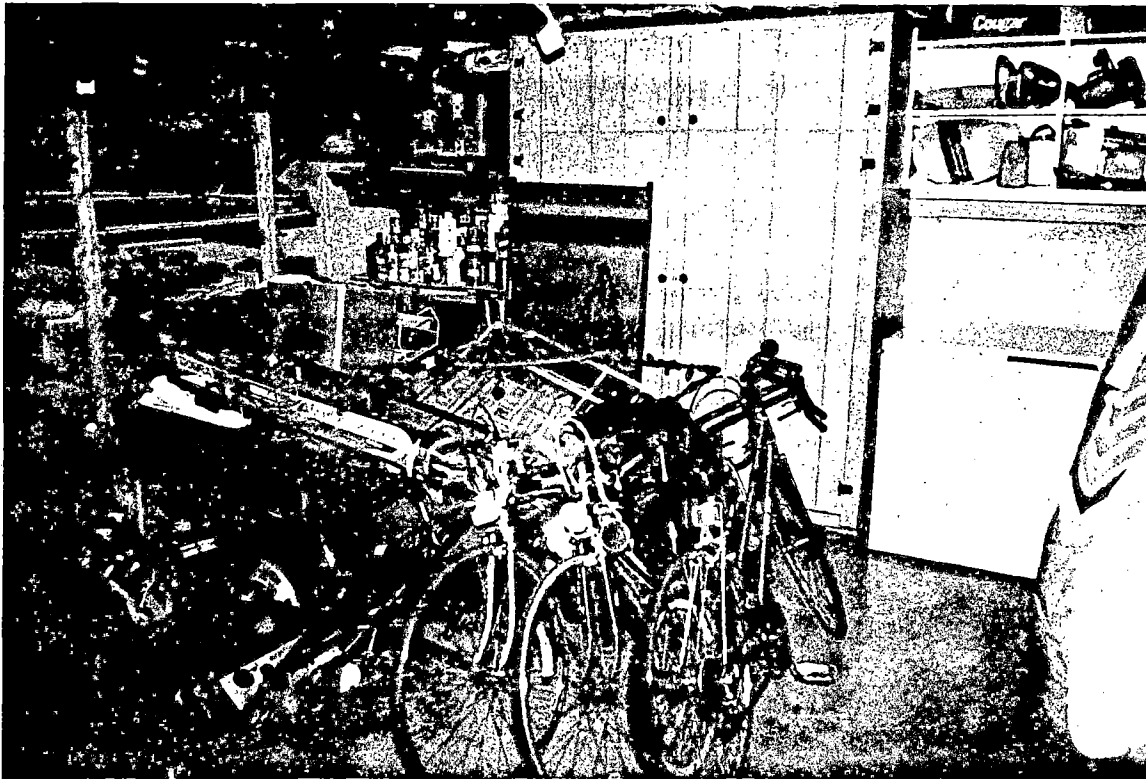


Figure 2.5. Photograph of garage used for storing bicycles, ski equipment and a host of other objects, Household 07 (0725-6).



This room was amply large for her when she was a baby but as soon as she started growing up this was no longer the case. Once they start growing up, children also begin to require much more play space within the house. Then a ping-pong table became necessary and, at the same time, room had to be found for me to work. (Father 06, p. 06-6)

We had the basement as a "safety valve" (Figure 2.6) since when they reach 12 or 13 years of age they need space. One of the children wants to play, the other wants to do something else. In this situation, well, the basement was there. Because, in our place, our first floor has five rooms and the basement is completely finished. Thus the children, especially once they became adolescents, had great fun in the basement. (Mother 17, p. 17-10)

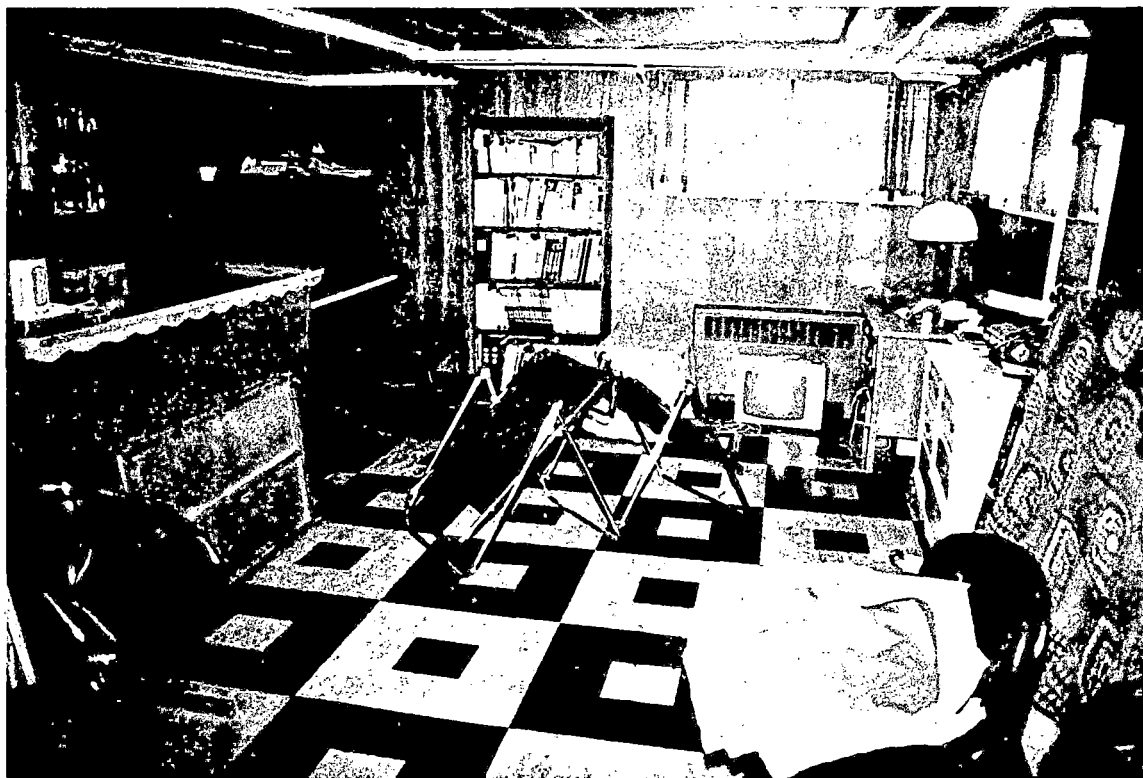
If not enough space is available, especially during the period of adolescence, this may lead to dissatisfaction or problems.

As far as space is concerned, they never complained. The only exception was when there were four in the same room. When we decided to finish the basement, they were overjoyed! (Mother 12, p. 12-11)

° Need (of at least the parents) to keep a part of the house tidy

We never wanted to put the television there, because we wanted to keep the living room tidy. (Mother 12, p. 12-12.2)

Figure 2.6. Photograph of basement family room, Household 17 (1716-1). This space, which was alternatively used as a playroom, study area (note the desks still there), bedroom and family room, was able to absorb the expanding needs of adolescent children. At a certain time the space was also used by the children for practicing piano and to receive their friends.



While this need is not limited to the period of adolescence, it is mentioned frequently in discussing this period. Probably the new demand of adolescent children to entertain their friends at home puts teenage children in competition with parents for common areas in which to receive friends and family.

The contrast between the living room and the basement family room as seen in **Household 11** (Figures 2.7 and 2.8) testifies to the importance of keeping an area tidy or formal.

° Parents' need for privacy

Parents' space for intimacy is reduced as their children mature. This process is gradual, although there are some markers as when, for example, infants stop taking an afternoon nap. A major change often occurs around the period of adolescence as children become sexually and socially mature. Thus when parents report a child's need for privacy and control, the child's need is often complementary to the parents'.

Observations

At adolescence or young adulthood, space in the basement is often claimed by children. This claim may start, as noted previously, even earlier where basement areas are used as play areas by young children. Later on, these spaces often become family areas (used by parents and children) and, later still, often come under the exclusive jurisdiction of children for entertaining their friends or as bedrooms. The latter use may, in turn, require the installation of basement bathroom facilities. (As a result, parents may start using the living room for informal living -- "deformalization of the living room" -- as in **Households 08 and 20**). This transfer is fully completed in a few households such as **Household 02** where the basement is converted into a completely independent unit for the adult child and the grandchild.

Figure 2.7. Photograph of formal living area, Household 11 (1104-2). This formality is communicated in the selection and positioning of furniture, the decor and the orderliness (the living room is always tidy) of the room.

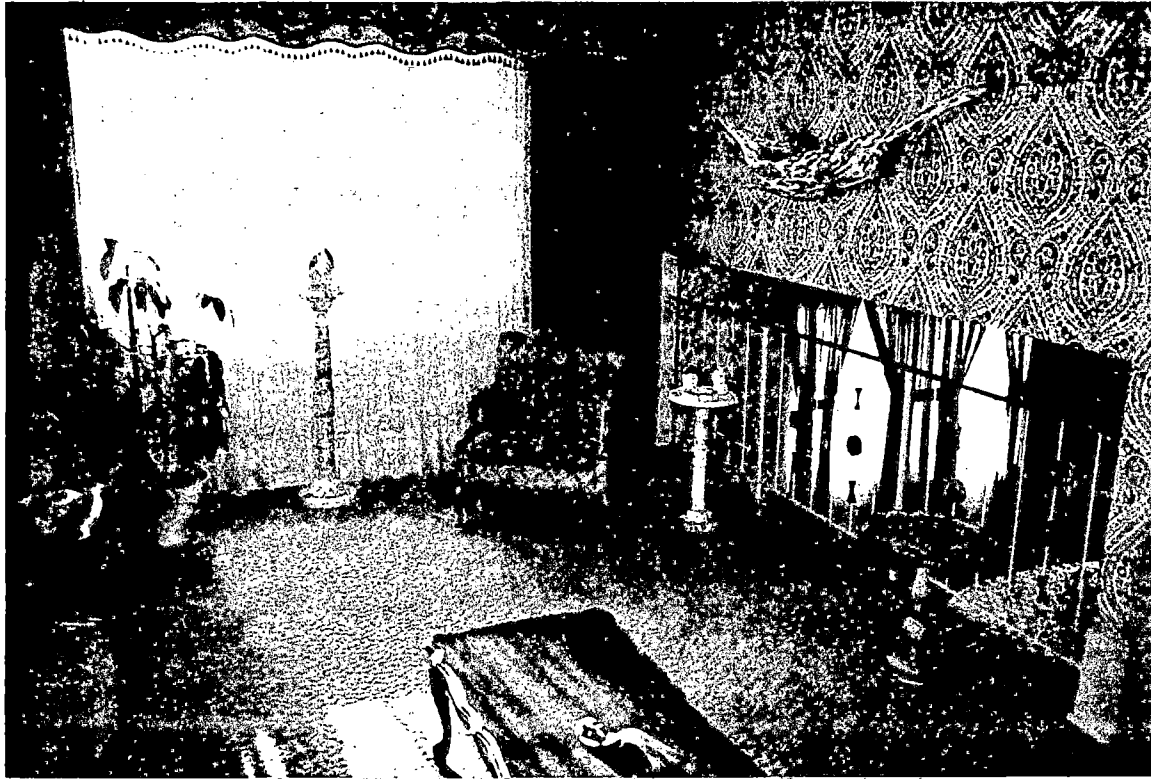


Figure 2.8. Photograph of informal living area in basement, **Household 11** (1116-3). The gathering and casual positioning of furniture of different styles, of objects and even the basement location all contribute to a feeling of informality.



- ° Basements used for entertainment or study by adolescent and young adult children

The majority of households (15 out of 20) in this study use (or used) at least part of their basement as a family or playroom. In different ways, adolescent and adult children are frequently able to gain or exercise certain rights to this space. These may be gained in a fairly explicit or direct way. In **Household 15**, for example, a basement room was arranged by the middle child, a daughter, as a drawing room and is used, as well, by her younger brother when he has friends over (Figure 2.9).

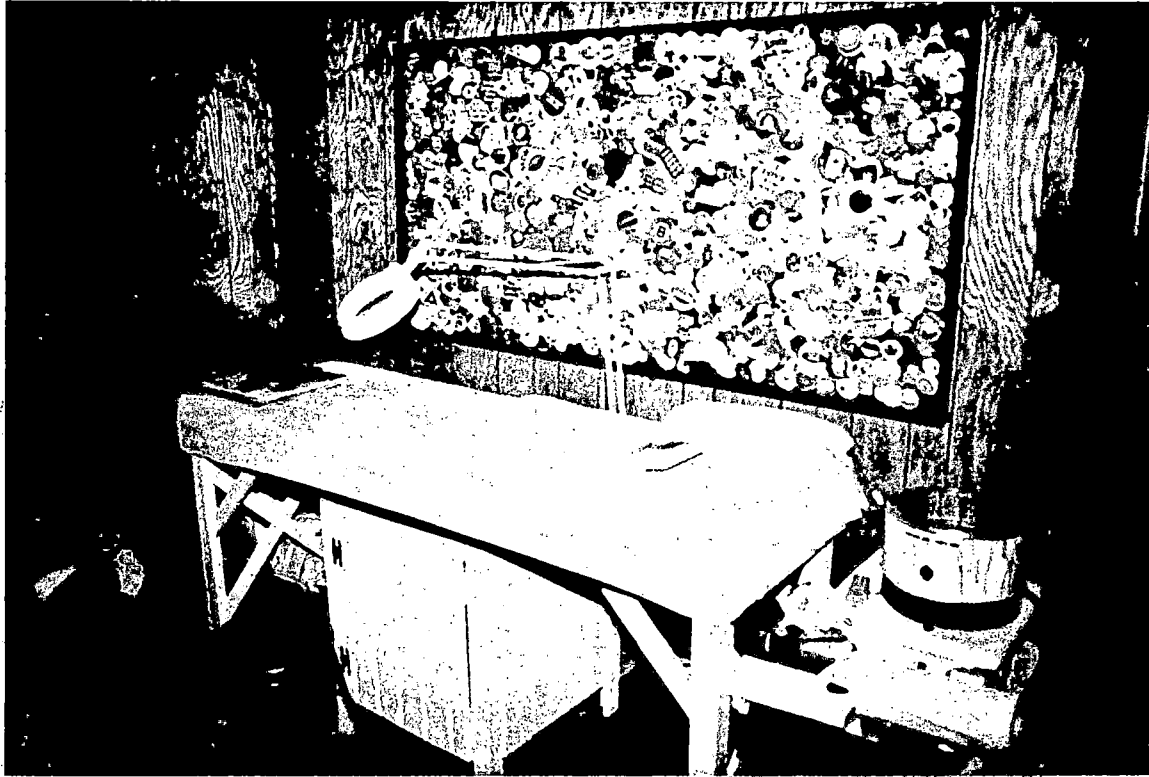
On the other hand, these rights may be negotiated and tested by "taking over" the basement... In **Household 08**, the basement area was invaded by the children and their "buddies". In **Household 10**, part of the family room was used as an esthetic services studio (Figure 2.10) by the eldest daughter. **Father 10** and the other children still express criticism of this use of the basement family room. "It is not really a good idea, our television room is contained within our living room in the basement ... for lack of a better word this area has virtually become a junk room ... (p. 10-6)."

In some instances the distinction between "upstairs" and "downstairs" activity is rigidly defined as in **Household 17**. Having three girls all sharing the same room (and a son in a different room), **Household 17** limited the use of the basement to play and study.

Figure 2.9. Photograph of Daughter 2's basement workshop she arranged herself, Household 15 (1529). The basement area which was previously unsubdivided and used as a playroom is also used occasionally by her younger brother and his friends to play.



Figure 2.10. Photograph of the esthetic services studio set up by eldest daughter within the basement family room, Household 10 (1016-1).



All the toys were downstairs, the piano was downstairs, they studied downstairs. (**Mother 17** p. 17-6)

Then, after the first six years, we bought big desks for them; from then on, they always studied downstairs. Everybody slept upstairs, but they studied downstairs and they played downstairs. Because at the beginning, for us, it was important that they sleep on the first floor. I preferred that everybody sleep on the first floor and that the other activities take place in the basement. Thus the ping-pong table and the piano were downstairs and that's where they entertained their friends. (**Mother 17**, p. 17-6)

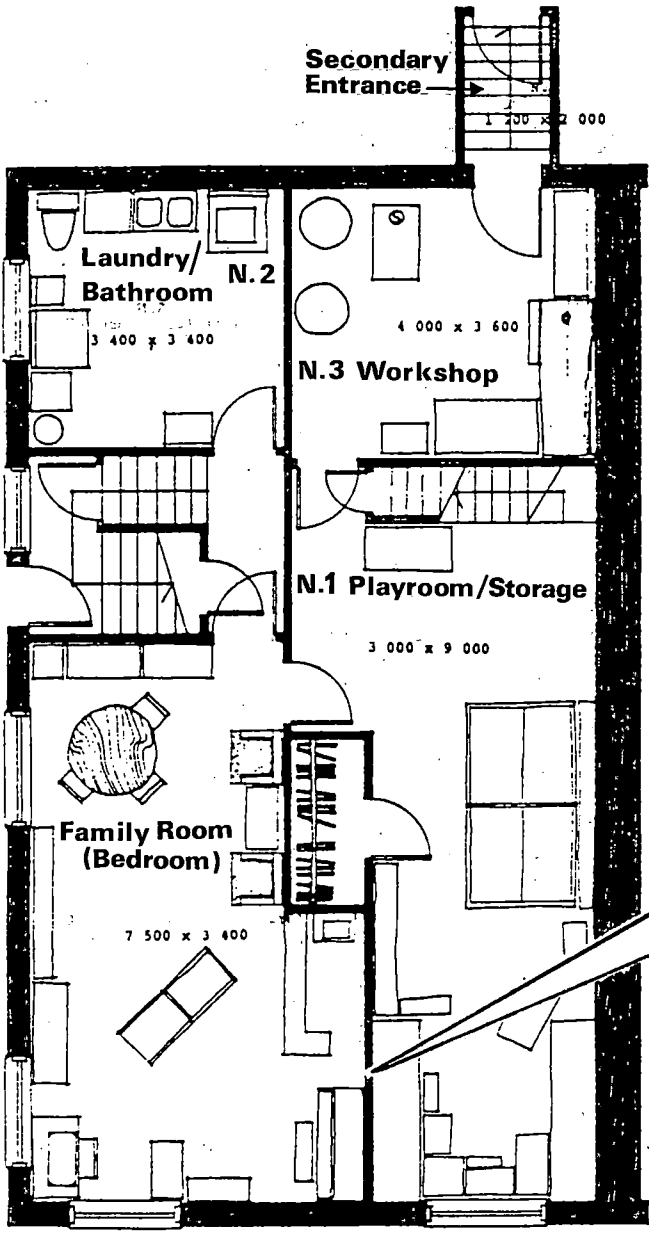
Thus while the basement (Figure 2.11) was a "free" area, "upstairs", where everyone slept, including three daughters who shared a single room (Bedroom 2, figure 2.12) over a 14 year period, remained under strict parental control.

In this way, everyone had to get up bright and early in the morning and all the family was together, we operated as one unit. Because when there is one person who tends to do his own thing, it is perhaps not as good, that's what I think. (**Father 17**, p. 17-6)

° Basements used for sleeping (as bedrooms) by adolescent and young adult children

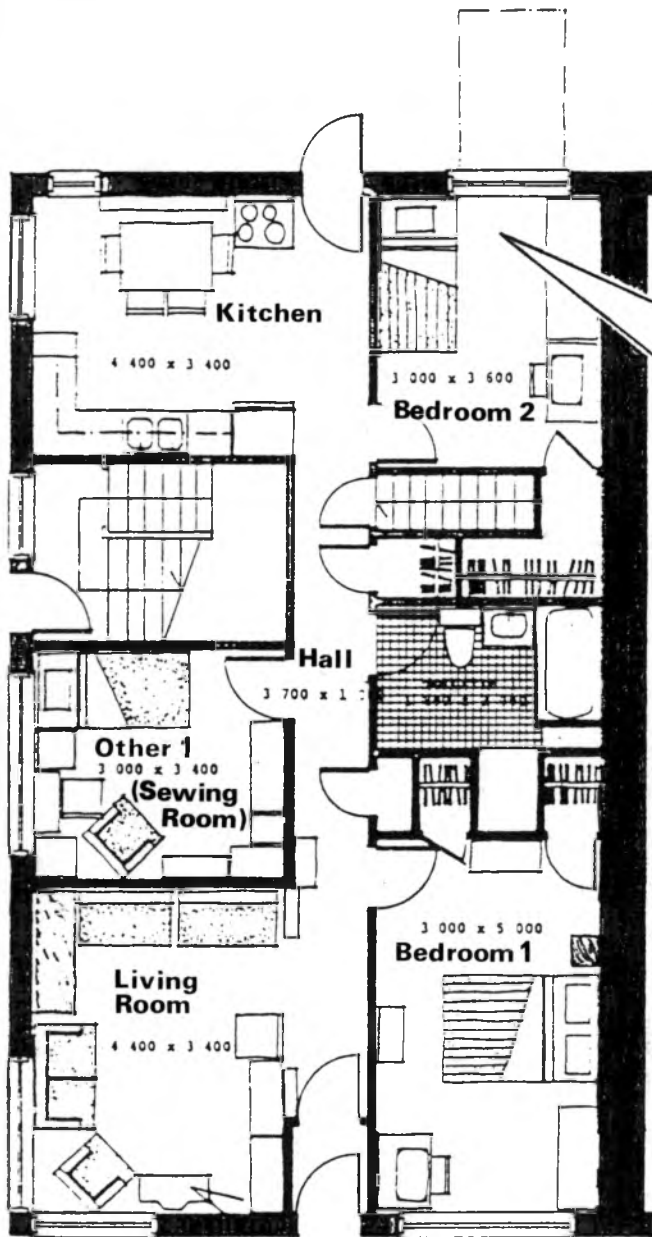
A basic pattern was observed in **Household 12** in tandem with each boy leaving home. For every boy that departed, his basement space was assumed by a brother still living "upstairs".

Figure 2.11. Basement plan of duplex, Household 17 (1770). Scale 1:100.



Basement areas were used for study, entertaining friends, music, ping-pong, etc., but not for sleeping.

Figure 2.12. Ground-floor plan of duplex, Household 17 (1771). Scale 1:100.



Over an 11 year period, all three daughters occupied Bedroom 2. It was important in Household 17 that everyone sleep "upstairs".

At the time of the birth of her daughter, the fifth child, the four older boys slept in the bedroom in the middle. So, can you imagine leaving those boys there for five years; that would have been ridiculous. So by the time they were 12-13 years old, they found that they didn't have enough space. So what happened was that we tried to get the upper unit to house our oldest children. This wasn't possible because according to "la Régie des loyers"(rent review commission, the children were not old enough. At that point, we decided to have the basement finished (Figure 2.13) to use as a bedroom for the two oldest. We put them in the finished basement, with two beds, a bathroom and a T.V.; they almost had a complete dwelling downstairs (Figure 2.14). As it happened, the two oldest were quite a long time there ... (**Mother 12**, p. 12-6)

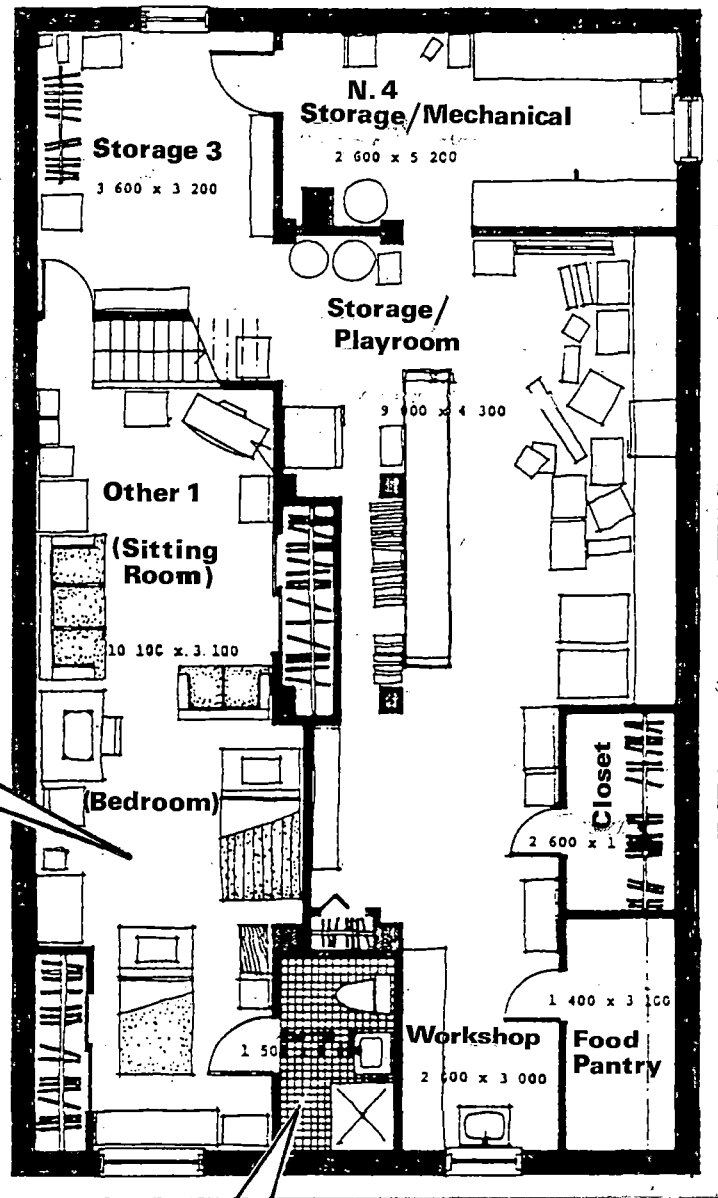
This move to the basement is generally viewed as a positive opportunity by children, at least in **Household 12**. "When we finished the basement, they all wanted to move downstairs. We assigned the two oldest to the basement and I said: 'You will each have your turn'." (**Father 12**, p. 12-11)."

In **Household 03**, the oldest son moved into his father's basement study/workshop (Figure 2.15), thereby obtaining more privacy, which in turn allowed the two youngest sons (9 and 7), who had been sharing, to have their own bedrooms.

Although there seems to be a slight preference for boys to move to the basement rather than for girls, girls too often move to the basement. Two daughters in **Household 10**, for example, who previously shared a room together, were each given separate rooms. This was accomplished by reassigning the use of the basement guest room to the eldest daughter who

Figure 2.13. Basement plan of triplex, Household 12 (1270). Scale 1:100.

The two eldest boys slept in the bedroom installed in the basement. After each departure, the next oldest boy still at home took up the vacated position. This area was finished when Household 12 was unable to obtain the upstairs apartment.



Toilet added when bedroom installed in basement.

Figure 2.14. Photograph of oldest boys' bedroom installed in basement, Household 12 (1217-1).



Figure 2.15. Photograph of father's basement workshop converted to son's bedroom, Household 03 (0317-1). This was done to provide separate bedrooms for younger sons.



was 15 at the time. The younger daughter, who was 9, continued using the previously shared "upstairs" bedroom.

We had one finished bedroom in the basement as we just simply decided, given that we didn't use it very much, approximately three times a year for visitors, that they (the girls) would thus each have their bedroom there and they would be able to have more privacy. (**Mother 10**, p. 10-6)

In **Household 18**, a first attempt to convert the basement to a bedroom for the younger of two sisters was unsuccessful because little light penetrated the room as the window was located under a balcony (Figure 2.16). Both sisters, 15 and 13 years old at that time, were sharing the same bedroom.

A second attempt three years later, however, in an area having a clear window area, was successful (Figure 2.17). This change permitted each sister to have her own room. At the same time, a basement bathroom was installed.

° Consequences on the space available to parents

The reuse or allocation of, basement areas often changes (and frequently penalizes) parents access, both in terms of their use of "upstairs" and "downstairs" spaces. **Father 08**, for example, laments the "deformalizing" of the upstairs living room. The parents now use the once formal living room everyday since the children took over the basement family room. (Of course, a part of the reason for the need of a formal living room is exactly because there are children.)

In **Household 03**, the father lost his basement study/workshop to his adolescent son. Now he has arranged a work area in his bedroom (see section 2.1.9) and, when he needs a particularly large working surface, uses the dining room table. (This was actually his second office in this

Figure 2.16. Photograph of duplex facade, Household 18 (1850-3). A first attempt at adding a basement bedroom was unsuccessful because natural light was blocked by the balcony over window. A second attempt in the basement area with an unobstructed window was successful.



Figure 2.17. Photograph of "successful" basement bedroom (1812-2). The room was installed by Father 18 and decorated and used by the daughter as she passed from adolescence to young adulthood.



house. His first was "lost" or ceded after the birth of his second son.)

He is stoic about these losses.

But this was not a sacrifice as far as I am concerned; the others are happy with their situation and this gives me more liberty; since each of the others has their own spot, this reduces a lot of the tension in the family... And in the end my oldest son will be leaving in three or five years and then I will be able to use the space in the basement for an office. (Father 03, p. 03-11, 13)

Conclusion

Basement areas provide greater physical and symbolic separation from parents and are the only places where there is likely to be space not already being used by others, or not being used intensively. As well, the transformation of the basement area allows for, in many instances, the liberation of upstairs space similar to the liberation of space as seen in section 2.1.4 concerning the departure of children.

In almost all of the households 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 behavior somewhat freer of parental control. While the testimony of parents often focused on control of music, television and having friends over, these references also probably serve in some instances as metaphors for adolescent sexual activity and experimentation.

It is perhaps in **Household 19** a rare instance where the basement had not been finished, or at least not in time, that the need for this space is communicated most forcefully.

My son is perhaps the one who suffered most from ... because he is big and when he walks about one has the impression that he bumps into everything (ha, ha) ... and he was also the one with the smallest bedroom (Bedroom 3, Figure 2.18) so I have the impression that he, perhaps suffered due to this; since the basement was there, he could go down there and busy himself with a hobby ... at one point he even set up headquarters down there with camping material to hide ... to our embarrassment ... because it was a cellar ... he set up headquarters in the cellar and subsequently he ... decided to leave, to move into an apartment on his own, but now ... he's in a very small apartment indeed. (**Mother 19**, p. 19-11)

Belatedly, only after the son left, did the parents begin installing a room for him in the basement (Figure 2.19).

In some instances, however, the gains experienced by adolescents and young adult children are only achieved at the expense of the space available to parents.

Neglect of parents' needs is common. This attitude is clearly articulated by **Mother 13**'s embarrassment in showing her bedroom during the interview.

Figure 2.18. Ground floor plan of duplex, Household 19 (1971). Scale 1:100.

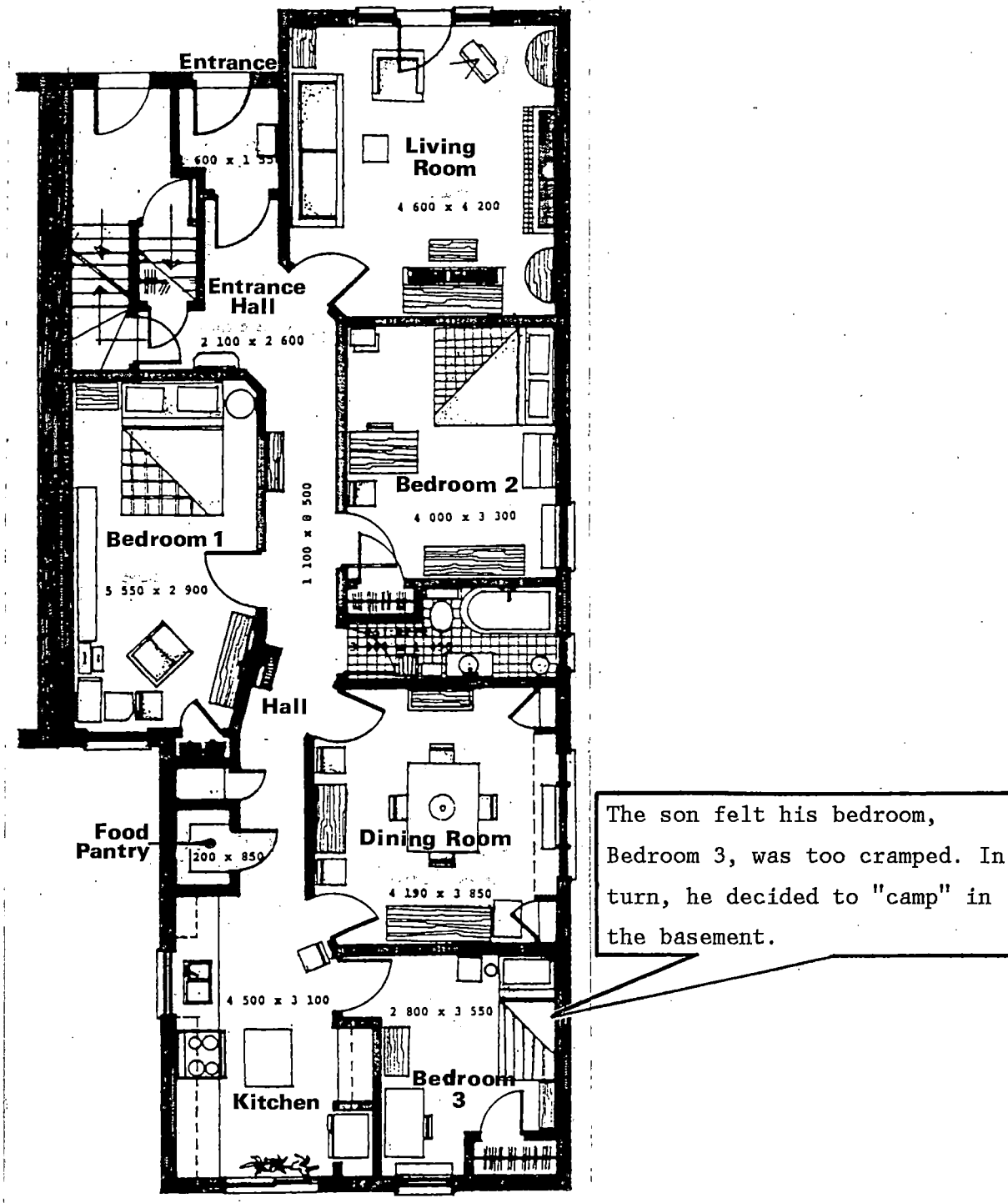
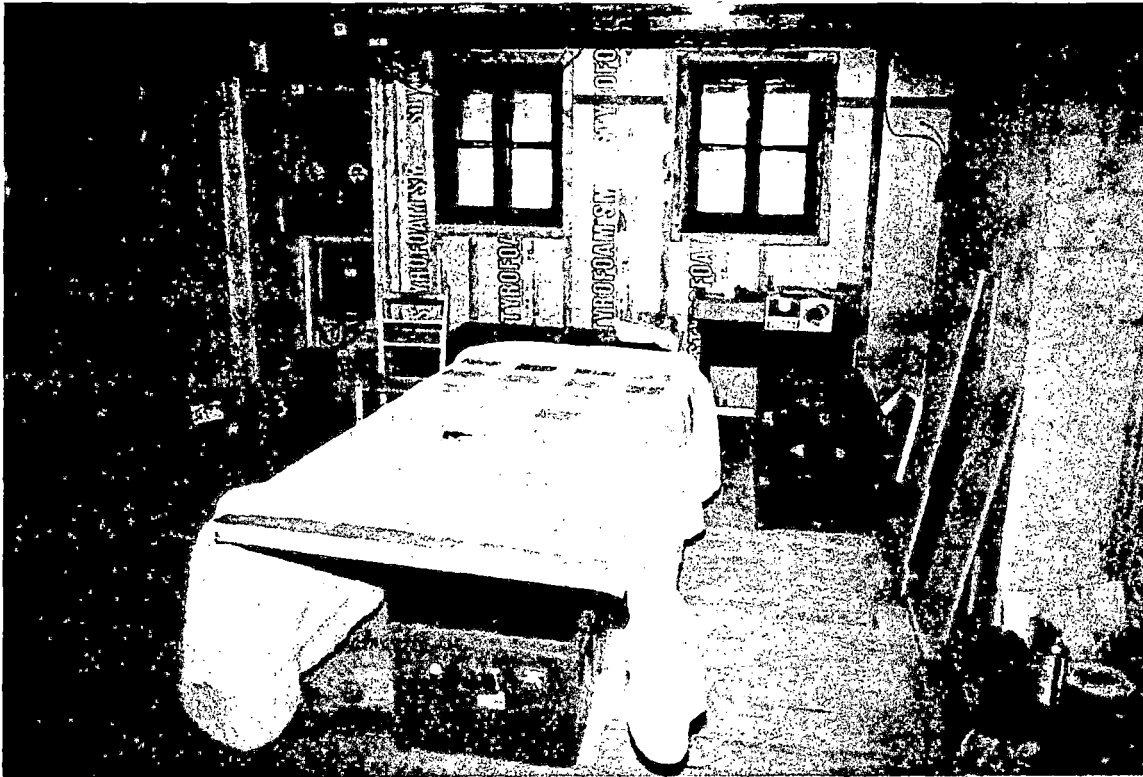


Figure 2.19. Photograph of basement in which the son camped, (1917-3).
Now the area is being renovated by Father 19.



You can't go in there, I'm embarrassed to show it to you, that's a room which we never fixed up, I don't know why, but for us the children have always been so important, they wanted to have their own bedrooms. (**Mother 13**, p. 13-12.1)

Even this interplay between childrens' and parents' needs probably underestimates the needs of parents which are, as discussed in sections 2.1.8 and 2.1.9, also changing.

2.1.3 **Other changes in spatial behavior associated with adolescence and young adulthood**

As was noted earlier in the previous section, numerous other types of changes in spatial and symbolic behavior are observed in association with the passage to adolescence and to young adulthood other than the use of basement areas. Examples of these include room modifications and redecoration, the addition or changing of furniture, and new or changed rules of conduct in "upstairs" areas.

Problems and needs

The need for privacy, for space and the demonstration of control over such space, all discussed in the previous section with respect to the basement, apply "upstairs" as well. Even more important than in the previous section, parents' access to privacy is especially constrained as children mature and as they themselves bring friends home. As noted, the needs of parents for privacy often complements and supports the decision to cede the basement area to adolescent children.

Observations

° Room modifications

In contrast to basement modification, modification to existing "upstairs" rooms is, if it occurs at all, often minor. Typical, for example, is the displacement of a closet in **Household 08** to enlarge the daughter's room (Bedroom 2, Figure 2.20). Furniture, shelving, etc. are also often added.

° Decoration

A trademark of adolescence seems, for many, to decorate one's room. When the son in **Household 14** was 17, for example, he added the wall graphics shown in Figure 2.24. The variety of different types of decor is seen in Figures 2.21, 2.22, 2.23, 2.24 and 2.25.

Such decorations serve several, often complementary functions. They are a way of storing and displaying souvenirs, of self-expression and of trying out different selves, of testing and confronting parental taste and, by implication, parental norms, of territorial identification, and probably many other things as well. It also marks the passage from childhood to adolescence as noted by **Mother 17**.

It was a beautiful bed, a 3/4 bed on the bottom and a single bed on the top which formed a canopy for the bed on the bottom. But the girls, at one point, found this to be childish. (**Mother 17**, p. 17-16.2)

Figure 2.20. Plan of first floor of cottage, Household 08 (0872). Scale 1:100.

This closet was added to replace the closet removed from Bedroom 2. Its removal enlarged the usable space in Bedroom 2.

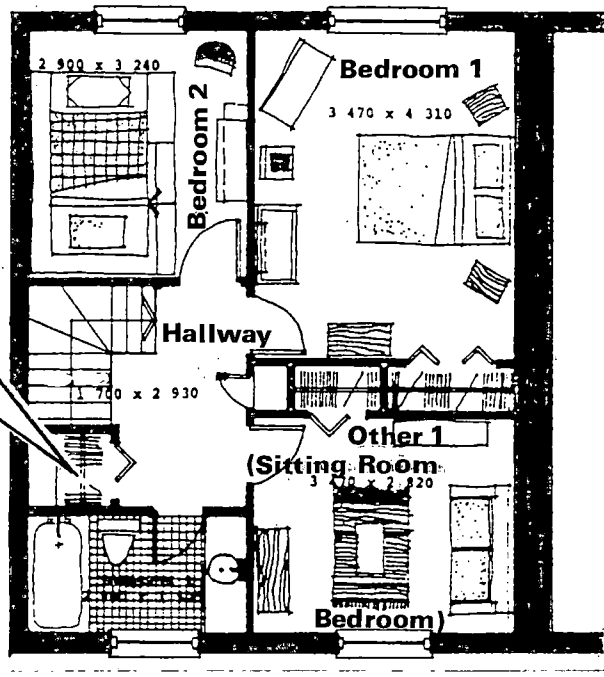


Figure 2.21. Photograph of son's bedroom showing disciplined self-expression, Household 05 (0515). Most personal markers are attached to a bulletin board installed for this purpose.



Figure 2.22. Photograph of daughter's bedroom, **Household 08** (0813-3). The room, with bed and integrated work area, maximizes the use of a small area in a personalized way.



Figure 2.23. Photograph of son's bedroom showing supergraphics, **Household 10 (1015-2).**

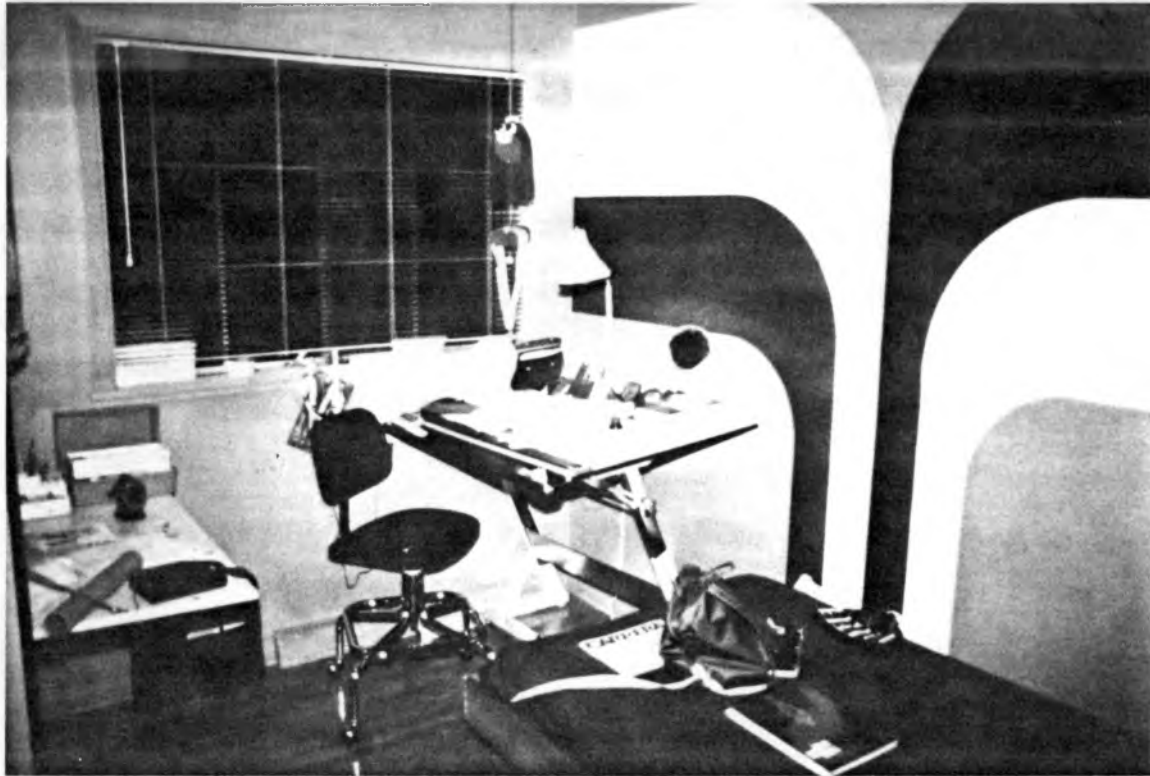


Figure 2.24. Photograph of son's bedroom in which the wall decoration testifies to a set of "mixed" values, Household 14 (1414-2).

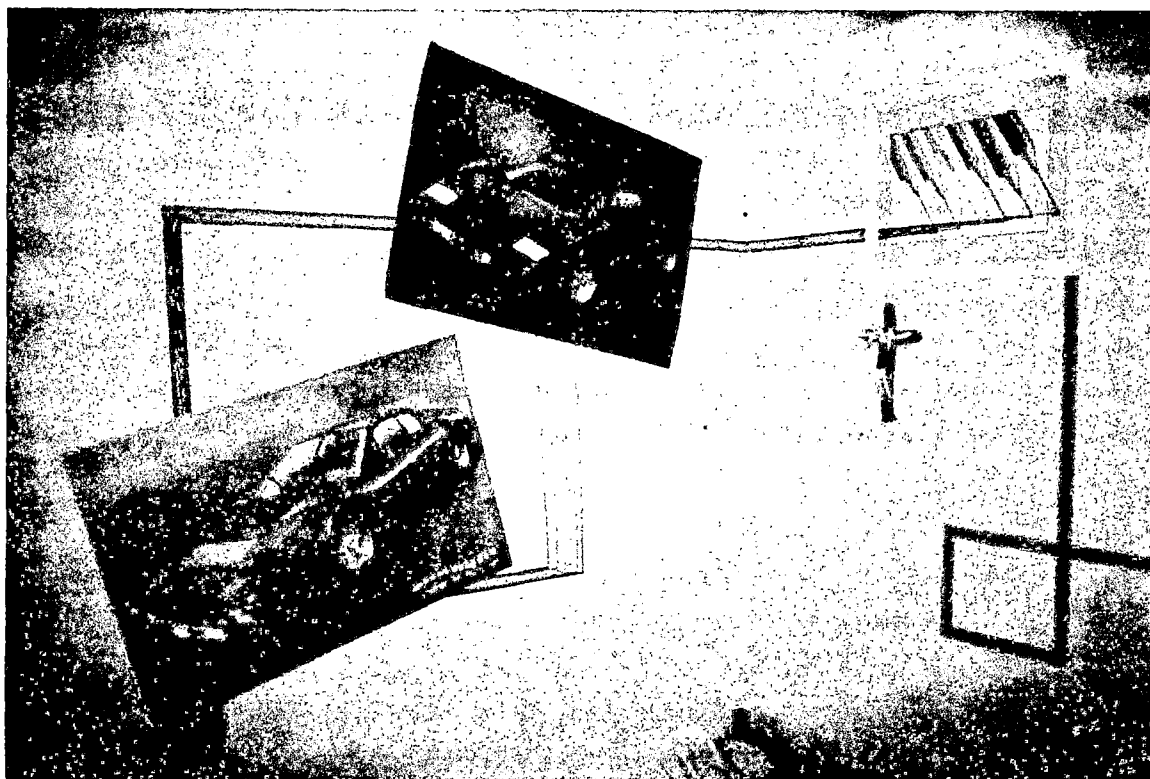


Figure 2.25. Photograph of daughter's bedroom in which the entire wall has become the bulletin board, Household 19 (1913-2).



° Rules governing behavior and conduct

Rather than or in addition to making spatial or physical adaptations, rules of conduct may be changed to accommodate new or altered needs. At a fairly macro-level this is what occurs when room uses change. At a more micro-level, such changes and the verbalization of these changes often relate to the use of the bathroom and the use of doors. While these are often implicit, around adolescence previous rules often become problematic and new ones must be established.

As reported by a number of households, bathroom scheduling, especially during the morning rush hour, often becomes essential. In **Household 17**, for example, greater efficiency is achieved by scheduling and by adding a corner recess with dispensary" as seen in Figure 2.26.

The use of doors to close off rooms also becomes important. With respect to doors other than those to bedrooms, it is often merely a functional exercise. In instances where public or common spaces do not have doors, however, bedroom doors must be used as a means of shutting off public areas as in **Household 14**.

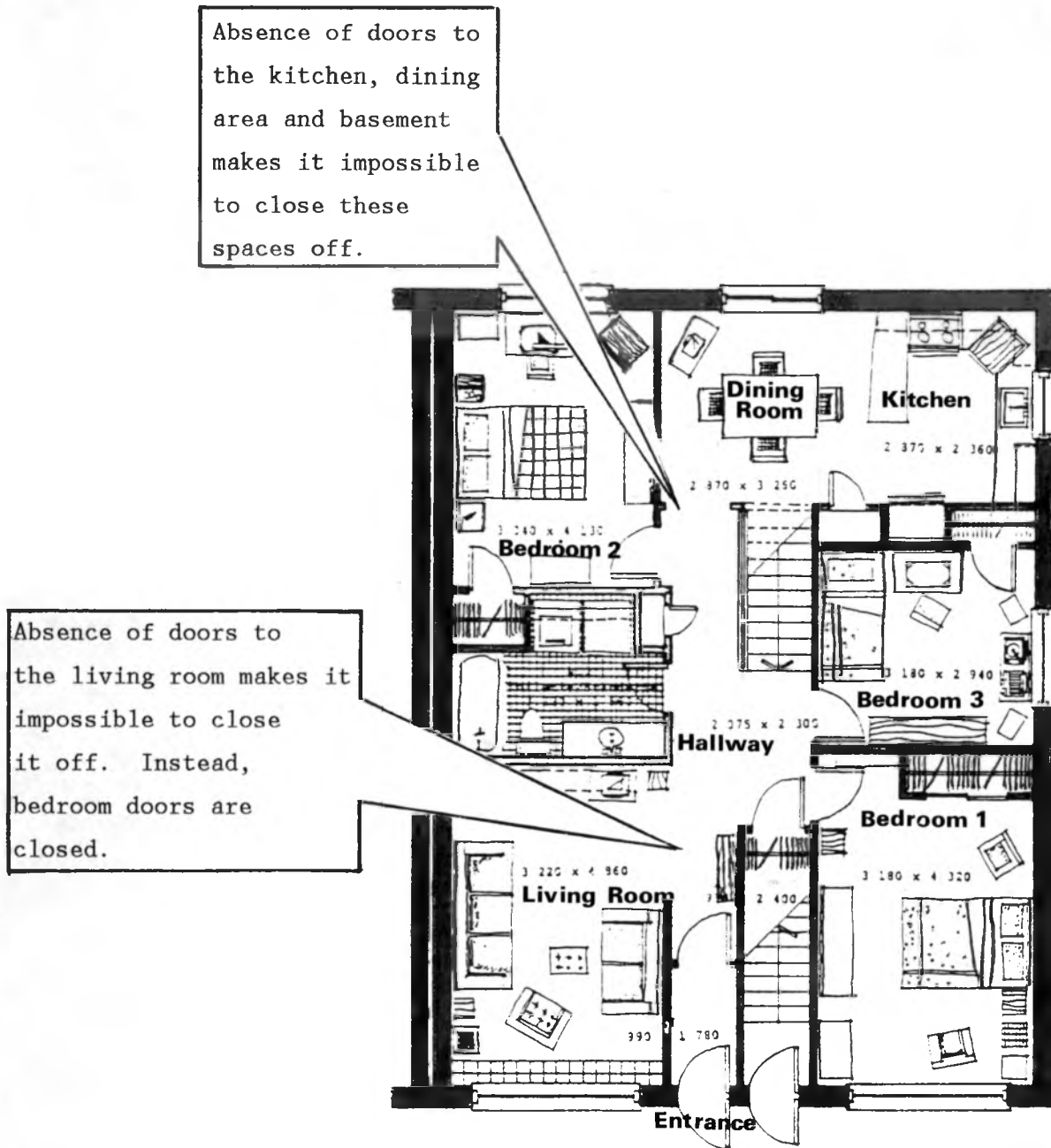
One defect (of this house) which I find to be major, is that there is no closed-in room. If there is somebody in the living room, it is difficult to have any sort of privacy in the other rooms (Figure 2.27) (**Daughter 14**, p. 14-11)

Closing the bedroom door in some home environments can be a radical and possibly an emotion laden issue where there may be resistance on the part of the parents.

Figure 2.26. Photograph of corner recess with dispensary installed by **Father 17** in the bathroom used by the parents and three daughters (1709-2). The son uses the basement toilet.



Figure 2.27. Ground floor plan of duplex, Household 14 (1470). Scale 1:100.



The bedroom doors have only been closed since the children became adolescents. This event was difficult because I had never lived with closed doors; I had always lived with open doors.

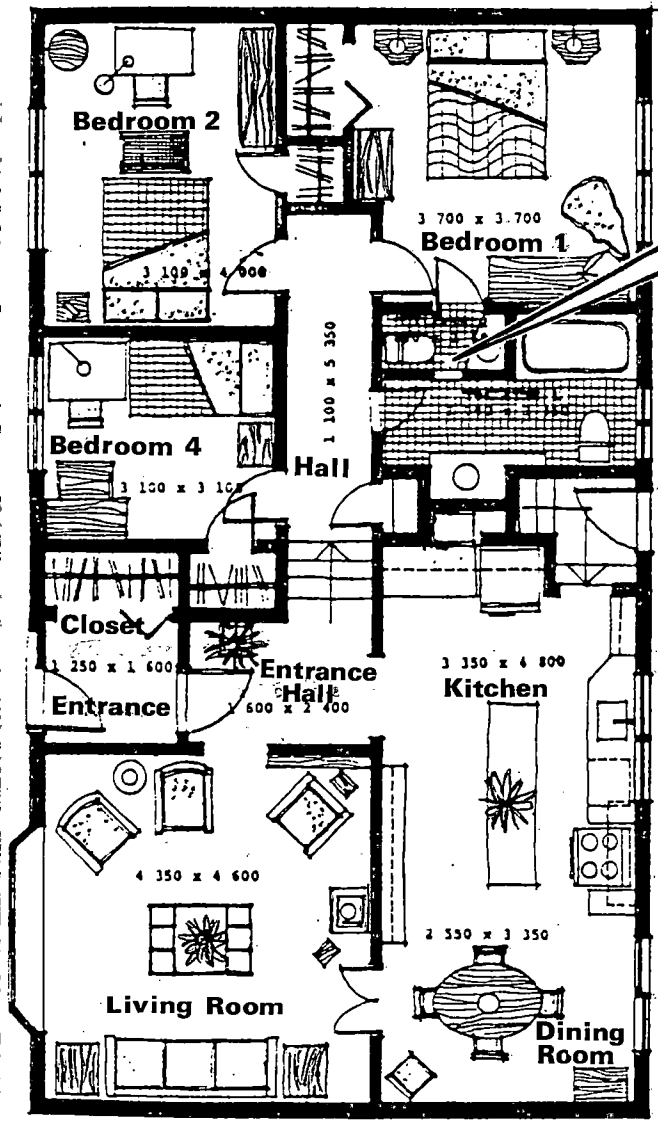
(**Mother 14**, p. 14-6)

Of course, rules may exist regarding the use of different areas of the house. Often these are not limited to the period of adolescence, as in the case of **Household 10**. "... We are not allowed to go into the living room (**Son 10**, p. 10-2.1)." But such rules may be renegotiated during adolescence as teenagers make greater demands for space.

In some instances, no change in rules can significantly alter certain physical aspects which become flawed during adolescence. This is the case of the use of "upstairs" bathrooms by adolescents, especially if adjoining or communicating directly with the parents' bedroom.

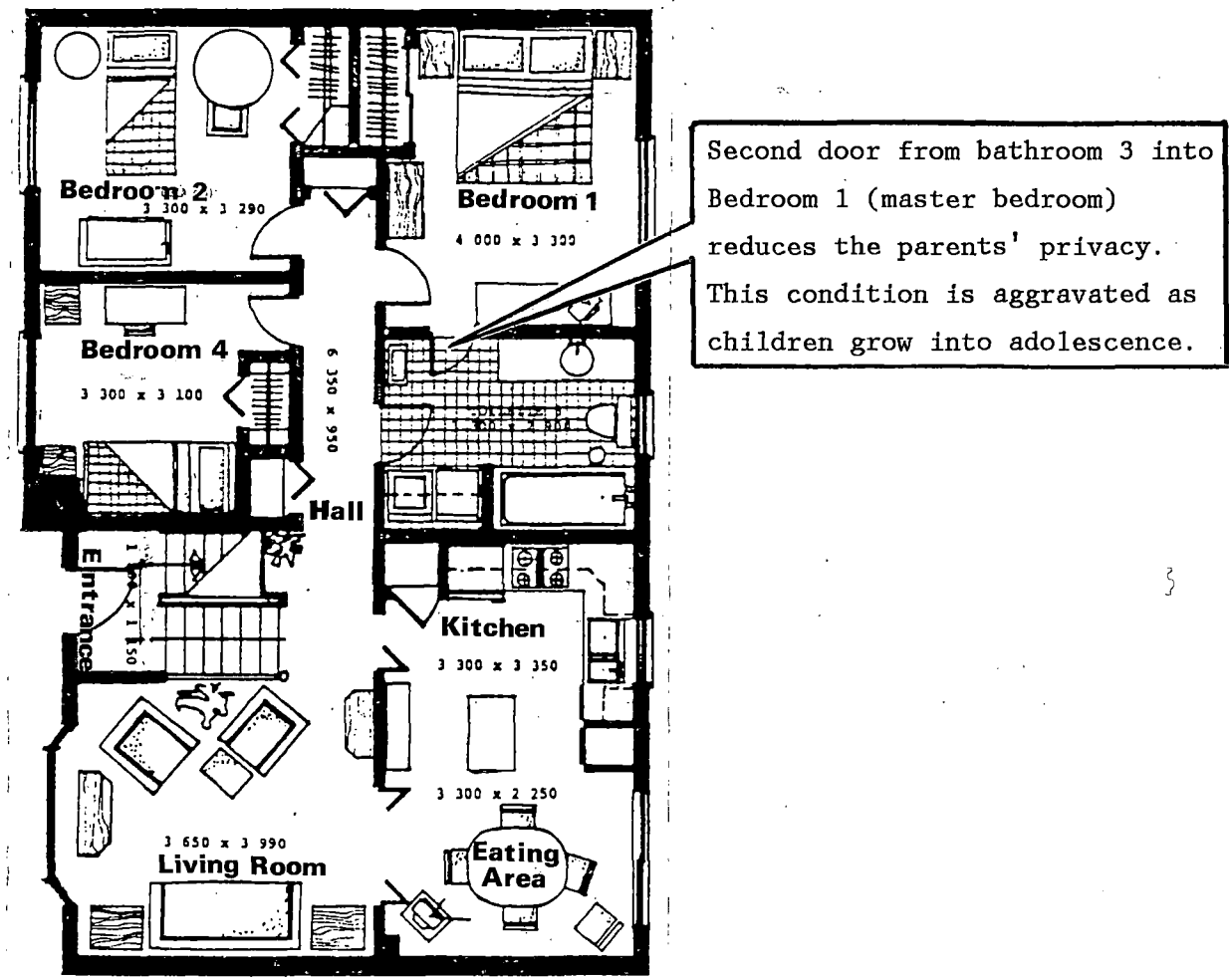
For example, in **Household 10**, the parents complained of the lack of privacy because of an opening between their bathroom and the bathroom used by the rest of the family (see Figure 2.28). Or because of a second door leading directly from the bathroom to the parents' bedroom, the parents in **Household 13** feel their privacy is compromised (see Figure 2.29). Where direct access to the parents' bedroom was probably perceived as providing greater privacy, which it probably did when the children were young, its effect is negative when the children are adolescent. It also reduces privacy for anyone using the bathroom.

Figure 2.28. Ground floor plan of split level, Household 10 (1071).
Scale 1:100.



Opening between bathrooms 1 and 2 reduces privacy in both bathrooms.

Figure 2.29. Ground floor plan of bungalow, Household 13 (1371). Scale 1:100.



Conclusion

While the basement provides a useful and probably necessary outlet for accommodating the needs of adolescent children and in turn the ability of parents to maintain a level of privacy, adaptation in the "upstairs" areas is limited and, in some instances, there is stress. At least part of the problem here is related to the limited time perspective considered when family housing is purchased. Most of the households studied purchased their houses when their children were young. While the future use of the basement was most likely taken into account, the future adequacy of upstairs areas was probably not considered in detail.

2.1.4 Recovery of space vacated by departing children

In past studies on the departure of children (Krobin, 1980), emphasis has been placed on: reasons for the departure, the child's age, etc. The data analyzed in this study, by contrast, emphasize the use of space in the household of origin freed by such departures and in turn the subsequent spatial adjustments or changes. Consequently, "push" from within the household (i.e., pressure for space from other, generally younger siblings) is examined as well as external "pull" type factors (e.g., leaving for university, work or marriage) that have been more typically examined.

Problems and needs

The reason typically used to explain this type of departure generally involves moving to another stage in the child's life such as pursuing advanced studies or marriage, or is job-related.

At the same time, the vacating of space allows others to satisfy new demands if they can establish the strongest claim to the vacated space. Moreover, the freed space allows for a readjustment or a redistribution of space within the household of origin.

Observations

Two types of departure and their effects on the child's household of origin are examined. In the first, the child moves into a completely separate and distinct unit; in the second, she/he moves into an independent unit within the same buildings owned and occupied by the parents and generally maintain close contact with the family of origin.

- ° Recovery of space vacated by departing children who move out (and into a different building)

Two distinct although sometimes overlapping patterns are observed. The freed space may be reused as a common or public area or may be used exclusively by other children or household members. If only part of a bedroom is freed, this place is often taken by the next (in terms of age), same-sex child. This is especially true where the vacated space is a basement bedroom and thus has special value.

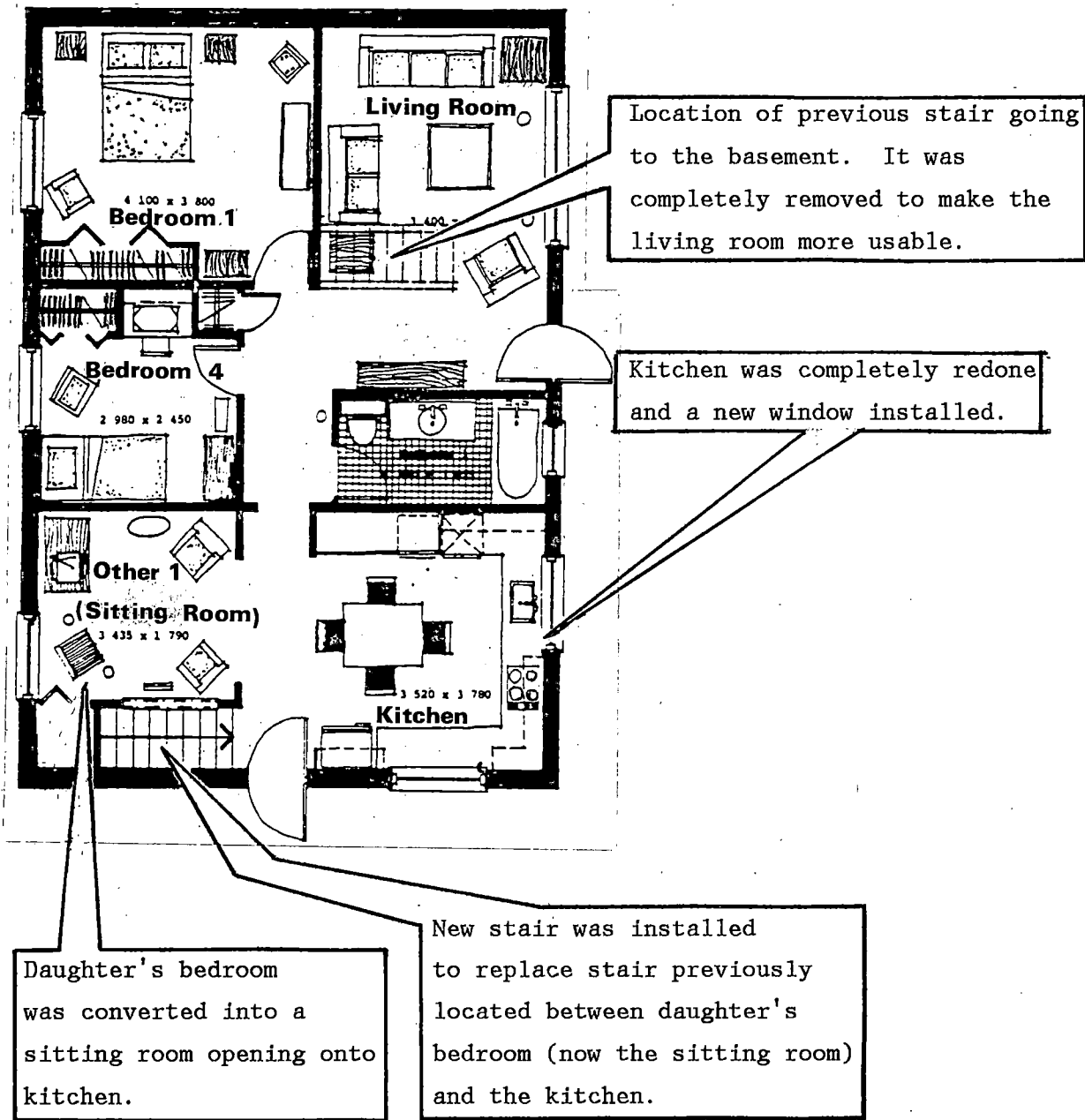
Household 04 demonstrates the expansion of common or collective space that is permitted by the freeing of space left by departing children. In this household, the son and the eldest daughter both left their parents' home during the same year to be married. Following the son's departure, his basement bedroom was, in part, converted into a family room, a storage area and a cold room. The eldest daughter's bedroom was appropriated by the younger daughter and her bedroom was in turn converted into a den opening onto the kitchen (Figure 2.30).

These spatial changes permitted (or co-occurred with) a host of other alterations and modifications. For example, the stair to the basement was closed off in order to enlarge the usable space in the living room and a new basement stair was constructed out of the new den. The kitchen itself was completely redone and modernized (counters, cabinets, appliances were all replaced), and even the exterior window was replaced to provide more light in the kitchen.

The departure of children also allows for other children (or other members of the household) to acquire more or different space. Or such a departure may change the sibling with whom remaining children share a room. What often follows is a chain reaction entailing a series of multiple adjustments as, for example, in the case of **Household 12**. From the same home, three of the five sons departed. (The single daughter had her own room, except for the first year when she shared it with her infant brother, at the ground floor level). After each departure, the vacated position in the shared basement bedroom was reassigned to the oldest son still living at the ground floor level. As such, the reassignment does not just respond to filling the vacated space, but also to the needs of the remaining household male children. Moreover, this represents multiple or nested patterns whereby the departure of an older male child permits remaining male children to readjust space to better meet their current needs.

Subsequently, the oldest (Son 1), when he decided to leave, that meant that there were three upstairs (Sons 3, 4 and 5), so one (Son 3) said, "I'm going to the basement!; so that left two upstairs (Sons 4 and 5) with two in the basement (Sons 2 and 3). It was at this time that I took the youngest (Son 5) who was $2\frac{1}{2}$ years old out of the girl's room and put him in the bedroom with Son 4. Today, the daughter can finally sleep all alone in her room. Thus, at one point, there were four boys in the same bedroom. Subsequently this decreased to three, to two and finally to one.

Figure 2.30. Ground floor plan of bungalow, Household 04 (0470). Scale 1:100.



Finally, last year, the one who was alone upstairs, got married; this means that his bedroom is free and I'm using it as a sewing room. To think that there were four boys there! (**Mother 12**, p. 12-6)

In most instances, however, the sequence following a departure is simpler. For example, the departure of the son in **Household 19** permitted the two daughters, who previously occupied the same bedroom, to each have their own room. In a still simpler reaction, the departure of a daughter in **Household 01** permitted her sister to have her own room. (Previously the two sisters had shared the room). Nevertheless, to "appropriate" this space as her own, she redecorated it.

An entirely different situation arose in **Household 20** following the accidental death of the eldest son. The freeing of space permitted or accelerated the arrival of the grandmother. "When he (the son) died, the grandmother came to live here; automatically, in the same week, she took over the room which had been occupied by the daughter." And she stayed there for the next 19 years. (See also section 2.1.6)

Her arrival in turn resulted in a number of other adjustments. The bedroom that had been shared by the two eldest sons (one who was now dead) was occupied by the daughter. The daughter's room was occupied, as noted, by the grandmother. And the remaining son, although younger than the daughter, moved to a basement bedroom.

Similar type chain reactions, although rarely as long or complex, were also observed in the case of finding space for newborn infants (section 2.1.1) and as children pass into adolescence or into young adulthood (section 2.1.2).

- ° Recovery of space vacated by departing children who move into another unit in the building

Another type of child departure, also resulting in the freeing of space within the household but not in the formation of a fully independent household, is the occupancy of additional space in the same building, generally another apartment in a plex (or an accessory apartment), by an adult child. Although this may be a totally separate unit, the child often maintain frequent if not daily contact with their household of origin. Following the same but opposite logic, space used by the child may be rented out once it is no longer needed.

This second type of departure is really quite different from the first. This departure may not correspond with a major change in the child's life cycle stage. And the child often maintains daily links with household of origin, thus representing a weaker break.

For example, the 11 year old son in **Household 15** moved into an upstairs bedroom in the upper duplex apartment occupied by his grandparents. Nonetheless, he continues to eat all his meals downstairs in his parents' apartment and frequently does homework and entertains his friends there.

The reasons to explain this move are of two sorts, representing both the needs of the grandparent and parent households. The grandparents desired or needed company and had an extra bedroom available following the marriage and departure of their last child (a son). In the parents' household, the need was recognized to provide each of the older, adolescent daughters, who were sharing a bedroom, with their own rooms. (Significantly, it was the son who moved upstairs rather than one of the daughters). In moving into an upstairs bedroom in his grandparents' apartment, the son's downstairs bedroom was vacated, in turn permitting each sister to have a separate bedroom.

... thus my son took a bedroom upstairs because my parents were alone ..., so, at that time, both girls were in the same bedroom, and the bedrooms are very small ... so daughter 2 took the son's bedroom and daughter 1 had her own bedroom...

...daughter 2 was 16 years of age and daughter 1 was 18 years of age, and that is when the trouble began, having two in the same bedroom, so when the boy went upstairs this resolved a lot of problems... (Mother 15, p. 15-6)

The son's move also allowed for reducing rush hour traffic in the single bathroom in the parents' apartment.

... it's a problem in the morning when everybody has to leave at the same time, one has to be organized, each one has to do his share, some have to take their bath in the evening, others in the morning. Once the son went upstairs, there was no longer any problem in the bathroom downstairs, of course we didn't want to see him downstairs in the morning, he had to stay upstairs. (Mother 15, p. 15-11)

In another example, the eldest daughter in **Household 07** moved into a separate, upstairs apartment in her parents' plex when she was 24 (she is now 26), where she lives alone. Prior to this move, all three sisters shared the same bedroom. (The son already occupied the basement bedroom). Despite her "departure", the father assists her constantly in decorating and improving her apartment.

In **Household 16**, one is able to observe the full cycle. The basement bachelor apartment, which had been rented, was given over to the two eldest daughters for a certain period when they needed the space. At that time, the income from this apartment was also no longer as important as it had been to the family budget. The daughter's then vacant "upstairs" bedroom was taken over by the parents because it was larger than theirs. Once the daughters left home, however, the bachelor apartment was again rented.

I was raised in a large family where we didn't have any room and then, all of a sudden, I realized that the two older children (Daughters 1 and 2) who at that time were approximately 18 and 19 years of age needed space and I wanted to give them more room, so I gave them the bachelor unit in the basement (Figure 2.31) so that they would feel more at ease, and have their privacy and their own bathroom. Because one bathroom with four women in the house, means that it is often a very busy place, and I liked the new set-up and I believe that the girls also liked it. They lived in that basement apartment for two or three years, (Father 16, p. 16-6)

Conclusion

Household 12 first considered using the upstairs unit in their duplex but, when this could not be done, transformed their basement into an almost separate unit. This example demonstrates the apparent substitutability of the basement area in single-family or duplex housing and separate units in duplexes. Moreover, space from another unit in a plex may be used by the household when space demands are the greatest or basement areas may be finished and converted to bedroom or living spaces.

Figure 2.31. Photograph of duplex façade, Household 16 (1650-1). Basement bachelor apartment, with separate entrance next to garage, was used by two daughters for a certain period and then rented again when no longer needed.



Examining what these two types of spaces, a separate unit in a plex or a basement area, have in common permits us to infer something about the nature and quality of the space used to accommodate the needs of adolescent children and of the parents of adolescent children. Both types of spaces provide separate and distinct areas from the "main residence" and maximize distance between the parents' and adolescent bedrooms. Both basement and additional duplex units often have a separate entrance.

Furthermore, the basement or another unit in a plex is infrequently claimed by another member of the household. Where a basement space is being used, the claim on the space is generally less secure in that it most often serves as a secondary work area. It is easier to "settle" or "claim" such spaces than to take possession of primary spaces (bedroom, living room, etc.) already occupied or used by other members of the household.

Because plex owners have access to the basement and other units in the building, plexes offer an extremely robust or varied set of spaces. At different times, extra units can be used by members of the household or rented out depending on the needs of household members at the time.

2.1.5 **Nonrecovery of "vacated" space**

Departures do not necessarily result in the vacating of space and in turn its reuse or reassignment. In some instances, this space is reserved for the departed child, either at the insistence of the parents who wish to continue to keep a space available for the child or of the child who wants to maintain rights to the space (Kron (1983), Wexler (1986)).

Problems and needs

- ° Need for continuity (both children and parents)

To the extent that space provides for both real and symbolic continuity of roles, the maintenance of a child's bedroom is consequential. The child's room may represent an anchor in contrast to temporary accommodation used while a student or while working in a series of short-term jobs.

Conversely, premature reuse or redecoration may be consequential in a negative sense, possibly representing a type of dispossession.

At the same time, however, reserving space for someone who has left represents a denial of any change.

I still keep her bedroom because it seems that she is still in the house; she hasn't been gone for a long time. Moreover, she still hasn't taken anything with her. She still has all her books here, and thus she comes by very often. (**Mother** 15, p. 15-15)

- ° Need for security

Not only does the room represent a type of symbolic continuity, it also may be a place to return to after a marriage breakup or job loss. As data in this study show, this can materialize into real support in a crisis situation.

Observations

In **Household 13**, the two daughters now at university live in an apartment during the week, but return home on weekends. As a result of this move, "... nothing has changed...because they come by regularly... ." (**Father 13**, p. 13-6)

That's right, they still have their bedrooms ...
their bedrooms are still used for the same purpose
... they are still their bedrooms ... (**Mother 13**,
p. 13-6)

While some parents wish to keep a room for children who have left, others do not. **Mother 05** would like to use her daughter's room for other purposes. The daughter, however, who is currently a student at the University of Sherbrooke and stays at home only a couple of days each year, insists on holding on to her room.

Conclusion

These examples of the nonrecovery of space following the departure of adult children suggest some of the complexity of the spatial needs of households passing into the empty nest period. As will be discussed in section 2.1.7, the needs and desires of households during this period differ significantly.

2.1.6 Taking care of elderly parents

While this study does not focus on the relationship between elderly parents and their adult children, certain data were collected in the course of the interviews related to cohabitation. Because of the timeliness of this subject, certain observations are included here.

Problems and needs

- ° Need for privacy and independence

While in theory, the need for privacy would be expected to be greater for three generations of family, those households who lived in such a situation did not focus on problems associated with privacy. This is perhaps as much a reflection on the types of families which cohabit as on their physical surroundings.

Nonetheless, the physical environment can make cohabitation more (or less) reasonable as an option.

Observations

Elderly parents lived for limited periods in **Households 02**. In **Household 20 and 13**, as discussed in section 2.1.4, the grandmother remained for 19 years. And in **Household 15**, also discussed in section 2.1.4, the grandparents lived in the upstairs apartment of the duplex with their children and their family living in the downstairs unit. Their grandson also had his bedroom upstairs.

Conclusion

Although cohabitation is not the major means of support provided across generations, it still remains an important alternative. As Wexler (1986) has described at length, plexes are particularly suited to this type of occupation since each household is able to retain its independence.

While the bulk of this study considers past changes and modifications in the use, decoration and furnishing of space within the home, certain data were collected concerning planned modifications in the home, generally as these relate to the maturation and departure of a child or, conversely, entry into the empty nest phase. In some instances, these represent simply a possible future scenario, while in others these have been carefully planned for many years in advance. In still others, these changes have already started.

Problems and needs

- ° What to do with "surplus" space?

Whether "surplus" space exists or not and, where it does, to what extent it is considered a problem varies among households. For some households, as will be shown, the space they now have may be barely enough. For others, they may wish to rent this space out for a variety of reasons: to gain additional income, to have someone living close-by in case of emergency, etc. And still others may wish to move to smaller or more convenient housing.

- ° Need to maintain valued roles

As discussed in Wexler (1986), certain spaces and facilities allow for the maintenance and continuity of valued social roles such as to receive family, prepare large or elaborate meals, care for grandchildren, or to offer accommodation to adult children (now departed) should this be needed.

- ° Need to be able to house adult children

The need to be able to re-accommodate adult children does not merely represent preservation of a desired social role, but also has real significance and consequence given the likelihood of family ruptures today (Rose and Wexler, forthcoming). Both the economic and moral supports such accommodation provides following divorce or a job loss are, even if for a temporary period, enormously important as discussed in section 2.1.5.

Observations

- ° The Move

While the focus of this study is on continuous occupancy and the modifications and adaptations made by families who remain in the same house despite important changes, a number of households plan on moving to a smaller, more convenient unit or one having a higher level of services within a short-to-medium time period.

... If we had to move it wouldn't really be because of the house, it would be because we had decided that we'd had enough (the work) ... when you buy a house, you are always happy, you have a lot of things to do, but at a given time ... I think that like everybody else, we would like to have a large condominium ... (Mother 10, p. 10-2.2)

Or again, **Mother 11** wishes to live in a condominium that would be

... smaller than the house that we now have. My husband isn't ready yet ... but, as for me, I am ready. I want to be all alone with my husband, I want this to be our little nest where we can end our days. I would also like to have a dwelling with a view over a body of water. (**Mother 11** p. 11-2.2)

Such a move represents, for some, a desirable alternative to remaining in their present home. While this represents a type of space planning, this is not the subject of this study (see Wexler, 1986).

- ° Renting out a part of the house or making some part available to an adult child

There is a wide range of variation within this broad pattern. Such variation is a tribute to the flexibility of the housing and of the innovativeness of the households studied.

In single family homes, such flexibility may be obtained by adding an accessory apartment. As will be discussed in section 2.1.11 on household fusion, **Father 02** actually built an accessory **apartment** to be occupied by his daughter and grandchild (and son-in-law initially) in the basement (Figure 2.32). Other households such as **Households 04 and 20** are considering adding such a unit to their basement.

We are thinking about installing a bachelor apartment in the basement with a small kitchen and eventually, as we grow older, one has to think about why the elderly cannot keep their houses;

because they are all alone ... and an elderly person finds it hard to adjust to living with a stranger in his/her house ... but this elderly person would allow strangers to live in a bachelor apartment in the basement, for example ... it's safe ... as for me, I am afraid ... I would not stay in a house all alone ... and if the idea of having a unit in the basement is possible, an elderly person could live there, but this would mean installing windows and allowing the sun in ... this house would lend itself easily to this type of modification and should we want to sell the house, it would also be an asset to attract potential purchasers ... (Mother 04, p. 04-12.1)

Duplexes and triplexes offer an even greater variety of alternatives. The basement or upper unit in a duplex or triplex may be occupied by children depending on the child's needs or life cycle stage. Both of these options are being considered by **Mother 14**.

The basement could be used by the children once again. If the children married, they could have the unit upstairs. The unit downstairs is as attractive as the one upstairs. It is a very cute apartment on a corner with lots of sunshine and fresh air. If we had a million dollars, we would live in the whole house. (p. 14-13)

Figure 2.32. Photograph of kitchen in basement accessory apartment (0219-1). Father 02 added the unit in order to accommodate his adult daughter and her family. Their "return" was due to a financial crisis.



In other instances, the family itself may use the additional unit in the building when its space requirements are highest as seen in section 2.1.4. As the family shrinks in size, this space can be rented to nonfamily.

In **Household 07**, for example, the two parents and three children occupy the main dwelling in the duplex and the eldest daughter lives in the upstairs apartment. Willing to tolerate overcrowding for the next few years, **Father 07** knows that his household will eventually be reduced, achieving a better fit with his present house.

You have to understand that I had a very big family ... but, all things considered, I decided that I could make a small sacrifice perhaps for a couple of years, which would allow me to keep my house ... (**Father 07**, p. 07-2.2)

I will not have any empty rooms ... for the next couple of years, we will remain as we are ... but the children are going to leave, that's for sure ... but I won't have a large house to look after ... there will be two or three of us perhaps, that's all! ...

That's why I was not tempted to buy a big, a very big house ... I decided rather, that I was going to make a small sacrifice ... that's sure.
(**Father 07**, p. 07-8)

Of the ten plexes examined in this study, six have kin living in at least one other unit in the buildings. Other than **Household 07** discussed above and **Household 15** whose parents live in the upstairs unit, siblings (two sisters, two brothers) of **Households 01, 16, 17 and 20** all live in separate units within the same building (plex).

- ° Using all of the space available

While some households are looking for ways to reduce the amount of space they now occupy, others wish to keep or even enlarge their space.

Household 12 continues to use and value their large home. In addition to maintaining an important role as head of her own family, **Mother 12** also maintains a key position within her extended family.

You have to realize that my house is still rather large because now the children come by with the grandchildren; when they come to visit, they are very happy to have lots of room. when they come for meals, we move into the dining room (Figure 2.33). I have to have my dining room, otherwise I would feel cramped in my kitchen. (**Mother 12**, p. 12-12.3)

Even her sisters, her cousin when they want to organize a party for someone, they always ask: "Would you be willing, could we have the party at your house ...? They want to come to the house to celebrate birthdays; sometimes this can be too much. (**Father 12**, p. 12-12.3)

In **Households 01 and 17** the dining areas are now inadequate. Both households have only "dinettes" in their kitchen which are now inadequate especially when married daughters and sons, daughters-in-law and sons-in-law, and grandchildren all eat there. Rather than needing less space at this stage in the life cycle, both need more (see Rose and Wexler, forthcoming) Figure 2.35). **Mother 17** also uses a "spare" bedroom to care for her grandchildren as she frequently does during the day (Figure 2.35).

Figure 2.33. Photograph of formal dining room, **Household 12 (1205)**. Although not used on a daily basis for eating, it is used when adult children, their spouses and grandchildren visit.



Conclusion

The actual and perceived space needs among households as they enter this period vary enormously. In some instances they need less space while; in other instances they require more. To provide such flexibility, parts of the house need to be able to be removed or added. Both basements and additional units allow for such family contraction and expansion.

The importance of such adaptability is, in fact, expressed by **Mother 04** in her positive response to a question if her home is able to adapt to changing needs.

Yes, because we have daughter 2's bedroom; she can remain there as long as she wants. If the children ever want to come back someday, there will be room for everyone without having to upset the whole house. It is always useful to have a house which is slightly flexible ... I believe that this reduces the number of stressful situations; there is enough stress that cannot be avoided, so, if it is possible to reduce stress, I think you should. (**Mother 04**, p. 04-11)

Figure 2.34. Photograph of "dinette", Household 17 (1706-2). When adult children, their spouses and grandchildren visit, this space is inadequate.

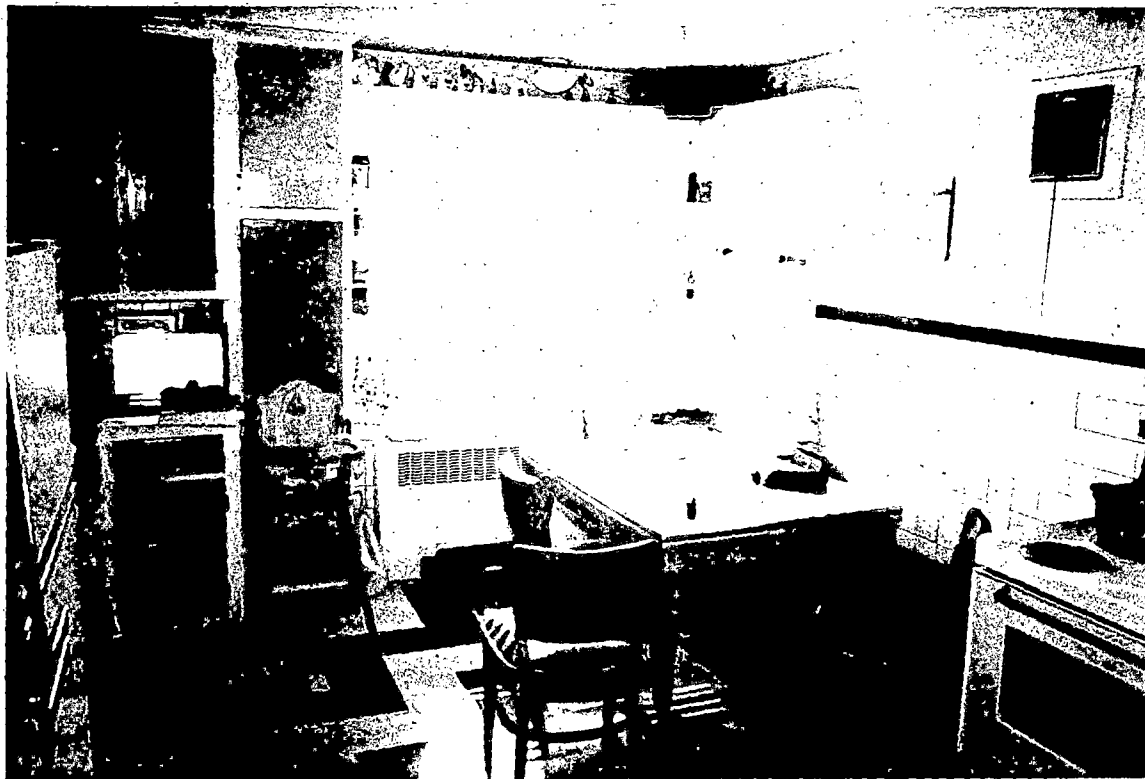


Figure 2.35. Photograph of "spare" bedroom (1717). Mother 17 uses the room to care for her grandchildren which she does on a fairly regular basis.



2.1.8 **Redefining space at home when the wife (or husband) returns to work or study**

Entry or reentry into the paid labor force or to further education have important implications to the family and the use of space within the home.

The return to school or to the paid labor force presents both new instrumental and symbolic needs.

Problems and needs

- ° Need for a place to work at home

Return to university entails the need for a space where she/he) can study, can store books and papers, etc. For the wife in her role as housewife, several areas may be under her control such as the kitchen, bedroom, sewing room. None of these however necessarily provide a setting in which she is able to do academic work.

- ° Need for a space of her/his own

Although again many spaces in the house may be under her control, rarely are they her space alone. More often, they are places where she must be available to others or where she can be freely (and legitimately) interrupted. A space of her own means one in which she is not "on call".

Observations

In this study, two women returned to complete their academic studies and one returned to the paid labor force. As in many households, the kitchen or dining room table is the place 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. As explained by her husband, working outside the home had spatial consequences on the type of space available to or desired at the home.

Last year (1985) my wife was working. At a given time, she felt the need to have a small area for herself where she could be alone. A place where she could sit down and rest. And the idea we had was to use the small room. We tried to buy furniture and quite frankly, it was hard to find anything that fitted in there. The end result was that we didn't buy anything.

She just purchased an armchair (Figure 2.36) which we found comfortable and we put it in our bedroom. So now she has a reason to go when she wants a little peace and quiet. (Father 06, p. 06-11)

Women who returned to study often acquired space from departed children or children living at home part-time as in the case of Mother 13 who studied at the kitchen table until she was able to use her daughter's room.

Of course, given that I was going back to school, I had work to do, I had to study, this meant that I needed a bookcase, eh? ... you installed a bookcase down there opposite the ... and because I bought more books, I realized that I perhaps needed a small area to study ... now, at the present time, my daughter has left and I am setting up my study in her room ... (Figure 2.37). (Mother 13, p. 13-6)

Figure 2.36. Photograph of chair used by Mother 06 in corner of master bedroom (0612-2). Unable to secure her own room in which to work, Mother 06 had to be satisfied with the purchase of a comfortable chair and a corner of her (and her husband's) bedroom.



Figure 2.37. Photograph of work table and storage - area set up by **Mother 13** in a bedroom which had been used by her daughter (1313-3).

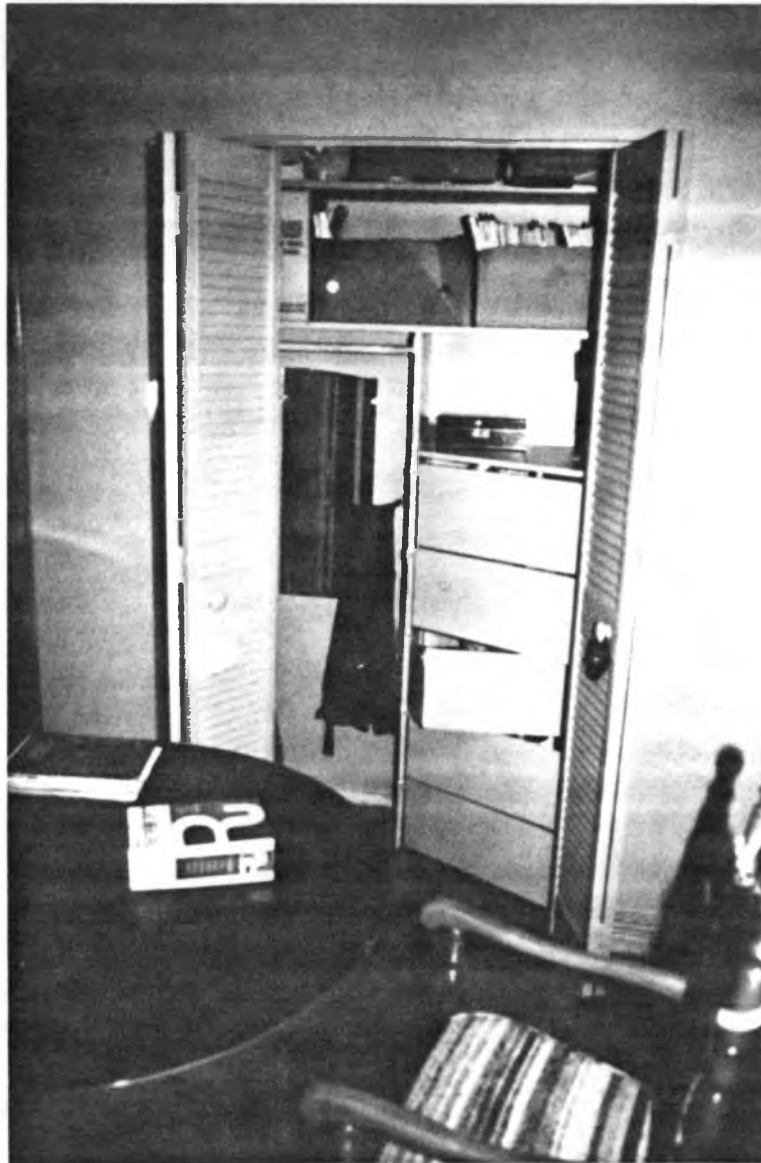


Figure 2.38. Photograph of basement "hobby corner" installed by **Father 08** (0827-2). A total of eight households have such work areas.



Figure 2.39. Photograph of sewing room, Household 08 (0826).



Conclusion

The redefinition of a woman's space inside the home after her return to school or to the paid labor force appears at first glance almost counter intuitive. Rather than decreasing the amount of space needed at home, having a more active role outside the home seems to increase the amount or requires new types of space inside the home.

2.1.9 Bringing work home

Parents often have special work areas related to maintaining the family and the home (see Figures 2.38 and 2.39). Eight of the households studied had, in fact, a "hobby corner" in the basement. Seven others had other areas such as a sewing room, office, etc. But, at one time or another, work is also often brought home.

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, etc., often bring work home. This requires additional or special areas, often bringing parents and children into competition for space.

Problems and needs

Observations

Parents and children often do work on the kitchen or dining room table. But for many purposes and for some individuals this is inadequate.

The need for a workshop area at home, in this instance a space for setting up a printing workshop to produce business-type cards, is reported by **Father 16**. In this instance, he converted his garage into a

printshop for a time in order to do work at home during the evening and weekends (Figure 2.40). In another example, **Father 06**, a professor, used a part of the basement for preparing courses, correcting student exams and for giving private lessons (Figure 2.41).

Another consequence of the use of basement areas by adolescent and young adult children is the type and limited amount and quality of space left for the parents' use. For example, as noted in section 2.1.2, **Father 03**, in ceding his basement work area to his teenage son, limited his own work space to an area in his bedroom (Figure 2.42) and occasionally the dining room table.

In **Household 05**, the seemingly unrestrained claims of adolescent and young adult children have limited the work areas available to the parents. **Father 05**, a graphic artist who prefers working at home and has, as well, a good deal of leisure time, is limited to the windowless, basement furnace area. "I work at both ends of the basement, using artificial light ... I go into hiding ... (Figure 2.43) (**Father 05**, p. 05-11)." **Mother 05**, who would like to use her daughter's room for another function, is not "allowed" to because of the daughter's tenacity in keeping her room despite the fact that she uses it just a few days per year.

Conclusion

Homes must provide for both the increasing space demands for children and for parents' needs. Parents' needs for work space at home will probably continue to increase with the increasing use of computers, word processing, electronic communication and the increasing use of modified work schedules such as part-time and split-positions, maternity and paternity leaves, etc. Adequate space in terms of quantity and type, especially with respect to its spatial zoning, street access, etc., are needed.

Figure 2.40. Photograph of basement garage, Household 16 (1625). At various times, this space was used as a printshop, as a billiards room, for storage and, as well, for keeping the car.

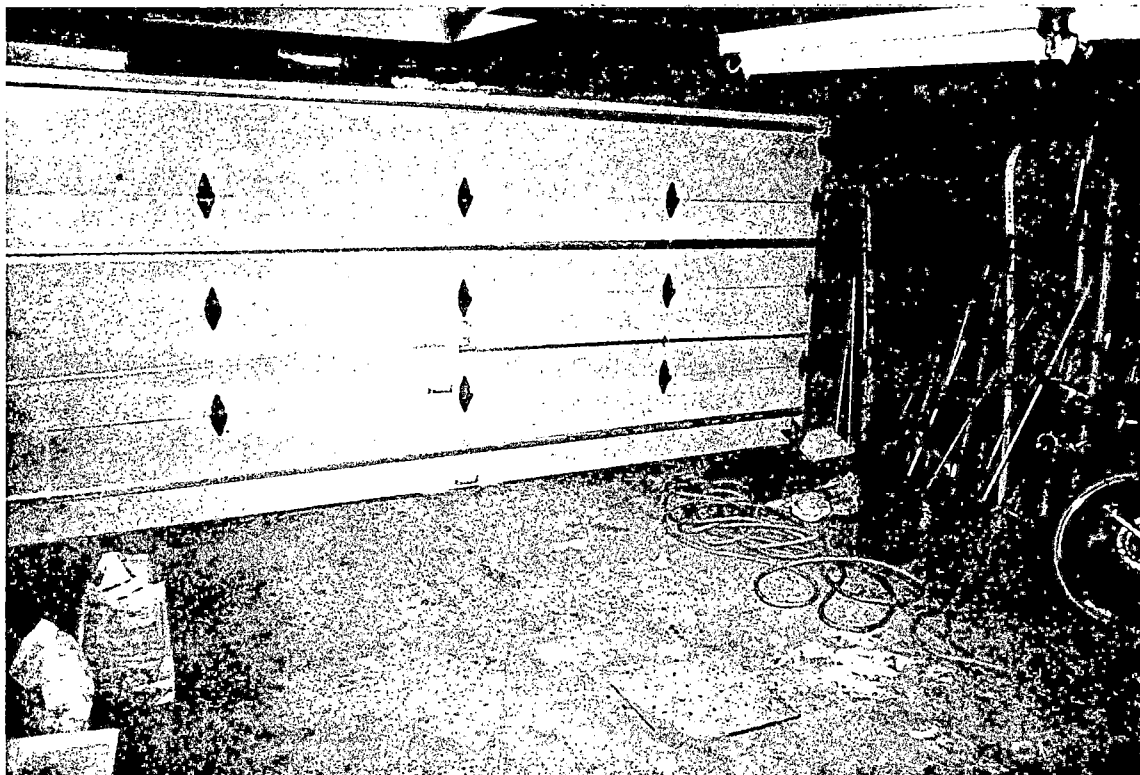


Figure 2.41. Photograph of basement office installed by Father 06 (0627-1). He uses it during evenings to prepare courses, work exams and for giving private lessons.



Figure 2.42. Photograph of work area in **Father 03's** bedroom (0312-1).
This area replaced his basement office which was ceded to his eldest son.

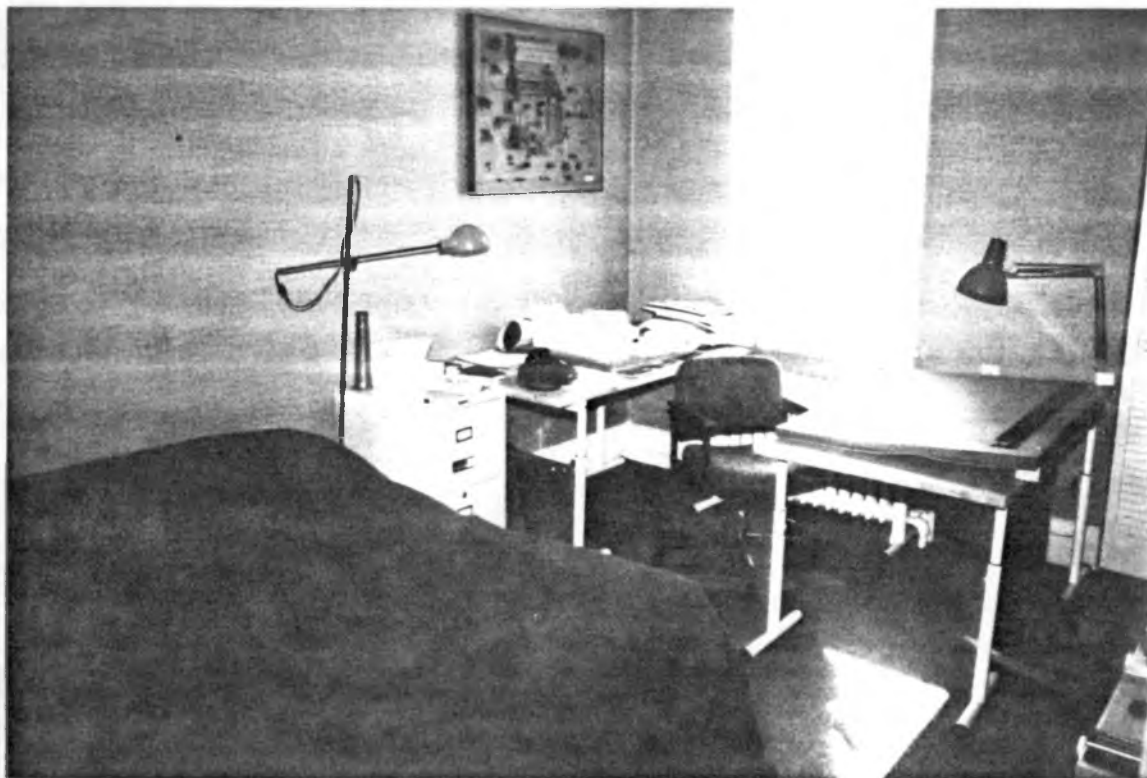


Figure 2.43. Photograph of Father 05's drawing room located in furnace room (0526).



2.1.10 Unemployment

Not only do numerous new work situations and schedules place new demands on the types of work spaces needed in the house, constantly high levels of unemployment have become part of our economic and social landscape. For households who are able to retain ownership of their homes at such times, unemployment places new demands and opportunities on the home.

Problems and needs

- ° Need for security and credit

While unemployment provides a surplus of "free" time that could be used to make improvements or modifications in the home, uncertainty over one's ability to continue living in the home and the unavailability of cash or credit to make improvements undermines this use of time.

- ° Need to control the timing

A fundamental characteristic of periods of involuntary unemployment is that there is no control over the timing or its duration. Yet, as has been shown in this discussion, there are certain periods when basements are converted to be used by older and adolescent children when a great deal of work is generally done, often by the husband.

Observation

It is important to note here that this sample only contains the "survivors", i.e., households who managed to hold on to their homes. Households who experienced unemployment and were forced to sell would generally have been excluded from this sample due to the sample selection criteria.

Despite these criteria, men, in several instances, experienced varying periods of unemployment. Such periods of unemployment appeared to have important although sometimes opposite effects on behavior. On the one hand, for example, **Father 08** used this "free" time to fix up his home. Or as discussed in section 2.1.11, **Father 02** built a small basement accessory unit while unemployed. On the other hand, unemployment and, more specifically, reduced income and economic insecurity, delayed renovation plans in the case of **Household 04**.

Conclusion

A number of important social and economic factors including moderate-to-high levels of unemployment and underemployment all contribute to the increasing use of the home as a possible means of converting time and skill into an improved physical environment, capital appreciation through improvement of the asset and, in instances where an additional unit is added, a source of income. Following retirement, when incomes often decline dramatically, these types of uses also take on added importance (Hare, 1981, 1982).

These types of considerations have probably not been as important since World War II as they are today. Consequently, housing built since the war has undervalued the use of the home as a means of generating income. Residential mobility rather than building improvement has more often been thought of as a means of improving one's physical environment. Comparatively low levels of unemployment, at least among home owning classes, and increasing real incomes during most of this period permitted the neglect of this aspect until the 80s.

Greater emphasis on the home as a source of income and as a means of capital accumulation necessitate a fundamental rethinking of the design of homes and zoning and occupancy regulation. Recent work by the Starr Group (1986a, 1986b) suggest a number of possible directions.

2.1.11 **Reconstituted household space (part I) -- Changes resulting
 from family fusion**

Data collected in this study show that the house is often called upon to serve reconstituted or blended families: (1) to accommodate other relatives or friends often on a temporary basis, (2) to house adult children returning to their parents' home (following, for example, college or university, divorce, etc.) and (3) to house merged households (remarriage) where one or both parents were previously married.

Problems and needs

- ° Need for privacy

Differences between "natural" and "reconstituted" families in terms of their need for privacy may vary depending on the age and sex of children when formed. One might speculate, for example, in the case of natural families where the incest taboo underlies family behavior, that the need for spatial privacy is less crucial. Opposite sex adolescent children coming from two different families are, however, "potential" sexual partners.

Even if sex is not an issue, physical or spatial privacy may play a more important role in reconstituted families where explicit and implicit rules of conduct, developed over a long period in natural families, do not exist or have not had time to develop. Furthermore, there may be times in the case of reconstituted families where a part of the family wishes to be together and separate from the rest of the household.

- ° Need for additional storage space

In family mergers or where adult children or other family members live in the same household, they frequently bring with them furnishings and possessions which filled their previous homes and lives. The "standard" house, already filled by one household, is generally not able to accommodate all of these belongings. The lack of storage space, including space for storing furniture, is often a major drawback to homesharing.

Observations

- ° Accommodating aged parents

The first type of reconstituted family, in particular the accommodation of aged parents, was discussed in section 2.1.6.

- ° Return of adult children

An example of the second type is seen in **Household 08**. The young adult daughter returned home after about six months, bringing with her newly acquired furniture purchased to set up her own apartment to study at CEGEP. She used this furniture to furnish her bedroom as a sitting room (Figure 2.44).

Requiring more substantial changes were the modifications made following the return of the daughter in **Household 02**. This return was not fully experienced at one time, but rather intermittently. At 19, she and her spouse lived in the basement bedroom (in Bedroom 2, Figure 2.45) that had been constructed by **Father 02** while he was unemployed to rent to visitors during Expo '67. Their infant daughter slept upstairs in the grandparents' "home" (in "Other 2", Figure 2.46).

Figure 2.44. Photograph of daughter's bedroom furnished as sitting room/bedroom, **Household 08** (0817). This furniture was brought from her previous apartment.

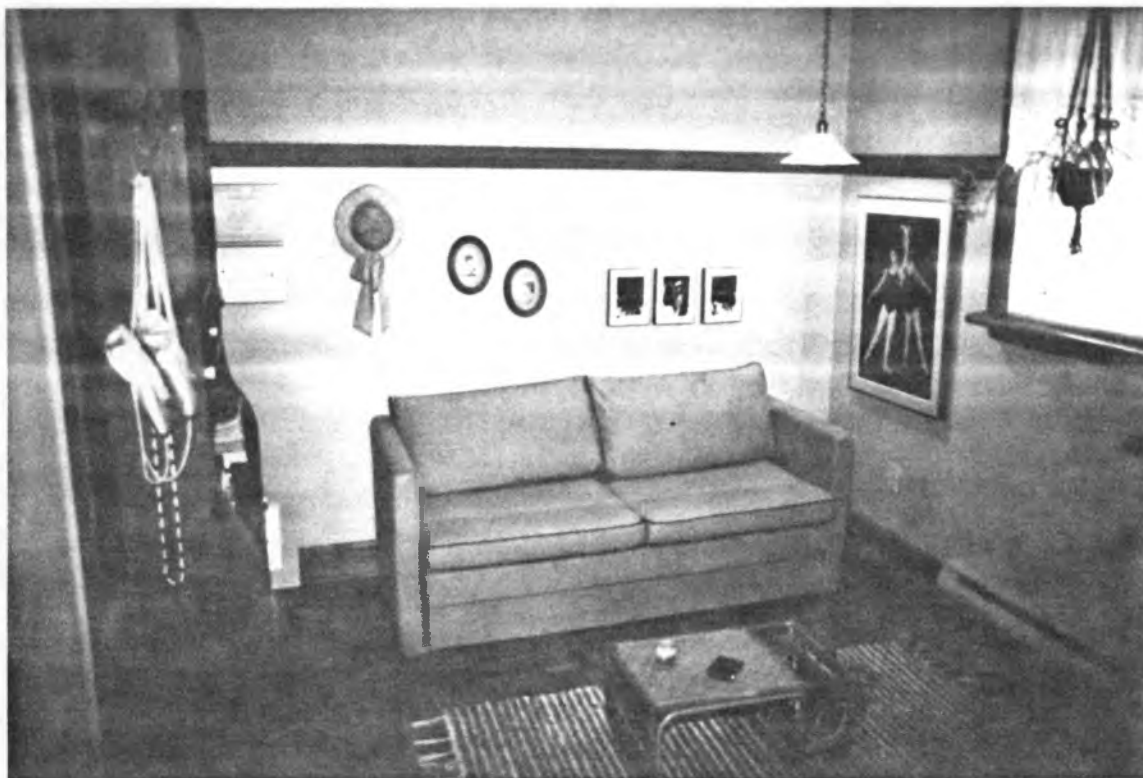
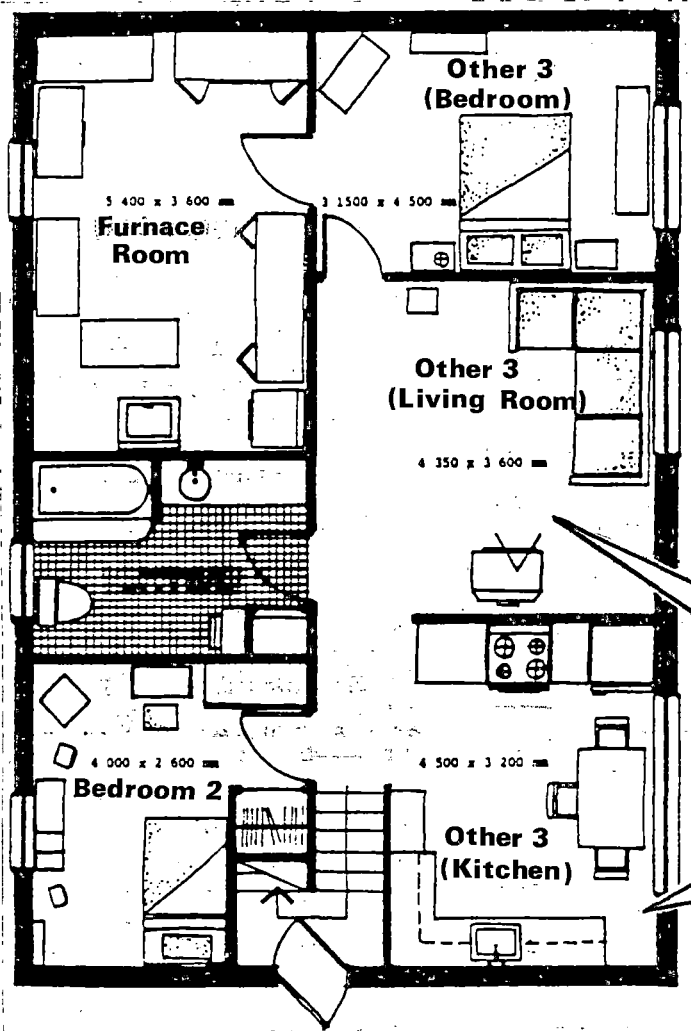


Figure 2.45. Basement showing conversion into an accessory apartment for daughter and granddaughter, Household 02 (0270). Scale 1:100.



After moving back in 1978, bedroom, living room and kitchen (other 3) were added by Father 02. The area was partially finished as a family room and had been rented out during Expo 67.

The following year, the daughter and her husband and child moved out to set up their own home. Eight years later, however, they moved back because of financial problems. On their return, **Father 02** converted the basement to an accessory apartment, adding a bathroom, an additional bedroom and a kitchen/dining room/living room (in Other 3, Figure 2.45). Still five years later, the daughter and son-in-law divorced, leaving the daughter and granddaughter in possession of the basement apartment.

° Remarriage

A third state, the subject of this section, results from remarriage. The situation that results from this type of merger depends on the individual situation of the two families being joined, the reasons for their previous separation, and what they bring with them in terms of housing, furniture, children and other possessions.

The only example of this state, in this study, is **Household 01** in which a widower having one son (and a house) married a widow having three daughters and a son.

When **Father 01** remarried two years after the death of his first wife following an illness, the household grew from two to seven members. Not only were a number of spatial modifications made to accommodate his new wife and her four children (three girls: 16, 17 and 21 and one 19 year old boy), their possessions needed to be accommodated and their identities asserted. The entire house was redecorated by **Mother 01**: repainted, new wallpaper and new drapes. Her bedroom suite was used to furnish the master bedroom (Figure 2.47) while that belonging to **Father 01** was given to his son to furnish his room (Figure 2.48). A basement room which was **Father 01**'s son's "play room" was converted into a bedroom (Bedroom 1, Figure 2.49) for two of **Mother 01**'s daughters. Her eldest daughter temporarily slept in the basement family room and her son occupied a room (Other 1,

Figure 2.49) for two of **Mother 01**'s daughters. Her eldest daughter temporarily slept in the basement family room and her son occupied a room (Other 1, Figure 2.50) upstairs that, at that time, had been used as a television room. In order to store her other possessions, shelving was built in the far end of the basement garage (Figure 2.51).

Having seven members and, perhaps more importantly, representing a reconstituted family, put special pressure on privacy and especially bathrooms according to **Mother 01**.

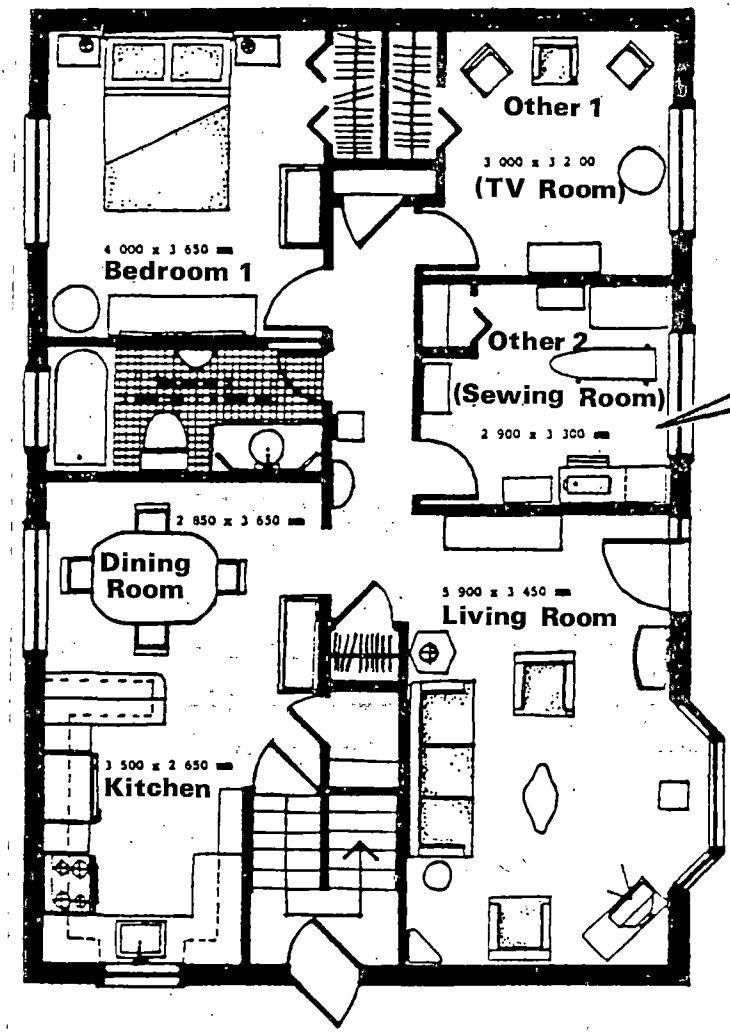
The house was really designed for a large family
... I had proof of this fact when there were seven
of us in the house ... the fact that we had three
bathrooms (see Figures 2.49 and 2.50) greatly
facilitated the adaptation. (**Mother 01**, p. 01-11)

Not only was the number of bathrooms important, but one suspects that the layout, in particular the en suite bathroom (Bathroom 3, Figure 2.50) in the parents' bedroom, also helped accommodate the particular needs of a reconstituted family.

Conclusion

Although only limited data were collected in this study concerning reconstituted families of the type discussed in this section, these data suggest that physical or spatial separation plays an even more important role than in traditional families. Given the numerical significance of family states today, new housing (and even existing housing) must be evaluated in terms of its ability to accommodate such families. The special needs of such households also should be taken into account in the design of all housing, not just special housing such as "mingles" units built to accommodate blended families.¹⁴

Figure 2.46. Ground floor plan with accessory apartment in basement for daughter and granddaughter, Household 02 (0271). Scale 1:100.



Granddaughter, when younger, slept upstairs (ground floor) with her grandparents while her parents slept in the basement (Figure 2.45). The accessory apartment was not installed at that time.

Figure 2.47. Photograph of master bedroom (0112-2). **Mother 01** used her bedroom suite to furnish the master bedroom after remarrying.



Figure 2.48. Photograph of Father 01's son's bedroom (0113). Father 01 gave his bedroom suite to his son to furnish his room.



Figure 2.49. Plan of basement of duplex, Household 01 (0171). Scale 1:100.

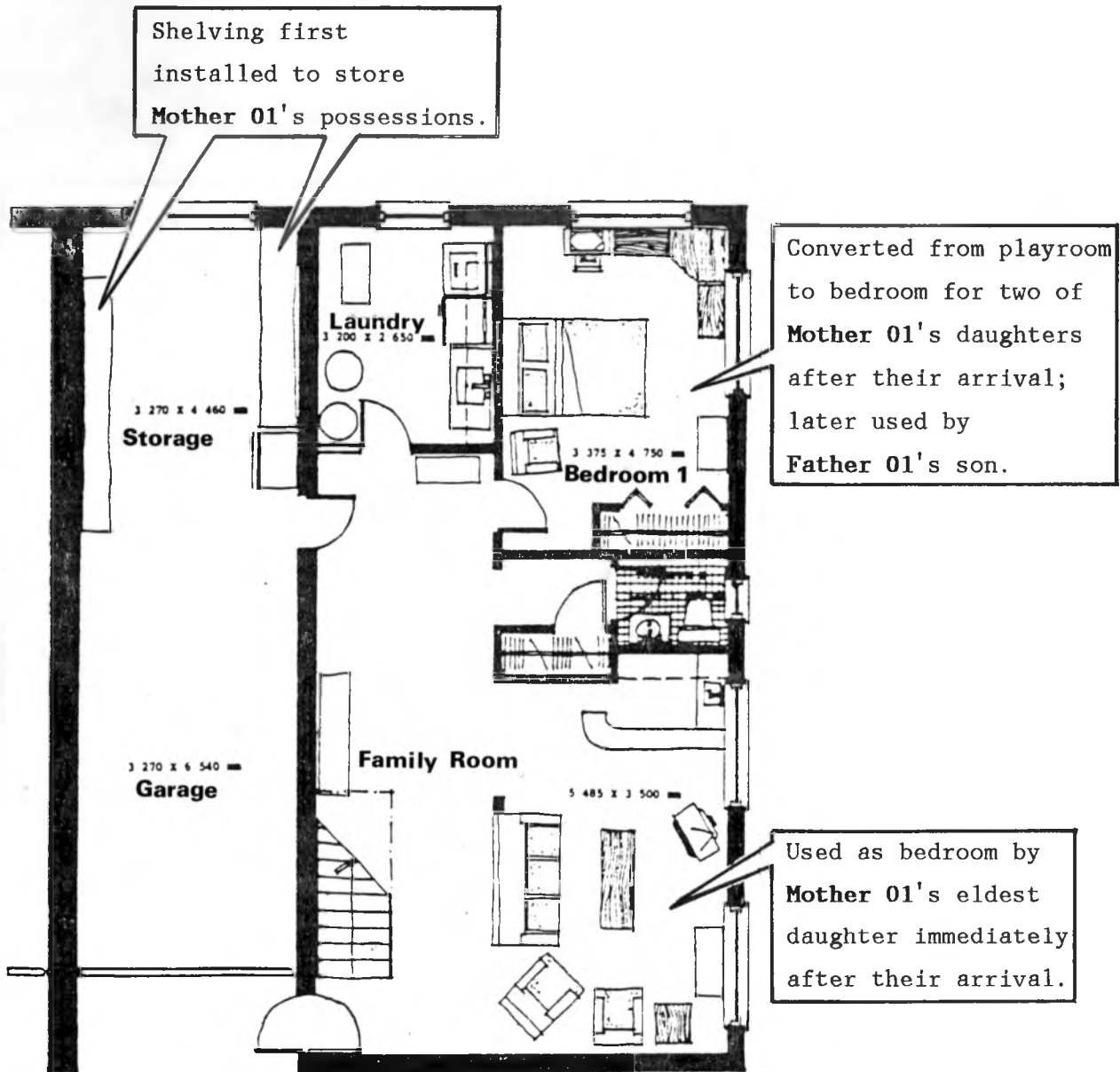


Figure 2.50. Ground floor plan, Household 01 (0170). Scale 1:100.

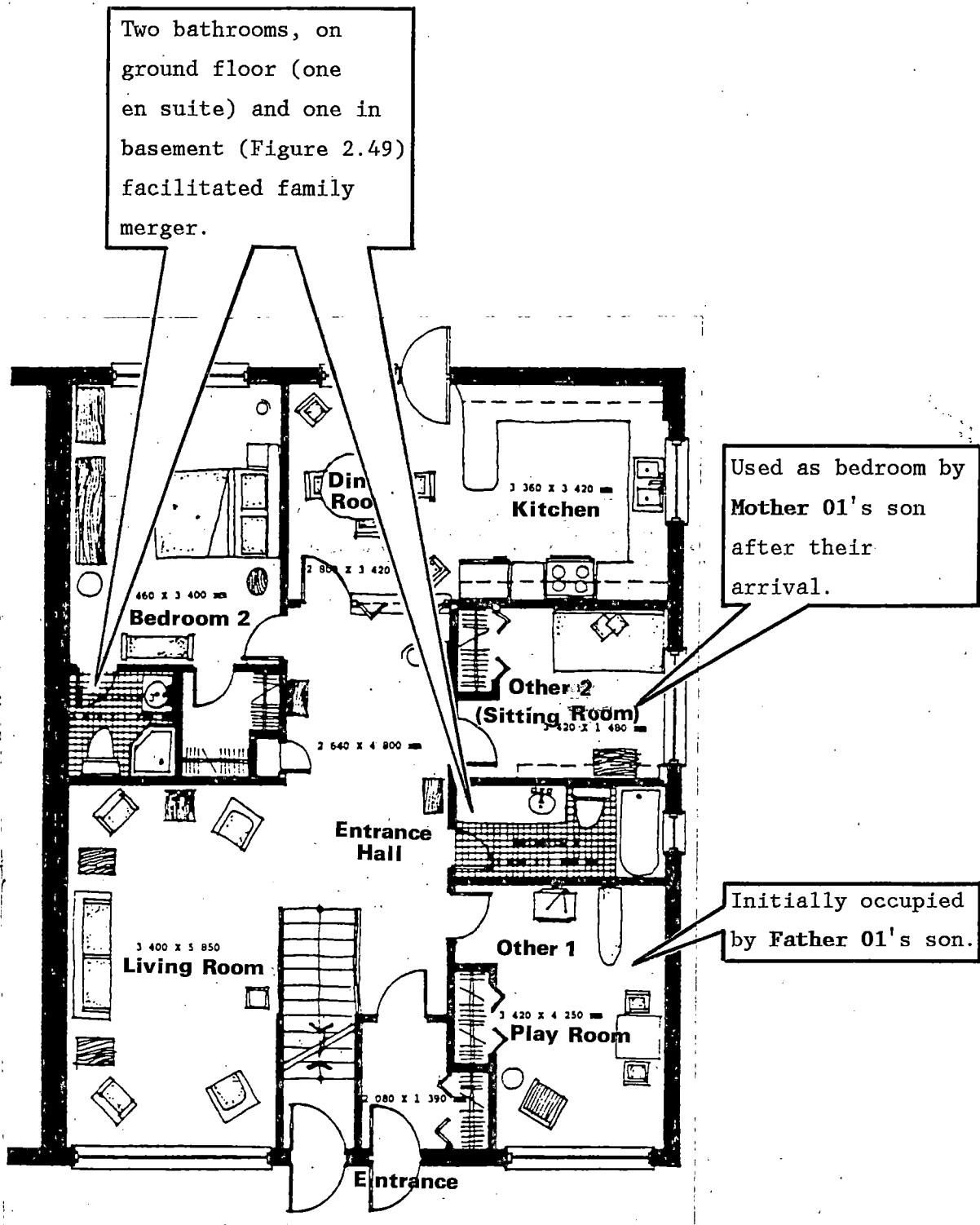


Figure 2.51. Photograph of shelving in garage (0123). Shelving was first installed to store **Mother 01's** possessions after remarrying.



2.1.12 **Reconstituted household space (part II) -- Changes resulting from divorce and separation**

Divorce and separation most commonly result in the setting up of separate households. While households may live separately, they still frequently remain spatially dependent in certain ways. There may be, for example, overlaps at least by the children who often live part-time in each parent's home; or ownership of the house may be shared. Or divorce or separation may occur while both continue living in the same house as observed in the case of **Household 16**.

Problems and needs

- ° Need for spatial stability and security

The instability generated by a parental break is often further aggravated by physical displacement. Even if the family home is not sold or vacated, children are often shipped between the parents' homes. As a result, spatial stability and security may be even more important than it is for children where parents still live together.

Observations

Examples included in this study do not provide a sufficient sample to be able to generate the full range of modifications of household space that may occur following family break-up. As in the previous section, however, they do provide provocative case studies of the physical consequences of such break-up that underline the need for further research, especially given the numerical significance of divorce and separation (see Rose and Wexler, forthcoming).

Household 03's residential history following the parents' divorce is complex, but probably no more complicated than most families who divorce. Immediately following the divorce, **Father 03** submitted to **Mother 03** and their four children in possession of the family home. About two years later, **Father 03** returned, **Mother 03** left, and the children remained with their father, always in the family home. Then two years later, the children started spending one week with each parent in their respective homes. This went on for another two years. Finally, for the last three years, the children have lived full-time with their father in the family residence.

The one element nearly constant in this history is the family home. While parents have come and gone and children have lived part-time or full-time with one or the other, the family home has remained constant. This stability may account for the extremely important role territoriality plays in this household. It is significant, for example, that one observes the most literal markers of territoriality in this study in **Household 03**. The youngest children have put no trespassing signs on their doors (Figure 2.52). And as **Father 03** reports, "Each one has a bedroom and this is an important way to eliminate the possibility of tension between the children (p. 03-12-1)." After all, if the family unit itself is changeable while the space remains permanent, one can understand the tenacity with which children would hold onto the space.

An indication of the importance of spatial stability in this household is the unsuccessful attempt, reported by **Father 03**, to convert the basement area to a playroom. As often happens, this did not work out because the children felt too isolated. Although **Father 03** suggests this was because of the children's young ages (their ages being 12, 11, 6 and 4 at the time), age may only be one of the reasons. Especially for the two youngest children, this may have been poor timing. During the same period, the children were being shuffled back-and-forth between parents so that any further distancing, to the basement, may have been especially threatening to them.

Figure 2.52. Photograph of younger child's bedroom door enter sign indicating private, Household 03 (0315-2).

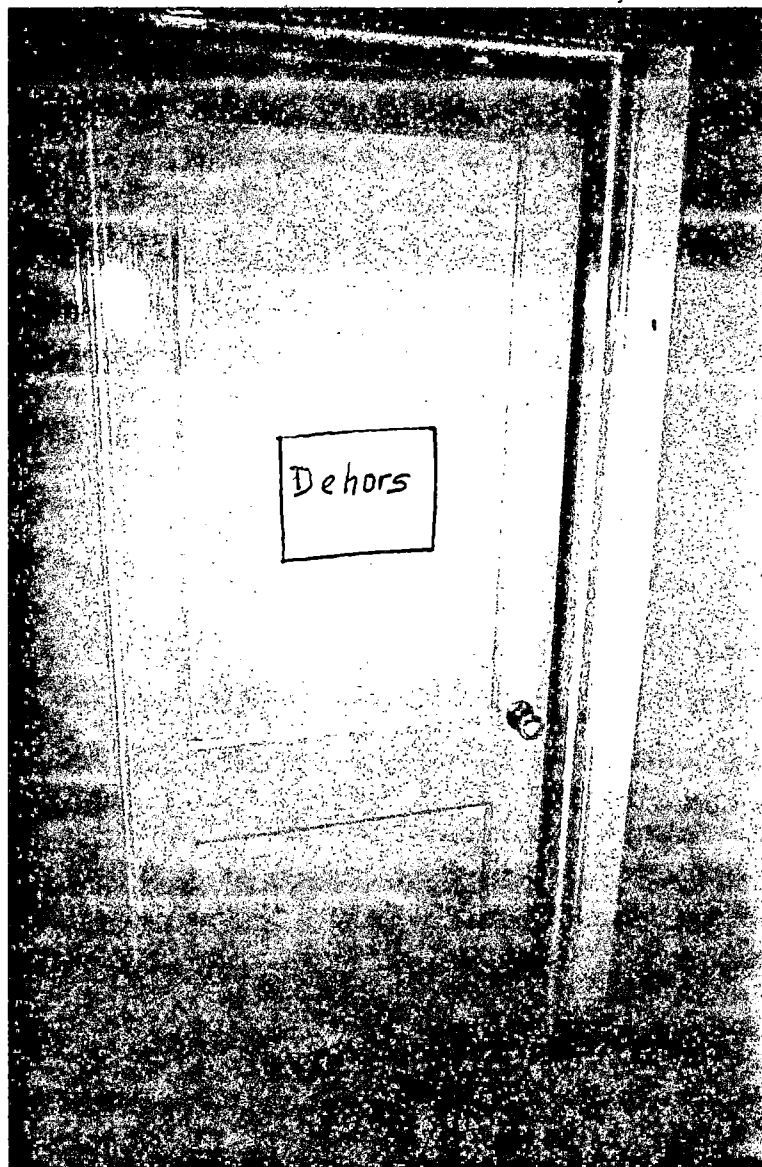
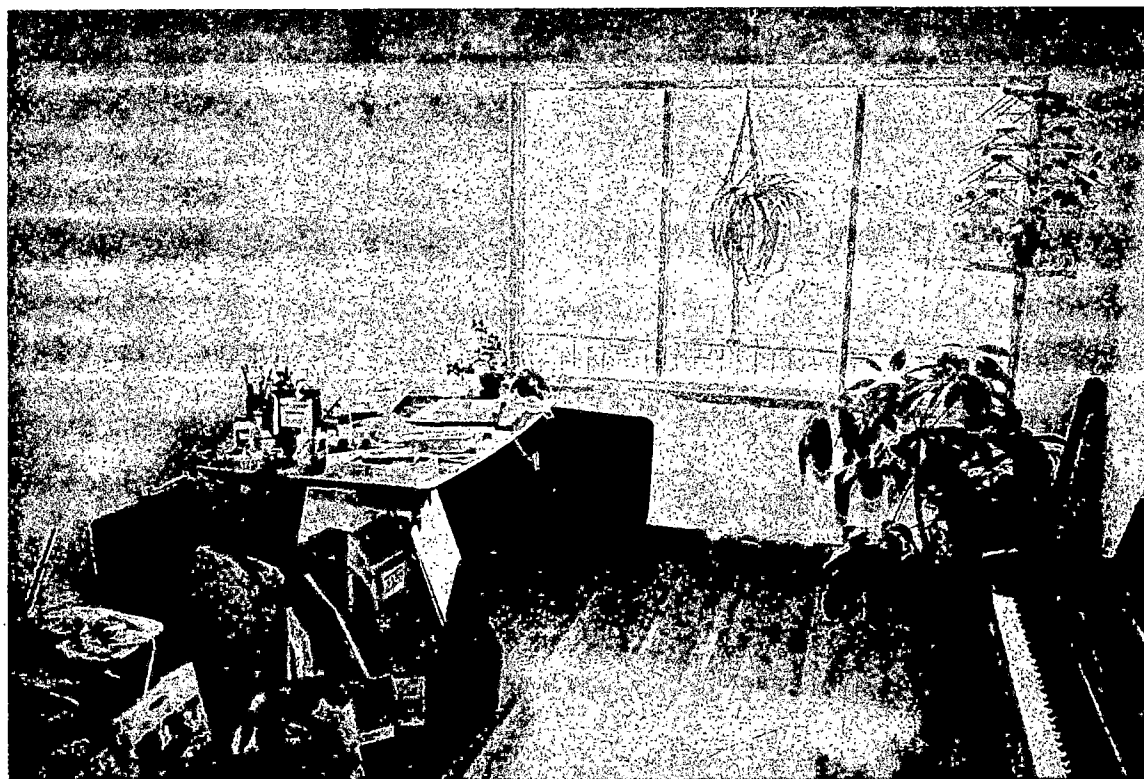


Figure 2.53. Photograph of the living room used as a painting studio by Mother 16 (1604-2).



In the case of **Household 16**, the couple continues to cohabit (and the **Mother 16**'s sister continues living in the upstairs apartment), despite their divorce. The reason for continued residency, as reported by the daughter, is because the mother (**Mother 16**) does not have a job. She has moved into and refurnished a daughter's room and uses the living room as a painting studio (see Figure 2.53). The basement family room is now used as the living room.

Conclusion

As in the case of family fusion, the spatial needs of divorced or separated families suggest an increased or exaggerated importance of space and spatial territoriality. In **Household 16**, space is another battleground, a statement that this is not a family, or not a family in the traditional sense.

Despite the increasing frequency of divorce, especially among recently married couples, our models of housing do not reflect the likelihood of such a rupture and generally do not provide spatial solutions for accommodating split families. While the suburban bungalow provides a reasonable model for nuclear families, it may not be the best model for housing reconstituted families. The task here implies designing separate living arrangements that do not require living at opposite ends of the city.

2.2 CHANGES OR MODIFICATIONS WITH NO EXPLICIT REFERENCE TO LIFE EVENTS

As discussed in the introduction to this chapter, a second type of change having no explicit reference to life events is observed. These changes or modifications also appear to be linked to certain needs, although "needs" in this instance seems less vital or fundamental or, stated differently,

more subject to manipulation and marketing than those discussed previously. This does not imply, however, that life cycle needs are not also subject to manipulation and cultural variation. For example, the need to give every child a separate room is fairly recent even within our culture and was only permitted by affluence. In other cultures, separate rooms might be looked on as a needless waste or even with abhorrence where spatial isolation or being alone is negatively viewed.

The following list suggests the range of additional "needs" observed.

- Changing tastes or styles, obsolescence, keeping up with the Jones' ...
- "Renovate", "long overdue", change for change's sake
- Narrowing the gap between the present and the "ideal" home
- Upgrading the present home
- Maintenance
- Means of self-actualization or "appropriation" through manipulation of the environment
- Changes in life style
- Changing tastes or styles

The popularity of magazines such as Décormaq, Chez-soi, Les idées de ma maison, as well as many others, shows a heightened interest in house decoration and style. As in so many areas of a consumer society, style and taste have been introduced into the way we manage our homes. These styles take on social significance, whether it be to personify a particular social class, a stage in the life cycle, professional orientation, etc. For example, the age of only white kitchen appliances is past. Almond or avocado color appliances have also faded as a trend. During the period studied, natural wood kitchen cabinets were the "in-thing" as testified to by **Mother 13**.

Because we like wood ... and when we purchased the house we didn't have the means to ... we didn't pay very much for the house and we did this with the idea of making modifications at some time ... and me, I work in a hospital environment ... well, I live with nurses, and it became fashionable to change the kitchen cabinets; and we didn't escape this influence, but there was also the fact that we liked wood a lot ... so, we felt ready.

(**Mother 13**, p. 13-16.1)

Now, of course, natural wood is out. In its place are glossy black or polished aluminum appliances which seem to go better with high tech, European style kitchen cabinets.

° "Renovate"

It is common and probably sane that, from time to time, our environment be transformed from merely a background for other activity to itself becoming the subject of activity. This transformation, from being a neutral context to one that is manipulated, is repeatedly alluded to by respondents in their desire to "renovate" a room. This "need" to renovate is most often referred to in the case of the kitchen.

No, we had the same kitchen for 25 years and we wanted to renovate it and we had thought of purchasing new kitchen cabinets, but these are much too costly; some people have them custom made, and the fact of the matter is that I prefer mine. (**Father 20**, p. 20-16.1)

° Narrowing the gap...

In some instances, households "know" what their ideal home looks like but are forced to compromise because such a home is unavailable, or if such a home were available, cannot be afforded. Some already have plans for modifying their home even before purchasing it. This is the case of **Household 09** who wanted and eventually were able to add a large addition to their home (Figure 2.54).

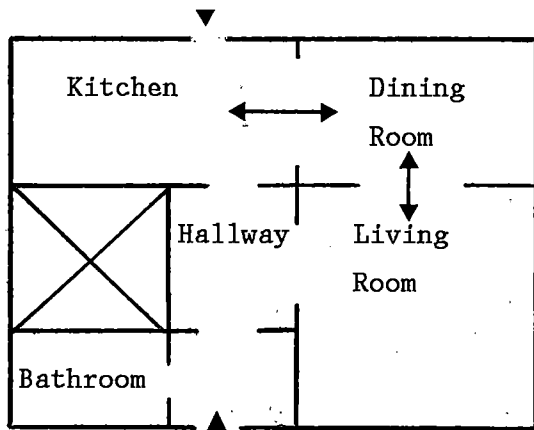
In other instances, however, households may be unable to articulate their ideal home or their "ideal" may itself change over time. In this case, changes often seem to occur by trial and error.

Our initial needs ... well, since the basement wasn't finished, our needs were concentrated more on the ground floor ... in addition, we needed a wall to install the bookcase. The remark which **Mother 08** made coming into the house was: "I don't like it here, it's too open" (between the living room and the dining room); so we simply closed the opening which existed between these two rooms ... (Figure 2.55). Later on we reopened the opening between the living room and the dining room. We made this change, for decoration purposes. Our parents had given us their old dining room set and we decided that this new furniture was too big to be in one closed room. So we decided redo over the opening between the dining room and the living room ... and in addition, at that time, we were purchasing a lot of old (antique) furniture ... at the same time we decided to fill in the opening which existed between the kitchen and the dining room to have a cozy area to entertain guests... (**Father 08**, p. 08-9)

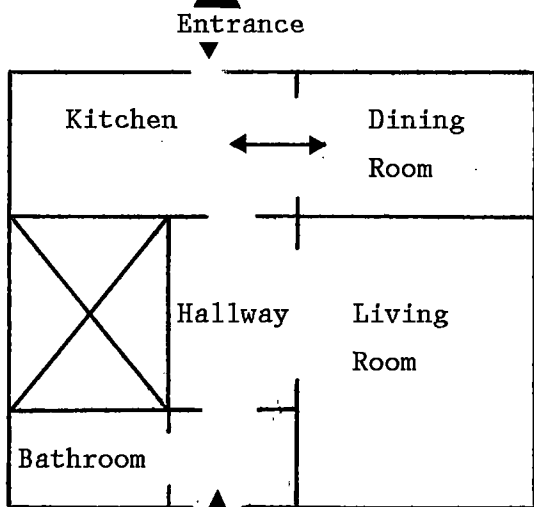
Figure 2.54. Photograph of family room addition, Household 09 (0916-2). This addition was first considered when the house was purchased, although realized years later.



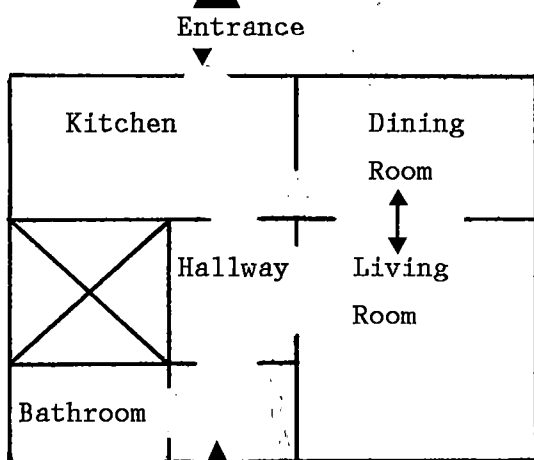
Figure 2.55. Schematic diagram showing changing connections between kitchen, dining and living areas in Household 08 (0881). Not to scale.



1976: Initial situation; opening between kitchen, dining room and living room.



1977: The opening between the dining room and the living room is closed in because we needed a wall for our bookcase.



1983: The opening between the kitchen and the dining room is closed in, and we revert to the opening between the dining room because our antique furniture took up too much room in the dining room and we didn't want to feel cramped.



Stairs and utility room

° Upgrading

Simply by narrowing the gap between the present and ideal home or in keeping up with current styles, the house itself may be upgraded. In modernizing the kitchen, for example, counter heights, the amount of storage space, the electrical supply, etc. may all be improved. Or households may explicitly decide to upgrade their dwelling as in adding thermal insulation, improved windows or doors or even by installing a central vacuum.

° Maintenance

Kitchen counters and floors, windows, etc., all wear out after a certain period. For households who moved into a new home, say 10, 15 or 20 years ago, it is expected (and observed) that many of these elements need to be replaced just to remain serviceable. While upgrading may, in fact, occur at the same time, the essential point here is not upgrading but simply retaining the same level of service that existed previously.

For example, **Household 18** recently changed the large window in the common stairwell of their duplex, which **Father 18** claimed was leaking. "The window had been there for 25 years and it was high time to change it (p. 18-16)." This completed the replacement of all windows in the house.

Father 06 refers to the need for maintenance and to aesthetics in explaining replacement of his front doors. "The two original doors had begun to rot and they didn't let any light through (no glazing) (Figure 2.56)."

° Self-actualization

Since we bought the house, our spare time has been spent in decorating ... the two of us enjoy; stripping furniture and all that ...(Father 08, p. 08-2.1)." For **Father and Mother 08**, home renovation and decoration have

Figure 2.56. Photograph of new front doors, Household 06 (0602-1).



become, as for many others, principal leisure activities. For others, such leisure activity has become an occupation. When unemployed for a period in 1967, **Father 02** installed, as noted in section 2.1.10, a small apartment in his basement to rent during Expo '67. Upon his retirement as a bus driver, "odd jobs" became his major activity, "went and gave a helping hand doing odd jobs at his brother's and sister's place, landscaped, did odd jobs in the house ... undertook small renovation contracts" (p. 02-2.1).

Both men and women are proud of their handiwork. This can be seen in the photograph of shelving, suggested by **Mother 07** and built by **Father 07**, built into the doors of the bathroom counter (Figure 2.57). **Father 07** is also proud of his ability to work without needing professional tradesmen. "Well, I never needed a plumber, nor an electrician, nor a carpenter since I am home... (**Father 07**, p. 07-2.1)."

Pride is also shown in the display of rice paper and tiffany style lamp shades made by **Mother 20** and her daughter (Figure 2.58).

° Life style

While this study emphasized changes due to specific life events, a number of households mentioned other changes that, while not necessarily independent of life event changes, suggest life style changes. For example, **Household 05** noted that they entertain less often because of its cost. **Father 02**, before building an accessory apartment in his basement, built a bar during the early '70s when he and his wife entertained more. And finally, many of the households interviewed maintain rooms for formal and informal living, depending on their overall "home style", but which may have varied over the years.

It is, frequently, extremely difficult to identify separately each of these different rationales or "needs". For example, the decision to redo the kitchen is often based on the need to replace worn out equipment or dirty or worn counter tops (both maintenance), yet at the same time, the desire

Figure 2.57. Photograph of shelving suggested by Mother 07 and built by Father 07 in bathroom counter doors (0709-2).



Figure 2.58. Photograph of rice paper and tiffany lamps, made by Mother 20 and her daughter (2003-2). These are displayed in the entry hall and elsewhere in the house.



to have wood cabinets (a stylistic concern) is an active consideration in the decision to modernize the kitchen.

More so than in the first part of this chapter, many of the changes discussed in this part are especially limited by the discretionary income for housing (acquired in any way, be it by salary increase, the addition of a wife's salary, reduced financial dependency of children, inheritance, etc.) and by the time available to plan and make modifications. Furthermore, these types of changes may be more susceptible to delay or cancellation by "contextual" factors because they are considered discretionary in contrast to modifications triggered by life cycle events, more often considered essential.

Other contextual factors in addition to income and time are also important. For example, the design and marketing of new or improved products such as windows or metal insulated doors make older models functionally obsolete or inferior in certain ways.

Not only are the needs mentioned above often overlapping or non-exclusive, they also introduce a number of factors exogenous to the life cycle and impacting on the timing of changes or modifications in the home. These schedules may relate to the wearing out of certain building components or systems, the development of new products, etc. And households may have different ways or styles of making decisions. Some households seem to act hastily as in the case of **Household 08**.

He came home one evening and told me ... "You know, it's not too complicated to make an opening there (in the wall); so he took a crowbar and made a hold in the wall ... and said to me, you know, it's not any more complicated than that ... I'll soon make that opening for you. So that meant that we had to put up with plaster on the floors ... had to wait ... and wait until finally one of our friends gave us a hand to make the modifications and it got to a point where, I screamed for help. (**Mother 08**, p. 08-2.1)

Others appear to proceed with extreme caution as in **Household 19**.

It always takes us a long time to do anything; take the kitchen, for example. We talked a long time before actually doing anything. I also think that you have to live in a house to know what it's like before you can plan changes. Like for our bedroom, we have plans ready to renovate it but we have yet to do it ... and then there is also the living room. (**Mother 19**, p. 19-11) (note: This is the same household whose parents decided to finish the basement.)

The resulting multiple "schedules" lead to an extremely complex, dynamic model of household modification and change.

Some of the types of modifications observed most frequently are discussed below. These are divided into six groups: updating or modifying the kitchen, changing the location of the basement stair or its railing/balustrade, decorating the basement play/family room with brick, stucco or wood, adding woodwork, changing furniture style and adding a room.

2.2.1 **Updating or modifying the kitchen**

The kitchen appears to be a favored area to modify or change. In this study, all households made some modifications to the kitchen while nine of the 20 households made major modifications in their kitchens involving changes in the plan or volume of the space, new or revamped kitchen counters and cabinets, or both (see Figures 2.59, 2.60 and 2.61 for some examples).

And these changes are made with a good deal of thought, attention to detail and pride.

The former residents had painted and varnished the oak kitchen cabinets; it was very pale, there was no contrast, so I sanded them all down, varnished them and I changed the handles on the doors.
(**Father 20**, p. 20-16.1).

In the beginning (25 years ago), our kitchen cabinets were completely white and our walls were green. it took us a long time to decide on the color to use Since we have so much sun and light, we decided that "we had to add a little color". And now, we are in the process of reupholstering the chairs. (**Mother 17**, p. 17-16.1).

We took a paper and we colored it to see the effect that it would produce. (**Father 17**, p. 17-16.1).

Figure 2.59. Photograph of completely remodeled kitchen, Household 19 (1906-2).



Figure 2.60. Photograph of remodeled kitchen, Household 10 (1006-1).



Figure 2.61. Photograph of new kitchen counter added under window, Household 05 (0506-1).



2.2.2 **Changing the location of the basement stair or its railing/balustrade**

Surprisingly, the stair leading to the basement often came under careful scrutiny. Its location may have been changed in order to enlarge or reduce circulation in the living area as in **Household 04** (Figure 2.62) to reduce sound transmission from the basement family area or to better articulate the relationship between upstairs and downstairs spaces or make it more attractive. **Household 05** also modified the basement stair location (Figure 2.63) in order to allow for a family room in the central part of the basement.

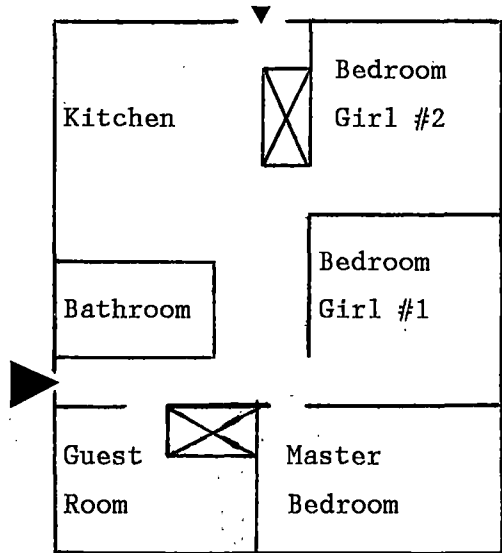
In **Household 16**, the wrought iron banister separating the stair from the living room was replaced by a pair of arches.

Like over there, for example, there was a wrought iron banister with a door ... it wasn't very solid; it wasn't very nice to look at and some rungs were missing. (Figure 2.64). (**Father 16**, p. 16-16.1)

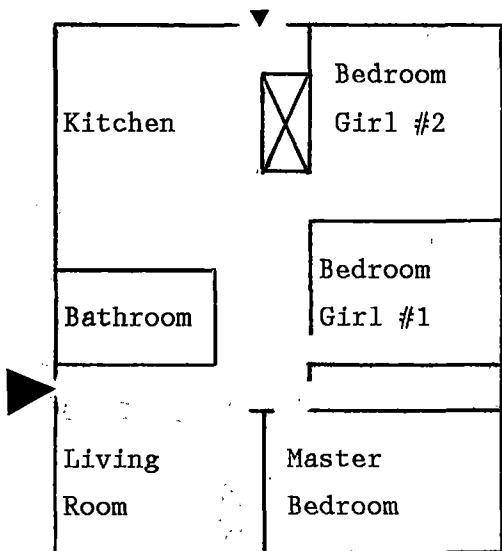
2.2.3 **Decorating the basement play/family room with brick, stucco or wood**

As will be discussed in the final conclusion, the basement area, as a "free" or unclaimed area offers enormous possibilities as needs change over the life cycle. Because basements are frequently unfinished or used in a less formal way than upstairs and therefore more susceptible to self-manipulation, basements are a primary target for self-expression.

Figure 2.62. Schematic diagram of relocation of basement stair, Household 04 (0480). The original basement stair, adjacent to the "guest room" was removed in order to create a "living room" and the stair, adjacent to the "kitchen" was modified to create a stronger link between the new "sitting room" and the "kitchen". Not to scale.

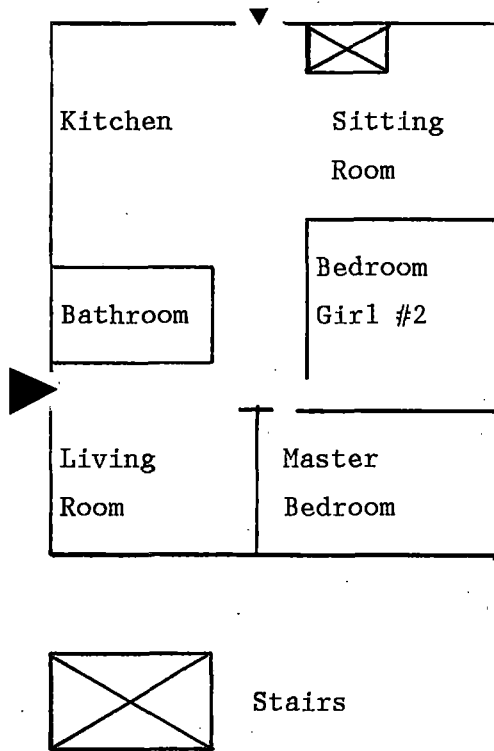


1974: Initial situation



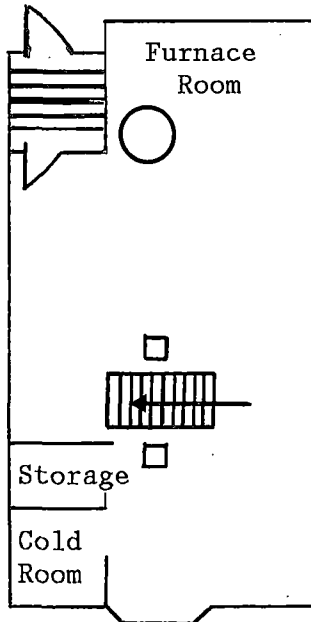
1978: Dining room replaces the guest room and the elimination of the adjacent stairway disappears.

Figure 2.62. (continued)

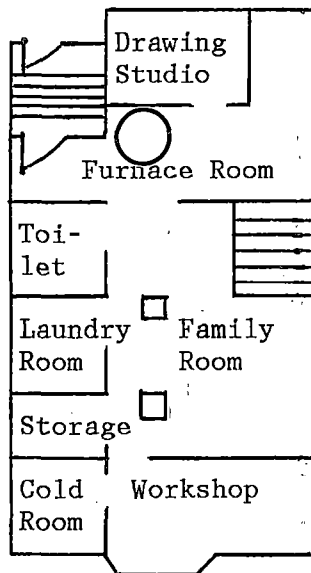


1980: Daughter no. 1 leaves; daughter no. 2 takes daughter no. 1's former bedroom; daughter no. 2's former bedroom is converted into a "sitting room" and the stairway which was adjacent to it is moved in order to make it easier to communicate between the kitchen and the "sitting room".

Figure 2.63. Schematic diagram of relocation of basement stair, **Household 05 (0590)**. This was done in order to free up a portion of the basement to create a family room. Not to scale.



1970: Initial situation;
dirt floor basement



1972-1986: The basement was finished gradually with the appearance of various rooms; the family room became the "listening room" once the young children became adolescents.

Figure 2.64. Photograph of series of arches which Father 16 used to replace wrought iron banister of stair leading to the basement (1604-5).



While many of the modifications done to the basement are, as discussed in the previous section, closely linked to the maturation and growing independence of children, the actual work done to basements often seems to follow its own time schedule and the availability of the male household head to carry out the necessary work.

The first thing that we did was to put in a wood floor to cover the whole basement (there were no partitions whatsoever). The following year, I started putting up the partitions and slowly started to think about how we could make this more liveable since it's difficult to put up walls when you wonder whether you will still like the new division two or three years down the line.

(**Father 06**, p. 06-16-2)

When it came to finishing the basement, what we needed was a place where we could rest. So not too long afterwards, I began to finish the basement myself; we installed the family room and the fireplace (Figure 2.65). That occupies approximately one-half of the basement. On the other side, we left that room for the children; they were young, and they could play there (bicycle).

There came a time when I felt a need to have an office to myself or at least a little space for myself somewhere. Thus when I had my son's bedroom installed, I made sure that it was a big enough room to accommodate the furniture. And I left the rest of the space for the ping-pong table (which we wanted to keep) and one corner for my

office because sometimes I give private courses to young people and it is important to have a quiet spot where we do not bother everyone. This is part of the adaptation which I had to make.

(**Father 06**, p. 06-11)

2.2.4 **Adding woodwork**

For the period studied, one of the most favored decorative types of change was the addition of wood and brick. These additions were made not only in the basement playroom, which most often had previously been unfinished, but also to the living, dining, kitchen and basement areas.

As seen in many of the photographs, these changes radically transformed the "look" of these interior spaces.

Although many if not most households added some of these somewhere in the house, **Household 13** probably represents the family having done the most in the shortest amount of time. In 1980, 12 years after having purchased their home, they replaced the wrought iron basement stair banister by a wooden one, added wooden doors to separate the dining and living rooms as well as wood trim in both rooms and constructed a fake brick wall in the dining room. **Father 13** also installed a brick fireplace in the basement family room around the same time, recovered their living room furniture and bought a new dining room set, replaced the older heating system with new heating and air conditioning, installed new, wooden kitchen cabinets with a new central work island (the older kitchen cabinets were used for storage in the basement) and replaced the kitchen flooring, and added woodwork and replaced an existing door with a wooden one in one of the bedrooms (Figure 2.66).

Figure 2.65. Photograph of basement family room showing common use of brick and wood, Household 06 (0616-2).



Figure 2.66. Photograph of wood decorative walls installed in the daughter's bedroom, **Household 13** (1313-2). The installation of wood and wood trim in this house is especially important.



2.2.5 **Changing furniture style**

We redid the living room a few years ago; which created a few conflicts. For me, the living room had to be spacious, one had to feel at ease there and be able to do what one wanted. My husband saw the living room as a more formal room with furniture which remained in place ... leather furniture ... So since the children were on my side, my ideas for the living room were put into practice (this involved a complete change in the furniture); ... and my husband got his leather chair ... (Figure 2.67.) (**Mother 14**, p. 14-2.2)

The decision is not always simply that of the couple or the household. As discussed earlier, **Household 08** inherited the old dining room set from their parents. Because of its size, they proceeded to modify and redecorate the room.

2.2.6 **Adding a room**

When **Household 09** purchased their house in 1962, they had already considered the possibility of an addition. Twelve years afterwards, they were able to realize their ambition. The addition, which includes family and dining rooms, added about 15% to the area of the house and cost, according to **Mother 09**, about as much as the original house (Figure 2.68).

Conclusions

No conclusive picture or theory of household modification not linked to or triggered by life events can be drawn from these data. It is clear, however, by the frequency of their occurrence and by the time, energy, money and interest households lavish on them that these modifications, mostly unrelated to major life cycle changes, are enormously important.

Figure 2.67. Father 14's leather chair is prominently displayed in the living room (1404-2). Exceptionally, the living room in this household is used on an everyday basis.

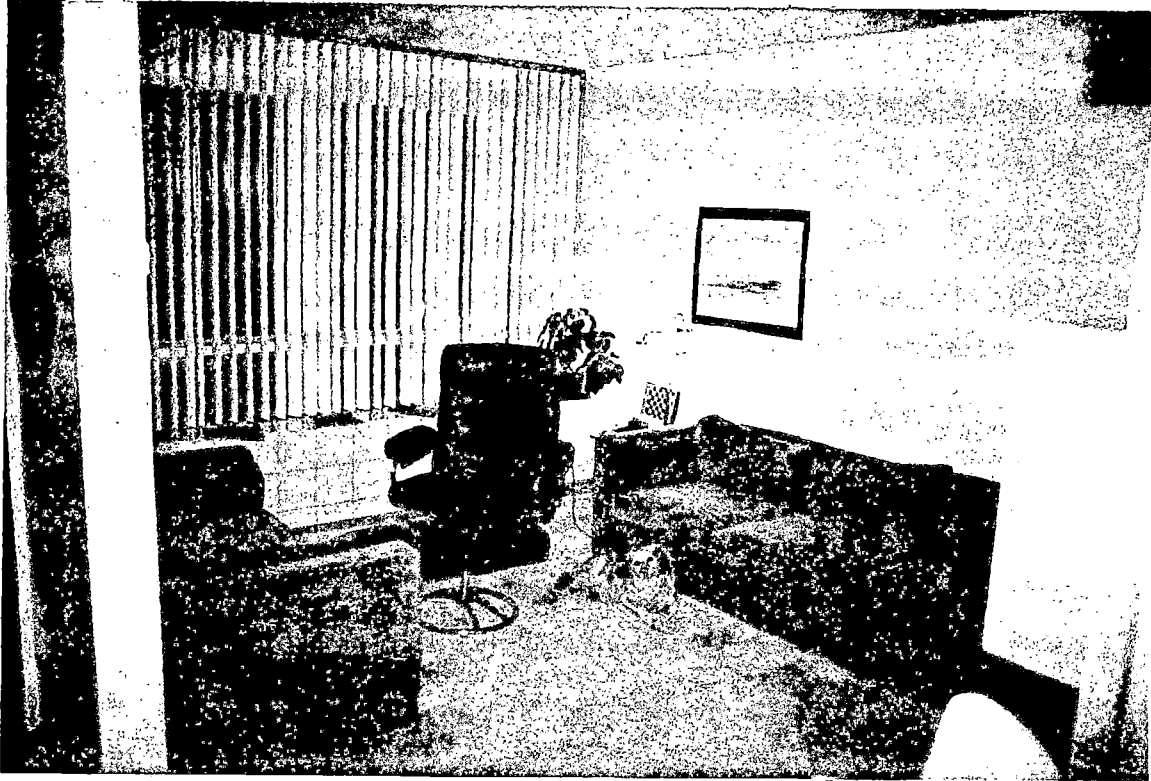
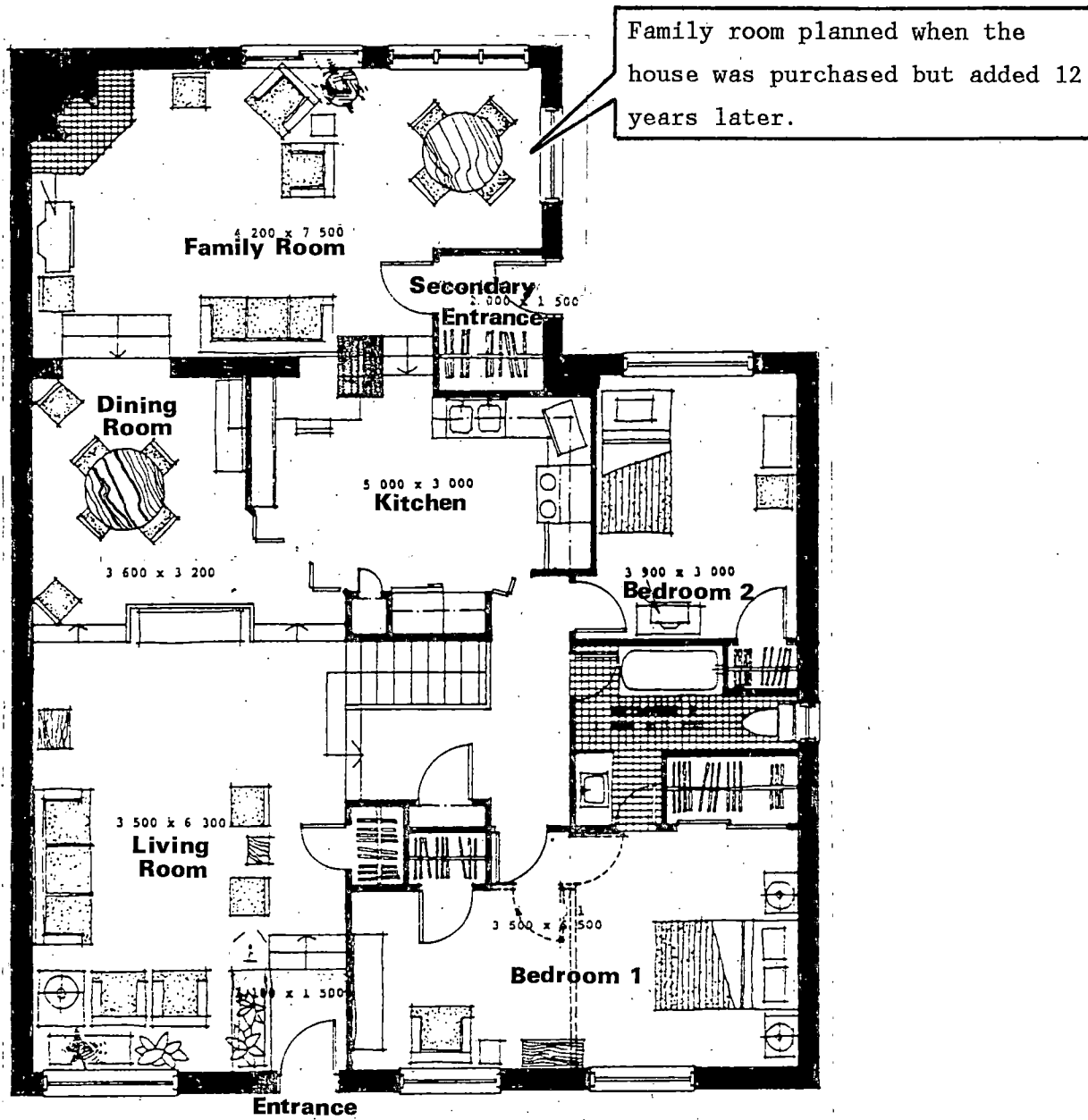


Figure 2.68. Ground floor plan of "split-level", Household 09 (0971).
Scale 1:100



2.3

CONCLUSIONS

2.3.1

Chain reactions

We initially started with a fairly straightforward model of household change triggered by the passage of major life events or other changes such as income or life style shifts.

As has been demonstrated in this chapter this model does not take into account the complex interactions and negotiations within the family or the household. A single event corresponding to an age or stage of development of one child must, for example, be considered with respect to other members of the household, his or her status (age, sex ...) and ability to negotiate a change to his or her advantage. The clearest example of this type of negotiation is seen in "who gets the basement?". And it was often seen that the child who moved the furthest was not, in all instances, the child in the midst of a life crisis. This was the case, for example, in **Household 15** in which the son moved into the upstairs duplex apartment belonging to his grandparents so that his two sisters could each have separate rooms. Or in **Household 03**, the adolescent boy moved to the basement so that his two younger brothers could also have their own rooms.

Multiple changes are especially noticeable where a single change such as a departure of a child often co-occurs or is concomitant with events affecting other household members or precipitates a chain reaction similar to a game of musical chairs. consequently, a spatial adjustment may be accelerated, delayed or possibly even suppressed by the interaction with other members of the household. As a result, it is often difficult to positively identify a single casual event. At least two models can be used to explain such multiple or nested patterns: what we call here the "pressure cooker model" and the "car mechanic model".

In the "pressure cooker model", adjustment occurs as a result of the sum total of events that have occurred. A single event in itself may not be

sufficient to cause a major physical change. However, pressure coming from a series of events builds up, causing a chain reaction.

In the "car mechanic model", a single event may trigger other modifications. As in taking an automobile in to change the oil, one asks the mechanic to check the breaks, the steering or anything else that has been problematic, the decision to undertake one change makes it convenient or opportune to make other changes at the same time. Rather than the sum total of events causing the adjustment, in this model a single event and the adjustment to this event provides the opportunity to make other adjustments at the same time.

2.3.2 **Gain for children is often at parents' expense**

This study was first conceived as looking at the changing space-related needs of children within the household as they pass through different stages. In looking at their needs and related patterns, one is also forced to examine the needs of parents, which are not necessarily stable, and the interaction or resolution of the needs of both parents and children. Even in instances where the needs of parents are stable as possibly in the case of privacy, the changing presence of children as they pass into adolescence and into young adulthood necessarily alter the environment of the parents.

In most instances there is a type of collusion between parents and children. The move to the basement is, for example, often to the advantage of adolescent children wishing greater independence and control over their environment and to the parents who wish to have adolescent children more distant in order to maintain at least the same level of privacy they had when the children were younger.

In other instances, however, the gain experienced by children seems to be at the expense of parents. This is most apparent in the inability of parents to get or hold onto work space at home. When they have such space, it is often inadequate.

2.3.3 **Need for two types of bedrooms**

A general pattern was observed regarding the use of bedrooms. When children are young, a bedroom proximate to the parents' bedroom is most frequent. Newborn children often displace older children if no other bedroom is available near the parents' bedroom.

Passage into adolescence and young adulthood adds another dynamic to this process in which children (and possibly parents) wish to distance themselves. Since most houses considered in this study do not provide these two types of bedrooms (and the number of bedrooms themselves may not be adequate), additional bedrooms are frequently constructed in the basement.

2.3.4 **Why the basement?**

The clearest finding of this chapter is the use of the basement as an outlet, the place where new demands of adolescents and young adults requiring space and privacy are most often accommodated. The reasons for this are multiple. The physical location of the basement maximizes distance to the principal living area. Symbolically, the basement, although physically a part of the house, is itself more distinct than, for example, a back porch or an upstairs bedroom. Basement space is also often underutilized or claims to its use weaker, as when serving as a workshop or for storage, than in other areas of the house. In fact, the basement is often unfinished and, as such may represent a sort of no man's land.

2.3.5 Multiple time schedules

Many different time schedules are imposed upon the house. Many of these derive from the life cycle. Yet as seen in what we have termed chain reactions, adjustments are not always immediate and often depend on the multiple and varied stages of different members of the household. An adolescent child, for example, may not move to the basement until it is time to separate younger children.

Furthermore, as seen in the second part of this chapter, many types of modifications do not appear to be related to life cycle changes. They depend on numerous other schedules such as obsolescence, maintenance needs, stylistic changes, etc.

These two major dynamics: (1) adjustments triggered by changing life cycle needs and (2) modifications occurring for other reasons, and the various sub-schedules within each of these dynamics provide an extremely complex dynamic.

2.3.6 Plexes

Owners of plexes, having both basement area and other units available, are faced with a wider array of options than owners of single-family homes. (Apartment tenants have, of course, the fewest options). It was also noted that some owners of single-family housing had or were considering "plexing" their homes to accommodate adult children, to have an extra income, or, more importantly not be alone in their homes in old age.

The possible use of basement space or space in other units in the building only suggests part of the complexity and options available to owners of plexes. Frequently, one of the other units in the building is occupied by family. As noted, for example, among the ten plex owners interviewed, over half occupied buildings in which still other members of the family, often grandparents or siblings of the parents, were living.

2.3.7 **Reconstituted families**

The existence of reconstituted families is not new. During earlier historical periods, the presence of non-family members such as boarders, lodgers or non-nuclear family members was frequent (Modell and Hareven 1973, Miron forthcoming).

However, in the period since the Second World War, enormous achievements have been made in housing the nuclear family.

Numerous factors account for this. There was, for example, fairly constant and substantial economic growth. Families during this period were generally stable and underwent fewer ruptures, divorce and remarriage, than are typical today.

These conditions are no longer applicable. As observed in a limited number of cases in this study, their housing is required to adapt to changing economic and family fortunes and to the needs of the different household members. To varying degrees, this has been possible.

**CHAPTER 3: ARCHITECTURAL CHARACTERISTICS WHICH FACILITATE
ADJUSTMENT**

In the preceding chapter, we identified the various types of events (ex.: young children become adolescents) which led the families to become aware of new needs (ex.: the need for independence felt by adolescents), and we subsequently observed the adjustments which had to take place in order to meet these needs (ex.: finding a bedroom for the adolescent at a certain distance away from the parents' bedroom).

In this chapter, we identify the architectural characteristics which either foster or inhibit the realization of the desired adjustments. The first two sections of this chapter contain advice and suggestions to make the dwelling as a whole (section 3.1), as well as the individual rooms within the dwelling (section 3.2), more adaptable in relation to the dynamic requirements of the family.

In each of these sections, under the "Observations" heading, one will be reminded of the main observations made in chapter 2 and under the heading "Recommendations", one will find advice and suggestions.

At the end of this chapter, in the "Conclusions" section (section 3.3), one will find a summary of the recommendations as well as an indication of those which we consider as being the most important.

3.1 CHARACTERISTICS OF THE DWELLING

3.1.1 The dwelling is an architectural framework which foster major adjustments¹⁵

Observations

We observed in chapter 2, that among the events which occur during the life of a family, there are those which generate the need for more space than that provided by the dwelling, while others produced a reduction in the need for space thus making the dwelling too large.

Here are two lists of events representing these two categories of needs:

Events which generate the need for more space than that provided by the dwelling

- ° The number of the members of the household increases subsequent to the birth of a child, the arrival in the house of a relative, the return of a child, or someone outside the family comes to live in the house.
- ° When they reach the age of puberty, girls and boys no longer want to share the same room.
- ° At six or seven years of age, children acquire an increasing amount of independence vis-à-vis their parents, their relations with their friends intensify and they have an increased need for space to play inside the dwelling.
- ° Once the children reach the age of adolescence, they have an even stronger need to affirm their independence. This need is reflected, on one hand, as pertains to the bedroom, by an increased need for privacy as well as an increased need for space to study in.

It is also reflected as pertains to the living room by the adolescent's need to have his or her own recreational space where he/she can listen to loud music and entertain his/her friends without adults always being close by.

- Once the adolescent becomes an adult, it is increasingly common for these young adults, even after marrying, to come back to live in their parents' house because they do not yet have the financial means to live in a dwelling completely separate from their parents. It is nevertheless true that these young adults need much more space, autonomy and privacy, than adolescents. Adding another unit onto the main dwelling, or lending these young adults an existing unit which is part of a duplex or triplex attached to the main dwelling, are the means which are most often used to deal with this type of situation.
- The decision by one of the parents to go back to school usually creates a need for additional space for study purposes.
- The decision by one of the parents to go back to work usually creates a need for additional space for that portion of the work which is executed at home.
- The decision by one of the parents to go back to work, but at the same time using the dwelling as his/her place of work also creates a need for additional space within the house.
- The fusion of two households or the arrival on the scene of a new partner for one of the parents may also suddenly create an increased need for space.
- An increase in income by a household can also create a need for additional space and more comfort.

Events which reduce the need for space within the limits of the dwelling:

- ° The children progressively leave home and the parents find themselves alone in a dwelling which they consider to be too large.
- ° One of the spouses leaves the dwelling. It should be pointed out, however, that this does not necessarily lead to a decrease in the need for space since the spouses usually share the same bedroom.
- ° Sickness or old age generates a decreased capacity to look after one's dwelling which has to be abandoned even if it is not necessarily considered too large.
- ° A loss of income no longer makes it possible to support the cost of the dwelling.

One important fact to point out, however, is that in many cases, for various reasons the increased or decreased need for space which we have just described cancel one another out. For example: a child leaves home to get married and his/her bedroom becomes free, and at the same time the mother goes back to university and uses the bedroom given up by the child to study.

Recommendations

The observations which we made militate in favor of the design of dwellings having the possibility of increasing or decreasing in functional flexibility.

Now, we have noticed that the plexes and single family houses represented two housing models which, to various degrees and depending on the particular models involved, do have this kind of flexibility. Figures 3.1 and 3.2 show a few of the possibilities which these housing models can offer. In the following sections we shall describe a certain number of

these characteristics which these dwellings should have to provide for flexibility.

3.1.2 **The spaces within the dwelling are organized so as to foster minor adjustments**

Observations

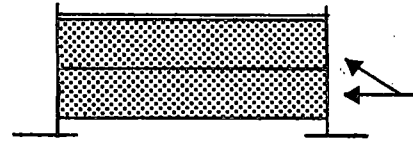
In the preceding section, we noted the fact that certain events could create needs for space rendering the dwelling either too small or too large. We also observed that certain events create the need for making changes within certain rooms without necessarily changing the size of the dwelling itself. Here are a few examples of these events and the corresponding needs:

- ° A child leaves home, a bedroom becomes free, the parents combine their bedroom with the bedroom of the child who just left to obtain more comfort (Figure 3.3).
- ° The children have left the family house to live on their own. The parents have more time to spend on their social activities. They combine the living room and dining room so that these areas appear more spacious. In addition, they considered that, with these two areas combined, it is easier to have several people over at once.
- ° One child leaves home and the other becomes an adolescent. The latter needs a bigger room for study purposes. His/her bedroom is combined with the bedroom of the child who just left.

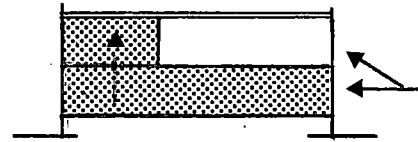
The need to make modifications within the dwelling is not felt by all families. We have visited families who had occupied the same dwelling for fifteen to twenty years and who had never felt the need to combine or separate various rooms. It is important to point out, however, that the opinions of the users as to the advantages of separate living rooms, combined living/dining/kitchen areas, are varied (Teasdale, 1984).

Figure 3.1. The plexes: A few examples of the possibilities of exchange, conversion and growth. Drawings not to scale.

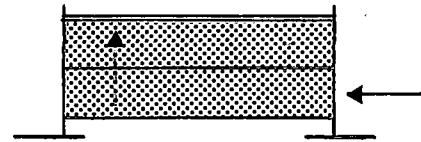
One or more members of the family (children or parents) occupy the dwelling on the second floor.



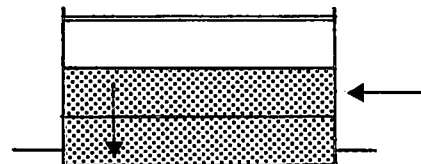
One of the members of the household living in the basement has his/her bedroom in the upper unit. This takes for granted that the occupants in the upper unit are closely related to the person living in the basement.



The unit on the ground floor and the unit on the second floor are combined to form a single-family dwelling.



The unit on the ground floor increases in size by expanding in to basement; a family room is set up there along with a play room, one or more bedrooms, an office, etc.



A third unit is added to the unit on the ground floor and to that on the second floor, in the basement.

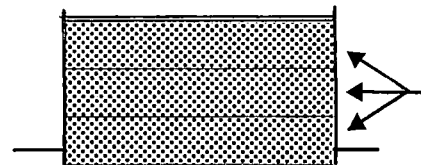


Figure 3.1. (continued)

The area of the ground floor unit is increased by adding on an extension.

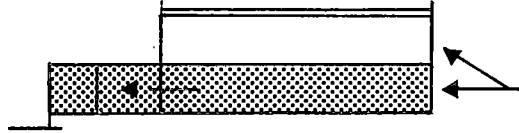
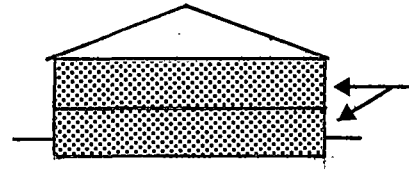
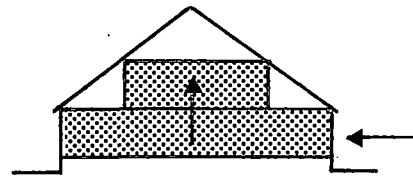


Figure 3.2. The single family houses: A few examples of the possibilities of exchange, conversion and growth. Drawings not to scale.

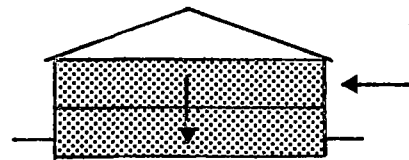
One or more members of the family occupy a unit in the basement



The unit grows by expanding into the roof space, where a family room is installed, a play room, one or more bedrooms, an office, etc.



The unit grows by expanding into the basement, where a family room, play room, one or more bedrooms, an office, etc. are set up.



The area of the dwelling is increased by building an addition.

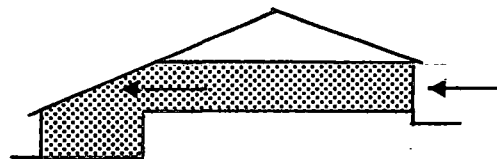


Figure 3.3. The ground floor plan of the split-level unit occupied by Household 09 showing Bedroom 1, which was formed by combining two rooms (0971). The broken line indicates the location of the doors and partitions prior to conversion. Scale 1:100.

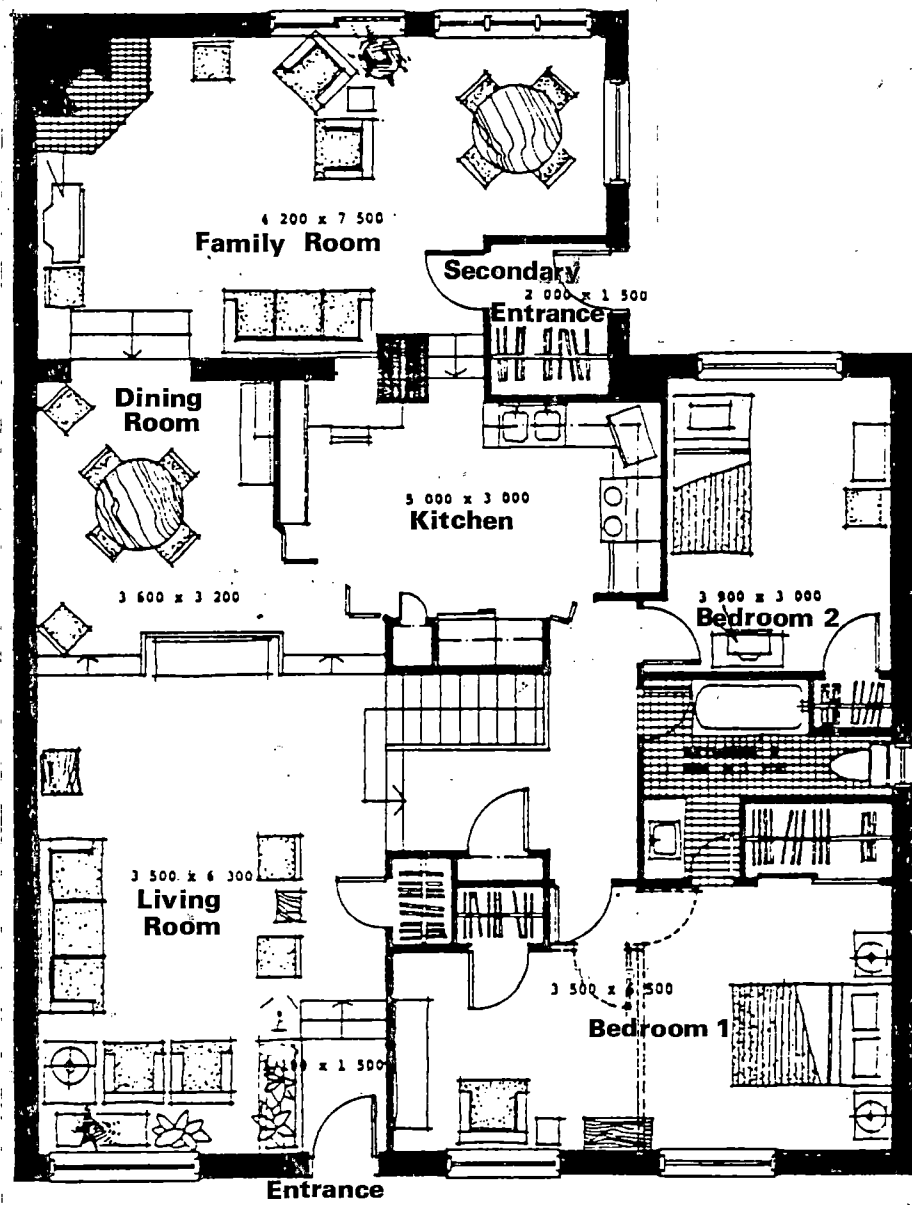
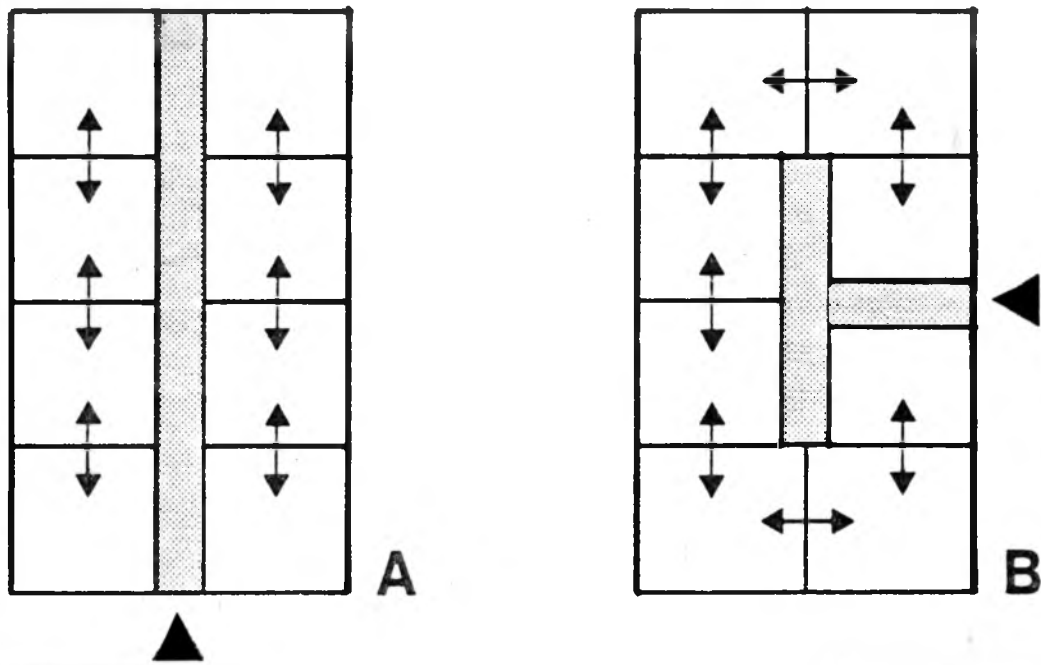


Figure 3.4. These two layout plans have the same area and the same number of rooms. It should be noted, however, that the topology of layout B allows for a larger possible number of combinations of room groupings when compared to layout A. Drawings to scale.



Note: We noticed that among the dwellings which were part of our sample, the plexes often had a topology similar to that of the rooms in layout A, whereas the one-storey, the split-level and the two-storey units often had topologies similar to that of layout B.

The opinions voiced by the users vary not only as to the relations which should exist between these rooms but also as to the dimensions which some of these rooms should have.

Recommendations

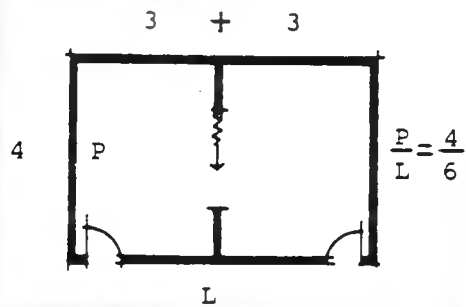
The topology of the rooms should allow for the largest possible number of combinations of room groupings (Figure 3.4).

In addition to the topology, consideration also has to be given to the following characteristics which either increase or reduce the possibility of combining rooms:

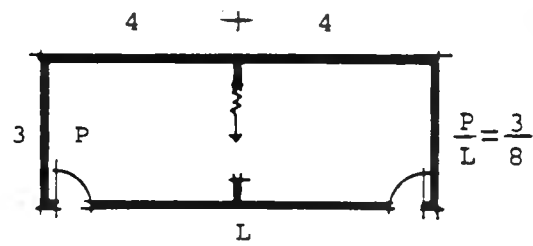
- ° the horizontal and vertical proportions of the rooms (Figure 3.5);
- ° the presence of different levels of, i.e., it is easier to combine rooms when they are on the same level than when there is a vertical shift as is the case in split-levels for example;
- ° the location of closets, i.e. it is easier to combine two rooms when they are not separated by closets;
- ° the mobility of the closets, i.e. it is easier to combine two rooms when the closets which separate them (hypothetical situation) are not the built-in types; for this mobility to exist, the weight and the volume of these closets must be reasonable, not to mention the fact that it must be possible to relocate them (Figure 3.6);
- ° the location of fixed features within the dwelling which cannot be changed, for example, stairways, utility rooms, bathrooms, chimneys and plumbing stacks (see section 3.1.4);
- ° the width of the openings between the rooms (see section 3.2.4).

Figure 3.5. For it to be possible to combine or to separate rooms, certain rules must be respected as pertains to horizontal and vertical proportions. Drawings not to scale.

(1) In order to combine two rooms and to respect suitable horizontal proportions, the ratio between the depth (D) and the width (W) of these two rooms, once combined, should not be less than $\frac{1}{2}$.

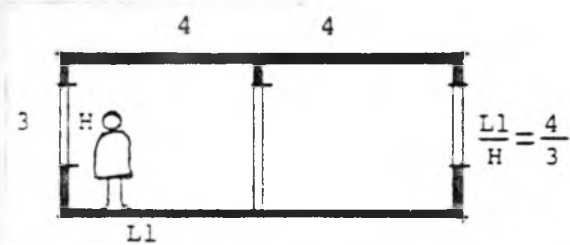


Acceptable Plan

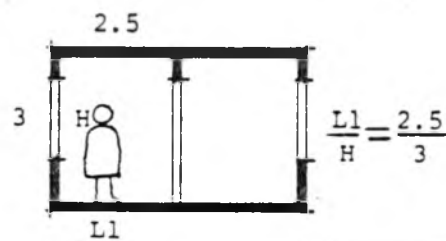


Unacceptable Plan

(2) In order to separate the same rooms and to respect suitable vertical proportions, the ratio between the Width (W) and the Height (H) of each of these rooms, once separated, should not be less than 1.



Acceptable Section



Unacceptable Section

Figure 3.6. Photograph of one of the bedrooms in LeBreton Flats demonstration project built in Ottawa in 1978.



This photograph shows the movable closets which had been designed to provide more flexibility for the dwellings in this project. This good intention remained just that, however, since no provisions had been made to provide an alternate location for these closets; in addition they were so heavy and bulky, that it took more than two people to move them.

3.1.3 **The spaces within the dwelling are organized to allow for the creation of activity zones with separate visual and acoustic areas for each**

Observations

Parents, young adults, adolescents, children and visitors all have different needs.

The dwelling must accommodate a vast range of activities, several of which are incompatible; actually, in most dwellings there must be sufficient space for the following activities:

- ° silent and noisy;
- ° clean and dirty;
- ° formal and informal;
- ° individual and collective;
- ° private and public activities.

In order to allow the members of the household to live together in harmony, it should be possible within the dwelling to organize areas where each of the members can be alone and not be bothered by others as well as different areas where incompatible activities can occur at the same time. This is a condition essential to the flexibility of the dwelling.

In most of the dwellings which are found on the market, the bedrooms are all clustered together in the same area. The fact is that this type of layout corresponds to the needs of young families but is much less in line with the needs of families made up of adolescents and young adults.

In addition, certain families often decide to rent out a room or to invite a friend or a relative to come and live with them. This roomer-friend-relative relation could develop into a relatively personal one. It is preferable and desirable nevertheless that the roomer, friend or relative be able to live his/her life without continually bumping into the members of the "foster" family.

One of the members of the family could also decide to work at home, to set up his/her office and to meet clients at home. This creates an increased activity need making it necessary for this member of the family to be able to use a small area of the dwelling which is separated both visually and acoustically from the rest of the dwelling. In addition, it is important that this small area be in a location which is directly accessible to the outside so that strangers do not wander into the more private zones of the dwelling.

Recommendations

Architects too often have a tendency to associate flexibility with areas without doors and with loft buildings.

Now, we in fact believe that doors and partitions are very important (see section 3.2.4 and that the flexibility of the dwelling is directly proportional to the possibility that each of the occupants has to find his/her own particular "corner" in the dwelling.

In addition to the presence of doors and partitions the five following characteristics will foster the organization of zones which are physically, visually and acoustically separate within the dwelling:

(1) the presence of a main entrance way and a secondary entrance way;

"Residents need an entry area that allows them to pass directly into either formal or informal areas within a dwelling unit without being forced to pass through both areas." (Zeisel, 1981)

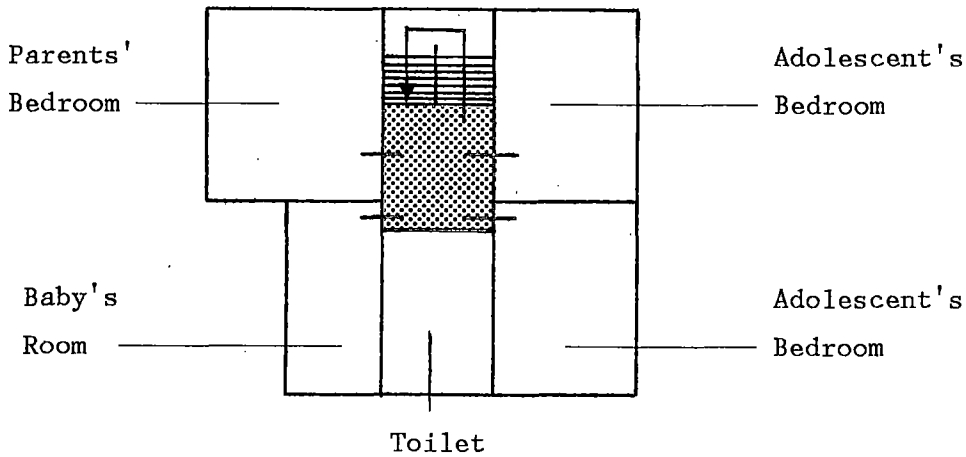
- (2) the layout of the rooms based on a linear rather than a concentric concept (Figure 3.7);
- (3) the organization of the rooms around a clearly defined corridor (Figure 3.8);
- (4) the organization of the rooms on various levels (Figure 3.9);
- (5) the insertion of buffer zones (visual and sound locks) between certain rooms or between certain areas within the dwelling (Figure 3.10).

It is important to point out that some of these recommendations, the organization of rooms around a clearly defined corridor or on various levels, for example, will establish a permanent architectural framework and could impose an unnecessary and undesirable segmentation in certain areas. Therefore, it is important to note that, among the means proposed above for segmentation, those which involve permanent spatial organization must be used sparingly. On the other hand, it would be better to end up in a situation where the spatial organization is set but where segmentation is possible rather than having a situation where the spatial organization is flexible and also where it is impossible to visually and acoustically isolate any particular area.

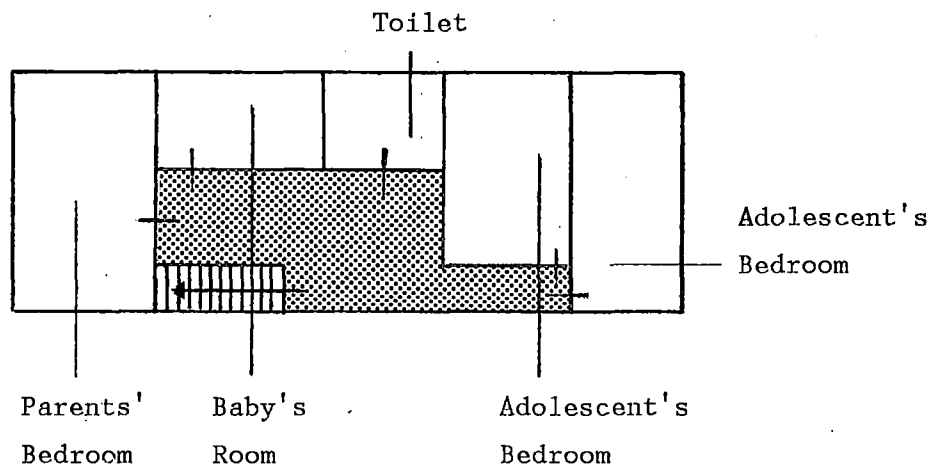
Lastly, it should be pointed out that if a dwelling has none of the preceding characteristics, the partitions separating the rooms of the dwelling should at least have characteristics comparable to those required by the National Building Code between dwelling units. This means that they should have a sound transmission rating of at least 45db.

Figure 3.7. The layout of the rooms based on a linear rather than a concentric concept fosters the creation of activity zones and visual and acoustic areas for each family member. Drawings not to scale.

Concentric concept (2nd storey of a two-storey house)



Linear concept (2nd storey of a two-storey house)



Note: The space reserved for the parents is more isolated and private in the case of a linear layout than in the case of a concentric layout; on the other hand, the space reserved for traffic is much more compact in the concentric layout than in the linear layout.

Figure 3.8. the organization of the rooms around a clearly defined corridor makes it possible to separate the incompatible areas and to establish a progression, starting from the main entrance way, going from the more public area to the more private. Drawings not to scale.

HYPOTHETICAL PLAN OF THE GROUND FLOOR OF A TWO-STOREY HOUSE

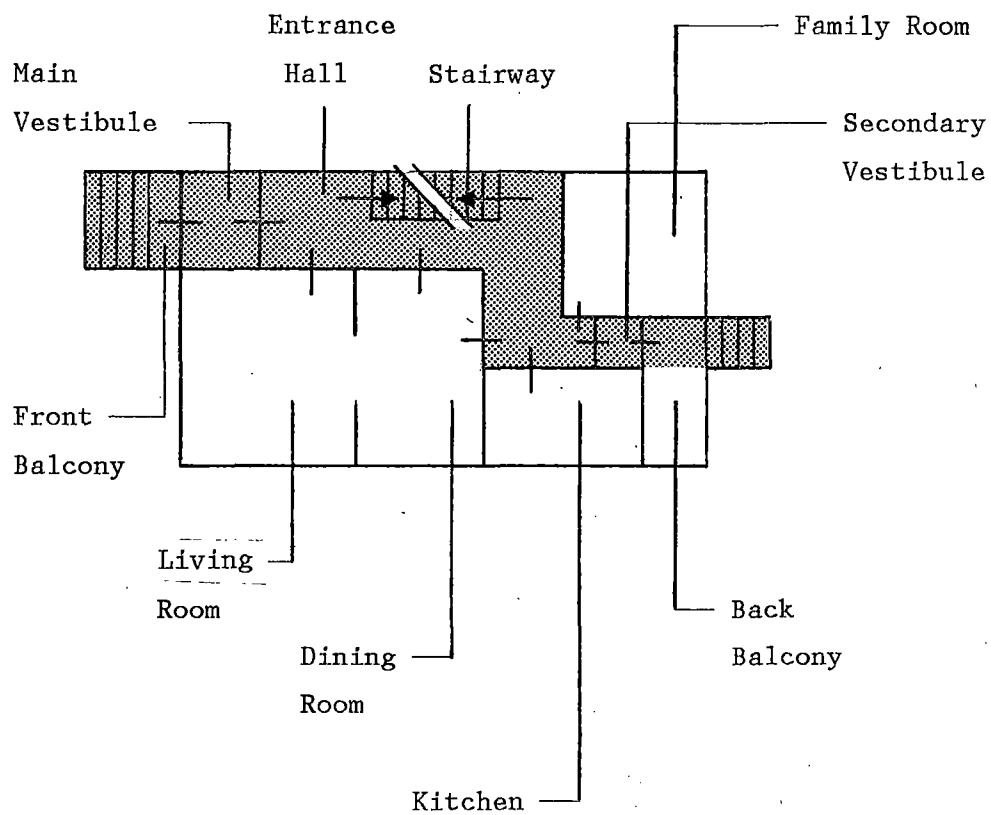
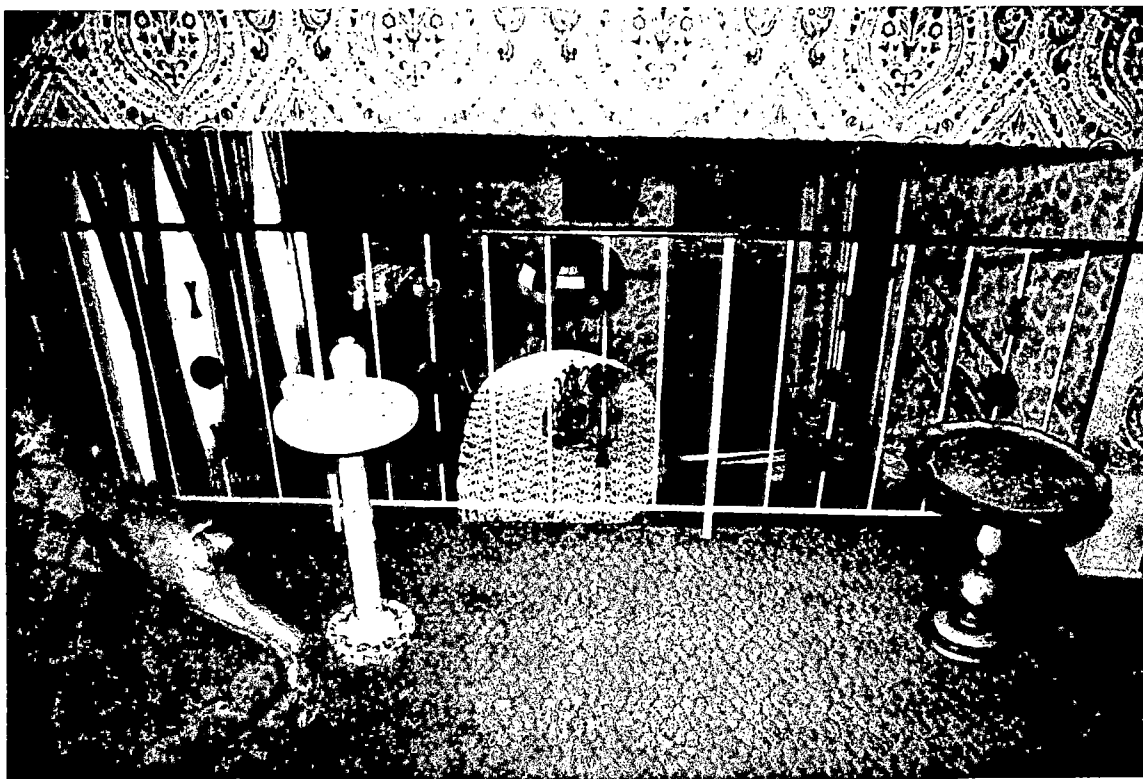
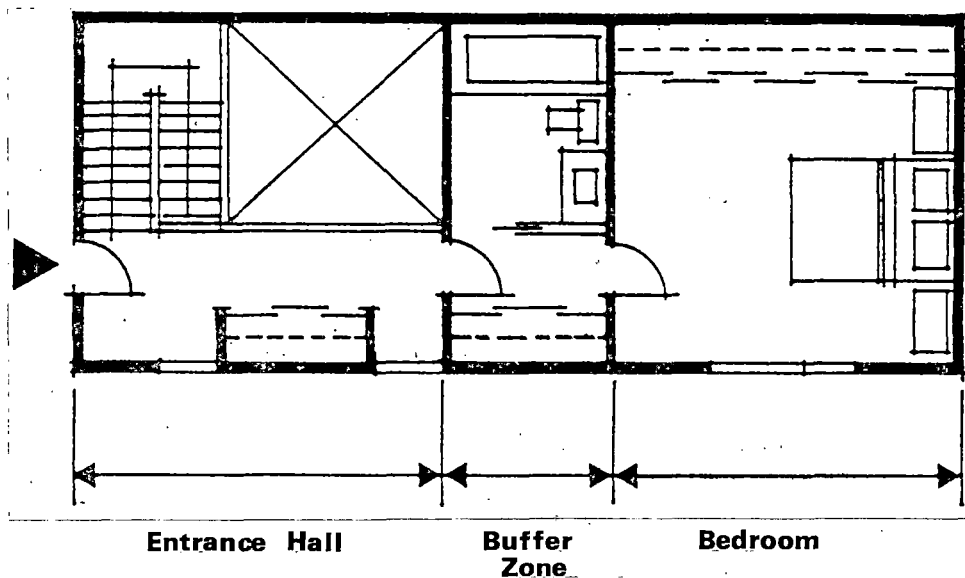


Figure 3.9. Photograph of the living room (front of photograph) and of the dining (back of photograph) of the split-level house occupied by **Household 11 (1104-1)**.



The organization of the rooms on two levels, as in this case, makes it possible to psychologically isolate certain zones, but does not provide visual or acoustic separation. Nor does the organization of the rooms on various levels make it possible to group certain rooms together.

Figure 3.10. The insertion of buffer zones (visual and sound locks) between certain rooms in the dwelling considerably reinforces the degree of visual and acoustic privacy of these rooms. Drawing not to scale.



Floor plan of a two level unit in the Habitat '67 project. The buffer zone separating the master bedroom from the rest of the dwelling confers a high level of privacy to this room.

3.1.4 **The fixed features in the dwellings such as the stairways, utility rooms, bathrooms, chimneys, and plumbing stacks are concentrated in one area**

Observations

In many dwellings and particularly in basements which had been finished by the occupants in the dwellings which we studied, we were able to observe that the shape of the spaces created was irregular (Figure 3.11). This situation is generally due to the fact that the occupants often have to make do with fixed constraints when they wish to make modifications to their dwellings. It is very difficult, for example, to finish a basement properly when elements such as bathroom, furnace room and stairway are located in various places within the square formed by the walls of the dwelling.

Recommendations

The fixed features of the dwellings such as the stairways, bathrooms, utility rooms, chimneys and plumbing stack should be grouped together in order to free up other areas of the house and thus make it possible to organize these latter areas adequately (Figure 3.12).

3.1.5 **There are a minimum number of columns and load bearing partitions and the exterior envelope, the frame and the partitions can be easily perforated without affecting the structural integrity of the building**

Observations

The occupants of certain dwellings hesitate to take down partitions or to create openings in certain partitions because they fear that this will end up costing a lot of money and they do not want to tamper with the structural integrity of the building in which their dwelling is found.

Figure 3.11. Basement plan of Household 05 showing how it is difficult to make full use of a floor area where the fixed features such as the laundry room, furnace room, toilet, stairways and two columns in this case are not concentrated in the same area (0570).

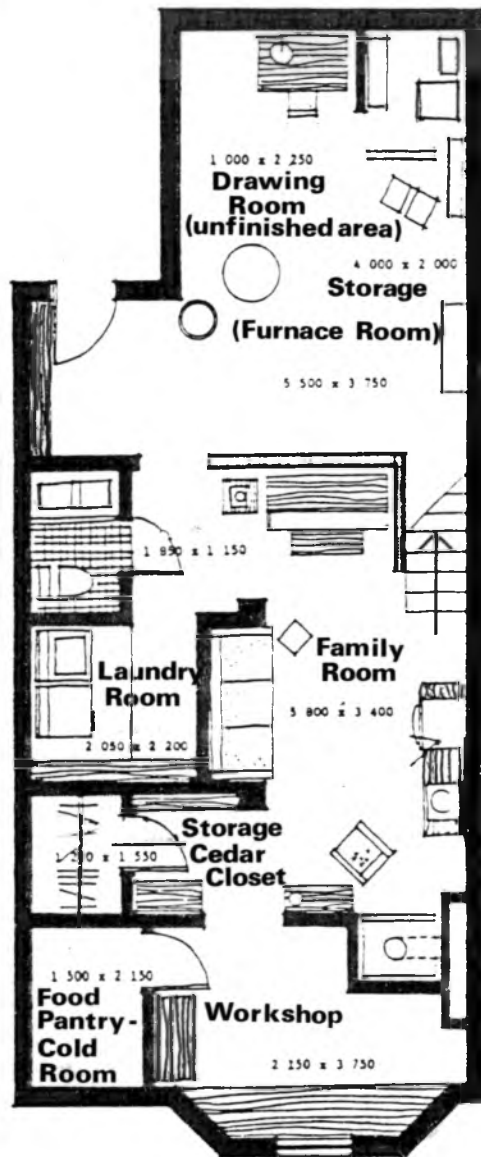


Figure 3.12. Basement plan of the split-level house occupied by Household 10. In this house, grouping together the bathroom, laundry room, stairs, cold room, sauna and furnace room, made it easier to install the family room and bedroom 3 (1070). Scale: 1/100.

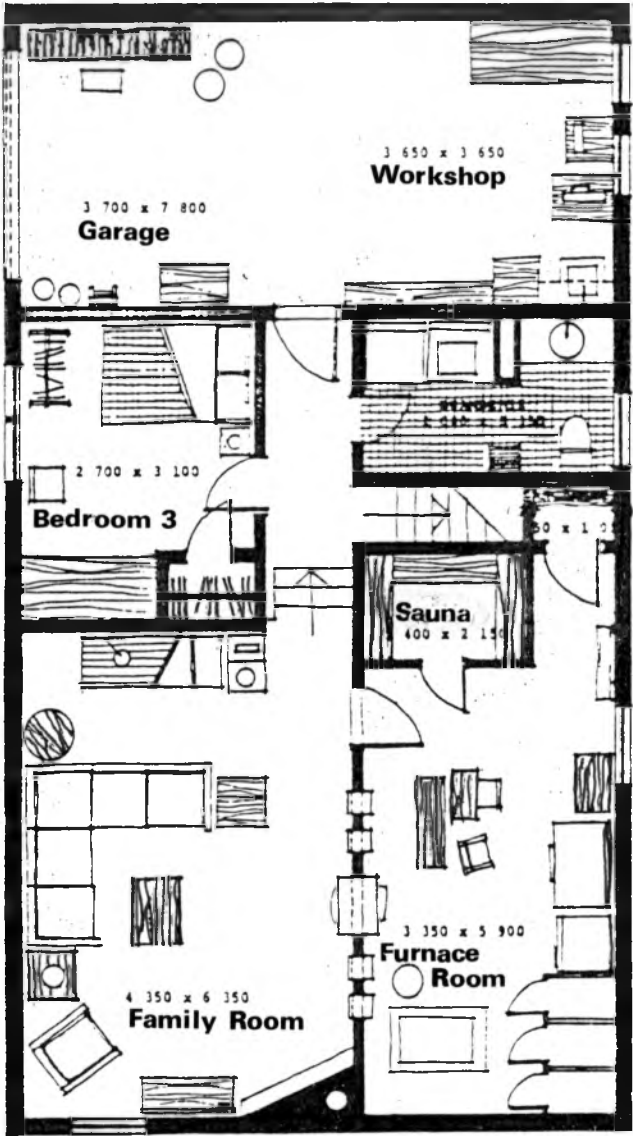


Figure 3.13. Basement plan of the triplex occupied by **Household 12** in which a "sitting room" and a bedroom were installed (Other 1). The exaggerated depth of these two rooms was dictated by the presence of two rows of columns along the length of the dwelling (1270). Scale: 1/100.

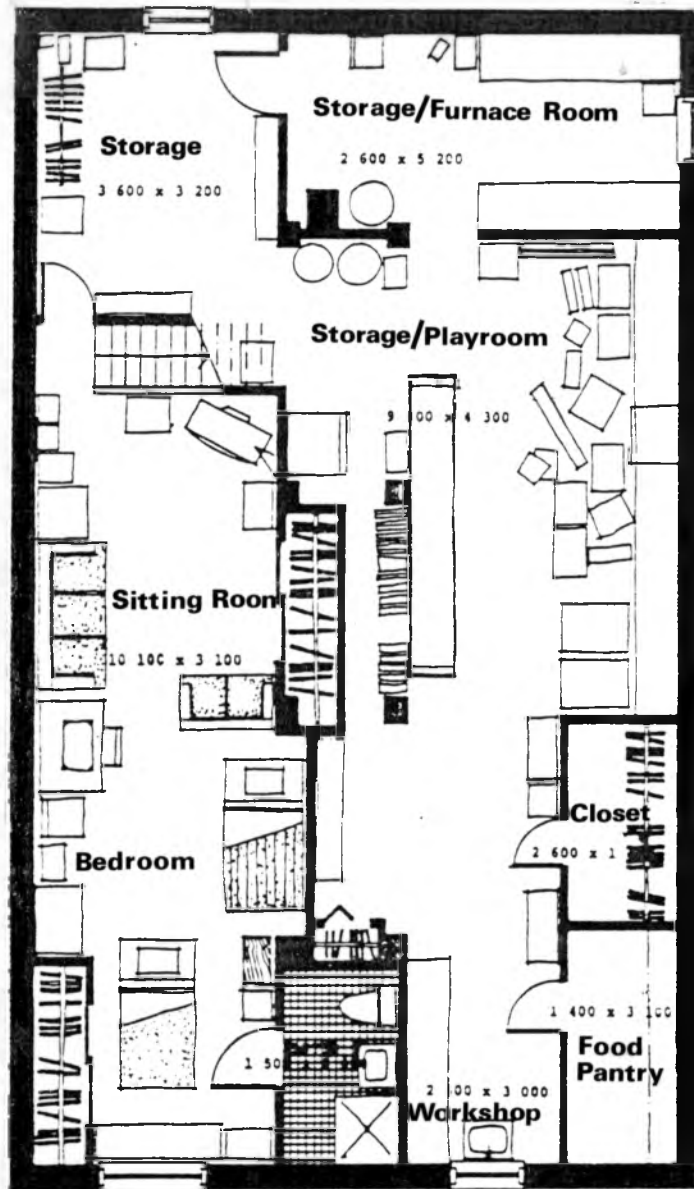


Figure 3.14. Photograph taken in the kitchen of the one-storey house occupied by Household 04. In the background, you can see the "sitting room" which was created using the bedroom which became free after the marriage and departure of one of the girls. Initially this room was completely closed in (0406-4).



One would think twice before building an addition to one's house, before adding a window or creating an opening between two rooms, if one knew to begin with, that this operation would require the installation of a beam and columns and the construction of new foundation walls.

In many cases, the large number of columns and the presence of partitions and load-bearing walls mean that the occupant has to make do with layouts which are not very aesthetic and practical. We observed this in the case of the basement in the triplex unit occupied by **Household 12** where the occupants had set up a "sitting room" and a bedroom, the proportions of which (exaggerated depth) were particularly unaesthetic and impractical. Thus, it was related to us that this shape had been dictated by the presence of two rows of columns along the length of the dwelling (Figure 3.13).

In addition, we were able to observe that numerous modifications had been made in the ground floor in the one-storey house occupied by **Household 04** (Figure 3.14). Here many partitions were removed, added and moved, a stairway was removed, another stairway was moved, and finally the use of various rooms were changed (Figures 2.30, section 2.1.4). These modifications were facilitated by the absence of columns and load-bearing partitions on the ground floor which was made possible technically by the use of trusses to support the roof.

Recommendations

- (1) Minimize the number of load-bearing elements such as columns, walls and partitions inside the perimeter wall of the dwelling.
- (2) If necessary, load-bearing walls, preferably frame systems covered with light finishing material rather than heavy systems (ex.: prefabricated concrete walls or poured-in-place concrete walls; frame load-bearing walls covered with masonry).

- (3) If load-bearing partitions must exist inside the dwelling, preferably use frame systems covered with a flexible finish such as gypsum board rather than masonry systems (concrete blocks).
- (4) If the dwelling has several stories, preferably use frame floor construction systems rather than solid systems (ex.: prefabricated concrete floors or concrete poured-on-site floors).
- (5) Preferably avoid materials which are difficult to modify such as steel and concrete.
- (6) Provide the occupant with a manual indicating how to modify or add to the plan without affecting the structural integrity of the building.

These recommendations facilitate adding openings, doors and windows, as well as horizontal or vertical additions to the dwelling.

3.1.6 **The dwelling contains two full-size bathrooms**

Observations

Parents share the bathroom rather easily with young children but, as these children grow up, each one's need for privacy increases. This need for privacy becomes more acute when one of the parents changes partners or when a stranger comes to live in the same dwelling. Thus, among the twenty families which we studied, eight had added a bathroom in the basement, i.e., the third most common type of addition of a family room and a bedroom. The frequency of this type of modification is not surprising considering the fact that all the families studied had experienced the situation where their children became adolescents or young adults.

In the dwellings where one may find several adults (we include older adolescents in this category) the occupants have to line up when there is only one bathroom. This situation becomes particularly critical when each

person has to leave the house around the same time in the morning:

"... that's the problem in the morning when everybody has to leave at the same time, it is necessary to be organized so that each person does his/her share, so that some people take a bath in the morning, others in the evening..." (**Mother 15**, p. 15-1)

In the case of **Household 01**, the situation was the opposite and the following remark is very pertinent:

"The house was really built for a large family ... I was served with proof of this when there were seven of us in the house ... the fact that we had three bathrooms greatly facilitated adaptation" (**Mother 01**, p. 01-11).

Recommendations

Dwellings intended for families¹⁷ should contain two complete bathrooms¹⁸ to allow the occupants to use the bathroom in complete privacy without having to line up.

3.1.7 The dwelling contains two distinct eating areas

Observations

For many families, the table in the dining room is used for many purposes, (ex.: sewing, doing homework, paying bills at the end of the month, etc.). Where there is only one area where one can sit down to eat in a house, these activities must be interrupted for each meal and the objects related to these activities must be picked up. This situation can become irritating over time in the long run.

When there are young children in the household, accidentally upsetting one's plate during the meal can have embarrassing consequences.

Most people eat a few quick meals in the kitchen.

Some people consider the evening meal as being a special event which should comply with certain rules in an area distinct from the kitchen.

Recommendations

There should be two distinct dining areas in dwellings intended for families. One of these areas should be in the kitchen, and the other should be close by. This would make it possible to have formal meals as well as more simple meals. This would also make it possible to use one of the table surfaces available for activities, other than eating, which last longer than one day.

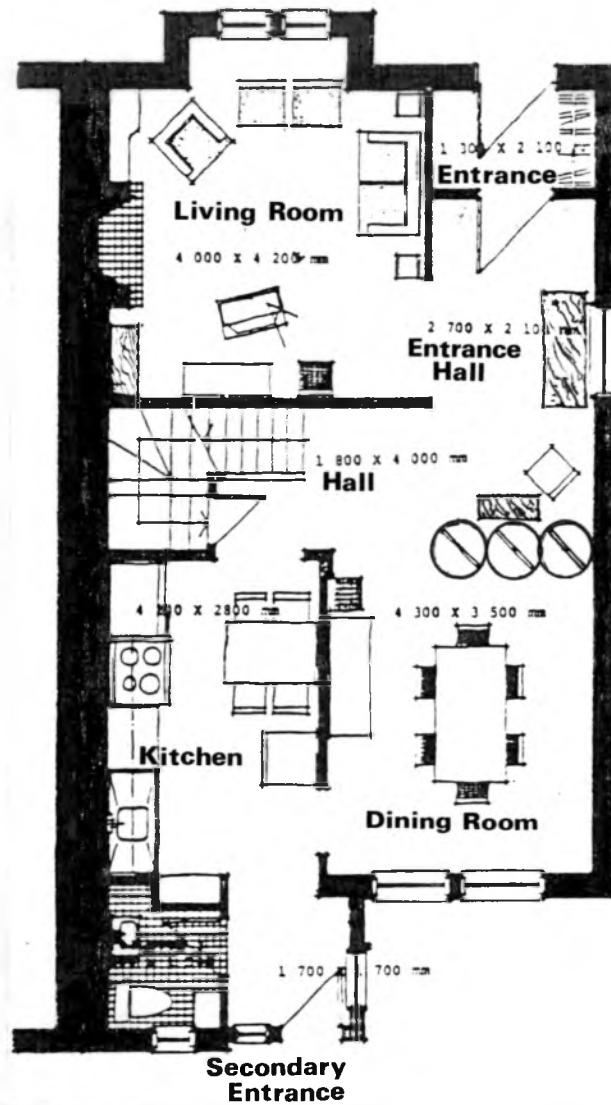
As can be seen in Figure 3.15, installing two distinct eating areas does not necessarily involve a substantial increase in the total area of the dwelling.

3.1.8 The dwelling contains two distinct living room areas

Observations

In spite of differences in taste and in family life style, we observed that most families would like to have both a formal living room and an informal living room (family room) in their dwelling first as most people have both formal clothes (suits) and informal clothes (jeans) in their wardrobes. Thus fifteen of the twenty families which we studied had installed a family room or a play room in the basement of their dwelling.

Figure 3.15. Ground floor plan of the two-storey house occupied by Household 03. As can be seen on the plan, having two distinct eating areas does not necessarily involve a substantial increase in the total area of the dwelling. In addition, in this case, the presence of a very small eating area in the kitchen makes it possible to use the dining room as a work room (0371). Scale: 1/100.



Generally, the living room is intended for adults, for social and passive activities whereas the family room is intended mainly for the children, for informal and active activities.

Recommendations

Dwellings intended for families should contain two separate living room areas to allow different activities to occur at the same time without any problems.

One of these areas could be set up in a space where the finish could be left to the discretion of the occupant (see section 3.1.11).

3.1.9 The dwelling contains spaces for storing bulk articles

Observations

Most of the dwellings which we studied were relatively well equipped as pertains to storage space for clothes, food, dishes, utensils, bedding and towels.

On the other hand, we observed that in almost all the basements, storage spaces had been installed (see section 3.1.1) and that in seven cases the garages were completely taken over by objects other than automobiles (Figure 3.16). Here is a partial list of objects found in these garages:

seasonal articles	exercise equipment
sports equipment	projection equipment
luggage	lawn chairs
barbecues	unused furniture
bicycles	garden tools
lawn hose	shovels
Christmas decorations	tires
automobile supplies	baby strollers

big toys	table leafs
games	game tables and chairs
toys	lawnmowers
construction material	baby carriages
workshop material	baby walkers
camping material	

In the dwellings where there were no garages we also observed that these objects were sometimes stored in bulk in the basement but that they were often scattered throughout the dwelling especially in locations such as stair landings where they could cause accidents.

In summary, we observed that the absence of storage area for maintenance material and for miscellaneous objects (seasonal articles, articles used occasionally, etc.) tended to limit, if not eliminate the function of certain spaces such as garages, and that it also was responsible for substantially reducing the flexibility of the dwelling.

Recommendations

Dwellings intended for families should contain spaces reserved for storing maintenance material as well as miscellaneous articles to avoid the situation where these articles clutter spaces intended for traffic or for other functions.

In addition, these spaces should be located in easily accessible areas and organized so that one has easy access to all the articles stored (Figure 3.17).

Figure 3.16. Basement plan of the duplex occupied by Household 18. The garage for this unit, as is the case for a certain number of dwellings which we studied, is taken over by a whole gamut of objects other than automobiles (1870). Scale: 1/100.

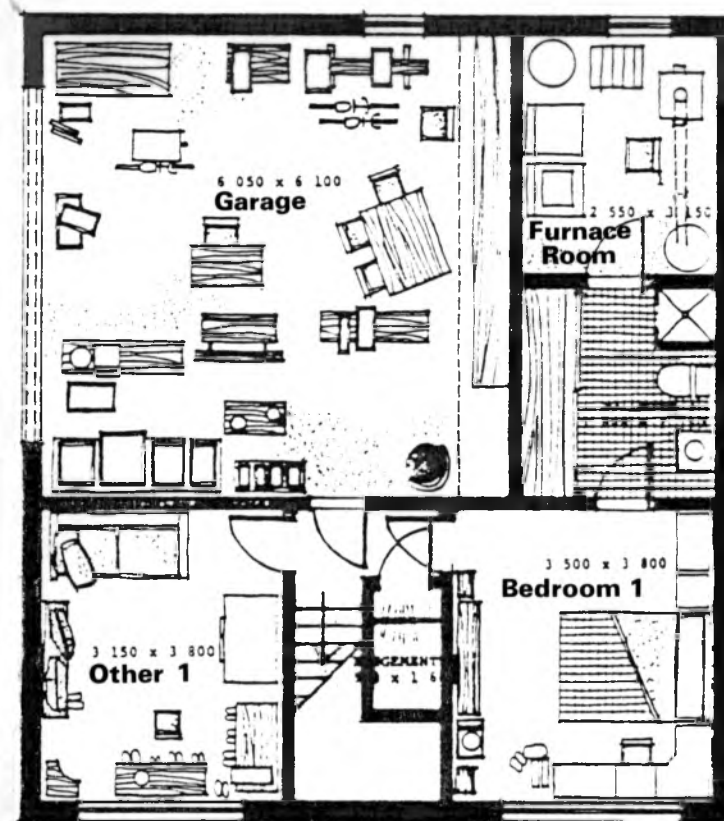
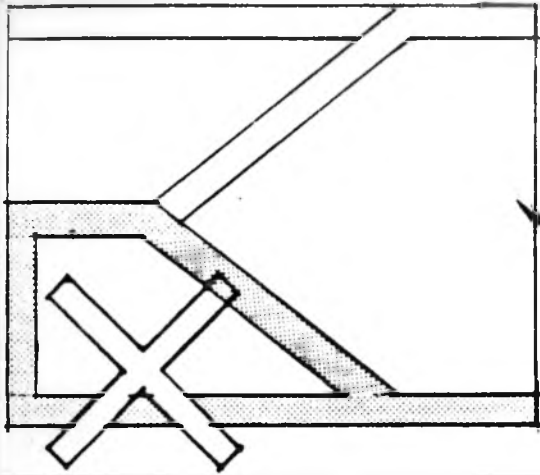
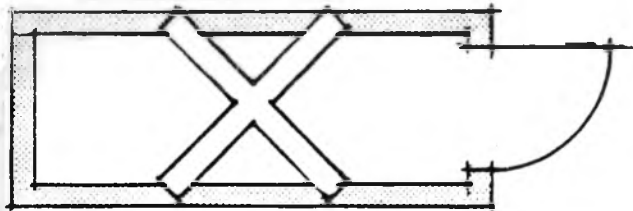


Figure 3.17. The spaces reserved for storing articles in bulk should be located in areas which are easily accessible and organized so that one has easy access to all the articles stored. Avoid for example:

- Storage under stair landings (drawing not to scale);



- Storage lockers which are disproportionately long in relation to the width and to which access is through one end (drawing not to scale);



- Storage lockers with appropriate dimensions but which are encumbered by elements of the mechanical systems such as the hot water heater (drawing not to scale).

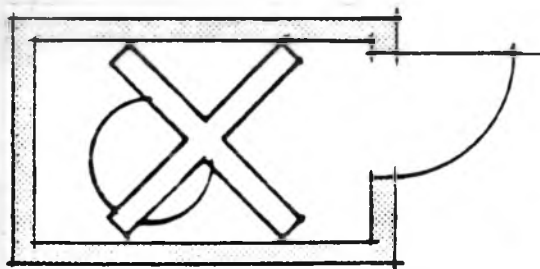


Figure 3.18. Photograph of the main entrance way to the duplex occupied by **Household 07**. This entrance way opens directly onto the living room and, for reasons of privacy and for climatic reasons, its presence substantially limits the function of this space. For this reason the occupants of this dwelling use the garage entrance way (Figure 3.19) more often than the main entrance way (0704-2).



Figure 3.19. Photograph of the garage and of the secondary entrance door which was installed as part of the garage door of Household 07. This entrance way is more frequently used than the main entrance way because it better complies with climatic imperatives (0725-1).



3.1.10 **The main entrance and the secondary entrance do not provide direct access to living areas**

Observations

In many dwellings we have observed that the occupants entering the dwelling through the main entrance had to go through the living room area or on entering through the secondary entrance had to go through the kitchen to have access to the rest of the dwelling. For reasons of privacy and for climatic reasons, the presence of an entrance in a living area limits the function of this area (Figure 3.18 and 3.19). The main factors contributing to a reduction in the usable area are the following:

- ° cold air keeps the users and consequently furniture away from the entrance way;
- ° the entrance area requires a carpet to clean one's shoes;
- ° the entrance area is cluttered with boots;
- ° the entrance zone requires a certain clearance to allow people to put on and take off their coats and boots;
- ° the absence of privacy which is felt when one opens the door to strangers also limits the function of the room onto which the entrance way opens.

Recommendations

The location of entrance ways must comply with requirements dictated by climate, storage area for boots, and privacy. Consequently, the main and secondary entrance ways to all dwellings should open onto an entrance hall or a passage to avoid restricting the function of any living spaces. In cases where the door opens directly onto the outside, there should be a

vestibule moreover, between the interior and the exterior of the dwelling.

3.1.11 The dwelling contains open unfinished spaces

Observations

Eighteen out of the twenty dwellings which we studied contained an unfinished basement when the present occupants moved in. In all cases of these basements, the occupants had finished the basements themselves (Figure 3.20). Here is the list of how the basements were finished based on our observations in these eighteen basements:

<u>Rooms or Areas Involved</u>	<u>Frequency</u>
Storage space	15 ⁵
Laundry room	13
Family room	12
Bedroom	10
Bathroom	8
Workshop	8
Sitting Room	3
Cold room	3
Play room	3
Drawing studio	2
Office	2
Additional dwelling unit	2
Dark room	1
Sewing room	1
Sauna	1

This observation is among the most important and the most significant which we have made in this study since it indicates that when a dwelling contains an open unfinished space such as a basement, it is highly likely that the occupants appropriate and finish this space in line with their priorities and tastes.

This observation is consistent with several observations made by Zeisel (1981) in a repertory of documents dealing with the characteristics which dwellings intended for families should possess:

"Housing residents always feel cramped, no matter how much space they have. They need more space for storage as their possessions increase. They need more space for a playroom as their family grows. They need more space to get unsightly utilitarian objects like washers and dryers out of the way. Basements, even unfinished ones, provide such expansion places in many houses."

In another research project dealing with the characteristics which dwellings intended for families should possess, Beck and Teasdale (1977), observed the same thing:

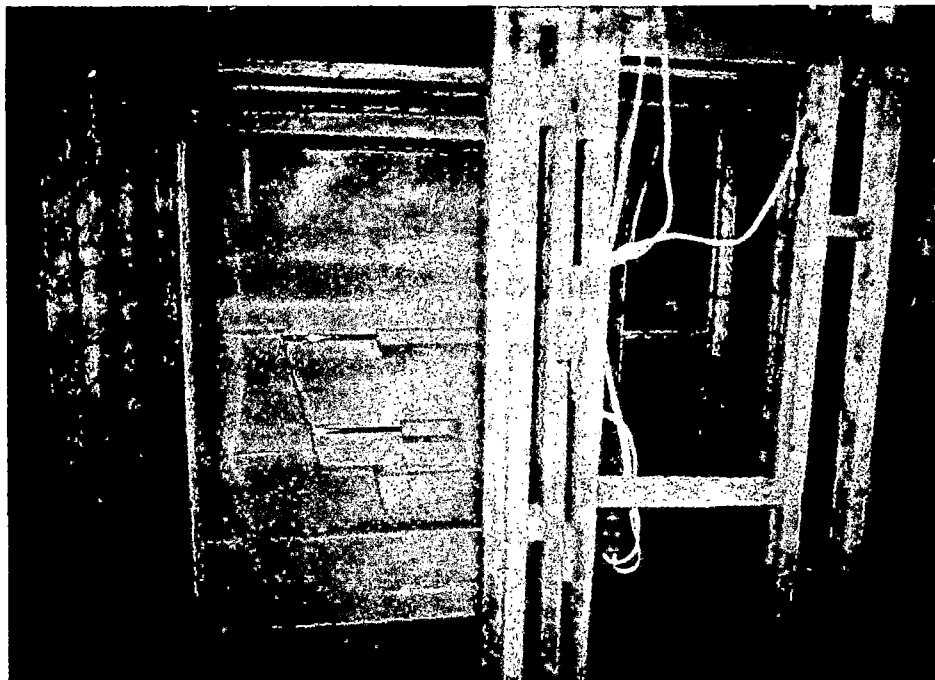
"All the occupants made improvements in their basements, in one way or another. The occupants were very happy when they had the opportunity to make these improvements in line with their tastes and this activity helped them to identify themselves more with their dwelling."

Recommendations

Dwellings intended for families should contain open unfinished spaces such as basements or garages, in order to accommodate unforeseeable functions and to allow the occupants to finish these spaces in line with their tastes.

Now, the observations which we were able to make during this study demonstrated to us that the use of basements could be maximized if the latter had the characteristics listed (see (1) to (6) below.)

Figure 3.20. Photograph of the basement in the dwelling occupied by **Household 19** showing the work being done to install a bachelor apartment including a bedroom, toilet, laundry room and kitchenette, at the time of our visit. It is important to point out that eighteen of the twenty dwellings which we studied contained an unfinished basement when the current occupants moved in and that in each one of these 18 cases, the residents themselves finished the basements (1917-1).



We are not in a position to make such equally detailed suggestions based on our analysis of the use of garages since we only observed 2 additional uses besides the normal use of providing shelter for the car, i.e., storage area and workshop. We are convinced, however, that a certain number of the characteristics listed below could also contribute to maximizing the use of garages and to improving their appearance.

- (1) good natural lighting, we recommend 5 to 15% of the floor area in order to reduce the feeling of being in a basement to a minimum;
- (2) the depth under grade¹⁹ not to exceed half the height of the space in order to maximize natural lighting and in order to reduce the length of the stairway from the exterior to the basement;
- (3) direct access to the outside, i.e., the possibility of going from the basement to the outside without going through the livable area of the dwelling; this possibility facilitates the conversion of the basement into an additional housing unit; it is also appreciated by young adults whose bedrooms are located in the basement since these young adults need more privacy;
- (4) the fixed features of the dwelling such as stairways, utility rooms, bathrooms, chimneys and plumbing stacks are concentrated in one area (section 3.1.4) to leave a maximum area of open space;
- (5) even if the proposal is made that the basement remain unfinished to allow the occupants to use their personal taste in the finish work, it does contain the following elements in order to facilitate the improvements: stairway respecting the same standards of architectural design as the rest of the dwelling, sufficient number of electrical outlets and plumbing systems to accommodate a laundry room, bathroom and kitchenette;

(6) relation between the basement and the rest of the dwelling: as in the case of the living room - dining room - kitchen relationship (section 3.1.2) the preferences are relatively varied as for closed-in versus open basements in relation to the upper levels of the dwelling; the observations which we were able to make in this respect allowed us to make the following points:

Basement separated from the rest of the dwelling by a door

- makes it possible to organize almost all the activities without bothering the rest of the family, i.e., good acoustic, visual and physical separation;
- preferred by the adolescents who like to have their own recreational area or to listen to booming rock music;
- does not make it possible to adequately supervise the games or the activities of young children;
- accentuation of the negative feeling of "being in the basement".

Basement linked to the rest of the dwelling by an open stairway

- the people who are in the basement can communicate with the rest of the family;
- the supervision of young children is easier;
- reduction of the negative feeling of "being in the basement";
- the fact that the basement is open to the rest of the dwelling does not make possible as wide a variety of activities as a closed basement which allows for noisy and unorganized activities;

° provides less privacy than an isolated basement and corresponds less to adolescents' tastes.

Conclusions concerning the relation between the basement and the rest of the dwelling: the stairway linking the basement to the rest of the dwelling should be designed to allow one or the other of the types of relation which we have just described.

3.2 CHARACTERISTICS OF THE ROOMS WITHIN THE DWELLING

3.2.1 Each of the rooms has a neutral and ambiguous shape as well as an area and dimensions above normal standards

Observations

The preceding chapter contains many examples and illustrations of reassigned rooms subsequent to different events (i.e., a birth, transition from childhood to adolescence, departure, divorce, fusion of two households, etc.) which occur during the life of a family.

It is also important to point out that the already large number of new uses to which rooms are put during the various life cycles of a family will be further increased by the number of successive families living in the dwelling. In fact, variations in the use of the rooms depends not only on the needs generated by the transition of a family from one life cycle to another, but they can also be the result of differences between the composition of one household in relation to another as well as the particularities of the life style of one family in relation to the next family living in the same dwelling.

Architecturally, we have observed that certain characteristics fostered, whereas other characteristics inhibited, multiple use of rooms. These characteristics are described in the following recommendations.

Recommendations

Characteristics to be recommended:

- ° neutral and ambiguous shape (Figure 3.21) of each of the rooms²⁰ to avoid predetermining the use of the room and especially to avoid limiting its use to one function;

- ° area and dimensions of each of the rooms above minimum standards²¹ (see Teasdale, 1984) to maximize the range of use of each of these rooms (Figure 3.22).

Characteristics which should be avoided:

- ° particular elements integrated in the room's fabric (Figure 3.23);
- ° double opening between two rooms without a door (ex.: double opening between the living room and the dining room);
- ° shape of the window too closely associated with a predetermined function for a room (ex.: very large window in the living room, average size window in the dining room and small windows in the bedrooms).

3.2.2 Each of the rooms has a simple shape and the doors and the windows in the rooms are located to maximize the possibility of rearranging the furniture

In the preceding section, we discussed the multiple use of rooms and suggested means for avoiding any predetermination or limitation of their uses. In this section, we shall discuss the flexibility and adaptability which the rooms should have even if the latter only have one use (i.e. used only as a living room, dining room, or bedroom).

Observations

Often the layout of the living room does not lend itself well to changes, (i.e. rearranging the furniture). For example, the location of a television set may be limited to only one corner and the location of a sofa to one wall (Figure 3.24).

Figure 3.21. Basement plan of the plex occupied by Household 12. In this dwelling, the shape of each of the rooms is neutral and ambiguous so that the function of each of these rooms may vary (1271). Scale: 1/100.

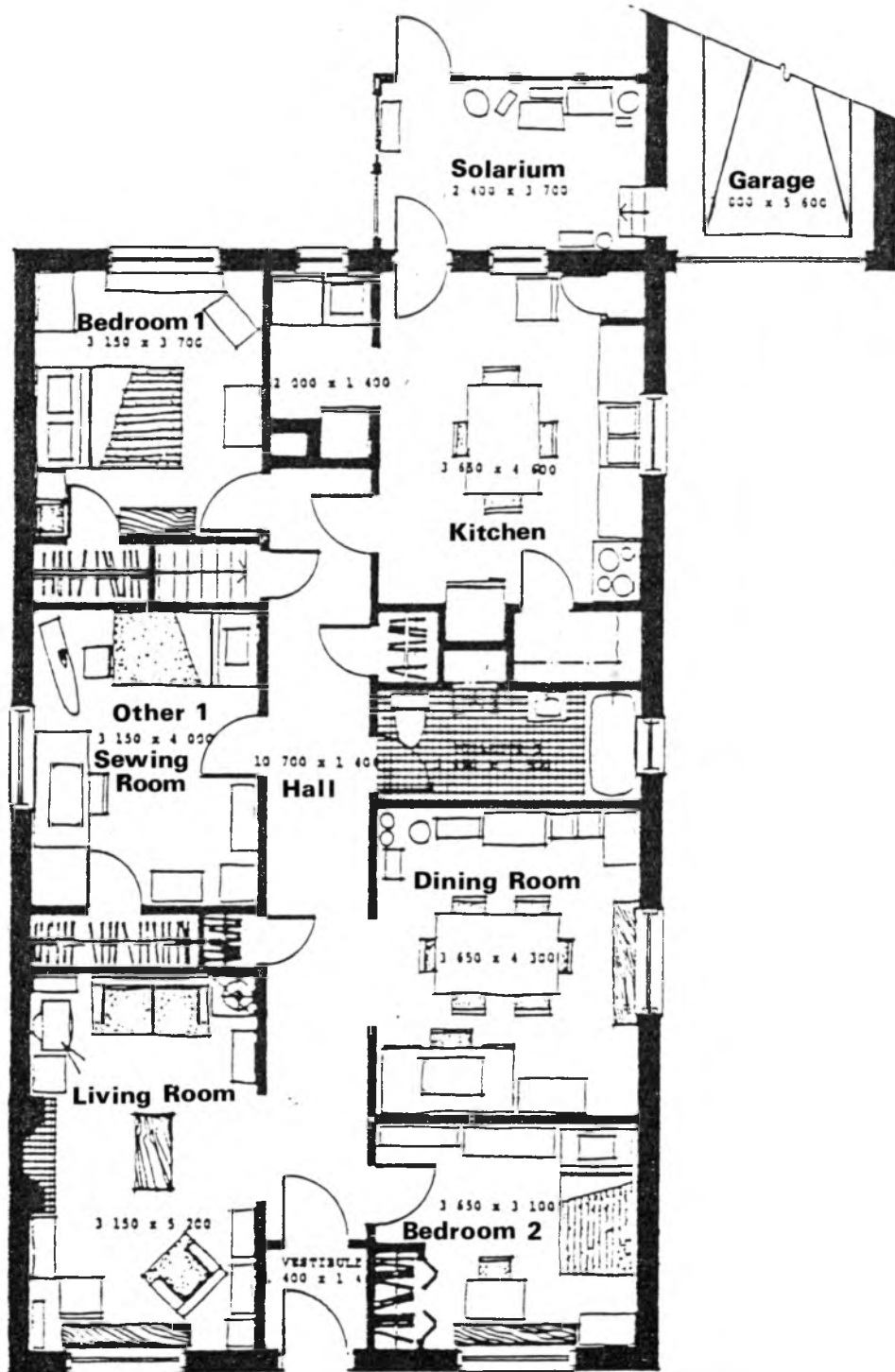


Figure 3.22. Basement plan of the one-storey house occupied by **Household 06**. In this dwelling, the "Other I" is so small (7.0 m^2) that its function is limited to that of a dressing room or a baby's room. According to Teasdale (1984), bedrooms intended only for one person and to be used only for sleeping, dressing and personal care should have an area of at least 8.5 m^2 ; bedrooms which are to be used for other activities should have an area of at least 11.5 m^2 (0671). Scale: 1/100

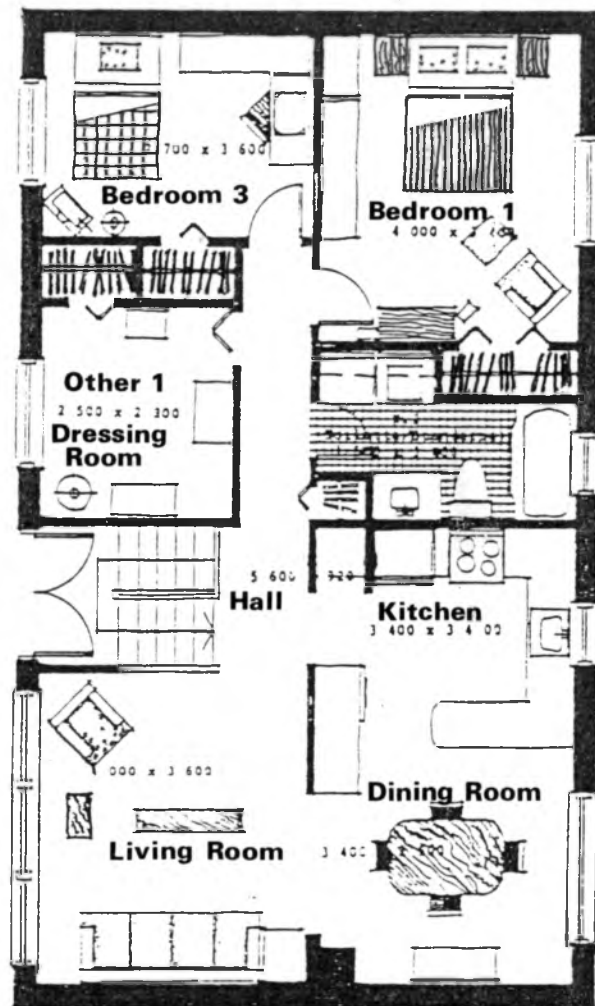


Figure 3.23. Basement plan of the duplex occupied by Household 19 showing the dining room, the function of which is predetermined by the presence of two doors, two built-in china cabinets as well as an overhead lighting fixture (1971). Scale: 1/100.

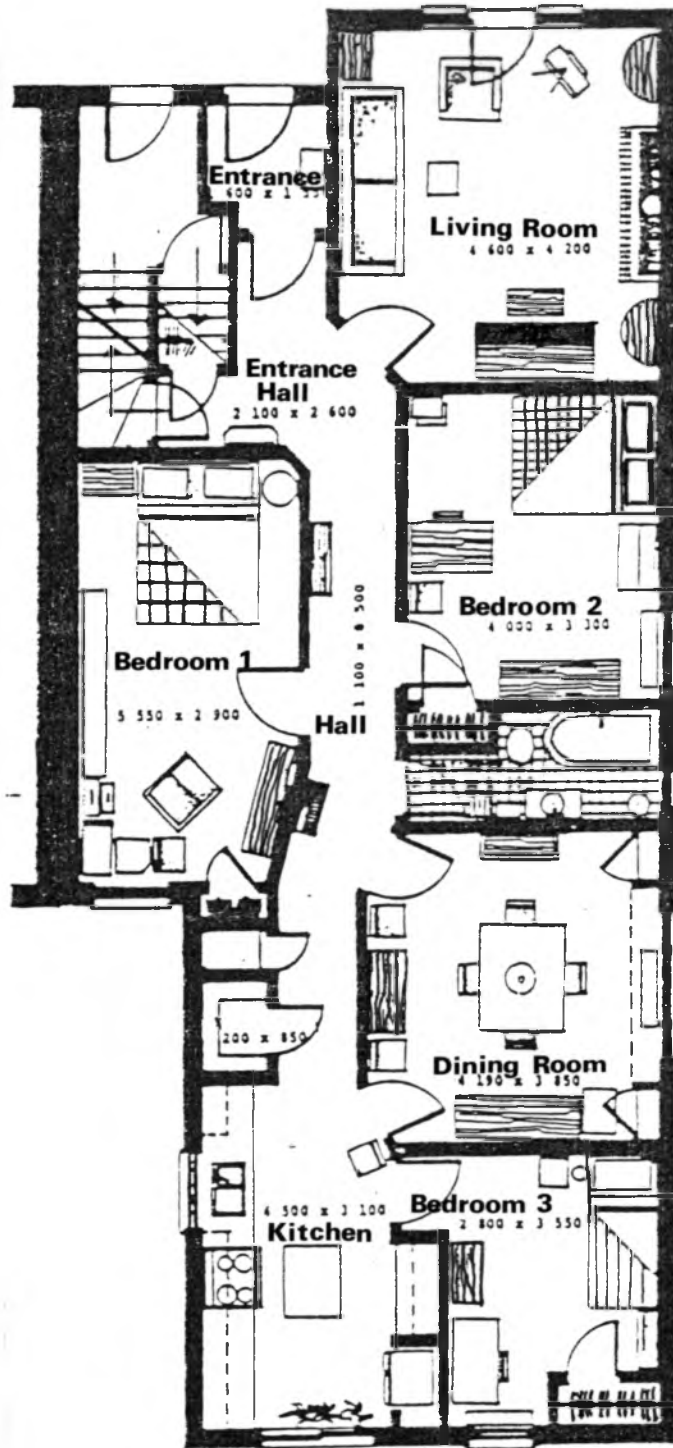


Figure 3.24. Basement plan in the duplex occupied by Household 07. The living room in this dwelling offers very little possibility for re-arranging the furniture since two walls contain openings and since a third wall separates the living room from a traffic space (0771). Scale: 1/100.

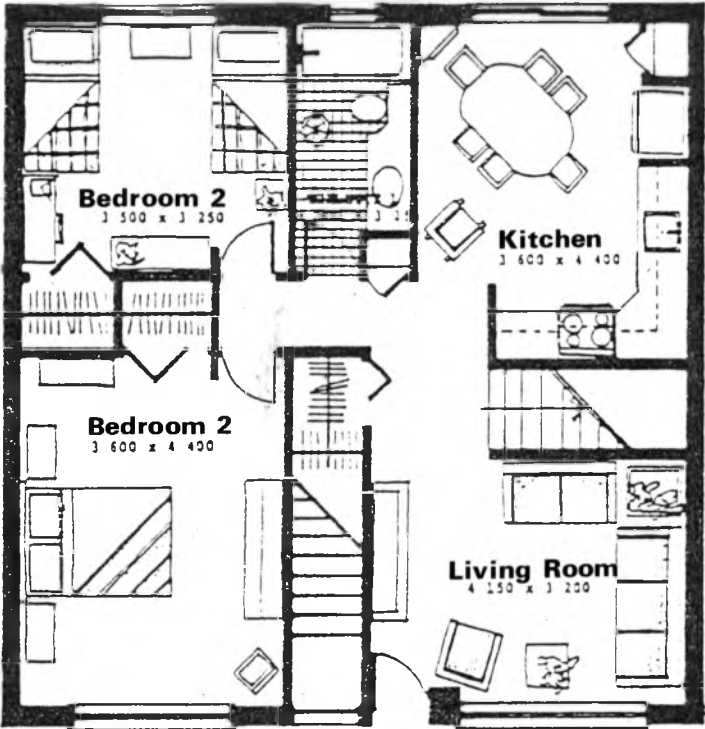


Figure 3.25. Basement plan of the duplex occupied by Household 01. The dining room in this dwelling offers very little possibility for re-arranging the furniture due to the traffic needs and to the virtual absence of walls against which furniture can be placed (0170). Scale: 1/100.

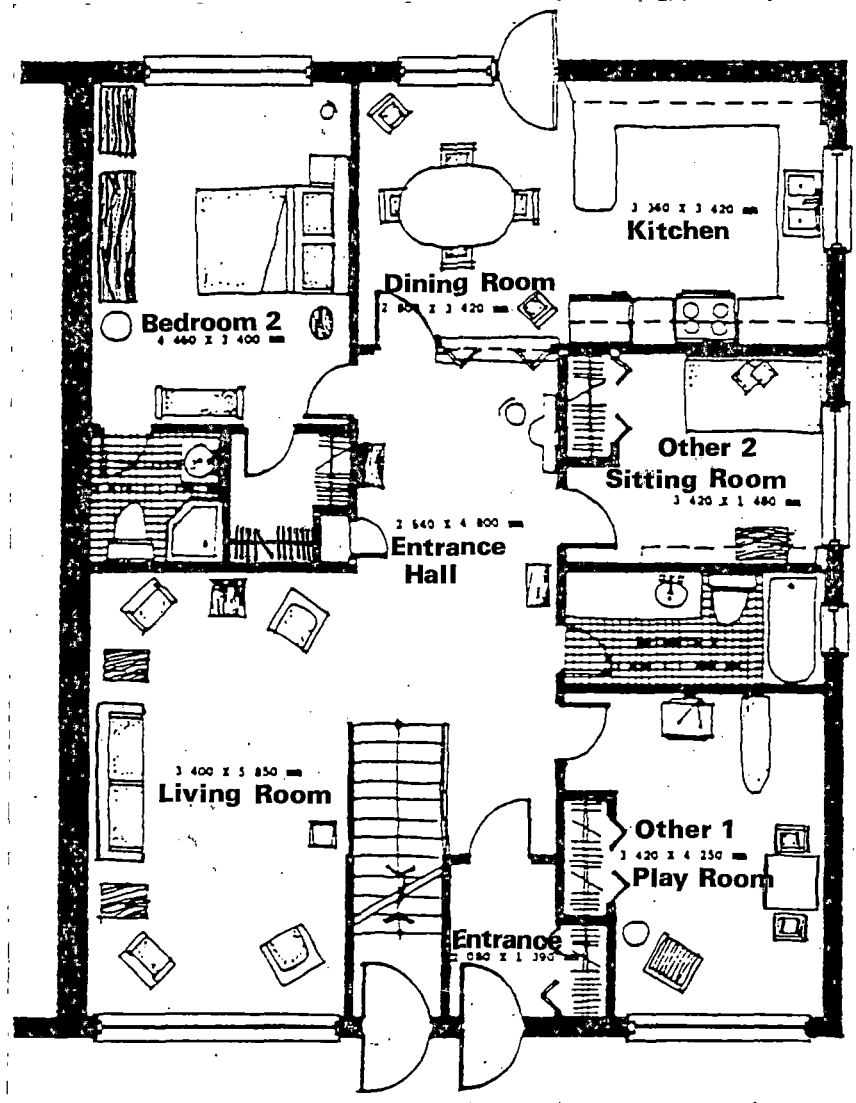
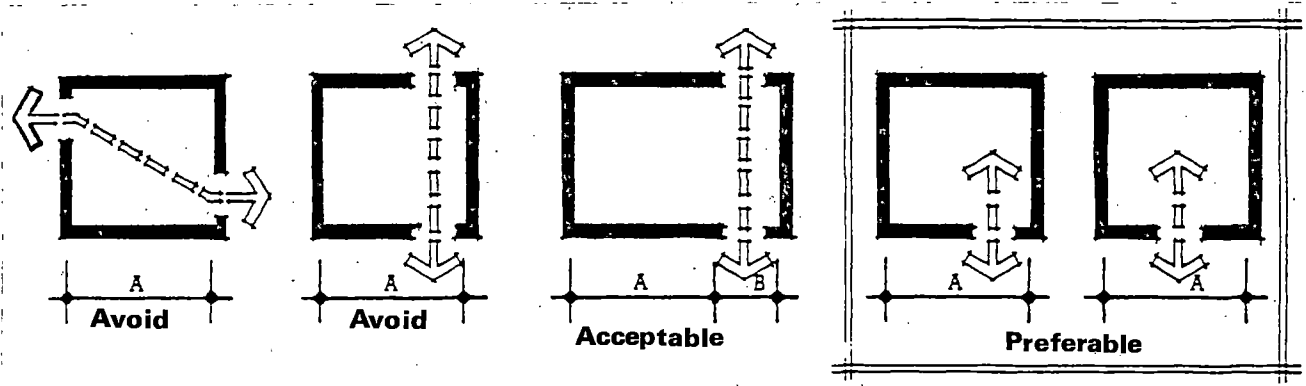


Figure 3.26. Having to cross rooms is to be avoided.



A = Maximum area of room

B = Area to be excluded in determining the minimum area of the room

Of all the rooms in the dwelling, the dining room is the one offering most adaptability to activities other than eating. For example, the dining room table may be used as a work surface, it can be moved and installed against the wall in order to provide a larger play area for children, or to make room for two armchairs and a television set. Unfortunately, dining rooms usually lend themselves very poorly to changes as pertains to re-arranging the furniture. It often happens, for example, that the dining room table can only be placed in one spot and that the large buffet is confined to one wall (Figure 3.25).

It is also unfortunate, but it often happens that one cannot change the way in which the furniture is arranged in the bedrooms. Often there is only one wall against which the bed can be placed.

Recommendations

Each of the rooms should allow for, at least two different furniture arrangements and have the following characteristics:

- entrance and exit points located to avoid having to go through the room (Figure 3.26);
- a shape which is closer to a square than a rectangle; this shape (Teasdale, 1984) offers more possibility for re-arranging the furniture;
- two uninterrupted walls, (i.e. without windows or doors also facilitate the layout of the furniture).

In addition, it would be necessary to avoid the following characteristics in rooms:

- complex shapes (ex.: those where several walls meet at more or less 90 degree angles, hexagone shape, etc.);

- ° disproportionate shapes (ex.: very narrow or very long rooms);
- ° shapes requiring furniture which is custom-made.

3.2.3 **The corridors are considered and designed as living spaces rather than simple access ways**

Observations

Corridors, the width of which does not exceed the minimum dimensions required in the National Building Code, (i.e. 860 mm, are usually impersonal and unoccupied areas), (Figure 3.27). By reducing their width to a minimum, one often thinks that this will save money, but most of the time this actually means that the potential of these spaces is destroyed. This is particularly true when the dwelling does not have an entrance hall, (i.e. a buffer zone between the entrance way and the other spaces in the dwelling).

On the other hand, when the width of the corridors is approximately 1 100 mm and when this width increases to 1 500 mm in strategic areas (points of convergence, changes in direction, entrance hall, etc.), they become very inviting, and give rise to various types of appropriation. For example, one finds plants, book shelves, desks, pianos, toys and children's cars, in these areas; bulletin boards are put up here; laundry room or studies are set up; furniture and decorative objects are placed here.

Corridors, once they exceed the minimum dimensions, act as safety valves in fact since they free the rooms of certain activities such as children's games, which are difficult in these rooms.

Corridors with dimensions in excess of the minimum dimensions in addition, contribute to creating buffer zones between spaces which would otherwise be difficult to juxtapose (ex.: juxtaposing a living room and a bedroom).

Recommendations

As far as possible corridors should be larger than the minimum prescribed by the National Building Code and be considered and designed as living spaces rather than be considered strictly as access ways. This would foster the personalization of these spaces in addition to acting as a safety valve for space pressures which build up within the dwelling and its rooms.

All the dwellings should have a transition zone between the entrance way and the rest of the house (Figure 3.28). At the entrance way, the corridor should become wider to form a location where one could meet one's guests or an entrance hall so that there is a place to accommodate visitors without either having them stand in the doorway itself or having them infringe on the privacy of living spaces.

The corridors should have natural lighting to the same extent as the other living spaces.

3.2.4 The partitions between the rooms as well as those between rooms and corridors have doors of varying widths

Observations

Doors as separating elements are major factors to ensure that a dwelling functions properly. They play an important role in ensuring privacy (ex.: the parents bedroom) and territoriality (ex.: adolescent's bedroom). It is also through the use of doors that incompatible activities (ex.: sleeping vs entertaining) can occur simultaneously without creating problems. Doors as separating elements struck us as being particularly important when several adults (including older adolescents) share the same dwelling.

Figure 3.27. Photograph of the corridor in the one-storey house occupied by **Household 13**. Corridors with widths not exceeding minimal dimensions are usually impersonal and unoccupied areas (1303-3).



Figure 3.28. Photograph of the entrance hall of the two-storey house occupied by **Household 05**. This space creates a buffer zone between the entrance way and the rest of the house and is personalized by the presence of a bookcase, pictures, knick-knacks, and a mirror. There is abundant lighting due to the glazing in the entrance way door, which no doubt had fostered use of this space as a play area when the children were young (0502).



Doors as connecting elements assume a role which is equally important. Their main role, of course, to provide access to all the rooms (ex.: link between corridor-room); they also assume an essential role when it becomes desirable, and they make it possible to combine certain rooms (ex.: living room, dining room). Doors as connecting elements struck us as being particularly important in the case of households with young children and where the possibility of exercising supervision over the whole dwelling was necessary (Figure 3.29).

Based on the preceding observations, the conclusion is that doors must be found not only between corridors and rooms, but also between certain rooms which one may wish to combine.

Another fact, based on the preceding observations, is that the width of doors should vary. In fact, it is not sufficient that a door may be opened, left ajar or closed; a door the role of which is limited to providing access to a room could be narrow (ex.: 750 mm) whereas a door used to combine two rooms should be at least twice as wide (ex.: 1 500 mm).

Recommendation

To maximize the flexibility of the dwelling, the partitions separating the rooms as well as partitions separating rooms and corridors should have doors (Figure 3.30) of varying widths (single or double) thus making it possible to combine or to separate spaces as desired.

The location and the width of these doors should be determined based on several hypothetical occupancy scenarios for the dwelling.

Figure 3.29. Photograph of the entrance hall of the two-storey house occupied by **Household 03** showing the pivoting partition system separating this room from the dining room. This system makes it possible to adjust the visual relationship between these two rooms and is particularly appreciated by the father who can both isolate himself in the dining room and keep an eye on the small children who are playing in the neighboring rooms (0302).

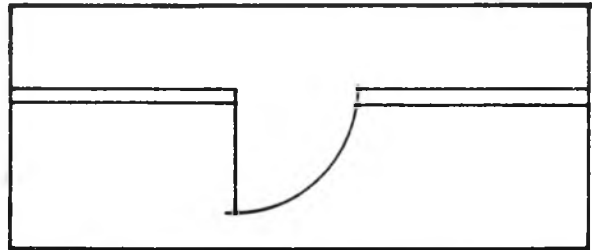


Figure 3.30. To maximize the flexibility of the dwelling, the partitions separating rooms as well as the partitions separating rooms and corridors should have doors with varying widths. Here are a few examples of doors as well as their main advantages and disadvantages. Drawings not to scale (also see the following pages)

SINGLE DOOR

Advantages

- the most common and less costly



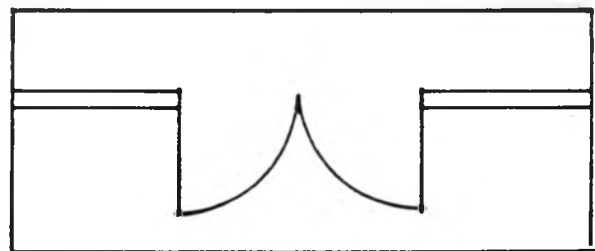
Disadvantages

- takes up a lot of space in the room into which it opens;
- is only used as an access way;
- not wide enough to visually combine two spaces.

DOUBLE HINGED DOOR

Advantages

- makes it possible to visually combine two spaces;
- less expensive than the double sliding door (concealed)



Disadvantages

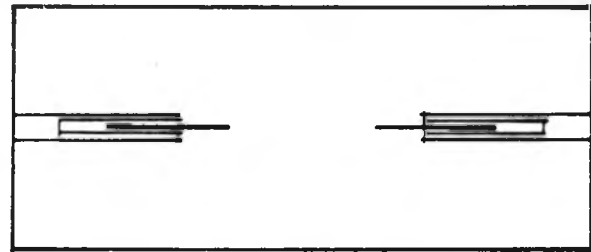
- takes up a lot of space in the room.

Figure 3.30. (continued)

BUILT-IN DOUBLE SLIDING DOOR (CONCEALED)

Advantages

- makes it possible to visually combine two spaces;
- makes it possible to adjust the door to be the precise opening desired;
- does not take up any space in the rooms.



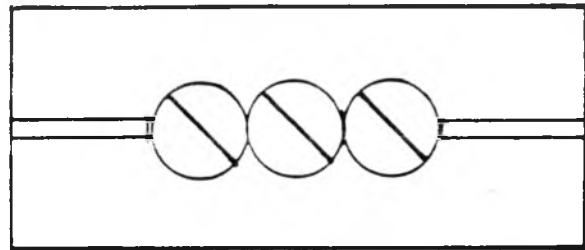
Disadvantages

- high cost.

PIVOTING DOOR

Advantages

- the number and the width of the panels can vary;
- makes it possible to adjust the door to the precise opening desired.



Disadvantages

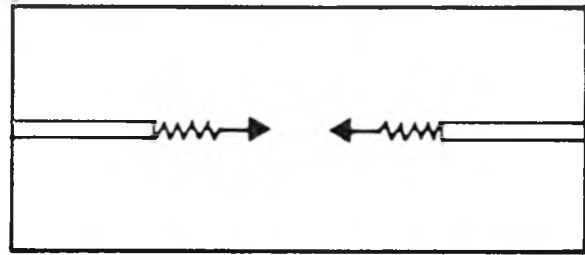
- congests space in both rooms into which the panels pivot;
- cannot visually combine two spaces completely
- poor acoustic performance.
- product is not standardized.

Figure 3.30. (continued)

DOUBLE ACCORDION DOOR

Advantages

- makes it possible to visually combine two spaces;
- does not take up any space.



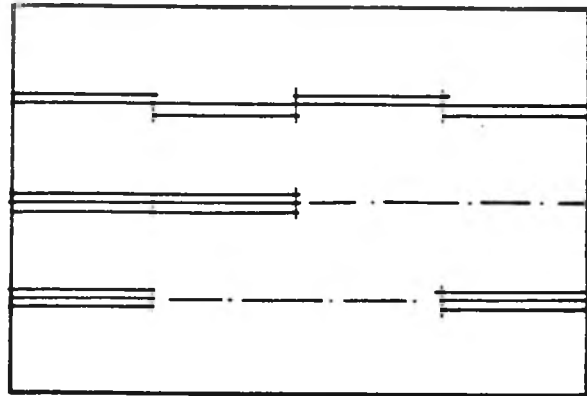
Disadvantages

- institutional and unaesthetic appearance;
- occupies a part of the opening even when it is open;
- poor acoustic performance.

SLIDING DOORS

Advantages

- makes it possible to visually combine two spaces;
- makes it possible to adjust the door to the precise opening desired;
- makes it possible to vary the location of the opening;
- does not congest space.



Disadvantages

- poor acoustic performance unless one is willing to pay a high price.

Figure 3.30. (continued)

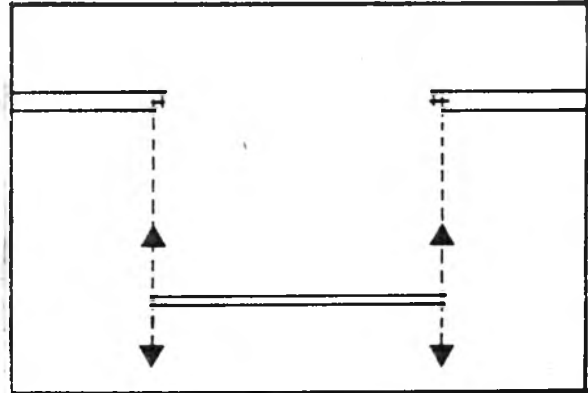
MOVABLE PANEL

Advantages

- makes it possible to visually combine two spaces and to eliminate any trace of a door;

Disadvantages

- problem of storing the movable panel;
- poor acoustic performance if the panel is light;
- difficulty of moving the panel if it is heavy.



As a conclusion to this chapter, we present for you below a summary of the recommendations made in the two preceding sections. We would have preferred to rank these recommendations by order of importance but we did not succeed in making all the very fine distinctions which we would have hoped to make. We do insist on pointing out, however, the very great importance which, in our opinion, should be granted to the following recommendation:

The dwelling should contain open and unfinished spaces such as the basement, in order to accommodate unforeseeable functions and in order to allow the occupants to finish these spaces in accordance with their tastes. The main architectural design features which contribute to optimum use of basements are: natural lighting, minimum depth of the basement under ground, direct access to the outside, the regrouping of fixed spaces and systems, the presence of certain services and the link with the rest of the dwelling (3.1.11).

This recommendation was part of our series of hypotheses at the beginning of the study but we had not imagined that it would prove so important. In fact, as we pointed out in the conclusions to chapter 2 (section 2.3.4), the basement becomes an outlet for a large range of functions (section 1.8.12) which cannot be accommodated elsewhere in the dwelling. Thus it seems that the basement becomes the natural spot to handle the dwelling's "excess luggage" which means that this space makes it possible for many types of adjustments which would not be possible elsewhere.

Here then is a summary of the other architectural characteristics which a dwelling and its rooms should have:

(1) The dwelling should be located in an architectural framework allowing for the dwelling to expand and to contract. The plexes and single-family houses lend themselves well to these major adjustments under certain

conditions such as, for example, the presence of a well lighted basement with direct access to the outside (section 3.1.1).

(2) The spaces in the dwelling should be organized so as to foster minor adjustments. The main elements of architectural design contributing to these minor adjustments are: the topology of the rooms, the proportions of the rooms, the number of different levels, the location and mobility of the closets, the location of the fixed features of the dwelling, and the width of openings between the rooms (section 3.1.2).

(3) The spaces in the dwelling should be organized to make it possible to create activity zones and visual and acoustical niches for everyone. The main features of the defined architectural design contributing to the creation of these zones are: the presence of doors and partitions, the presence of a main entrance and a secondary entrance, the shape (linear rather than concentric) of the dwelling, clearly defined corridors, the presence of more than one level and the presence of buffer zones (section 3.1.3).

(4) The spaces and the fixed systems such as stairways, utility rooms, bathrooms, chimneys and plumbing stacks, should all be grouped together in the same area to make it easier to create new rooms (section 3.1.4).

(5) There should be a minimum of load bearing partitions and columns should be kept to a minimum, and it should be relatively easy to make openings in the exterior envelope, the frame and the partitions without affecting the structural integrity of the building (section 3.1.5).

(6) The dwelling should contain two complete bathrooms to allow the occupants to use them in complete privacy without having to stand in line (section 3.1.6).

(7) The dwelling should contain two separate eating areas so that different activities requiring a table may occur simultaneously without any problems

and to allow for both formal and informal meals (section 3.1.7).

(8) The dwelling should contain two distinct living areas so that different activities (formal/informal, dirty/clean, passive/active, etc.) can occur simultaneously without any problems (section 3.1.8).

(9) The dwelling should contain spaces reserved for storing bulky articles so that the latter do not end up cluttering spaces intended for traffic or for other functions (section 3.1.9).

(10)The main and the secondary entrance ways should not open directly onto living spaces so as not to limit the function of these latter spaces (section 3.1.10).

(11)Each of the rooms should have a neutral and ambiguous shape as well as an area and dimensions which are above minimal standards so as not to limit their use to one function (section 3.2.1).

(12)Each of the rooms should have a simple shape and the doors and windows in the room should be located so as to maximize the possibility for re-arranging the furniture (section 3.2.2).

(13)The corridors should be considered and designed as living spaces rather than mere access ways (section 3.2.3).

(14)The partitions separating the rooms as well as the rooms and corridors should have doors with varying widths thus making it possible to combine or separate the spaces between which the connections could sometimes be desirable or undesirable (section 3.2.4).

APPENDIX 1: DESCRIPTION OF MODELS AND DEFINITION OF CONCEPTS BASED ON WHICH THE THEORETICAL FRAMEWORK WAS DEVELOPED

1.0 RESIDENTIAL SATISFACTION

According to Michelson (1977) and Becker (1977), most households assess their current situation as pertains to housing, on one hand, in relation to an ideal housing model and on the other hand, in relation to their past experience. The picture that an individual has of his/her ideal house is the end result of ideas that he/she has accumulated over the years, concerning all the positive features which his/her house should have. This picture is determined partially by his/her residential history; by his/her education, by the experience that each individual has been able to accumulate concerning various forms of habitat through the media, travel and magazines; by cultural and social pressures applied by the family, friends and employers. This picture of the ideal house is generally three dimensional: (1) physical dimension (ex.: geographic location and type of dwelling sought); (2) social dimension (ex.: type of intra and extra family interaction desired); (3) economic dimension (ex.: savings or investments sought). Becker (1977) stipulates, however, that the individual, in assessing his/her current situation as pertains to housing acts in a very realistic and rational manner, weighting the assessment by introducing what he calls the components of the situation (ex.: anticipated length of stay in current habitat, availability of certain types of housing and their relative costs in relation to other types of housing, stage in life cycle and perceived locus of control (i.e.: perception of being able to control everything that happens to us vs. having the impression of being controlled by exterior forces). It is due to this realistic attitude, according to Becker (1977), that one finds individuals who express a high degree of satisfaction in relation to their current housing even if there is an important gap between their current housing situation and their ideal house.

When realism and rationalization are not successful in eliminating "dissonance" (Festinger, 1976), between the current dwelling and the ideal habitat dwelling, the individual has three avenues of action according to Becker (1977):

- ° modify or adjust his/her housing (personalization);
- ° modify his/her attitude, for example concentrate his/her attention on the positive aspects (focusing);
- ° move (substitution).

2.0 ENVIRONMENTAL COMPETENCE

Humanistic psychologists, for example Rogers (1961) and Lessard and Jutras (1984) affirm that the human being has a basic tendency to actualize him/herself. Jutras and Cullen (1983) define this tendency as a desire to make full use of actualizing one's potential as a human being and they see in this actualization the basis for an incentive to establish optimal relations with the environment, an incentive which many psychologists, (Lantermann, 1976; Leff, 1978, Steele, 1973), associate with ENVIRONMENTAL COMPETENCE. According to Steele, environmental competence is based on two types of aptitudes: (1) being aware of one's environment as well as its influence on each of us and (2) being able to modify one's environment or the use of one's environment without destroying it to make it more adequate in relation to one's needs. Jutras and Cullen (1983) on the other hand, define environmental competence as an iterative process characterized both by a motivation to negotiate effectively with the environment and by the result of this negotiation. If the result of the action generated by the motivation is positive, the person has a feeling of efficiency, of control, of being able to master his/her environment, and consequently a feeling of satisfaction. In the opposite case, the person will probably perceive

him/herself as being incapable, weak, in a word, incompetent. "A person who succeeds in finishing his/her living room, or his/her basement in a pleasing way, according to Jutras and Cullen (1983), experience a feeling of competence; he/she has been able to meet his/her spatial needs."

Jutras and Cullen (1983) subsequently outline five stages in the environmental competence process based on previous work done by Lantermann (1976) and Steele (1973);

- (1) "Becoming aware of one's needs and one's objectives" (see section 5.0 for our definition of need).
- (2) "Understanding, perceiving the elements of the situation which are relevant based on the intention".

We associate this stage with that in the process described by Becker (1977), where the individual weights his/her assessment of the current situation based on the components of the situation.

- (3) "Plan the action".

We associate this stage with that in the process described by Becker (1977), where the individual wonders whether he is going to change his environment, change his behavior or move.

- (4) "Act on the person-environment relation through the physical environment, an action which Sonnenfeld (1966) refers to as the adjustment, and/or by a change in the person (adaptation according to Sonnenfeld)".

There is evidently a clear correlation between the notions described by

Becker	and	Sonenfeld
modify one's environment	:	adjustment
modify one's attitude	:	adaptation

(5) "Assess whether the change made has generated a more adequate person-environment relation".

This is equivalent to starting the cycle which we have just described in (1).

These stages correspond to the main phases involved in problem solving adopted by scientists and which are increasingly used by people working in the urban planning field. In fact, according to Jutras and Cullen (1983), these stages may often overlap. Nevertheless, making a clear distinction between each of them makes it possible for us to highlight the critical aspects of the process to be in a position eventually to support them.

The ability to resolve problems is more or less innate. According to Jutras and Cullen (1983), it is based on a cognitive maturation, the end result of deliberate training, psychological, social and architectural conditions support this. Specifically, the environmental competence used in the resolution of an environmental problem is tested by a series of idiosyncratic, social and architectural obstacles.

2.1 **Obstacles of an idiosyncratic and psychological nature**

Among the idiosyncratic attitudes identified by Steele (1973) there is apparently the perceived locus of control (internal/external); the capacity of being able to recognize one's needs and to clarify ones objectives; the lack of self-esteem, the fear of making irreversible changes; lack of knowledge, of know-how, or of financial resources.

2.2 **Obstacles of a social nature**

Socially, the individual can extricate him/herself from the physical environment (Steele, 1973) because there is a disagreement as to the goals which are pursued. There may also be territorial standards which govern the use of space to the point where calling them into question literally corresponds to initiating quarrels. Family standards which dictate the behavior of members of the family may specify the environmental actions as acceptable or not. Likewise, the absence of communication between the members does not foster the implementation of environmental modifications.

2.3 **Obstacles of an architectural nature**

Two sources (Rabaneck, Sheppard and Town, 1974; Rapoport, 1968) were used by us concerning the obstacles of an architectural nature inhibiting appropriation. Given that there was certain overlapping between these two sources we put all the information that we received from them into one list. Here then are a few examples of what these authors consider as being obstacles of an architectural nature:

- (1) the dwelling was designed for a certain type of household (ex.: nuclear family) and it is difficult to reconcile the dwelling with another type of household (ex.: non-family household);
- (2) the dwelling was designed to accommodate a certain kind of life style (ex.: family whose members do not need clearly differentiated personal living spaces) but could not accommodate a family which does not share that life style (ex.: family where the members need to be alone);
- (3) the dwelling, both the interior as well as on the exterior, does not contain spaces designed to foster appropriation (ex.: unfinished basement);

- (4) the dwelling, because it does not present a clear distinction between the front and the rear, between the public and private areas, between the passive and the active areas, does not foster certain types of appropriation;
- (5) the type of construction (ex.: reinforced concrete) does not lend itself to modifications;
- (6) the interior finish materials (ex.: concrete block) do not foster individual expression);
- (7) the rooms in the dwelling have built-in elements (ex.: clothes closet, furniture, ceiling light) which are very closely related to the function which is planned for the room and consequently limit the use and the possibility of rearranging the furniture in this room;
- (8) the spaces designed for traffic (hallway, corridors) have minimum dimensions and cannot accommodate other functions (ex: children's games);

3.0 **NEEDS**

We define the concept "need" as being a state of imbalance between, on the one hand, our expectations and tendencies and on the other hand, the influence exercised by our environment. To eliminate this state of imbalance, the individual has recourse to various activities.

Based on Steele (1973) who claims that our environment should accommodate the functions related to an individual's needs, we have identified four categories of need:

3.1 **ELEMENTARY NEEDS**

These involve physiological and physical needs associated with shelter, health and security, such as eating, breathing, being protected from the natural elements (rain, wind, etc.). The environment must support these needs to deploy other functions.

3.2 **FUNCTIONAL NEEDS**

This involves the need to be able to engage in individual or group activities as effectively as possible; this need particularly involves action-related activities.

Depending on the categories of tasks involved, certain characteristics of the environment should be given priority. This could be the relation between the rooms, the use assigned to the rooms, the shape of the rooms, etc.

3.3 **PSYCHOLOGICAL NEEDS**

These needs are found at four levels: the sensory, emotional, symbolic and cognitive levels. At the sensory level, this involves the need to be in a position to control the quantity and quality of immediate stimuli (noise, odor, etc.); at the emotional level this involves the need of experiencing the pleasure of being in an environment which one deems beautiful, pleasant, aesthetic and stimulating; at the symbolic level, this involves the need to be able to identify oneself symbolically with a place (territory) which one considers one's own and the need to be able to communicate, using this place and the objects it contains, with the rest of society; at the cognitive level, this involves the need to be able to understand, to get one's bearings and to feel at home in one's environment, as well as the need to develop, learn, grow, and to actualize one's total potential in one's environment.

3.4

SOCIAL NEEDS

This involves the need to have social contacts. The environment can exercise an influence on the number and the quality of these social contacts. The very properties of this environment will either foster or exhibit social contacts, i.e. the arrangement of the resources, the position of people in relation to the activities and the possibility of movement).

4.0

EVENTS

We believe that this periodic, full realization of one's needs (i.e. "this perpetual questioning of the occupant/dwelling relation while being influenced by such variables as environmental competence, the ideal housing model and past experience is generated by a succession of events which characterize the life of the people" (ex.: the transition from childhood to adolescence, the decision of one of the parents to go back to school, the temporary lodging of a relative, change in status or income, etc.). Based on Warshaw et al. (1973), three types of events apparently generate a questioning of the needs: (1) changes in the life style (ex.: variation in the relative importance which one grants to certain functions in relation to others in the dwelling); (2) changes in the life cycle (ex.: modification of family structure, new child, departure of an adolescent, inviting the grandmother who lives alone to stay with the family, etc.); (3) changes in the "staff" resources (i.e. a family with three children between 15 and 19 years of age has a higher work potential than a family with two younger children) and in monetary resources (ex.: an improvement in family income due to the development of a remunerative activity of the lady of the house).

5.0

SPACE APPROPRIATION

Space appropriation, according to Haumont (1976) can be defined as a series of practices relating to the dwelling and its immediate environment.

According to Haumont there are apparently two complementary appropriation practices: organizing the space in which one lives and personalizing it. For the purposes of this study, we will associate these two practices with the concept of adjustment.

5.1 ORGANIZING THE DWELLING AND USE ASSIGNED TO THE ROOMS

Organizing one's dwelling means differentiating between spaces which can be called "corners" or "rooms" (Haumont, 1976). For us this also means choosing policy for the use of the rooms in one's dwelling, and this includes assigning both people and uses to rooms. The user organizes his/her unit in line with cultural and social models, according to many authors (Graff, 1976; Bayazit, 1976; Haumont, 1976). According to these research workers, these models include in particular sociability (and privacy), family organization (parent-child relations, masculine-feminine roles) and sexuality. Thus the architecture of the dwelling becomes restrictive (Haumont, 1976) when it does not take into consideration these cultural and social models (ex.: absence of doors between certain rooms, absence of certain rooms, etc.) or when it imposes on the residents certain layouts which correspond to models with which the residents are not familiar. Lastly, in an historical research paper, Barbey (1976) reminds us and shows that cultural models change over time and that the use of the dwelling in a society evolves simultaneously.

5.2 MODIFICATION OR ADJUSTMENT OF A DWELLING

Changing one's dwelling according to Lugassy (1976) and Leroy (1976) means, among other things, personalizing one's dwelling (i.e. using objects to symbolically qualify the space in reference to relations which one has with one's body, to one's personal goals, to the image which one wants to project, to one's social position, to one's desire to make a name for him/herself or for his/her family). These research workers also insist on the importance of time in the appropriation process.

Personally identifying one's dwelling, according to Maria Petit (1976) means appropriating space in a relation which is not one-sided: "the space appropriated becomes appropriating ... in the relation with space, it is the very existence itself of the human being which is in question in the "how" of his/her presence in the world"; from which, the difficulties linked to moving can produce somatic and psychological problems for the resident; from which, the anxiety felt by the victims of eviction procedures, can experience the pain of actual depersonalization.

The importance of the social environment and of the social models in personalizing one's dwelling is pointed out by Mazarat (1976) and by Latour Dejean (1976).

Becker (1977) in addition distinguishes between three types of modifications or adjustments in one's dwelling: the first, which he qualifies as decorative, corresponds to the preceding definitions given by Lugassy and Leroy; the second, which he qualifies as functional, illustrates the role of functional investments in space (ex.: building closets, adding an electric outlet in one room, etc.), and the third, which he qualifies as functional and decorative (ex.: finishing a basement), seems to us to be slightly ambiguous in nature.

The obstacles to personally identifying one's space, according to Haumont (1976), are economic, regulatory (tenants and the owners of condominium units are not allowed to put their personal stamp on the façade for example), and architectural (pre-determination of use of space, use of certain materials, etc.).

APPENDIX 2: INTERVIEW GUIDE

Fill out this page prior to the interview

**FAMILY DYNAMICS, RESIDENTIAL ADJUSTMENTS,
AND FLEXIBILITY OF THE DWELLING**

ANNEX 2: INTERVIEW GUIDE

1. Subject Number _____
2. Card Number _____
3. Single Family House ()¹ Plex ()²
4. Special Remarks: _____

5. Participant's Name _____
6. Telephone Number _____
7. Address _____
8. Cross Street: _____
9. Date scheduled for the interview: _____

	Day	Date	Time
1st	_____	_____	_____
2nd	_____	_____	_____
3rd	_____	_____	_____
4th	_____	_____	_____

10. Person responsible for the interview: _____
11. Assistant (interview): _____
12. Person responsible for the summary: _____
13. Preparing photos: _____
14. Remarks: _____

MEETING (PROCEDURE TO FOLLOW)

Hello,

May I talk to Mr., Mrs. (6) (11):

My name is Pierre Teasdale. I am a professor at the Faculty of Architecture of the University of Montreal and I am calling you about the study which we are carrying out on housing about which _____ a student at the university has undoubtedly already talked to you.

I would like to know whether you are still willing to grant us an interview and to set a date and a time for us to meet you. Our visit should last approximately two hours.

- . Yes we agree () 1. and 3.
- . What does this involve () 2. and 3.
- . We do not agree () Thanks and excuse us for having bothered you.

1. Meeting

Day _____ Date _____ Hour _____

2. Our study deals with the relation which exists between changes which occur in people's lives and the modifications which these people make in their dwelling to adapt it to their needs.

To do this, we shall interview families who have occupied the same dwelling for at least ten years to see how they have succeeded, over the years, in adapting their dwelling to their needs.

Thus we hope to be able to identify the characteristics of the dwelling which inhibit or foster the development of the family to its full potential.

This will make it possible for us to provide advice and recommendations for architects to assist them in renovation work and in designing more flexible dwellings.

3. Before finalizing this meeting, I would like to verify with you, however, certain information in order to ensure that the main characteristics of your family and of your dwelling correspond to those which we are looking for, for methodological reasons.
 - a. Will it be possible to interview one or more members of your family who have occupied your dwelling since the beginning (i.e. since it was purchased)?
 - b. Then verify the pertinent participation criteria among points 6 to 19 on the form inserted on the next page.

Lastly, I would appreciate having your permission to take photos during my visit since I will need this information for my study.

I thus want to thank you for granting me this interview which will be:

Day _____ Date _____ Hour _____

in the company of two female students of one male and one female student.

If for any reason, this date becomes impossible, I would appreciate your informing me the day before by telephone. My number is 876-1881.

Once again, I truly appreciate your co-operation.

INTERVIEW (INTRODUCTION PROTOCOL)

Hello,

I am Pierre Teasdale and I would like to introduce you to my co-workers:

Gabrielle Léger

Johanne Guertin

France Duhamel

Patrick Pretty

Before beginning the interview itself, I would like to explain to you why there are three of us and how we would like to proceed.

Usually, our procedure is that two of us interview you while the third person sketches the various rooms of the house.

Once we complete the interview, we shall take the dimensions of each of the rooms and the person who has made the sketch will indicate these dimensions on his/her sketch.

Thus the main reason why there are three of us is to minimize the time that we will spend with you.

For the same reason, we would appreciate your allowing us to record our conversation since even if we try to take note of everything that you say, we would like to be certain not to lose anything.

Rest assured in any case that the information which you provide will be treated as highly confidential.

It is important for us that you answer all the questions but it is also important that you realize that **YOU DO HAVE THE RIGHT, HOWEVER, TO REFUSE TO REPLY TO ANY OF THE QUESTIONS WHICH WE ASK YOU.**

MAIN COMPONENTS OF THE STUDY

In general then, we have five series of questions to ask you, and these will deal with the following subjects:

First of all, a series of questions concerning

- ° **THE CHARACTERISTICS OF YOUR FAMILY**

A second series of questions concerning

- ° **FORMER DWELLINGS**

A third series of questions concerning

- ° **YOUR CURRENT DWELLING**

A fourth series of questions concerning

- ° **YOUR IDEAL DWELLING**

And lastly, a final series of questions concerning

- ° **THE CHANGES WHICH YOU HAVE MADE IN YOUR DWELLING SINCE YOU MOVED IN**

We shall begin with the first series of questions dealing with the characteristics of your family.

N.B.: The questions are to be asked by order of preference:

- (1) to the spouse who has lived in this dwelling for the longest period of time;
- (2) to the spouse who spends the most time in the home; this should not prevent the other members of the family from participating in the interview. The interventions made by these latter people will have to be identified, however.

FAMILY

15. Person Interviewed

Father ()¹ Mother ()² Other (stipulate) ()³

16. How long have you lived in this house? ()

17. How many people live here? ()

18.

19.

20.

21.

22.

23.

Relation with other people*	Age	Sex M=1 F=2	Civil status single=1 married=2 separ.=3 div.=4 widow=5	** Occupation	Total Number of years of edu- cation
					9 10 11 12 13 14 15 16
					17 18 19 20 21 22 23 24
					25 26 27 28 29 30 31 32
					33 34 35 36 37 38 39 40
					41 42 43 44 45 46 47 48
					49 50 51 52 53 54 55 56

* write the first names of these people below the figure.

** Once the interview is completed, code each of the occupations using the occupation categories suggested in the "Sample: participation criteria" form, p. 4 (of questionnaire).

24. Do all the people that you have just mentioned live here full time?

yes ()¹

no ()²

25. If all the people that you have just mentioned do not live here full time, who are they and why do they not live here full time?

26. Are there other people that you have not mentioned who do not live here full time but who regularly stay in your dwelling?

| yes () | Q.27

| no () | Q.28

27. In the affirmative, who are these people?

28. Has the composition of your household remained the same since you moved into this dwelling?

| yes ()¹ | following page

| no ()² | Q.29

29. In the negative, could you explain to me how and when the composition of your household changed?

PROBE: Have other people for example, a grandfather, a grandmother, or another child ever lived here?

DESCRIBE FOR ME THE VARIOUS CHANGES WHICH HAVE OCCURRED IN THE MAKE-UP OF YOUR FAMILY IN THIS DWELLING STARTING WITH THE MOST RECENT.

Number of people	Period	Relations between these people
------------------	--------	--------------------------------

Example:

3	78-86	Father, mother, son
4	71-77	Father, mother, son, daughter
5	68-70	Father, mother, son, daughter, daughter
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

30. Are there other members of your family who live or have lived in another unit which is part of this same building?

yes () ²

Q.31

no () ³

following page

31. In the affirmative, what is/was the relation between you and these people?

How long did they occupy this other unit?

Example:

Brother of the mistress
of the house

65-83

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

33. What is the employment status of the man of the house?

- Does he work full time? (outside the house) _____ ()¹
- Does he work part time (outside the house) _____ ()²
- Is he looking for work? _____ ()³
- Is he retired? _____ ()⁴
- Other (stipulate) _____ ()⁵
- Does not apply _____ ()⁶

34. What is the employment status of the lady of the house?

- Does she work full time? (outside the house) _____ ()¹
- Does she work part time? (outside the house) _____ ()²
- Is she looking for work? _____ ()³
- Is she retired? _____ ()⁴
- Other (stipulate) _____ ()⁵
- Does not apply _____ ()⁶

35. What is the approximate combined annual income of all the members of your family? Is it ...

- less than \$20,000 _____ ()¹
- between \$20,000 and \$40,000 _____ ()²
- between \$40,001 and \$60,000 _____ ()³
- between \$60,001 and \$80,000 _____ ()⁴
- more than \$80,000 _____ ()⁵

In addition to the details which you have just given me concerning the history of your family, it would be useful to me if you could provide me with a list of important events which have taken place during your life since you have lived in this house.

I am interested in these events as they may have an important influence on the relation which exists between the dwelling and its occupants.

To assist you in replying to this question, I am going to give you an initial list of events which could have occurred. Subsequently, you can add to this list as you wish.

36. Since you have moved into this dwelling have there been any ...

37. In what year?

- 1. births yes ()¹ no ()² _____
- 2. sickness yes ()¹ no ()² _____
- 3. deaths yes ()¹ no ()² _____
- 4. departures by
 children yes ()¹ no ()² _____
- 5. return of a child yes ()¹ no ()² _____
- 6. departure of one
 of the spouses yes ()¹ no ()² _____
- 7. change in spouses yes ()¹ no ()² _____
- 8. changes in
 employment yes ()¹ no ()² _____
- 9. other _____
- 10. other _____
- 11. other _____
- 12. other _____
- 13. other _____
- 14. other _____

38. What are the needs or problems associated with the shape or the use of your dwelling which became apparent when each of these events occurred?

Events

Needs/Problems

Examples:

Birth of a child

Space problem

Change of spouses

Need to redecorate and

Changed partners

start anew

FORMER DWELLING

Now I would like to ask you a certain number of questions concerning your former dwellings...

SOMETIMES EXPERIENCES WHICH EACH OF US LIVE IN OTHER HOUSES OR DWELLINGS CAN INFLUENCE THE PERCEPTION WHICH WE HAVE OF OUR PRESENT DWELLING.

TO ASSIST US IN UNDERSTANDING HOW THESE EXPERIENCES COULD HAVE HAD AN INFLUENCE ON YOUR PERCEPTION OF YOUR CURRENT DWELLING, I WOULD LIKE YOU TO TALK TO ME A LITTLE ABOUT EACH OF THE DWELLINGS IN WHICH YOU HAVE LIVED PRIOR TO COMING HERE.

Thus I am going to ask you a series of questions concerning each of these dwellings beginning with the one which you occupied just prior to moving into this house.

MODEL INDEX CARD (FORMER DWELLING)

Number of the dwelling beginning with the one in which you lived just prior to moving into this dwelling.

39. Where was this dwelling located?

(street, district, city)

40. How many years did you live there? ()

41. At what stage of your life?

- ° lived with parents _____ ()¹
- ° had left parents (without children) _____ ()²
- ° had left parents (with children) _____ ()³
- ° other (stipulate) _____ ()⁴

42. Type of dwelling?

- ° single family _____ ()¹
- ° plex _____ ()²
- ° apartment (4 storeys or less) _____ ()³
- ° apartment (4 storeys or more) _____ ()⁴
- ° other _____ ()⁵

43. At that time were you (or your parents) homeowners ()¹
or tenants ()²

44. How many people lived there? _____ ()

45. How many bedrooms were there in this dwelling? _____ ()

46. What are the most important details about this dwelling which come to mind when you think back on this period?

ATTITUDE (PRESENT DWELLING)

If I am not mistaken then, you must have lived in () different dwellings, including this dwelling, since your birth.

NOW I WOULD LIKE TO ASK YOU A CERTAIN NUMBER OF QUESTIONS CONCERNING YOUR PRESENT DWELLING.

47. Were you the original owners of this house?

yes () ¹

Q.48

no () ²

Q.50

48. In the affirmative, was this dwelling specially designed for your family?

yes () ¹

Q.49

no () ²

Q.50

49. In the affirmative, was it designed ...

by you? _____ ()¹

by an architect? _____ ()²

by another person? _____ ()³

50. What made you choose this house rather than another one when you bought it?

PROBE: ... in addition to the price and the site.

N.B.: IF YOU HAVE ANSWERED IN THE AFFIRMATIVE TO QUESTION 48, FORMULATE THE QUESTION: What motivated you to give this particular shape to your house rather than another when it was designed?

51. Could you tell me the municipal assessment or value for your house?

Amount: \$ _____

52. Do you own a secondary residence?

yes ()¹

Q.53

no ()²

Following page

53. If you are the owner of a secondary residence, could you describe it for me?

ATTITUDE (MAIN PASTIMES)

54. Now I would like to know, outside of your work, what are your main pastimes? (i.e. what do you do most of the time?)

PROBE: Do you go to receptions, spend quiet evenings at home, go to the movies and plays, travel, participate in sports activities, invite friends over, go to restaurants, go shopping, decorate your house, go on trips, work, watch television, etc.?

ATTITUDE (PRESENT DWELLING)

55. At the present time, what are the most positive aspects of this dwelling, not only for you but also for your family?

PROBE: Apart from the district ... what are the elements, the spaces or the relations which exist between the spaces which you cherish the most?

For whom are these aspects particularly positive?

ATTITUDE (PRESENT DWELLING)

56. Conversely, at the present time, what are the most negative aspects of this dwelling, not only for you but also for your family?

PROBE: Apart from the district .. what are the elements, the spaces or the relations which exist between the spaces which you cherish the least?

For whom are these aspects particularly negative?

N.B.

Subsequent to the pre-test, the questions 39 to 64 were revised and replaced by questions 39 to 56. Thus there are no longer any questions bearing the numbers 57 to 64.

ATTITUDES AND BEHAVIORS (PRESENT DWELLING)

65. Has your dwelling, over the years, been able to adapt to the changing needs of each of the members of your family?

PROBE: I would like you to think back in particular to a time when the children went from childhood to adolescence or from adolescence to adult age.

yes () ¹

why?

no () ²

Q.66 and Q.67

66. In the negative, list the members of the family and the corresponding needs which were not met.

Members
(names of persons)

Needs not met
(description)

67. How did each of these people cope with this situation?

Members
(names of persons)

Needs not met
(description)

ASPIRATIONS

NOW THAT YOU HAVE INFORMED ME RATHER CLEARLY OF YOUR PAST EXPERIENCES AS WELL AS YOUR FEELINGS IN RELATION TO YOUR PRESENT SITUATION, I WOULD LIKE TO ASK YOU A CERTAIN NUMBER OF QUESTIONS CONCERNING YOUR ASPIRATIONS AND FUTURE INTENTIONS AS PERTAINS TO HOUSING.

68. Do you find that this dwelling suits your current situation considering your values and life-style?

yes () ¹

following page

no () ²

Q.69

69. In the negative, why do you find that this dwelling does not suit your present situation?

ASPIRATIONS

70. Considering your current situation, what would be an ideal dwelling for you?

71. Do you think that all the members of your family would agree with your conception of an ideal dwelling?

yes () ¹	following page	no () ²	Q.72d
----------------------	----------------	---------------------	-------

72. In the negative, how do they perceive an ideal dwelling?

73. Do you wish to continue living here indefinitely or are you thinking of moving in the short or long term?

- ° wish to continue living here ()¹ Q.78
- ° thinking of moving eventually ()² Q.74

74. If you are thinking of moving eventually, what type of tenure are you thinking of?

- ° homeowner ()¹
- ° condominium owner ()²
- ° tenant ()³
- ° other (describe) ()⁴

ASPIRATIONS

75. Into what type of dwelling do you intend to move?

- ° single family ()¹
- ° plex ()²
- ° other (describe) ()³
- ° apartment (4 storeys-) ()⁴
- ° apartment (5 storeys+) ()⁵

76. If you are thinking of moving, what will be your criteria for choosing a new dwelling?

77. At the present time are you looking for another dwelling?

yes ()¹

no ()²

RESIDENTIAL ADJUSTMENTS

NOW WE WOULD LIKE TO MAKE AN INVENTORY WITH YOU OF THE CHANGES WHICH YOU HAVE MADE IN YOUR DWELLING OR IN ITS USE SINCE YOU HAVE MOVED IN.

WE ARE PREPARING THIS INVENTORY TO EVALUATE THE DEGREE OF FLEXIBILITY WITH WHICH YOUR DWELLING HAS ADAPTED TO YOUR CHANGING NEEDS OVER THE YEARS.

ESSENTIALLY, WE ARE INTERESTED IN IDENTIFYING TWO TYPES OF CHANGES.

FIRST OF ALL: CHANGES IN USE WHICH HAVE OCCURRED IN CERTAIN ROOMS; FOR EXAMPLE, A BEDROOM WHICH WAS CONVERTED INTO AN OFFICE.

SECONDLY, WE ARE INTERESTED IN THE PHYSICAL CHANGES WHICH YOU HAVE MADE TO YOUR DWELLING; FOR EXAMPLE, ADDING OR REMOVING A PARTITION BETWEEN TWO ROOMS.

TO PREPARE THIS INVENTORY, WE WOULD LIKE TO GO THROUGH THE HOUSE WITH YOU, ROOM BY ROOM, AND TAKE A FEW PHOTOS.

MODEL INDEX CARD (MODIFICATIONS/USAGE)

78. Standardized name for the room _____

79. What are the main functions of this room?

80. Who are the main users? (first names)

81. What led you to assign this function to this room?

82. Has this room always had this function?

yes ()¹ | Q.83

no ()² | Q.84

83. In the affirmative, why?

84. In the negative, what were the successive uses and who were the successive users of this room (list starting with the most recent)?

85. What was the length of the use?

86. What led you to change the use?

MODEL INDEX CARD (MODIFICATIONS/USAGE)

87. Did this room lend itself well to changes in use?

yes ()¹ Q.88

no ()² Q.89

88. In the affirmative, why?

89. In the negative, why not?

MODEL INDEX CARD (PHYSICAL CHANGES)

90. Has the layout and the decoration of this room always been like this?

yes ()¹ Q.91

no ()² Q.92

91. In the affirmative, why?

92. In the negative, what are the physical changes which have been made to this room (provide a list starting with the most recent)

93. When were these physical changes made?

94. For what reasons or subsequent to what event were they made?

MODEL INDEX CARD (PHYSICAL CHANGES)

95. Did this room lend itself well to these changes?

yes () ¹

Q.96

no () ²

Q.97

96. In the affirmative, why?

97. In the negative, why not?

APPENDIX 3: BIBLIOGRAPHY

- ACTON, R. et al. (1980). Tractability in Housing and Neighborhood Form for Three Selected Housing Types in Boston: A Preliminary Report. Cambridge, Mass.: M.I.T. Department of Architecture.
- ALEXANDER, C., CHERMAYEFF, s. (1963). Community and Privacy. Garden City, N.Y.: Anchor Books, Doubleday and Co.
- ANDERSSON, B.E. (1974). Projet YG (Youth in Goteborg), in H. Thomas, T. Endo (Eds.): Contribution to Human Development. Vol. I: The Adolescent and His Environment (pp. 24-37). Karger: Basel
- ARCHER, J. (1984). Functional Performance of the Existing Stock, Draft: Terms of Reference. Ottawa: Société canadienne d'hypothèque et de logement. Texte inédit.
- BARBEY, G. (1976). L'appropriation des espaces du logement: tentative de cadrage théorique, in P. Korosec-Serfaty (Ed.): Appropriation de l'espace, actes de la dixième conférence internationale de psychologie de l'espace construit (pp. 225-218). Strasbourg, s.n.
- BARRETT, R. (1976). The Search Process in Residential Relocation. Environment and Behavior, Vol. 8, 169-198.
- BAYAZIT, N., YONDER, A., OZSOY, A.B. (1976). Trois niveaux du comportement reliés au besoin d'intimité dans l'appropriation des espaces d'habitation de la maison turque, in P. Korosec-Serfaty (Ed.): Appropriation de l'espace, actes de la 3ième conférence internationale de psychologie de l'espace construit (pp. 260-269). Strasbourg, s.n.

- BECHTEL, R.B. et SRIVASTRAVA, R.K. (1978). Post Occupancy Evaluation of Housing. Rapport présenté au U.S. Department of Housing and Urban Development.
- BECK, R.J., TEASDALE, P. (1977). Towards a Model for the Integration of Psychological and Social Information into the Programming of Buildings and Sites. Rapport de recherche, Université de Montréal.
- BECK, R. J., TEASDALE, P. (1977). User Generated Program for Low Rise Multiple Dwelling Housing. Lignes directrices suggérées par les occupants pour la conception d'ensembles d'habitations multi-familiales, peu élevés. Montréal: C.R.I.U., Université de Montréal.
- BECKER, F.D. et al. (1977) User Participation, Personalization and Environmental Meaning: Three Field Studies. Ithaca, N.Y.: Cornell University.
- BECKER, F.D. (1977). Housing Messages. Stroudsburg, Pa.: Dowden, Hutchinson and Ross.
- CARROLL, J., GOWLING, B., SPAZIANI, M. (1977). Residential Design Guidelines. Ottawa: City of Ottawa. Draft copy.
- COOPER, C., (1974). The House as Symbol of the Self, in J. Lang et al. (Ed.): Designing for Human Behavior. Stroudsburg, Pa: Dowden, Hutchinson and Ross.
- DIVAY, G. et al. (1982). La dynamique des espaces résidentiels: l'évolution des conditions d'habitat, version préliminaire pour fins de discussion. Montréal: INRS-URbanisation.

- ENVIRONMENTAL RESEARCH AND DEVELOPMENT FOUNDATION (1977). Post Occupancy Evaluations of Residential Environments. An international bibliography. Washington, D.C.: U.S. Department of Housing and Urban Development.
- FESTINGER, L. (1957). A Theory of Cognitive Dissonance Stanford: Stanford University Press.
- FORTIER, J. (1982). Appropriation du logement par des adolescents de 15 à 18 ans: aperçu des besoins, rapport de travail dirigé présenté en vue de l'obtention de la maîtrise en aménagement, Université de Montréal.
- GIANTURO, D.T., SMITH, H.L. (1974). The Promiscuous Teenager. Springfield, Ill.: Charles C. Thomas.
- GOULD, R. (1978). Transformation: Growth and Change in Adult Life. New York: Touchstone.
- GRAFF, C. (1976). Aliénation ou identification: le rôle de l'espace dans la maison, in P. Korosec-Serfaty (Ed.): Appropriation de l'espace, actes de la 3ième conférence internationale de psychologie de l'espace construit (pp. 297-306). Strasbourg, s.n.
- HANSEN, W.B., ALTMAN, I. (1976). Decorating Personal Spaces: A Descriptive Analysis. Environment and Behavior, 8 (4), 491-504.
- HARE, P.H., (1982). Subdividing the American Dream: A Survey of Resident Experience with Accessory Apartments. Paper read at the 35th annual scientific meeting of the Gerontological Society of America, November 1982, at Boston. Mimeographed.

- HAUMONT, N. (1976). Les pratiques d'appropriation du logement, in P. Korosec-Serfaty (Ed.): Appropriation de l'espace, actes de la 3ième conférence internationale de psychologie de l'espace construit (pp. 227-235). Strasbourg, s.n.
- ILSTAD, S. (1978). Why Families Move: A Social-Psychological Study of Residential Mobility in the City of Bod, Northern Norway, in Rogers W. et Ittelson W. (Ed.): New Directions in Environmental Design Research. EDRA 9. Washington, D.C.: Environmental Design Research Association.
- JENNY, J. (1967). Le jeune dans sa famille et dans le logement, in P.H. Chombart de Lauwe (Ed.): Famille et habitation. Vol. II: Essai d'observation expérimentale (pp. 197-220). Paris: Centre national de la recherche scientifique.
- JUTRAS, S. et CULLEN, K. (1983). L'intervention environnementale: une affaire de compétence. Psychologie Canadienne, 24:1, 37-45.
- KARSK, R.S. (1977). Teenagers in the Next America. Maryland: New Community Press.
- KROBIN, F. (1980). Children and the Household Economy: Ethnic Differences in Leaving Home. Paper read at the annual meeting of the Social Science History Association, 6-9 November 1980, at Rochester. Mimeographed.
- KRON, J. (1983). Home-psych: The Social Psychology of Home and Decoration. New York: C.N. Potter, Inc.
- LANTERMANN, E.-D. (1976). A Theory of Environmental Competence: Architectural and Social Implications for the Elderly. Zeitschrift für gerontologie, 9, 433-443.

- LATOUR DEJEAN, C.H. de (1976). Les systèmes relationnels et leur impact sur l'espace, in P. Korosec-Serfaty (Ed.): Appropriation de l'espace, actes de la 3ième conférence internationale de psychologie de l'espace construit (pp. 330-343). Strasbourg, s.n.
- LEFF, H.L. (1978). Experience, Environment, and Human Potentials. New York: Oxford University Press.
- LEHR, U.M., BONN, R. (1974). Ecology of Adolescents as Assessed by the Daily Round Method in an Affluent Society, in H. Thomas, T. Endo (Eds.): Contribution to human development. Vol. I: The Adolescent and his Environment (pp. 67-74). Basel: Karger.
- LEROY, C. (1976). La formation historique de l'image de soi et des mécanismes de défense par rapport à l'environnement et autrui; son rôle dans les relations au territoire actuel, in P. Korosec-Serfaty (Ed.): Appropriation de l'espace, actes de la 3ième conférence internationale de psychologie de l'espace construit (pp. 285-296). Strasbourg, s.n.
- LESSARD, M. et JUTRAS, S. (1984). La qualité de l'environnement perçue par les résidents de Chisasibi. Élaboration de la problématique et des instruments de recherche, rapport présenté à la SCHL Montréal: s.n.
- LEVINSON, J. (1978). The seasons of a Man's Life. New York: Ballantine.
- LUGASSY, F. (1976). La spatialisation de l'identité étayée sur l'image du corps et sur le logement, in P. Korosec-Serfaty (Ed.): Appropriation de l'espace, actes de la 3ième conférence internationale de psychologie de l'espace construit (pp. 307-319). Strasbourg, s.n.
- MAGDER, D.M. (1981). Breaking away: adolescent behavior in context. Canadian family physician, 27: 1789-1792.

- MAZERAT, B. (1976). Appropriation et classes sociales, in P. Korosec-Serfaty (Ed.): Appropriation de l'espace, actes de la 3ième conférence internationale de psychologie de l'espace construit (pp. 250-259). Strasbourg, s.n.
- MICHELSON, W. (1977). Environmental Choice, Human Behavior, and Residential Satisfaction. New York: Oxford University Press.
- MIRON, J. (en préparation).
- MODELL, J., and HARAVEN, T.K. (1973). Urbanization and the Malleable Household: An Examination of Boarding and Lodging in American Families. Journal of Marriage and the Family 35: 467-79.
- NEUGARTEN, B.L. (Ed.) (1968). Middle Age and Aging. Chicago: University of Chicago Press.
- PETIT, V. (1976). Espace approprié-espace appropriant, in P. Korosec-Serfaty (Ed.): Appropriation de l'espace, actes de la 3ième conférence internationale de psychologie de l'espace construit (pp. 219-226). Strasbourg, s.n.
- POLLOWY, A.M. (1977). The Urban Nest. Stroudsburg, Pa.: Dowden, Hutchison & Ross.
- PROSHANSKY, H.M., KAMINOFF, R.D. (1979). The Built Environment of the Young Adult. New York: City University of New York.
- RABENECK, A., SHEPPARD, D., TOWN, P. (1974). The Structuring of Space in Family Housing. Progressive architecture, November, 102-107.

- RAPOPORT, A. (1968). The Personal Element in Housing: An Argument for I. Open-ended Design. (Reimpression de Royal Institute of British Architecture Journal, 75 (7), 300-307). Milwaukee, U.S.A.: University of Wisconsin-Milwaukee.
- ROBERT, P. (1973). Dictionnaire alphabétique et analogique de la langue française. Paris: société du nouveau littré.
- ROBILLARD, J.L. et TEASDALE, P. (1968). L'environnement d'une cellule d'habitation. Mémoire de maîtrise inédit. Université de Montréal.
- ROGERS, C.R. (1961). On Becoming a Person. Boston: Houghton Mifflin.
- ROSE, D. and WEXLER, M.E. (ouvrage en préparation). Post war social and economic changes and housing adequacy, in J. Miron (Ed.): Housing Progress in Canada Since 1945.
- ROSSI, P. (1955). Why Families Move. New York: Free Press.
- SHEEHY, G. (1974). Passages: Predictable Crises of Adult Life. New York: E.P. Dutton.
- SIMMONS, J.W. (1968). Changing Residence in the City: A Review of Intra-urban Mobility. Geographical Review, Vol. 58, 622-651.
- SOCIÉTÉ CANADIENNE D'HYPOTHÈQUES ET DE LOGEMENT (1985). Plan de recherche 1985-1987. Ottawa: Société canadienne d'hypothèques et de logement.
- SONNENFELD, J. (1966). Variable Values in Space Landscape: An Inquiry of Environmental Necessity. Journal of Social Issues, 22, 71-82.

- STARR GROUP (1986a). Flexible Use and Tenure Study. Interim report No. 3: Economic analysis.
- STARR GROUP (1986b). Flexible Use and Tenure Study. Interim report No. 3: Economic analysis.
- STEELE, F.I. (1973). Physical Settings and Organization Development. Reading, Mass.: Addison-Wesley.
- TEASDALE, P. (1984). Aménagement des espaces intérieurs: conseils et recommandations. Ottawa: Société canadienne d'hypothèques et de logement.
- TEASDALE, P. (1980). Projet parapluie. Proposition conceptuelle d'abri pour le jeu suggéré pour les enfants d'âge scolaire d'un ensemble résidentiel montréalais. Ottawa: Société canadienne d'hypothèques et de logement.
- TEASDALE, P. (1979). A User and Visitor Generated Evaluation of Eight Experimental Townhouses. Study report 1/2. Ottawa: National Capital Commission and Central Mortgage and Housing Corporation.
- VAILLANT, G.E. (1977). Adaptation to Life: How the Best and the Brightest Came of Age. Little: Boston Brown.
- WARSHAW et al. (1973). Options habitation. Canada, s.l.,: Conseil national de l'esthétique industrielle.
- WEXLER, M. (1985). Residential Adjustments of the Elderly: A Comparison of Non-mobile and Mobile Elderly in Montréal. Texte inédit.
- WEXLER, M., AMIEL, M., COLLIN, J.P. (1982-1984). Typologie de l'habitat plex à Montréal, projet de recherche soumis au Ministère de l'éducation du Québec. Montréal: IRNS-Urbanisation.

WEXLER, M. et MISHARA, B. (1981-1983). Les ajustements résidentiels des ménages âgés mobiles et immobiles, projet de recherche soumis au Ministère de l'éducation du Québec. Montréal, INRS-Urbanisation.

WEXLER, M. (1982). The Living Arrangements of Non-mobile and Mobile Elderly Households in Montreal, texte présenté à l'Annual Meeting of the Canadian Association on Gerontology, Winnipeg, Montréal: INRS-Urbanisation.

YCAS, O. (1978). Les indicateurs du logement. La revue Statistique Canada, août.

ZEISEL, J. et al. (1981). Housing Designed for Families. Cambridge, Mass.: Joint Center for Urban Studies of M.I.T. and Harvard University.

ZIMRING, C. et REIZENSTEIN, J.E. (1980). Post Occupancy Evaluation. An Overview. Environment and Behavior, Vol. 12 No. 4, 429-450.

APPENDIX 4: NOTES

1. It goes without saying that we also recognize the fact that appropriation can be the result of a process of trial and error.
2. This question is discussed in section 1.0 of appendix 1.
3. See appendix 1, section 2.0 for more details on this theoretical model.
4. This figure represents the number of basements in which there was storage space rather than the actual number of storage spaces (i.e. in the same basement, there could be several storage spaces).
5. The definition of plex is taken from Divay et al., 1982 who estimated that the proportion of this type of housing in Montreal is approximately 40%: "two or three storey multi-family building, including at least two superposed units, each with its own address and with separate access to the street (sometimes two units share an entrance way)" (Introduction, p. 53).
6. This figure includes two units.
7. This figure includes three units.
8. The livable surface of the units studied refers to the total floor surface of all the floors in the basement, ground floor and upper floor, measured from the interior surface of the exterior walls or the interior surface of the party walls. As for the calculation of the liveable area in the basements, we have excluded those spaces which were not used mainly for living purposes such as storage areas, furnace rooms and garages.
9. Only applies to split levels and to two-storey houses where there was more than one floor above grade.

APPENDIX 4: NOTES

10. In spite of the fact that on several occasions in this report we do the calculation or addition of certain replies and observations.
11. Page numbers refer to the data corpus submitted to CMHC as part of the third progress report for this study.
12. This is an exception. In most instances parents keep newborn and very young children near their bedroom.
13. "Mingles" units are specially designed dwellings built to house adults living in a non-family situation. Each bedroom has a separate bathroom forming a bedroom suite.
14. Section 3.1.2 will deal with the architectural characteristics which foster minor adjustments.
15. We would like to point out that the feasibility of some possibilities of exchange, conversion and growth which we show in illustrations 3.1 and 3.2 depend on the construction and zoning regulations in force in the municipality where the dwelling is found and in addition, it depends on many of the architectural characteristics of this dwelling (see the following sections of this chapter as well as the study published by the Starr Group, 1986).
16. That means units containing at least three bedrooms.
17. A complete bathroom should include a bathtub or shower, a wash basin with a vanity and a toilet.
18. We are aware of the fact that the standards which are used to determine at what level a floor must be located to be considered as a basement vary according to municipalities.

APPENDIX 4: NOTES

19. With the exception of, it goes without saying, specialized rooms within the dwelling such as the kitchen and the bathroom.
20. Defined in the National Building Code.