MEETING HOUSE

A BEHAVIORAL APPROACH AND ARCHITECTURAL MODEL

FOR A NEIGHBORHOOD MULTI-SERVICE CENTRE

by

GRACE ATHENE GORDON-COLLINS
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Signature of Author ..... Department of Architecture

Certified by ..... Thesis Supervisor

Accepted by ..... Chairman, Departmental Committee on Graduate Students

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A Neighborhood Multi - Service Centre for the Elderly

MEETING HOUSE

ABSTRACT

Meeting House
Grace Athene Gordon-Collins
Submitted to the Department of Architecture on
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requirements for the degree of Master of Architecture.

For most elderly people in this culture the price paid for the sin of growing old is to have to struggle on fixed incomes for economic survival, for many it is a struggle for some recognition and social status and for almost all it is a struggle against being pushed out of the mainstream into a subculture; a subculture of fear, poverty, isolation and social uselessness.

The aim of my thesis is to provide an alternative to the most frequently used solution to the elderly problem "institutionalization" or isolation by design.

The purpose of my thesis is to research and design a prototype for an elderly multi-service community centre. This facility would contain services relative to the elderly population:

(1) Preventive services such as shopping facilities, education programs, volunteer programs, recreation etc.,

(2) Supportive services such as medical, homemakers, hot meals, self help, legal aid, and family service.

(3) Rehabilitative services such as community mental health and medical clinic.

(4) Shelter such as congregate dwelling units and elderly day care.

The primary goals through this program and facility would be to help old people remain, if at all possible, in their own homes in their own community, by providing the services they might only get by institutionalization. To prevent the breakdown of many old people by creating a focus, a place that is responsible and supportive to

the needs of this population. To help many old people to continue (or start again), to lead active, rich, and fulfilling lives.

To assist in this process by creating a bridge to the existing community to make the transition to "what is on the other side" easier to deal with whether it be an elderly person coming into personal contact with a child for the first time in years, or the younger person becoming resensitized to the value of, and the beauty in, old people.

The behavioral inputs and architectural response, will be documented throughout this thesis. Hopefully the handbook that results will be of some use to those involved with planning and design for the elderly within a community setting, and will illustrate that a design framework based on user, behavioral inputs and needs, need not be restrictive (on the contrary) to the ultimate forms within our built environment.

Thesis Supervisor: Jan Wampler
Title: Assistant Professor of Architecture

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CONTENTS

ATTITUDE

Granny

This project essentially started 5 years ago. It was the 12th of September on a "frosty Friday" and the Winnipeg fall winds were carrying the message that winter was just around the corner.

On that day my mother arrived home after a 2400 mile round trip to Ontario to sell Gran's home and bring Granny out west.

This event happened because of a series of incidents. Granny had apparently been cutting herself off from the neighbors retreating more and more into the refuge of her home. She began to regard almost everyone with suspicion and got the reputation as the old witch of the block often chasing little kids down the street that she caught peeping through the hedges, brandishing her father's enormous irish walking stick. The extent of her mental decay became obvious, when one night she bolted out of the house as one of the neighbors put it "Like a bat out of hell",screaming "they're all over me, they're filling the house" etc. We never really found out what those particular theys were, but the neighbors quickly called Winnipeg, collect, and the next day my Mother was on her way to Sarnia:

This brings us to the 12th of September, none of us knowing quite what to expect, when Gran and Mother got off the plane. They arrived, Gran looking littler than I remembered and Mother pale, exhausted, and untypically, close to tears. My feelings at that moment are hard to describe; Granny is the only Grandmother I've ever known, (the other dead before I was born) and we'd always had a grand relationship. It was she who taught me how to play solitaire and cribbage while sipping endless cups of faery tea (that's about 1/10th tea to 9/10ths milk) or who yakked with me for hours on the front porch, talking about all the earth shattering things 6 year olds find interesting. Thus my frame of reference, if somewhat archaic, left me totally unprepared for the new Gran, and her entourage.

I soon found out that not only did Mother and Gran get off the

plane but a whole troop of singers, trumpet players, and most interesting, a band of monkeys "doing it" to young ladies, all of whom were visible and audible only to Gran. We took Gran, the brass band, the singers, and the monkeys to the farm. In order to make her feel more at home and alleviate some of the stress of being uprooted, Mother had the insight to send to Winnipeg all of Grans own furniture, bed, bureaus, etc., and that night she and companions crawled into her own double bed, in a room very similar in size and shape to the one she'd left behind. It is interesting to note that only recently have people working with the elderly recognized the critical need to reduce stress inducing factors in the environment, one obvious way is allowing the elderly person moving into elderly housing etc., to be allowed to bring in their own furniture and artifacts. This obviously has strong architectural implications in the shaping of a design philosophy and development of a framework for dealing with the spatial needs of the elderly. I feel this is a major issue and will deal with it in detail a little later on.

To get back to Gran she has been living in ever improving physical health at the farm, but the mental decay has continued. She is lucid only at two decisive points - one when she is asked if she wants "a nice pot of tea" and she snaps to instant attention, drinks her tea like a proper english Granny and then settles back into her fantasies The second - is when she is asked if she would consider going to a nursing home. This elicits rage, tears, pleading to Gran a nursing home is like dropping her at deaths door, in fact so many of the elderly people living in institutions, people I've spoken to over the summer describe, apathetically, their next move as being "to the grave-yard." This attitude often exists relative to age segregated living environments and is compounded by so many elderly housing developments and nursing homes located on isolated tracks of land, often adjacent to cemetarys (nothing like a constant reminder), super highway exchanges,and filled garbage dumps.

Philip Slater in his book "Pursuit of Loneliness" writes about this attitude in the following way.

"Our ideas about institutionalizing the aged, psychotic, retarded and infirm are based on a pattern of thought we might call the

toilet assumption. The notion that unwanted matter, unwanted difficulties, unwanted complexities and obstacles will disappear if they are removed from our immediate field of vision. Our approach to social problems is to decrease their visibility, out of sight, out of mind, the most extreme case is the Indian reservation". [One of the most brutal is the "old folks home"]* "The result of our social efforts has been to remove the underlying problems of our society farther and farther from daily experience and consciousness, and hense decrease in the mass of the population the knowledge, skill, resources and motivation necessary to deal with them".

Simone de Beauvoir in "The Coming of Age" more specifically describes the elderlys reactions by quoting an American gerontologist."Among the factors that contribute most to the development of our elderly fellow citizens emotional problems we must place the social ostracism to which they are subject, the shrinking of their circle of friends, their intense loneliness, and reduction and loss of human respect and their feeling of self disgust!" The social planning implications in that statement are immense.

Granny has now become a full time job to both my parents and her physical presence is everywhere. If they have company she wants (with good reason) to be right in there, and invariably accuses one of the guests of having babys in the cellar, or telling my Mother what a wicked woman she is for living with "that man" (who happens to be her son) etc., etc., I realize this seems amusing, and often in relating these stories, tears of laughter role down my cheeks, but its also a tragedy as Grans presence is wearing down emotionally and physically two creative vital people. (my parents).

The options that are available are:

(1) Live with it (which is becoming almost intolerable)

(2) Put Granny in a home; out of the question because --

(a) She was not physically ill thus not requiring the medical attention, and cost that is calculated into the typical nursing homes modus operendi.

* Authors note

(b) Philosopically they don't consider "a home" the solution probably out of sense of love, guilt and obligation. Besides Gran didn't want to go.

(c) Last, but not least, they couldn't afford the money even if alternatives (a) and (b) were no problem.

At the moment my parents and probably thousands of people like them are faced with the reality of a Granny very much like mine. One of the solutions, which I shall explore in this notebook is the development of day care centres for elderly people.

A centre in concept much like childrens day care, but in operation could incorporate meals, activities, resource centres, transportation, medical services etc., for a modest cost. This notion could be further expanded into short term stay apartments, which would be extremely useful if people such as my parents wanted a holiday or weekend off and could be assured their parent(s) were in good hands, in an environment that was supportive and familiar.

The whole notion of elderly day care seems very reasonable, and, if incorporated into a familiar community/neighborhood centre, would be able to draw upon all of the services and social contacts that type of facility would have to offer.

Thus elder day care has the potential to serve the primary purposes of :

(1) helping to keep the elderly person, within an existing family structure.

(2) reducing the psychological stresses on both sides of being "ever present" and/or a burden.

(3) providing a vehicle for the elderly person for new friends and interests, and exposure to a variety of activities he/she might participate in.

(4) most importantly this type of facility would provide a viable alternative to the overinstitutionalization of the individual which results in rising social costs and unnecessary human decline.

Gramps Baker (Albert) lives in an older neighborhood in Toronto. His wife died 10 years ago at the age of 74. The day after she died he went back to his part time job of helping school children across the street. His philosophy about his wife is "if you're good to them when their alive, you won't have any regrets when they're gone". His philosphy is admirable but extremely poignant, especially relative to his only son who lives in the neighborhood and who selfishly ignores the "old boy" appearing only when he needs something.

Albert (Gramps Baker) is going on 85, he is healthy, mentally alert, and walks a mile and a half a day to and from his job. He says he's starting to get tired out especially when it gets really cold, yet without his job his outside contacts would remain at a once every two weeks outing at the legion (whose membership is rapidly declining) if someone will drive him there.

Albert is living on a tiny fixed income, in fact his job is a necessity to help maintain his house which is now worth $40,000 on the open market. The neighborhood he lives in has changed and he no longer knows anyone on the street, but he won't sell the house and move into an elderly housing project as he wants to leave the house to his son, and shrewdly knows each year he continues to live, increases its value. Gramps talked about how lonely he was, how he'd like to get out more but there was "no place to go".

There is a charming elderly widow living at the street corner where he helps the children cross. The other day, after saying "hello Mr. Baker", for the last five years, she took the bull by the horns and asked Albert into her house for a cup of tea. Albert refused, because he was "afraid of what the neighbors would think!" (if you know what I mean). Albert could really make use of an elder community centre. There he could meet people, and not have to worry about the neighbors wagging tongues. Have the use of a workshop for his hobby - carpentry, and access to a commercial outlet to sell the things he makes. The subsidized meal programs now available to the elderly through neighborhood drop in centres some church groups and elderly apartment complexes would provide a nutritious meal for as little as 50 cents, thus saving him money. But most importantly Albert would have a place to go to that he could feel

at home, a place to meet people, a place to exchange loneliness for friendship.

I felt the stories of Gran and Gramps (like so many thousands of elderly people) were worthwhile telling because they illustrate two of the many areas in which little thought or action has been given by the public sector. They also illustrate the great need for Multi-Solution Planning by people working with the elderly.

It is ironic in a nation that has such a strong mandate to extend and prolong life that the planners, designers, administrators, and developers, have been so little concerned with the quality of life that is being so actively extended. The planning issues surrounding the older persons community progress represent major environmental factors that each of us will eventually experience on a personal basis. From basic concerns, such as having enough food, decent shelter, proper medical attention, to the issues of community acceptance, employment, legal aid, environmental and psychological barriers.

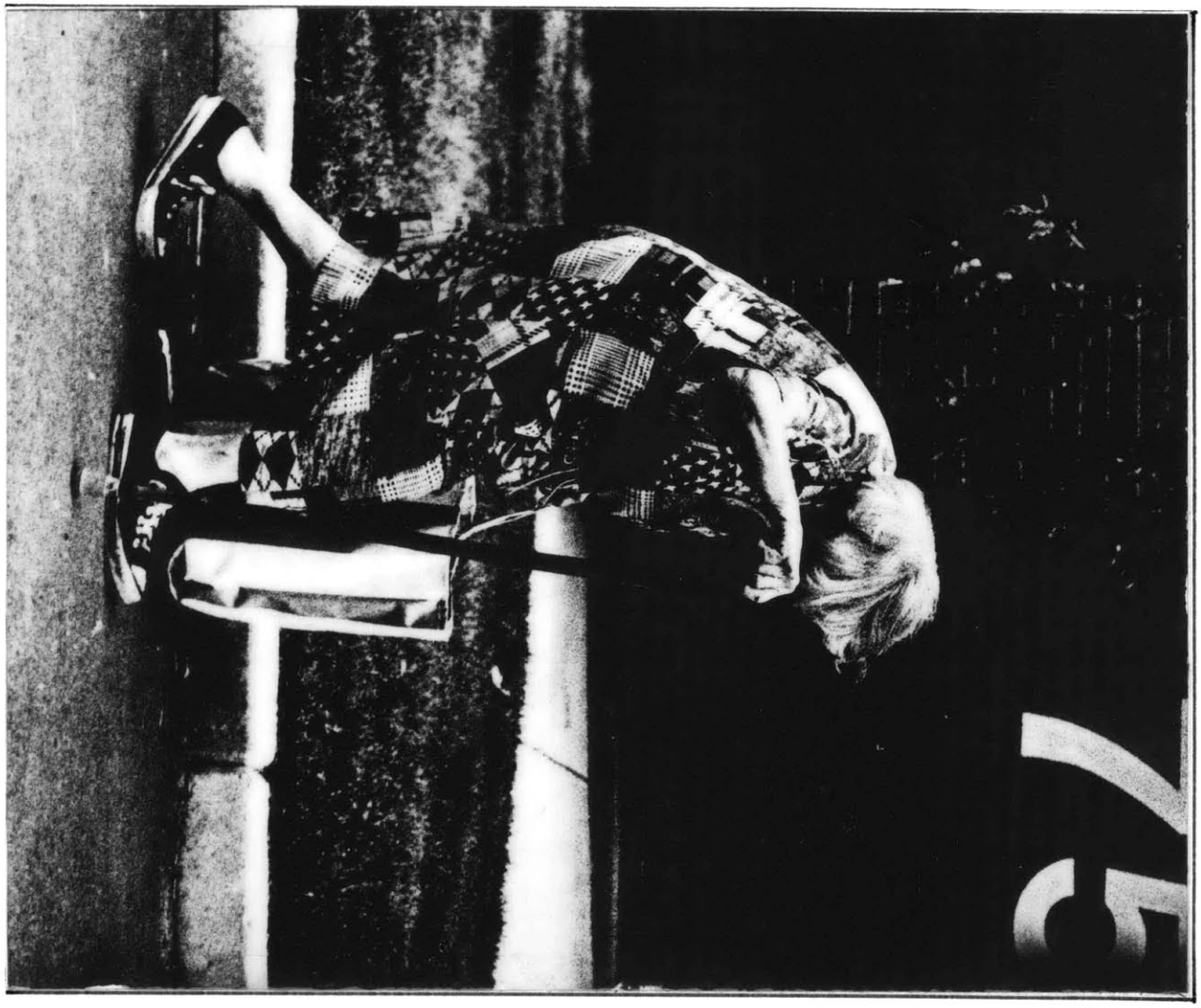
I could go on in this vein and probably shall as this workbook progresses. One very sobering thought is this little paragraph that I copied from the Nov 5/74 B.A.D.

["An 88 year-old woman phoned Dominich Bianculli, executive secretary to the Governor's Council, and offered her services as a poll worker for Councilor Patrick "Sonny" McDonough on election day.

"What the hell can we do with an 88-year old woman?" Bianculli asked McDonough.

"Why don't we nail her to a fence?" Sonny responded"]

The attitudes that are represented in this piece are going to, regretfully, die hard.



BACKGROUND

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Elderly Needs and Life Styles

The development of environments for the elderly should begin with some understanding of what it means to grow older in our society. Aging is universal and normal, a process that begins at birth. To all persons, growing older means adaptation to changes in the structure and functions of the human body and changes in the social environment. Oftentimes, at the stage of retirement, an aged person is viewed as being obsolete and contributing little of value to a society enamored of youth. However, a large percentage of elderly people can lead active, productive lives and want to continue doing so as long as possible.

The elderly population is reputed to be one of the nation's most distressed minorities. Loss of income is an ever-present problem for the elderly. Social Security, private and public retirement plans, and personal savings have not been sufficient to decrease poverty among the elderly population. Approximately two-thirds of the elderly people in this country have annual incomes of $5,000 or less.

Aging means changing functional roles for the individual and changes in the social environmental. The role of the worker with its accompanying role status is lost for the great majority of employed aging men and women at retirement. Many persons who have been active socially and in civic and professional organizations often find that they are given positions of less importance as they grow older. Our society is one which, for the most part, refuses to honor the intrinsic values of old age.

Psychologically speaking, the results of this forced lessening of activity and retirement create in many individuals a passive dependent manner. This is a result of the lack of opportunities provided for older individuals to establish their relevance in a society which prides itself on being young and independent. Negative attitudes and stereotypes about aging have created and perpetuated opinions damaging to elderly people. This generally accepted view

of the aging process results in a forced segregation and alienation of the older person.[1]

THE AGED IN THE U.S.A.

Number Of Older People

The newest (oldest) and most rapidly growing minority is the aged, those 65 years and over.

A large elderly population is a new phenomenon to this century. In 1900 there were 3 million older people, every 25th American, whereas the 1970 census showed there are over 20 million over 65, almost 10% of the population. It is estimated that by the year 2000 there will be over 28.8 million Because men have a shorter lifespan and tend to marry women younger than they, for every 100 men 65 and over, there are 139 women. The proportion of people currently married is higher for men than women. Among those 65 and over only 36% of the women have a living spouse as compared to 73% of the men.

Geographic Distribution

Geographically, older Americans are distributed among the States in a pattern quite similar to that for the total population. The three most populous States, California, New York, and Pennsylvania, accounted for just over a quarter of the older population and just under a quarter of the total population. Adding the next three States, Illinois, Ohio, and Texas, brings the six-State proportions to just over 40%. The ten largest States, adding in Florida, Michigan, New Jersey, and Massachusetts, had about 56% of the total.

Urbanization brought the population into the city where it has aged; suburbanization has taken the younger population out of the city but has left the elderly behind. (On a national basis, a slightly larger proportion of older people live in nonmetropolitan areas than do younger people [40% vs. 35%] as they live in towns rather than on the farms). Among the over 60% of the population now living in metropolitan areas, most of the younger group live in the suburbs while most of the elderly live in the central city.[2]

Economic Status

It is no secret that the incomes of the elderly are meager. In fact in this time of nationwide inflation the fixed incomes of most of the elderly are creating almost desperate situations. People are now becoming aware that the high level of dog food sales in districts that have large numbers of elderly is not because they have so many pets. Its shameful that the economic plight of the elderly has only been focused upon when such sad instances come to light in newspaper headlines.(And are quickly forgotten as soon as it is out of sight). In 1971 the median income of older families $5,453, was half that of younger families $10,976. For older persons living alone or with non-relatives the figure was $2,199 as compared to $4,783 for a younger person. The elderly spend the highest proportion of their income on rent, food, and medical expenses.

The "near poverty" annual income for unrelated individuals in 1971 was $2,414 and the poverty level was $1,931, this means that in 1971 42.3% of all unrelated elderly were living at or below the poverty level and 14.2% between the two levels; thus 56.6% of the almost 6.1 million older persons living alone or with non relatives were "low income". In the three years since this survey the situation has not become easier.

Living Arrangements

Problems of daily living, present special difficulties to older persons. In transportation alone, they face growing crises in shopping, in visiting friends and relatives, in getting to social, cultural, or entertainment opportunities and in getting to a medical office or facility if it exists.

Some of these problems may be eased or made worse depending upon the older person's living arrangements. More than 80% of older men live in a family setting, 70% with a wife present. Another 16% live alone or with nonrelatives and only less than 4% are in institutions. Among older women, only 61% live in a family setting and only 34% with a husband present. An astonishing 35% live alone or with nonrelatives and over 4% are in institutions. Thus, quite

contrary to one of the most troublesome and false stereotypes over 95% of older Americans do live in the community -- not in institutions -- and they depend on community resources and services for survival. Of the older people outside of institutions, 14% have no chronic conditions at all and 67% have chronic conditions that do not interfere in any way with their mobility. Another 8% have some trouble getting around but can still manage on their own, sometimes using a mechanical aid. Some 6% need the help of another person to get around while only 5% are homebound.

The popular picture of the decrepit, doddering oldster is so gross an exaggeration as to be completely misleading. The overwhelming majority of older people can easily manage in the community if society permits.

This fact has very important planning implication since it puts into perspective our national tendency to think of aging in terms of the institutionalized and the feeble. With this fallacy laid to rest (I hope) we can look at ways in which the community can start to develop support systems for it's older citizens.

COMMUNITY PLANNING FOR THE ELDERLY

The Older Person and the Aging Process

Perhaps the most important fact about older people is their diversity. "The aged" are not a group of people with a set of common characteristics, if anything, they differ more among themselves than do younger people. Thus, we must quickly give up the idea that any one environmental prescription is going to suit all or even a majority of people who are beyond their 65th year. The appropriate task is, to match the needs and capabilities of particular older people to the proper environment for supporting them and making them grow.

It is difficult to describe the average older person, however, there is research knowledge that tells us what we can expect for a substantial number of older people. We must recognize however that we are talking about averages, rather than all older people in order to avoid the fallacy of single-solution planning. The only way to take care of people with different needs and different wishes is to provide for as great a variety of environmental CHOICES as possible.

It seems useful to review some of the changes that take place (at different rates) in many people as they age, and then to look at the needs that are basic to all people and examine how aging and the environments we provide for the aged may affect the satisfaction of these needs. It is then possible to take this list and systematically look at some of the programmatic and architectural choices within this frame work.

Age-Related Changes Include:

Sensory processes of all kinds - vision, hearing, taste, smell, and body position, become less acute as a part of the normal aging process, and major losses in one or more senses are more likely with old age. People do compensate for these losses, such as by using hearing aids, by double-checking their reading of distant signs, or by waiting for information from more than one

sense before acting. However, much behavior is based on habits learned at a time when senses were sharper.

Muscular action and coordination may be affected by biological changes that reduce the speed with which information can be utilized to guide muscular behavior. All but the most simple tasks involve decisions about the correct order in which actions should be performed, what to do if something unexpected happens, and so on. In addition, the sheer strength and endurance of muscles becomes diminished. The net result may be behavior that is slower, less accurate, less strong, and less confident than similar behavior at an earlier age might have been.

Locomotion is an especially important instance of muscular behavior. Decreased muscular efficiency may lead to difficulty in walking, which is a special problem for the elderly because of their greater dependence on walking. They are less likely to drive an automobile for both economic and biological reasons, and often find themselves living where public transportation is becoming both less accessible and more restrictively routed.

Occupational skills by no means uniformly decline with age, though they vary widely in this respect. Losses in physical strength and speed may frequently be compensated for by gains in judgment, caution, and continued learning by experience.

Learning in general is affected by many factors other than age; in fact, age by itself seems in many situations to be less of a factor in how well people learn than are such matters as having adequate time to learn, being able to anticipate or control what one learns, having recent exposure to other related kinds of learning, or simply having confidence in what one is trying to do.

In contrast to these changes expected in the latter part of the life cycle, basic needs continue. Unfortunately, in many ways the social and physical environments we create for the elderly make it difficult for basic needs to be satisfied, especially since the manner of satisfying them is apt to change over the life cycle.

Some physical life support needs may be more critical to the elderly than to others, such as nonpolluted air to the person with a chronic respiratory condition.

Food is taken for granted by most, but under the pressure of low income, lack of ability to shop, or unfamiliarity with food preparation due to changed family circumstances, basic nutrition may suffer, not to mention many broader aspects of food-taking: The enjoyment of the taste, the texture, the look of food, and especially of the social context in which it is consumed.

Shelter in its most basic sense subsumes the notions of safety and security. Safety as expressed in good design of objects, structures, spaces and whole communities knows no age bounds. Our creative ideas about creating accident-discouraging environments for the elderly are most likely to benefit people of all ages. However, special attention must be paid to age related changes in perceptual and muscular capabilities.

Security needs have rapidly become a major focus of anxiety among our citizens, regardless of their age. While the young may be mobile enough or affluent enough to take counteractive measures in the face of threat to their person or property, the elderly have many fewer options. The result is typically a major reduction in the scope and physical range of their life styles. Fear of both real and perceived crime can severely restrict actitivies of older adults.

Phychological needs are at least as important for total well-being as are the physically oriented needs described thus far. Some needs that our society has particular difficulty maintaining in older people include:

The needs for sensory experience, as contrasted with sensory deprivation. We have described the personal deficits in these capacities, but in addition, society has a way of passively (or even actively) accepting drabness as consistent with the needs of the elderly. The older areas of towns, clothes designed for "the older market", and the reluctance of many people to engage in

physical touching behavior with older people are examples of ways in which sensory richness is withdrawn from the elderly.

Social interaction is central to the lives of most people, though its form varies widely among people and to some extent with the life cycle. Many of the environmental factors described above also increase the isolation of the elderly: The moving-in of younger families into old neighborhoods, the youth orientation of activity and educational programs, traffic and transportation problems, crime, and so on. Older people gathering in natural congregation areas, such as public plazas, constitute an embarrassment to many municipalities.

An equal and opposite need (though less often frustrated in old age) is that for privacy. However, enforced shared living arrangements such as three-generation families living at poverty levels, or institutional situations are clearly stressful. More subtle intrusive behavior, such as the way in which urban renewal and some welfare services are handled, clearly violates the need for a sector to which one can retreat.

New experience beyond the sensory realm should have few age limits. Unfortunately, it has great budgetary limitations. Recreation, education, vacations, redecoration of the home, and so on are frequently the priviledge of the upper-income segment of the elderly. Opportunities for paid work, perhaps in new occupations, are in particularly short supply.

Again, in an equal and opposite fashion, predictability is a basic need. Perhaps the critical aspect through which older adults needs for both new experience and environmental predictability may be mutually satisfied is the ability to decide for oneself when one is ready for new experience and when the familar or predictable is best. Involuntary relocation is the epitome of destructive unpredictability.

The freedom to choose is the essential element of the need for self esteem. Anything that makes it possible for a person to do for himself rather than depend on others is likely to raise his level of self-esteem. So often, if the older person's ability declines a small amount, he must subject himself to a far greater degree of dependence than is warranted. For example, institutionalization is an all-or-none affair, where in some instances a few core community-based services might help to preserve and maintain his self-determination [3].

The freedom to chose relative to 'place', 'activity' and 'occupation' constitutes the main behavioral framework of this thesis.

COMMUNITY SERVICES FRAMEWORK

Community services are generally classified in the following manner.

(a) preventive
(b) supportive
(c) rehabilitative and
(d) sheltered care

Preventive Services	Supportive Services	Rehabilitative Services	Sheltered care Services
Planned housing	Medical or visiting nurse services	Community mental health centre	Congregate housing
Advocacy or consumer involvement action groups	Home health aides	Rehabilitation hospital	Institution day care
Employment opportunities	Homemakers		
Volunteer programs	Hot meals		
Information dissemination	Congregate dining		
Education programs	Meals on wheels		
Recreation centre	Multiservice senior centre		
Work shops	Family service agency		
Safe-escort services	Social worker		
Legal Aid			

These services constitute an essential aspect of the community fabric, but few localities other than major urban centers will be able to provide all of them. In general, those labeled as "Preventive" are most relevant to the healthiest segment of the older population. The "supportive" services are designed for people with some disability that can be reduced by the service. The rehabilitative services presumably give training to people with severe disabilities who have some hope of permanently improving. Finally, "sheltered care" services provide relatively permanent support for the more disabled end of the spectrum[4]. The above services constitute the basic programming frame work for the design portion of this thesis*.

Planning New Services

The decision as to whether a service is feasible is contingent on at least 3 factors:

1. Are there needs for the service by significant numbers of elderly people? For some purposes an actual survey may be required, asking people about their felt needs, their actual capabilities, and their hypothetical preferences. More often population data must be utilized to infer a need.

For example, the Departments of Housing and Urban Development and Health, Education and Welfare have tentatively defined the need for federally assisted housing in terms of whether an older person spends more than 25 percent of his income on "adequate housing". Tabular cuts of federal and local data on income, housing cost, and housing condition may be utilized to get some idea of the size of the deprived segment. A relatively neglected source of information is groups of older people themselves, recruited from existing advocacyorganizations like the Grey Panthers, housing project tenant councils, or senior citizen clubs. Organizations like the National Council on Aging, the National Council of Senior Citizens, the American Association of Retired Persons, or the Gerontological Society may also be able to provide such information.

One index of probable need for a service is the estimate of potential utilization, usually obtained from the percentage of eligible

* Authors Note

individuals who actually utilized a service in another location, preferably one comparable to the area in question[3].

For example in one instance with a senior recreation center in an age-dense area of New York City, the "yield" of participation from those eligible was about 5%.

In early voluntary lunch programs in some public housing environments, the utilization rate averaged around 25%, participation being defined as eating once a week or more. I used these percentages as a guide to determine the potential utilization, and resulting square footages of the recreation and eating spaces in the "meeting house".

In 1969, elderly persons constituted 30% of the population of mental hospitals, but only 4 percent of the clientele of community mental health centers and 2% of mental health clinics' clientele. These figures illustrate the dangers of taking current estimates as standards for what should be; they represent a dereliction of duty by the centers and the preference by society for the easiest but least desirable treatment situation -- the mental hospital. The incidence of severe mental illness in older people living in the community has been estimated to range from 5 to 15 percent.

2. Another aspect of estimating the feasibility of a community service is the determination of the nature and availability of existing services within the community. A basic beginning point is an inventory of services that may be compiled by the local health and welfare council, or other local groups. If such a list of services to the aged does not exist it may be necessary to do a survey of all listed general service organizations together with a request to such organizations for information on services being provided by non-listed groups. Total gaps in service may thus be identified (for example, if no meals on wheels program exists, this constitutes prima facie evidence of need, though not of the magnitude of need).

An illustration may be useful of how national data may be utilized in providing benchmarks of need. 'Shanas' has determined that 2 percent of the elderly are bedfast at home, 6 percent housebound,

and 6 percent ambulatory with difficulty. These figures set upper limits on the potential numbers who may require in-home or transportation services. These percentages will be reduced by some proportion who live with responsible younger relatives, and a lesser proportion for those who live with a spouse.

Local and national attitudes toward existing and potential services will obviously be major factors to consider. As of 1973, high potential value is attached to community-based, integrated multi-service elderly-specific services, such as senior centers with nutrition, outreach and counseling programs in addition to the usual activities. Institutions are out of favor on a national level. Housing is beginning to have its problems on a local zoning level (fear of a foot in the door for economic and racial integration), though it has high marks as a tangible, political showcase.

3. A major question in determining feasibility is whether other similar programs have had demonstrated success, or which of several alternative modes of service delivery have been most successful.

(a) Federally assisted, age-segregated planned housing results in an improvement in the social and psychological health of elderly people.

(b) Easy access to neighborhood facilities, such as shopping, and to informal meeting places, is associated with well-being.

(c) Concerted programs of medical and social services offered to institutional applicants or to handicapped tenants of specially designed housing can prolong the period of community residence and forestall institutionalization.

(d) Paid employment, both on the open labor market and through programs like a sheltered workshop, is associated with well-being.

(e) Multiphasic medical and psychiatric diagnostic screening programs reduce the incidence of mental hospital admissions.

The search for "alternatives to institutionalization" is based on the assumption that such services are not only effective but cost-effective as compared to institutional care.

Perhaps the most radical "service" intervention is the physical relocation of people. This particular phenomenon has been studied more extensively than most others. Some relatively firm conclusions are:

(a) Involuntary relocation of the most vulnerable older people (i.e., already-institutionalized physically or mentally impaired people) results in a higher death rate and incidence of other impairments.

(b) Institutionalization itself may have similarly lethal results for some people.

(c) Voluntary relocation by relatively healthy old people does not produce these results and may, in fact, be associated with positive growth.

(d) Urban renewal and highway relocation programs result in higher housing costs and lower effective incomes.

(e) Older people will endure unbelievable mental, physical, and economic hardships in order to remain in a familiar surrounding, particularly if they own the dwelling.

(f) Availability of palatable and financially feasible housing alternatives makes relocation easier for some, but by no means all, people living in negative situations.

(g) The mere threat of enforced relocation may have major negative psychological consequences.

Urban renewal has not been adequately studied in relation to its specific mental and physical effects on older people. The consensus of opinion, based on studies of other forms of relocation, is that planners must be aware of potential dangers and take appropriate

action to minimize the effects of necessary change.[5]

Physical Planning and Social Outcomes

(a) Facilities and resources:

Perhaps the most important physical resource of the elderly is the existing housing stock. Most national effort has been devoted to the building of new planned group housing, to the neglect of the 70 percent of elderly who are homemakers, the great majority of whom wish to remain where they are. Some problems making it difficult for old people to use their owned homes effectively have been:

(a) Lack of information about loan and grant availability.

(b) Lack of assistance through outreach, or ombudsman) in fording the governmental bureaucracy.

(c) Lack of immediate access to funds and manpower for small or emergency home repairs.

(d) Lack of total dollars for grants, rather than loans.

(e) Lack of assistance in getting the person who needs more space in touch with the elderly head of household who has too much space.

(f) In urban centers, the psychological discouragement in seeing one's neighborhood deteriorate and crime increase.

(g) Cash outlays required to pay property taxes and basic utility costs.

New and creative measures are clearly required to preserve the older housing and by so doing, give the independence of self-determination to the many who do not wish planned housing. A highly visible 'centre' for the elderly, providing this type of information seems to me to be a good start in this direction.

PROGRAM

Outline of Issues

The issues dealt with in the programming phase were the following:

(1) Site selection (see next chapter for actual selection criteria)

(2) Development of an outline program based upon the COMMUNITY SERVICES FRAMEWORK (see page 17) including

   (a) the number and type of services required. (this was based on a neighborhood service survey; and user needs expressed by the elderly people I interviewed)

   (b) the number of elderly people in the neighborhood and their projected use of the facility.

   (c) the number and type of dwelling units to be included in the facility.

   (d) restrictions imposed by the site directly affecting program choices examples: orientation and size.

(3) Selection of a user group.

(4) Special concerns of the elderly.

(5) Parking requirements.

(6) Open space requirements.

(7) General community response.

(8) Preliminary Design.

PROGRAM SUMMARY

A summary of the program and space model is as follows:

Administration

	sq.ft.
Managers office	150
Secretary/reception	120
Seminar space	200
Storage	70
Day care offices	200
Volunteer information and employment	120

Preventive Services

These services are relative to the healthiest segment of the elderly population. They also form the core services of the elder day care and community centre.

Symbol	Area	sq.ft.
√o	Library	450
√	T.V./Lounge	450
√o	Card room/pool room	200
√o	Dining spaces	1270+
*	Kitchen, main preparation area + meals on wheels	500
	Kitchenettes	210

√*	Diet office	100
	Serving space	200
√*	Arts and crafts	200
√*	Machine shop	300
√o	Laundry 2 @ 150	300
*√o	Adult Education/seminar spaces	600
√o	Darkroom	120
√	Meditation space	150
√o	Audio Visual area	150
√o	Music room	300
o√	Bar	200
o√	Swimming Pool	500
o√	Day care space (children)	1000
*	Day care places (elderly)	500
*	Private mens space	120
*	Greenhouses	600+
o√	Large space, subdividable for dances concerts, beano etc.,	2000
		1000
	Entry and circulation	
		100
*	Mail room	

	Storage	1000
	Loading dock	100
	Mechanical	1500
	Rubbish disposal	300
	Toilets	800
Supportive Services		
o	Counselling office	100
o o	Medical clinic and Community Mental health	1000
o	Legal Aid	120
	Storage	150
	Reception/lounge	100
	Staff area	120
Commercial Area		
√*	Handicrafts outlet	400
√*	Food Coop/cannery	800-100
o√	Hairdresser, Barber	400
√*	Movie Theatre	2000
√o	Coffee Shop, bakery	600+
o*√	Articulated spaces for book sales, bazaars, garage sales etc.,	600
o*√	Park and circulation	1400

Shelter

*	Congregate units	20 @ 200	4000
*	Common living rooms	4 @ 320	1280
*	Common kitchen/dining	4 @ 320	1280
	Storage	20 @ 80	1600
*	Elder day care places	- see preventative section.	

Outdoor spaces

Mini Bus space	1 @ 240	240
Handicap parking	2 @ 240	480
Garden re congregate		3000 +
Pocket Park (children)		1000
Outdoor recreational		100 +

Explanation of symbols

* services not available in the immediate community and/or were considered desirable by the interviewers.

o services that do exist in the community but were important to the quality of life of the centre

✓ services that would be available to the entire community within a given time framework.

The selection of a user group was essential before final programming could begin. I used the eligibility criteria model from the pilot program at the PGC (Philadelphia Geriatrics Centre).

Eligibility criteria:

(1) Freedom from confusion or disorientation.

(2) Freedom from severe personality disorders or psychiatric illness.

(3) Comparatively good functional capacity (i.e. ability to manage steps, or ramps*,dispense own medications, and not be in need of nursing supervision or constant medical care).

(4) The applicant's capacity to manage and adapt to communal living.

(5) To function independently without supervision.

(6) To use appropriate judgment in personal matters[1].

Special Concerns of the Elderly

(1) Elderly people are less mobile than younger age groups. In fact, 90 percent of them don't move after they reach age 65 The dwelling unit should be conceived of as a home, not as transient housing.

(2) The elderly are generally less mobile in terms of their ability to reach community recreational and social services and facilities, these should be provided within their immediate living environment.

(3) The elderly desire choice in living situations.

(4) The elderly desire a sense of autonomy and need an environment which extends and enhances the time span of independent living.[2].

Program Revisions

The next step was to test out the validity of the program choices

*authors addition

and sizes and make revisions where necessary. This was accomplished by a review with some of the community people and through criticism and discussion from Sandy Howell (head of the H.E.W. Elderly Housing Design Evaluation Team at MIT) and Jan Wampler, my thesis advisor. Finally after chopping assembling revising, especially the shelter care section (NOTE. program illustrated is the revised model) I decided to assemble the community, social and behavioral inputs, and architectural program into a matrix to visually check and help organize many of the issues I was able to define. (see figure A) After I finished, I realized there should have been major subdivisions in both the behavioral objectives category, e.g. social needs, physical needs etc., and the architectural response category e.g. planning, landscape, interior design etc., but as this is a work book and I could (at this rate) spend all my time producing multi dimensional matrices, I decided to push on, and leave this as a tool or method that has some potential for the architect; wishing to work, in systemmatic visual way, with behavioral information.

Preliminary Design

The first preliminary design sketches, (there were several) based upon the site analysis, program notes and behavioral objectives are reproduced in the appendix.

SITE

SITE SELECTION

Elderly Needs

The process of developing specific and measurable criteria for site selection involves understanding the human values and locational needs of the elderly and, at the same time, understanding the distinct contextual characteristics of each site location.

What makes the elderly development site selection process uniquely different from other site selection processes? The following is a list of major site qualities relative to elderly needs.

(1) The elderly should be a part of the community. They should not be located on physically or socially isolated parcels of land.

(2) The elderly desire autonomy and a sense of independence. In order to enable elderly people to achieve this, they need convenient services, especially full service shopping and health care facilities, social service and activity centers, public transportation, and others.

(3) The elderly have time to participate in community affairs. They want to be able to control this participation, however.

(4) The elderly are less mobile. They depend on public transportation more than younger people do.

(5) Elderly people are limited in the amount of topography they can negotiate and the distance they can walk.

(6) The elderly are concerned about physical and psychological security.

(7) Elderly people are less mobile in terms of moving their households. Ninety percent do not move after they reach the age of 65.

Sites for housing or multi-service* developments for the elderly can be analyzed at three levels of urban development; the community/region, the neighborhood, and the site.

The Community/Region: This area can be defined as the service area, which will provide community services for the residents of the development. This area could include, but not necessarily be limited to, the intended market area for the development.

The Neighborhood: This area can be defined as the immediate vicinity in which the site is located. It is defined by a characteristic land use and in some cases by a system of physical edges, that is, streets, highways, or buildings*

The Site: This area can be defined as the land being considered for the proposed development and all its land use determinants, both natural and man-made.[1]

The following factors are of special concern at the community/region scale:

(1) Major medical facilities should be available within a 20 minute driving radius of the site or, even more desirable, be connected to the site.

(2) Opportunities for community involvement should be available to the residents through existing facilities, or facilities provided on site*, for example:

a. Library
b. Museum
c. Churches
d. Social services/community elderly center
e. Historical societies
f. YM-YWCA
g. Adult educational program
h. Community park system
i. As many other related facilities as possible.

These opportunities should be relatively accessible to the

*authors addition

residents by foot or by public transportation system.

(3) Existing family and friend relationships are a very important consideration. In many communities neighborhoods evolve in which the elderly tend to be the majority of the residents. These neighborhoods should be considered during the site selection process.

(4) Isolation - the site should not be located in an area which is separated physically from the social/commercial community by such barriers as expressways, industry, thoroughfares, railroad rights of way, large expanses of underdeveloped land or land that has impossible grades*.

(5) Pollution - the site should not be near extensive or potentially extensive exposure to air, noise, or inordinate visual pollution.[2].

*authors addition

Urban Neighborhoods

Usually, sites available in these neighborhoods are located within old central business districts, older residential areas adjacent to central business districts such as the Jamaica Plain site, or as a part of urban renewal areas.

Sites located in urban neighborhoods should offer options for passing recreation, for example, parks, meeting places. These facilities will complement the highly active urban spaces found in this type of area. Of major importance is the existing and predicted crime rate in the neighborhood in question. One of the major concerns is to blend and relate with the neighborhood. This blending insures that the development will not be isolated from the neighborhood and community. Sites should not be located adjacent to industrial activities which cause environmental air, noise, or visual pollution.

Some of the key concerns regarding sites located in urban neighborhoods are listed below:

Security: What is the crime rate in the neighborhood? Is it safe for pedestrians to use the area, and facilities at all hours of the day?

Pollution: What is the detrimental effect on the site of noise, air, and visual pollution?

Developability: Is the site large enough and of appropriate configuration so that an acceptable residential site plan can be developed?

Economic Stability: Are services that are within convenient walking distances diminishing, or will they remain stable and operative?

Precedent for Residential Living: Is the site in an area where families (other than elderly) live and want to live?

Availability of Public Transportation: Is a public transportation system accessible to the site and will it remain in operation? [2].

Site Selection Process

Jan Wampler and I started to look for a site for this project that met all the foregoing criteria and surprisingly found one that met most. The site that was selected is the old AGISSIZ SCHOOL site in Jamaica Plain.

The site is owned by the DPW (Department of Public Works) therefore acquisition would not be a major problem if this project were ever to be realized.

It is located in the POND STREET neighborhood of Jamaica Plain, an area in which 23% of the total population is over 65 years of age and another 44% is between 24 and 65. It is also adjacent to other large neighborhoods, Hyde Square, Moss Hill and Central Jamaica Plain which combined add up to a further 48% of the elderly population of the area. In numbers this means the "Meeting House" would have the potential to draw on over 12000* people classified as elderly. The other advantages of the site are:

(a) It has been cleared (in fact at present it is used as a parking lot, a place for auctions, garage sales, and an adventure playground).

(b) It could be easily reconnected to existing sewer, gas water and electricity lines.

(c) It is accessible to churches, parks, transportation, shopping, historical buildings, childrens museum etc.,

(d) And it is close to the "main drag" (Centre Street) of Jamaica Plain a place that has been described by one of the elder "drop in" Centre Managers as "THE LIVING ROOM OF THE ELDERS"

NOTE - See appendix for a more complete evaluation summary.

*Source 1974 BRA report for the Jamaica Plain, Mission Hill District Planning Program.

INFORMATION GATHERING

Shortly after I decided the Agissiz site was for me I did an 'environmental map' and a 'walkabout' of the neighborhood.

Environmental mapping in the process where the designer or behaviorist looks for and marks down various pieces of information about the neighborhood within a given radius of the site. (on a scale map, see example 1) I was looking for building uses i.e. commercial, industrial, residential (single or multi-family); open space i.e. parking lots, playgrounds, vacant lots, environmental barriers, i.e. steep grades, busy streets etc., and potential barriers for elderly people such as teen age hangouts, places with inadequate street lighting and the like. The result is a very complete visual description of the neighborhood. This allows one to make some pretty good guesses as to where people will shop, the paths they will take, and if there are barriers or special conditions that might inhibit these and other activities. This information can then be tested (interviews, walkabouts, observation, behavior maps etc.,) and translated into program additions, (the cinema was one of these additions), behavioral strategies and/or physical design.

The term 'walkabout' originates with the custum of the Australian Aboriginals of sending their young men at puberty into the surrounding neighborhood (meaning thousands of square miles of wilderness) for a given period of time. If they survive they can complete the rites of passage and are considered a man. In order to survive the young person must develop and use his instincts, cunning, intelligence and will to live. (the analagy is not lost in the experience of walking around parts of Jamaica Plain at night).

Dr. Sandra Howell of M.I.T. uses this term when she talks about the behavioral scientists (and architect*) need to walk about or walk through sites, settings, neighborhoods, plans and problems with the significant others in environmental planning**

*authors addition

**Kevin Lynch (MIT) and others have attempted several approaches to this such as resident mapping of neighborhoods and landmarks; Leon Pastalan(University of Michigan) is currently exploring empathic devices which simulate disability. (This is explored in the design section).

TABLE A

CONVERGING OPERATIONS*

SUBJECT AREA	Behavioral Science	Architecture Design	Planning and Development	Real Estate and Banking	Government	Consumer
Neighborhood	Familiarity; Social and Physical Risk; Patterns of Interaction; Development Stage	Design Continuity; Vehic. traffic; Pub. transport; Ex. Poten. Land Uses	Deterioration Status; Potential return investment	Property values. Investment risk.		History Change Security Familiarity
Site	Historical relation to neighborhood	Specifications	Land acquisition Preparation costs	Alternative use	Loan Guarantee	
Structure(s)	Institutionality Access	Facade Components	Max. possible cost/unit	Cost Depreciation	Tax policy	
Technological Specifications	Ease of use	Material Maintenance Innovativeness Performance	Building codes	Per U/Cost		
Social Space	Socialization Serv.	Location Movement	Gov. - Bank Allow	Cost/sq.ft. $ less	Legislative Standards and limits	Needs; Activity uses wants
Commercial Space	Instrumental Behavior Settings	Integration Functions		Stability Competitive Pressures	Zoning ordinances Management	Accessibility Use-Convenience Priorities
Private Space	Life style Identity	Spatial function			Codifacts of mores & living arrange. limitations incentives	Territory Possessions Family/ friends
Tenants	Age integrated-segregated Levels of disability competence		Management	Income base	Income age restrictions	Congeniality

*Cell contents not intended to be more than suggestive.

The hopeful results of such "walkabouts" would be what some psychologists refer to as converging operations. Sandra has begun to look at the concept of converging operations, or the development of descriptors by which perceptions of the same situational field may be commingled. In Table A are some preliminary attempts at specifying the areas in which there are probably differential objectives and therefore different perceptions across the range of participants. Such approaches to convergence consitute one aspect of what is called "information feedback." [3].

Site Problems

Needless to say this site like most 'found' urban sites does have problems. The two main problem areas I perceived were

(1) Community acceptance

(2) Crime prevention

I feel Community Acceptance can be achieved simply by the nature of the meeting house and the positive services and activities it would generate. The main objection in the Pond Street community was to "elderly housing". This is probably due to the large number of nursing homes in the area which tend to personify most of the negative associations of this type of dwelling. Since the centre has services,shopping, childrens day care, park, and community spaces(that reach out to the whole spectrum of the neighborhood,)I do not feel any real resistance will develop.

Crime Prevention is another area that needs multiple solution planning. The physical issues the planner can work directly with are issues of building design, orientation, surveillance, location of lighting and the like. The following is a partial checklist of site and building qualities that can help to create a safe and secure environment.

(1) Territorial definition of space in developments reflecting the areas of influence of the inhabitants. This works by

subdividing the residential environment into zones toward which adjacent residents easily adopt proporietary attitudes.

(2) Positioning apartment windows to allow residents to naturally survey the exterior and interior public areas of their living environment.

(3) Adopting building forms and idioms that avoid the stigma of peculiarity which allows others to perceive the vulnerability and isolation of the inhabitants.

(4) Enhancing safety by locating residential developments in functionally sympathetic urban areas immediately adjacent to activities that do not provide continued threat. [4].

(5) Good lighting at all entrances, pathways, parks and parking lot areas.

(6) Range of spaces from public to private with spatial 'locks' at the interfaces. (an example of the above in the framed entry point at the transition from the public street to the semi private "front yard" of the residential edge of the meeting house).

(7) Street furniture located at areas of high use (surveillance) with clear visibility from major entries.

(8) In this particular building the physical design was translated into building walls along hostile edges melting into a series of short walls at the softer edges of the residential area.

Relating specifically to the building is the following security checklist

Building security checklist - architectural

(1) 50% or more of entrance lobby visible from street

(2) Elevator waiting area visible from entrance lobby

(3) Elevator waiting area visible from staff office or area

(4) Main entrance visible from staff office or area

(5) Main entrance visible from common space other than lobby

(6) Walkway to main entrance visible from seating spaces in lobby or other ground-floor common spaces

(7) Stairwells visible from outside building

(8) No place for concealment near front entrance

(9) No place for concealment near elevator waiting area, ground floor[5].

(10) Single loaded corridor at residential floors visible from interior "street" and also from "points of reference" (two story spaces) linking the two residential floors and two community floors

(11) Personalized and territorially marked entriesor front porches to building and to front entry of dwelling units.

(12) Good lighting along internal streets and all entrances and exits.

History

The last aspect of the site in this workbook is its place in history. (this was actually one of the first areas I researched but somehow its found its'place' here!)

As far as the actual site is concerned I didn't find anything too interesting other than the old school that was demolished was apparently an absolute gem, and probably could have been adapted to the current use I am proposing.

Jamaica Plain is a veritable living history book. The following is a brief glance of what Jamaica Plain was in 1667 and what it is becoming in 1974. Many of the insights and information gathered from

this study were invaluable in the formulation of attitudes and design criteria expressed in the actual design.

Early History

Jamaica Plain was originally part of the township of Roxbury, a community founded by colonists from England in 1630.

The area at that time was known as "Pond Plain" and was used largely by farmers.

The earliest reference to "Jamaica End" dates from 1667, and suggests the name was given to commemorate Cromwells victorys in the Caribbean. The second 17th century source (or maybe souse) claims the name was derived from the locals fondness for straight or Jamaica rum. (I prefer this explanation).

By the 1700s Jamaica Plain had become a summer resort area, attracting wealthy people from the nearby community of Boston. Many of the professionals and businessmen sought to emulate the plantation owners of Virginia. This desire is especially apparant in the design of many of the white porticoed mansions in the area. Some people even went to the extent of owning slaves! Its surprising in this light that almost the entire community of Jamaica Plain supported the revolution.

When fighting broke out in Lexington and Concord, Jamaica Plain sent men and arms to those communities and declared for the continental congress. The only Tory in Jamaica Plain, aside from the Govenor, was Commodore Joshua Loring, a wealthy sea captain, who fled to the protection of the British Authorities in Boston. His elegant white frame house, now in the property of the Tuesday Club of Jamaica Plain, was commandered by General Nathaniel Green as a headquarters for the fledging American army. During the seige of Boston, Washington visited Green on an inspection tour and Jamaica Plain, like so many other vintage eastern towns, can truthfully claim that "Washington slept here".

As early as 1817 Jamaica Plain had begun an independence campaign. Many residents felt that the town ship of Roxbury was politically

dominated by its more populous sections, and rural Jamaica Plain felt its interests and goals were different from those of urban Roxbury. Roxbury township and the State legislature held fast, until 1851, when Jamaica Plain became the dominant neighborhood of a new community called West Roxbury. The town hall, located on Centre Street, opened its doors in 1868.

The greatest change in the face of Jamaica Plain began in 1871 with the opening of the first horsecar line to Boston. The horsecar offered cheap commuter transportation and opened up Jamaica Plain's relatively inexpensive land to large-scale residential development. The new construction formed a narrow strip along the street car line, but as service was expanded, and the original housing areas became congested, the old country estates were broken up into lots for middle and lower middle class housing. These new two-and three-family houses were taken over by the large Irish population that had been pouring into Boston in the 'seventies' and 'eighties'. Only Moss Hill and a stretch of homes along Jamaica Pond maintained their upper class character.

In 1878, recognizing its changing relationship to the metropolitan area, West Roxbury allowed itself to be annexed to the City of Boston. Since that time, the only other major changes in Jamaica Plain have been the construction of the community's eleven hospitals, most of which were built around the turn of the century, and the public housing developments that have been built since 1940.

Neighborhood Characteristics

Many of the negative neighborhood characteristics that I looked at were at least partially, the result of direct government action.

The Egleston Square area has been influenced by the elevated MBTA. Whereas the states decision to clear a swath down the middle of Jamaica Plain has undermined Central Jamaica Plain, and the Bromley-Heath housing conditions are the direct result of an outdated New Deal housing policy.

The District

Jamaica Plain-Mission Hill is located southwest of Boston's downtown (see map). It is bounded by three parts (Olmsted, Franklin, and the Arnold Arboretum); an institutional area (the Fenway); the Penn Central (Southwest) railroad right-of-way, and several major residential communities including Washington Park-Model Cities, Roslindale, West Roxbury, and Brookline. The BRA has subdivided it into six neighborhoods, Moss Hill, Pond, Hyde Square, Mission Hill and Forest Hills.

Population in Jamaica Plain-Mission Hill has been decreasing since 1950 when it was 59,015. Its 1970 population was 44,497 (a drop of 25% over its 1950 level). Population composition has also shifted in the last 20 years. The numbers and proportion of 20-24 year olds and elderly persons have increased, while the numbers of middle-income families and homeowners have declined. The latter trend is perhaps the most threating to the district from the viewpoint of preserving its residential character.

Median family income in 1970 for Jamaica Plain-Mission Hill was $8,907, slightly below that of the City. However, the number of families earning less than $5,000 annually exceeded the City percentage. Bromley Heath and Mission Hill public housing projects are within census tracts in which over 40% of total families annually earn below $5,000*.

Housing within Jamaica Plain-Mission corresponds closely to the prevailing two and three family zoning in the district, although there are a number of exceptions such as the public housing projects that exceed this zoning maximum. Areas surrounding Jamaica Pond, on the other hand, generally contain one family homes on larger lots and show residential densities below the district-wide average (8.8 units per acre).

In 1970, Jamaica Plain-Mission Hill contained 16,558 housing units: 41% single family and 59% multi-family. The condition of most housing is fair to good, although there are a number of pockets of deterioated housing. Areas in sound condition include Moss Hill and the Pond neighborhoods, both located in the western portion of the district close to Jamaica Pond, the Arnold Arboretum and

*statistics sources:BRA and Jamaica Plain, "little city hall".

Brookline's Larz Arnderson's Park. Deteriorated housing is concentrated in and adjacent to the Penn Central (southwest) right-of-way and includes Bromley Heath and Mission Hill public housing projects and the back of Mission Hill -- an area of institutional landing banking. It is not a coincidence that areas in sound condition are also near large parks and substandard areas are furthest away from parks.

Hyde Square

In 1970, Hyde Square had almost 8,000 people. This multi-family residential area (which includes Bromley Heath Housing Project) is experiencing an influx of new upwardly mobile Greek and Spanish (especially Cuban) residents. At the same time, the negative influence of the Bromley Heath project and the Penn Central (Southwest) Corridor threaten the potential upgrading process. Elderly and young professionals are also increasing their percentage of the total population. Hyde Square not only has the highest population density of all of the district neighborhoods, but approximately 38% of total occupied units are overcrowded (containing 1.01 persons or greater per room). This is due to the presence of the Bromley Heath project which is one of the largest in the city and contained approximately 3,670 people in 1970.

Central Jamaica Plain

Is the area immediately adjacent to the Pond neighborhood. In 1970, Central Jamaica Plain contained approximately 13,500 people. Despite the deteriorating presence of the cleared right-of-way of the Penn Central (Southwest) Corridor, running along the eastern portion of the neighborhood, Central Jamaica Plain has become a stable family residential area. Under the City's Community Improvement Program many residential units have been rehabilitated and needed street improvements completed. While the federally sponsored improvement program has brought stability to the neighborhood, the blighted cleared land in the Southwest Corridor remains as a negative influence on their neighborhood's long-term stability.

Centre Street, which runs along the western boundary of the

neighborhood, is both a positive and negative influence. It provides the major shopping for the area; however, a number of underutilized parcels, several cleared and vacant, are located along Centre Street, which add to the sense of blight along this area. Population composition of this neighborhood shows substantial percentage of people under the agest of 15 (23%) and over the age of 65 (17%).

Pond

The Pond area contains the old Agissiz School site which I have selected for this thesis. It is the smallest neighborhood with approximately 1600 people, and contains a large number of single-family homes and a high percentage of home ownership. While the neighborhood continues to preserve its estate-like character, pressures exist such as the Cabot Estate proposal to develop certain parcels at densities far in excess of present patterns. This pressure may soon also be applied to the Hellenic College 10-20 acre site and to the Children's Museum site (if the museum secures a new downtown location).

While the Pond neighborhood has the lowest proportion of its population under 15 years (18%) and between 15 and 24 years (15%), it shows an unusually large proportion (23%) over 65 years.

The over 65 population desperately needa place that provides many of the amenities lacking for the elderly in the neighborhood, a place that is accessible and safe. The Jamaicaway for example serves as a barrier to access from the Pond neighborhood, to Jamaica Pond, and the surrounding park, especially for mothers with young children under 15 years and the elderly. (The other problem, is the present mugging danger at the Jamaica Pond Park) Thus, the park's local service function is somewhat reduced.

Moss Hill

While Moss Hill is geographically one of the largest neighborhoods in the district, it contains only 3300 people in 1970 (ranking it as the third smallest neighborhood). Like the Pond neighborhood, Moss Hill contains a large number of single-family homes and a very high percentage of home ownership. Despite trends towards

change to multi-family uses in other parts of the district, Moss Hill continues to be a stable family residential neighborhood.

Population composition of Moss Hill is similar to the Pond except that median family income is higher and its residential density far lower.

Moss Hill has no neighborhood park facility except a few school playgrounds which offer little in terms of active recreation facilities. The neighborhood's location on the edge of the Olmsted Park and the Arnold Arboretum provides it with a large amount of open space as well as opportunities to satisfy some local large scale park needs.

DESIGN

DESIGN

Introduction

This section is concerned with translating the activities and information from the previous sections into the physical design of a 'Meeting House'.

The design section is composed of three subsections:

(1) Human needs and the aging process.

(2) Architectural concept.

(3) Design development.

The first subsection is an attempt to give insight into what happens to a person as he or she grows old. It deals with age related perceptual and physical capability losses in terms of their implications for the satisfaction of basic human needs.

I feel this is probably the most important section in this thesis. If those who read it take with them a raised consciousness about elderly people (and perhaps a few pangs about their own mortality. then all of the blood sweat and tears that went into this study will be worthwhile.

The second subsection deals with the consolidation of the behavioral, social and architectural goals into an overall architectural framework.

The third subsection is an exploration of the design development process.

Human Needs and the Age Loss Continuum

The development of appropriate and applicable design guidelines involves a direct response to the needs of the elderly resident. The basic needs of the elderly are identical to those of any

other age group.

Human needs which relate to the environment can be divided into two categories.

Physical Needs: Those needs which involve using the environment in order to sustain acceptable physical health and comford levels.

Perceptual Needs: Those needs which involve a persons ability to process information about his environment and other people in that environment.

In some cases it is difficult to clearly separate these two categories of need because there is a strong symbiotic relationship between the two. It must be recognized that these needs are just as intense for the elderly as they are for anyone else[1].

As people age they experience a variety of physical and perceptual losses which affect very real environmental changes in a world in which the aging individual lives.

A brief summary of these losses are as follows:

(1) Standing height decreases as a result of greater slouch and compressing of the fibrous discs between the bony vertebrae. (One should also keep in mind that because of the increase in average size from decade to decade the elderly are shorter than the rest of the population).

(2) Loss of joint mobility can occur because of structural changes in the joints and loss of muscle flexibility. These conditions limit the high and low reaches the elderly can attain with ease.

(3) Muscular strength falls off; at age sixty, a person has about 60 percent of the strength he had at age thirty.

(4) Reaction time lengthens; at age sixty, it is about twice that at age thirty.

(5) Lungs and heart decline in efficiency.

(6) Since the elderly may have excretory problems, bathrooms should be conveniently located.

(7) Bones may become more brittle, and fractures may take longer to knit.

(8) Dizziness and imbalance result from bending to reach areas too low or too high.

(9) There is an increased fear of falling. Tripping hazards should be minimized and safety grab bars installed in bathrooms.

(10) Sensitivity to vibration may diminish.

(11) Discomfort in the heat and cold tends to increase.

(12) Sense of smell declines. The smelly gas normally added to odorless cooking gas may not be detected if there is a leak.

(13) Vision:

a. At age sixty, the minimum close focal distance (uncorrected) may be as great as 40 in. (101.6 c,). Also, acuity decreases for distant vision. Even with corrective lenses, normal vision may not be restored.

b. Eye diseases increase, such as cataracts and retinal degeneration,which affect depth perception.

c. Ability to see in low levels of illumination is reduced.

d. Greater illumination relieves eye strain by reducing the pupil opening, thereby increasing the depth of focus and minimizing constant eye adjustment.

e. Color values change; the world may be more blue for the elderly.

(14) Hearing:

a. Hearing loss advances with age. A child can hear a sound frequently of 20,000 Hz. At age thirty a person can hear up to 15,000 Hz, and at age fifty the limit is 13,000 Hz.

b. A loss of 45 decibels in hearing acuity makes it difficult for a person to understand direct conversation, and a loss of 65 decibels makes it difficult to hear over the telephone.

c. Hearing aids are available, but they are not always completely satisfactory, and many people do not make use of their aids. Phone companies provide their customers with such devices as amplifiers, loudspeakers, and loud ringers. [2].

Dr. Leon Pastalan has done some of the most interesting (and I think of potential use to the architect and planner) work, in the area of sensory deficits or losses. He has developed a sensory deprivation model or "empathy model" that enables the designer to actually experience the main perceptual losses of the elderly. Two years ago Dr. Pastalan came to M.I.T. and demonstrated this evaluative tool to one of our classes. (environmental Barriers and User Vulnerability to be exact). It was one of the most profound and at times shattering insights I have ever had into these aspects of being 'old'. To explain this model I am reproducing portions of a paper, by Dr. Pastalan presented for publication to the Journal of Architectural Research.

ENVIRONMENTAL EVALUATION THROUGH SIMULATION OF AGE RELATED SENSORY CHANGES:

The purpose of this study was to construct a simulation model which would duplicate relevant environmental experiences of an elderly population suffering from sensory deficits. Such an approach would provide a unique tool to discover and evaluate the nature of environmental barriers which the elderly and other physically vulnerable people face daily in their homes, neighborhoods and communities.

Since the organism can respond directly only to those aspects of the environment experienced through sense organs, age changes in sensory and perceptual mechanisms affect very real environmental changes in the world in which the aging individual lives. There has been an impressive accumulation of literature regarding the relationship between age-related sensory losses, environmental experiences and behavior.

Because of the availability of this kind of basic data it was possible to simulate certain types of sensory decrements such as increased opacity of the lens, increased rigidity of the middle ear or presbycusis and diminished tactile and olfactory sensitivity by mechanical means. Sets of simple mechanical appliances such as specially coated lenses, ear plugs, a masking device to decrease olfaction and a fixative to temporarily desensitize the tactile sense were developed and assembled.

A basic strategy regarding the empathic model was to develop devices which simuluted only "normal" loss and to steer clear of pathologies at least until some baseline information was established for normal losses. Thus our visual, auditory, olfactory and tactile appliances simulate only losses that occur within the context of the normal aging process. An attempt was made to simulate the condition of a person in his late seventies in the behalf that this would represent a kind of average or mid-point in terms of this progressive condition, keeping in mind the wide range of variation within the elderly population.

The visual loss which was simulated was the problem of light scatter or glare. The lens of the human eye typically begins to lose its clasticity and gradually starts to become opague from about the mid-fifties and the condition continues to progress with age. The preparation and coating of the lenses was done under the supervision of Dr. Byron C. Floyd, a practicing optrometrist.

Hearing loss for the elderly typically occurs above the 2,000 cycles range and decribel loss averages around 30 for those 65 years of age or older. Through the co-operation of Ronald Rogers,

a speech and hearing specialist with The University of Michigan, a material was tested which when used in the form of ear plugs, simulated the above loss very precisely.

The literature is rather sketchy in the area of age-related olfactory loss and since there was no reliable guidelines or practical instrumentation available to establish the magnitude of loss, it was felt that simple cotton wading introduced into the enterior of the nasal passages would reduce olfactory stimulation sufficiently so that it would give the researchers at least some idea of the kinds of environmental messages lost from the inabiity to smell acutely. This was the most primitive of the devices and perhaps the least successful.

There was also very little information in the literature regarding age-related tactile loss. Our research team developed its own instrumentation,[3] standardized the losses with an aged population in the community and experimented with a number of liquid and spray fixatives until we established the appropriate fixative with the proper coating procedures. The procedure involved coating the finger tips with a liquid fixative until the proper thickness was secured to elicit the necessary desensitivity.

Once the devices were developed and assembled the research team which consisted of four doctoral students in architecture specializing in environmental problems of the elderly initiated the field work. The researchers not only had several years of experience in professional practice but had advanced graduate work in the behavioral sciences including the physiology, psychology and sociology of aging. It was felt this team of researchers was uniquely suited for the undertaking.

[3]The instrument involved making comparative judgments regarding the lo grades of 3M sandpaper. Each of the 10 grades were mounted on 4" x 4" x 1" blocks and subjects were asked to feel these various grades of sandpaper with their fingers and make comparative judgments as to whether the different blocks were coarser, finer, or the same. The subjects were not allowed to see the blocks but had to rely entirely on the sense of touch. Authors will be glad to supply further information on this procedure.

The experiences will be summarized under the four senses tested: the visual, auditory, olfactory and tactile.

Visual:

(a) Glare from uncontrolled natural light and from unbalanced artificial light sources was the single most ubiquitous difficulty encountered. For instance, when walking up an aisle toward the front of a supermarket the typical vast expanse of plate glass across the front of the store on a bright day serves to obliterate most of the detail in surrounding objects. If only a single intense artificial light source is used for illumination rather than several, the chances of inducing uncomfortable glare is increased.

(b) Colors all tended to fade, the cool colors such as green and blue faded most while red faded the least.

(c) Contouring was a difficult problem. One example of contouring involves the capacity to perceive the boundary between two contrasting surfaces. The problem was most apparent when two intense colors such as red and green bounded each other. The boundary becomes visually unstable because the intensity of the colors seem to overlap and as one focuses on the boundary it appears to shift. This becomes a real hazard when an elderly person has to negotiate stairs or distinguish floor from wall surfaces.

(d) The opposite problem from unstable boundaries is the disappearance of boundaries. Closely related colors such as blues and greens tend to fade and blend into each other. This also creates problems in distinguishing wall and floor surfaces. For example, a light green wall and a blue-green carpet becomes virtually impossible to distinguish, and stumbling into walls is common.

(e) Depth perception is affected. Frequently it is difficult to judge risers and treads going down a flight of stairs particularly when stairs are carpeted with a floral print

carpet or painted the same color.

(f) There was difficulty in eye recovery when moving from a lighted area to a dark area or vice versa. The abrupt movement from an area having too much light to an area having too little should be avoided or mitigated with transitional lighting arrangements.

(g) Dark wall surfaces bounded immediately by windows admitting bright sunlight make it difficult to see objects located near the walls. Again, the extreme in contrast needs to be reduced.

(h) Ability to discriminate fine visual detail was seriously impaired. The reading of printed information such as names on people's doors, directional signing in hallways of public buildings, hospitals, stores and the like were continual burdens.

Audition

(a) Inability to hear conversation clearly with background noise such as noise from appliances, air conditioning units, or when people congregate together and talk such as at parties, theaters, lecture rooms etc.,

(b) Parts of words in a conversation are frequently unintelligible. This apparently occurs when a part of the word sound goes above the 2,000 cycle frequency. Thus it is not only a matter of loudness but even if the sound is loud enough part of the sound can be filtered out if the frequency is high enough.

(c) Difficult to locate and identify sounds. For example, noises from down the hall sounded much like noises only a few feet away.

(d) Some combinations of carpeting, acoustical ceiling and draperies absorb too much sound and make functional hearing even more problematic.

Olfaction

(a) The single most dramatic experience was the drop off in the taste of food and the pleasure of eating. Appetite and interest in food was reduced.

(b) Odors associated with various rooms in the dwelling unit which are used to aid environmental coding such as cooking and food smells in the kitchen, the smell of deodorants and bathing paraphemalia in the toilet, were missing. Street smells such as exhaust fumes, bakery smells, freshly mown grass, the scent of flowers were all significantly reduced and affected the richness of environmental information.

Tactile

(a) Difficulty with fine muscle control in eye-hand co-ordination tasks such as unfolding napkins, adjusting dials, turning pages of newspapers, magazines and books, adjusting pressure in gripping objects.

(b) Making fine discriminations in temperature differences such as in dish and bath water.

(c) Problems in identifying subtle differences in textures.

Implications and Applications

In terms of practical applications, the model has been used to assess existing facilities for the elderly ranging from housing projects to nursing homes and hospitals. Recommended changes regarding such things as lighting, control of natural light, color coding, use of textures, and the like were then made to the respective facilities.

In one instance a designer over came the problem of color fade by increasing the intensity of the hue. The intensity seemed almost garish to a younger person but highly preferred by the group of elderly people he was working with. The model is also

going to be used in the final check out of a new facility before it is occupied.

I found insights from Dr. Pastalan's work extemely valuable and tried to integrate them throughout the entire design process.

The other set of "losses" the elderly experience happen (unfortunately) in a similar time frame as the set just described. These are, the losses of children, income, spouse and often home. The following table illustrates this phenonemon.

THE AGE-LOSS CONTINUUM

*Losses:	Age 30	40	50	60	70	80	90
Separation of children			Δ				
Death of peers				Δ			
Loss of spouse				Δ			
Motor output deterioration						Δ	
Sensory acuity losses				Δ			
Age related health problems						Δ	
Reduced physical mobility						Δ	

*The losses for each specific individual of course would not happen as precisely indicated for each age category. This is an abstraction used for analytical purposes only.

The age loss continuum has the effect of making the elderly person less certain about the fulfillment of his needs; his relationship to, and his role in, society; and, his/her relationship to his environment. While it is impossible to forestall these losses indefinitely, it is possible through consciously programmed environmental, physical design and social choices, that this process can be mitigated.

Δ Source: L. Pastalan and D. Carson, Spatial Behavior of Older People (Ann Arbor: The University of Michigan Press, 1970), page 89.

Perception and Information Processing

People use their five senses to absorb and process information about their physcial/social surroundings. Perception and information processing is made easier for people, depending on how the physical environment is construed. Design facilitates this whole phenomena when it allows the physical environment to simply make sense! Making sense out of places involves being able to recognize what and where people are and how they relate to their mental maps of the world.[4].

Another of the ways the designer can help to "make sense" in the the environment is to organize and orientate spaces for their predictive value. This is the notion that a space should have a unambiguous definition and use. This concept has several important dimensions. In terms of orientation, spaces can be cued with landmarks which act as focal points for functionally different spaces. For example color coding surfaces to signal functionally different spaces or activities, in terms of visual perception, textured surfaces for the tactile sense and so on. The purpose is to sensorally load the spaces so that they may more effectively serve as points of reference.[5].

I decided in the design of the "meeting house" to further expand on the notions of environmental cuing and actually use major pieces of the building as cuing devices. For example the major spatial originizational element and "landmark" for the public spaces is the galleria. The form is distinctive, strong, easy to recognize and defines the places of public use. Within it there is diversity and richness of scales and activity areas, each with their own set of landmarks and cuing devices. (see drawings).

The other building 'form' landmarks are the stair towers, and the monuments. The stair towers were purposefully designed to be very strong points of reference from both inside and outside the building, since they are such critical elements in any building housing the elderly. (and should be easily identifiable and reached). The other landmark for which I have a great deal of softness in my heart, is the monument. To digress slightly, the

notion of monument came about during one of the many "walkabouts" I took in the neighborhood. I noticed that one of the prize "hangout spots" was the monument located seemingly, in the centre of Centre Street. This was so popular a place with the elderly people that some public spirited official put a chain link fence around it to keep them out. People still hang around the fringes of the monument watching the traffic (action) go by. The symbolic form I used for the monument was a clock-tower. It has great landmark potential for marking the entry to the elder community portion of the building, as well as being extemely functional.On the inside it frames the physical setting for the elevators, telephones, mailroom, manager's office, plus a series of nooks and crannys. -(places to watch and hang out); viva la monument!

Two other factors that should be considered along with the notion of creating environments that "make sense" are:

(1) Potential for exploration: If things make too much sense, people will not bother with them. Places should provide a variety of physical forms, shapes, textures, and colors so that people can know where they are located within a place. Just as importantly, a place should also offer a variety of activities or things to do.[3]

(2) Permit Role Choices: People do not want to feel manipulated by places. They want to be able to decide where and what they will do in a place,and they want to decide when and with whom they will do it. Relating to places and people involves certain amounts of risks. In relationships with people, some people might be rejected and their feelings could be hurt. Not all people have the same capacity for risking. Therefore, the opportunities for risking must offer choices that accommodate a wide range of people.

These three factors cannot be separated in reality because they are closely dependent on one another. For example, a place that makes sense and has potential for exploration is "relaxing" and permits people to more easily decide on a role choice. It makes

rising safer and easier. It is the combination of uncertainty about places and people and the capacity to risk relationships with places and people which becomes a primary concern to the designer.

Further, if the potential for exploration is allowed to dwindle, the motivation to relate to the physical environment and to other people begins to be less and less. This results in a common problem among the elderly, that of disengagement from the mainstream of life. By making sure that places make sense, offer potential for exploration (attractions), and permit role choices for users, designers can begin to create physical environments that are responsive to human needs.[4].

ARCHITECTURAL APPROACH

Social Framework

The need for and workability of, community centres for elderly people has been convincingly illustrated by the model of the Philadelphia Geriatric Centre. Although The Philadelphia Centre is on a much larger scale than I am dealing with, it essentially provides medical, social, dependent and independent community living for healthy but aging people. My feeling is that the multi-service framework explored there can be expanded to create an even closer link with the community and neighborhood. This could be done by utilizing one of our greatest and most under used resources, that is the skills, occupations, intelligence and experience of the elder community. 'Lawton' describes one of the major psychological needs of elderly people as their need for self determination.

This need can be realized in part by creating physical settings that are supportive to the older person, that foster a sense of independence, self reliance and self esteem. My response is to create a major setting (the galleria) with a number of physical settings which can become places for elderly people to recreate past roles and/or develop new ones. Thus renewing the sense of self esteem and self identity often lost when that person is denuded of his role in society at the age of 65. My contention is that the elderly people from the community could run the 'meeting house', and the bakery (and bake and sell goodies) and the food coop and pursue skills in the machine shops or sewing place and sell the products in the market place(s) of the ground floor of the galleria.

Maggie Kluhn (who is in her 70's) head of the "Grey Panthers organization" a militant elderly organization states very eloquantly that elderly people "are not children and don't belong in play-pens". This seems obvious but is not at all apparent in the actual environmental choices that are open for the elderly.

Other social behavioral objectives that could and should be explored in this 'place' are:

(1) The need for safe "crusin" places.

(2) The need for a "hangout" place or places.

(3) The need for a "monument" or 'symbolic' watching, meeting place.

The above may seem like strange criteria for an architectural behavioral framework, but they deal with some of the major social and behavioral goals when designing for people young and old. The need for social interaction, for friendships for "people contact". "Cruisin" or gathering information on the move, e.g. the comparison of the price of a loaf of bread from one shop to the other, or seeing whats new (or old) in the goodwill store, sensory stimulation, acknowledging or meeting of friends etc., The 'hangout space' places to watch the action, to observe or be observed, the hangout place(s) could be a park, a coffee shop, a window into the daycare, a view of the main street. The hangout space is really a variety of places that offer choice on a scale of observation and social contact from solitude to large scale interaction. A monument, a physical symbol of a meeting place, an arrival point, a departure point, a focus, a hangout, a place with something extra.

Architectural Concept

The next major problem facing me was; what does a place that has medical services, shops, a park, community and recreational facilities, adult education and a monument want to be!

The symbol that came to mind was the "meeting house" historically a meeting house was 'the place' the community came together for a variety of functions; to worship to celebrate, to make and act on policy, air grievences, hold auctions, make quilts and occassionally fan the flames of revolution. The meeting house was a strong cohesive symbol and was often the focal point of the New England village.

I can't think of a more suitable image and jumping of point for the development of a design concept and framework, than the meeting house.

The next step was to look at some of the planning issues that had to be considered in this process. The most pervasive of these were the actual building typologys in the surrounding neighborhood.

It is therefore appropriate at this point to briefly analyse the design of environments for the elderly in terms of some broad generalizations that can be drawn about sites. By the nature of its setting (urban neighborhood) it can be classified as the external site type; that is:

The context of the site is so strong that the building and the development of the site should be shaped in response to the external pressures and characteristics within which it will exist. The following general design objectives are applicable to external sites. The site should:

(1) Respond to and complement neighborhood scale, texture, and social contour.

(2) Maintain and enhance the streetscape.

(3) Blend the building(s) into the environment.

(4) Relate functional components directly to their external counterparts.

Generally, it is necessary that developments on these sites achieve their own identity without appearing to be, or, in fact, being separate from their surroundings. If the site and building design were to create the impression of separateness then the broader objectives regarding non-isolation of the elderly would be violated. In addition, the sort of disruption of the urban continuum that can occur is both socially and visually undesirable[5].

Jamaica Plain is one of the most historically rich areas of Boston (see history section). The homes surrounding the site range from Victorian gingerbreads to federal porticoed mansions. The one single architectural feature they all seem to share are their impressive, expressive sometimes sensuous roofs. Huge roofs often appearing to have faces; did I imagine eyes winking from under eyelid windows? It was this feature that produced another piece of the overall architectural framework and the "floppy roof" concept was born. The notion that a roof could flow, be pushed and pulled, could define and bear the imprint of the forms and activities underneath, that it could have its own life and the reflected life of those underneath, its own poetry its own persona . Thus the meeting house's link with its neighbors will be the primary image of home hearth and shelter .... a roof!

DESIGN

In the design of every building it should constantly be borne in mind that people who will use it should have enough freedom to allow them to decide for themselves exactly how they are going to do it. The more the opportunities for interpretation are increased, the more people will become involved.

Herman Hertzberger.

An adjunct to this statement might be 'the more people are aware of or can perceive an activity in a place the greater the attraction and subsequent involvement (or choice of non-involvement). The importance of these two statements is reflected in the ongoing research of the H.E.W. Design Evaluation Team at M.I.T. and will become apparent in many of the design decisions made in the next section

Design Development

The following charts the design development phase of the building. It is a fusion (hopefully) of the social and behavioral goals and the architectural objectives stated throughout this workbook. Many of the planning and design decisions are based on the actual observations and conclusions myself and fellow students made as members of the H.E.W. Team. They should not be misconstrued as positive rules for the design of elderly environments but rather as possible guidelines.

Entrance

The entrance(s) to the building are one of its most important components. Behaviorally they are very significant because they are natural activity places. People (for the most part) have to enter or leave through the entrance, thus it 'becomes' or 'wants to be' a place that people gather to watch or wait or gather to gather. In the post construction evaluation we have been doing of existing elderly environments it is surprising to see that

this apparent fundamental notion of people wanting to be where the action is (or other people) has been almost totally ignored. Entrance lobbys have not been designed with places to sit or watch or hangout, but rather as brisk circulation or control spaces, often the prevailing concept seems to be that of an entry to the Massachusetts Pike. Needless to say people do attempt, very often unconsciously, to take these areas over. This is usually achieved by the inhabitant bringing from his room a piece of light garden furniture (most of these spaces are unfurnished) which is placed strategically by the entrance. Then the fun begins. The scenario is often the following: setting, a gaggle of old people cluttering up the main entrance (in the managements eyes) actor, the mailman, scene: a narrow passage like entry. Action: the mailman weaving his way through chair legs, peoples legs, outstretched arms to the safety of the mailroom (if there is one) or taking his chances at 'front loading' the mailboxes if there isn't. Antagonists, architect, management; victim?

In one particularily sad "elderly apartment with community spaces" building, that we evaluated. The designer had put, at seat height, a nice 12 inch deep air convector. The location was under the window, (just like a window seat) between the elevators and entrance doors. In other words the PRIME watching spot in the whole place (the rest of the entry utilized the Massachusetts Pike concept). I was puzzled by a big sign on the connector saying without explanation "DO NOT SIT HERE, USE THE COMMUNITY ROOM", why the sign? The response was "people keep coming and sitting here, (naturally) looking out the window!" Apparently they would get hit, (in the winter) with a blast of hot air and often wet themselves. Their solution was to isolate them from one of the few natural activity places in the whole building!

In other words there was no recognition of what this 'place' wanted to be or forsight that could have perceived this as an activity setting and its uses.

I have tried in the entry(s) to the 'meeting house' to recognize and enhance the possible roles of the entrance lobby. The lobby on the Brewer Street edge is framed by a very low residential type

entrance porch, to give the sense that one is entering a place that is homelike, friendly and in scale with the user. On the interior the large open stairwell inside of the clocktower becomes a kind of inner stage with large platforms and stairs forming the framework for little nooks and private spaces around the edges. The stairwell starts to become the backdrop for the 'town square' and is the first of the direct visual links with the community and elder day care places on the second level. Every corner of the entrance lobby is programmed for multiple roles and in this way relates to the program of the entire building. The elevators, mailroom and management/information offices are adjacent to this place, thus contributing the activities they generate. Offices are very visible from the main entry, giving visual surveillance and control from the office, while the change of level keeps these from dominating the space, thus reducing the institutional effect they might give.

I located the mailroom adjacent to the management office in order to enhance the sense of security to the inhabitants. (this is very important to elderly people as they often worry, with good reason that their mail, especially social security checks, will be stolen as soon as they get them out of the mailbox).

The site entry on the Burroughs Street edge is a whole different kettle of fish. It is and wants to be part of the street activity. Its big, and bold and reflects the scale of the adjacent building and street. The form says COME ON IN (at least I think so) attracting attention and participation from the main drag action of Centre Street (the commercial life line of Jamaica Plain). This entry also acts as the 'front porch' to the "community service edge" of the meeting house. This edge has the 'reach out to the entire community' services, such as the CHILDRENS DAY CARE (with the potential for elderly people to be foster grandparents or to actively participate.

The MEDICAL and MENTAL HEALTH CENTRE (directed at the elderly community) the COMMERCIAL KITCHEN (with meals on wheels programs attached) the SWIMMING POOL (possible use might be elderly people during the day and general community in the evenings) and the

POCKET PARK (part of the childrens day care also a prime watching spot and chance for participation by elderly and neighborhood)

I envisage the physical setting of the actual galleria space as an enclosed park like place, one that encourages and is analagous to the type of space and activity generated in the Paul Revere Mall. Again each corner and space has been programmed for either multiple roles or is 'owned' by some object or place. An example of the first is the place by the entry where the telephones are located. This is not just a place for a telephone conversation, but a place to sit out of the mainstream., to wait, watch, sketch, converse etc.; in a way its a street living room. The second condition could be typlified by the Bazaar space and the space in front of the food coop. These spaces have the beginning of an owner framework. As soon as someone moves an orange stand in front of the food coop, or sets up a spot for a garage sale under the structure canopy supporting the fireplace the place is owned. These aren't flexible spaces but rather places adaptable to a multiplicity of owners and users.

The commercial and community activities programmed into the galleria on the first two levels insure constant'life',and energy in these spaces during the day and evening. Thus creating an internal focus for the residents of the day care places on the second floor and the living units on the third and fourth floors.

An interesting piece of information relative to the galleria space, was the fact that the most eagerly sought after rooms and apartments by the elderly, were those located on and overlooking Centre Street.

This raises some interesting questions about the stock sites that are presently selected for elderly housing, and suggests a new context for elderly housing; within an old framework that is the reuse and rehabillitation of the existing urban street edge.

Community Spaces

The basic spatial organization of the community space relates back to both of the statements at the beginning of this sub-section. This was the result of some interesting findings in the 'behavior mapping' (see appendix) pilots. (post construction evaluation at MIT). Our observations suggest that people's initial use of communal areas is a direction function of the spaces visibility from the major circulation axis. This expands upon the notion that use stimulates use and delves into the behavioral concept of personal risk. To most people, and especially the elderly to enter a space means a certain degree of risk or committment. If there are no visual cues to tell a person who or what is in a space, alot of people will avoid it altogether rather than risk an unwanted meeting, activity or person. Conversely spaces that had a level of visibility (and the activity and/or user could be determined at a distance) had a high degree of use. In other words activity did breed activity, but the notion of visibility and choice appear to be key issues in permitting people to make decisions as to if they will use an area. I have used these notions as the basis for creating "places" where people might feel"at home" in the community area and put them in the context of levels of privacy (private to public) levels of scale (big to little), and levels of visibility. The ground floor is conceived as a large open highly articulated space. The centre opens up to the second level creating a strong visual and spatial link between the two community oriented floors. This has the added affect on the second level of carving out an internal courtyard, whose edges might constitute a framework for the "elder day care places". It also helps to increase the sense of total community, suggesting little islands of semi-privacy. Directly below on the ground floor the open ceiling edge defines an area for the core dining facilities.

My concept of the dining is as follows. There are about 20-25 full time congregate inhabitants in the centre, (these are the people who hopefully could run and administer the centre) they may or may not dine in the dining area, as they do have their own

common kitchenettes and may choose to eat there instead. The most frequent users would be the day care centre people and the elderly people from the community on a 'drop in' basis. Although I estimated from the numbers of elderly people in the neighborhood how many would use the centre for meals on a daily basis (this came to about 125) the number could fluctuate daily. I have therefore planned the dining room with a core eating space, which looks a little like a cafe in a park, and seats about 40 people. If the number of dinners increases sections on either side can be taken over. If there is a bonanza of eaters the entire space could be used. When not in use the other places can resume a number of roles i.e. T.V. lounge, card room, sewing space etc.,

The rest of the ground floor consists of highly articulated edges. These encompass a range of spaces from two person alcoves looking out on a front porch to a living room size space replete with fireplace and a view into the galleria. A diversity of spaces and use is developed in conjenction with the differences in the qualities of the edge condition (meaning a change in orientation) quality of light and type of activity viewed) for example, the galleria edge encourages various levels of participation with the street life. People would be able to move freely to the galleria from the community spaces. Because of the need for security and a 'lock' at the interface between the public spaces (the galleria) and the semi public-semi private spaces (the community space), the reverse movement, e.g. elderly back into the community spaces from the galleria ground floor, would require a 'security entrance'. (i.e. a buzzer and guard, or keying system etc.,)

Elderly Day Care Centre

The notion of elderly day care is very new, therefore once again, I have few models to draw upon in order to design for this activity. The definition of elderly day care as given by HEW is the following:

(a) "Day Care" is a program of services provided under health leadership in an ambulatory care setting for adults who do not require 24-hour institutional care and yet, due to physical and/or

mental impairment, are not capable of full-time independent living. Participants in the day care program are referred to the program by their attending physician or by some other appropriate source such as an institutional discharge planning program, a welfare agency, etc., The essential elements of a day-care program are directed toward meeting the health maintenance and restoration needs of participants. However, there are socialization elements in the program which, by overcoming the isolation so often associated with illness in the aged and disabled, are considered vital for the purposes of fostering and maintaining the maximum possible state of health and well-being.

(b) "Impaired adult" means a chronically ill or disabled adult whose illness or disability may not require twenty-four hour inpatient care but which, in the absence of day care services, may precipitate admission to or prolong stay in a hospital, nursing hoom, or other long-term care facility.[7].

The required services laid out in this pamphlet coincide with the general medical health, rehabilitative and nutritive services which constitute part of the raison d'etre of the meeting house. The major comment that I had after reading the Elder Day Care preliminary analysis was there was no sense of and no mention of the quality of environment needed by the elder day care users. It seems to me that the consciousness becoming so apparent in other programs for the elderly has taken a giant step backwards relative to day care.

My approach to the Day Care facility is to make it as much of a 'part and parcel' of the whole meeting house, as it can possibly be (this is of course working within the required service framework). The elderly people taking part in the day care should not be separated from the mainstream of the building and its other users, and should be made to feel "at home" as opposed to "in a home". In keeping with the behavioral concept of enhancement of the sense of self which deals with the feelings of ownership; (i.e. spatial ownership as in "a place to call your own" and objects such as furniture etc.,) I feel the places generated around the two story space could become ideal territories

to be claimed by the day care people. These might become mini living rooms, studys, fantasy spots etc., etc.,Because of the strong visual point of reference, quality of the space it would be very helpful for people suffering from memory loss and serve as a vehicle for enhancement of memory. Memory dysfunction is a typical attribute of the mentally impaired, (which might constitute a large number of the day care users). A failed memory can be bolstered by enriched and intensified environmentally induced sensory cues. The meeting house has already introduced this concept in the overall building vocabulary in the form of landmarks; but a subset of smaller cues such as color, texture, graphics, symbols and auditory cues can start to act as additional points of reference and enhancers of memory.

Congregate Dwellings

Congregate services can be defined as those which are provided for occupants who cannot or do not wish to provide these services themselves. The broad objective in providing such services is to extend and enhance the length of time that an elderly person can, if he or she so chooses, live as independent a lifestyle as possible. The alternative to providing such services is to relegate all those elderly persons who are partially incapable of taking care of themselves to complete dependence[3].

The congregate living framework can have many permutations. The model I chose for this centre was the "hotel" model. This is pretty well self-explanatory. The dwelling units like a hotel, have a living sleeping space and their own bathrooms. Unlike a hotel the congregate units share a common living room and kitchen.

The basic congregate services are the following:

(a) central food services
(b) social services
(c) medical centre
(d) laundry
(e) recreation, crafts, education, transportation and work training /job placement.

In other words the 'required' congregate living service needs are the same as the 'required' service needs of the elder day care and the needs of the rest of the elderly community. This adds strength to my contention that elderly housing, especially congregate could be a feasible economical addition to the commity service network as an integral and vital part of the community centre and community progress, (hopefully illustrated by the social, behavioral and architectural model of this thesis).

No Place Like Home

All of this brings me back to the central focus of this building which is to create a home, where people feel "at home" (compared to the antithesis in a home), which involves the user, in a multitude of interpretations of his/her PLACE within.

Congregate Revisited

The basic visual and symbolic framework for the housing is the New England village green. The two levels of neighborhoods are oriented around the galleria, village green, park, space, and have an overview of the commercial and community, space below, and views across (the green) to their neighbors. At the end of the galleria on the top residential floors and the second community floor is a huge ingle nook fireplace (a fireplace so big you can sit in it). This serves as a 'link' or common meeting ground for the residents on both sides of the "Green" and is (in my opinion) the second strongest symbol of home and that is HEARTH.

I have also programmed into the various neighborhoods around the village green, activities that will encourage interaction from one neighborhood to the other; for example, a laundry area in one, an outdoor balcony and a greenhouse in the other and so on.

By regarding the four different groups of units as neighborhoods it is possible to give each one a special unique identity. For example, COTTAGE ROW or PARK LANE (I'm getting to the point where my idea bank is running dry on names). This could be the jumping off point for very strong visuals such as graphics, street signs, painted fronts of units, symbols and color coding. One of the main environmental cues is the galleria itself which provides a continuing orientation to time and place. All of which add to the earlier discussion of cuing the environment by creating landmarks and points of reference.

The actual living units are quite tiny and will hopefully encourage people to "get out" a bit, as well as to use the common areas. They are large enough on the other hand that the residents can

bring in THEIR OWN FURNITURE, the double bed that holds all the memorys most double beds have, the big chunky chest of drawers, the rocking chair, the pictures of weddings, loved ones and (usually) J.F.K.

It must be understood by people working with the elderly that the associations, identity and love imprinted into most elderly peoples possessions cannot be duplicated. To take these from people (i.e. by not letting them bring these in) is depriving them some of the last symbols of self and of home. This is not the case with everyone, and some people can't wait to "get rid of all the old junk" but the dwelling unit must be large enough to accommodate this CHOICE.

The other area of choice that I tried to accommodate in the units was choice of furniture arrangement, (multiple solution planning on a micro scale). This is illustrated on the drawings. I did not detail any large clothes closets into the units, these could be added by the available modular storage components (see example on ground floor) or by wardrobes people bring in with them. There are large storage lockers associated with each dwelling, which would be coded to that unit by color or graphics. The walls between the units are not bearing, merely double stud (for better acoustic separation) dry wall. They could be removed altogether if needs and/or lifestyles changed, with just the wet walls left as a perminent element.

ENVIRONMENTAL BARRIERS

A barrier by definition is an obstruction, anything that holds apart or isolates, a limitation or boundary.

These phrases apply directly to the concept of environmental barriers. The notion that many aspects of the environment isolate and discriminate against the user. The elderly and handicapped are very dependent upon their living environments for support, and are therefore much more vulnerable to its barriers. Barriers can range from social, cultural, economic to physical, architectural, and to miscellaneous such as the canaine barrier, (relative to the abundance of unleashed dogs in Jamaica Plain who knock over, trip up and even attack people, and never curb themselves).

It is impossible for the architect or planner to address herself (himself) to all of these issues, but a start can be made in the areas the designer has some control and that is the built environment. The first step is to glean some consciousness of the numbers of vulnerable people, and types and levels of disorder. The next is to look at the aspects of the environment that might be considered as a barrier, and see how these can be taken into account in the design process.

Requirements for the Elderly and Handicapped

In the United States some 25 million people are physically disabled. Of these, 10 million cannot function normally and another 680,000 use wheelchairs. Wheelchair users include those with:

(a) paralysis of various degrees; paraplegics (whose lower limbs are partially or totally affected), quadriplegics (whose four limbs are all affected), and hemiplegics (who have one side of the body affected with partial or total paralysis)

(b) spinal injuries and other back problems

(c) deformities of the spine, hip or pelvis

(d) amputations

(e) loss of joint mobility due to rheumatoid arthritis and other musculoskeletal diseases

(f) loss of muscular strength, muscular dystrophy, and other related diseases

(g) loss of controlled movement (like spastics) and those with multiple scierosis, and other types of motor incoordination

(h) perceptual disorders (those who can move their limbs but cannot direct them)

(i) afflictions due to aging

Unlike other handicapped people, who can make their way through existing architecture, wheelchair users need special environmental safety measures, and certain architectural elements have to be restructured for them if barriers are to be eliminated.

Barriers

1. Floors

(a) Steps and curbs should be eliminated whenever possible. Maximum threshold or curb height is 1 in. (2.5 cm).

(b) Scatter rugs and rugs with a deep pile and abrupt edges should be avoided.

(c) Floor gratings may interfere with wheel travel.

2. Walls

(a) Rough walls can cause hand abrasions.

This is especially important when locating handrails. In one elderly apartment building we evaluated the architect had carried the expressive(?) split concrete block exterior feature inside the building, and located it on the same wall as the handrail for the ramp connecting

a laundry and a lounge to the main level. There was not a great deal of clearance between the handrail and wall as my abraised knuckles will attest. I am sure that follow-up observation will show this to be a real problem area.

(b) Objects projecting from the wall should be kept to a minimum.

(c) If paintings or graphics are used as decoration they should be anchored firmly enough to be able to withstand the impact of a person clutching onto it if they loose their balance and there isn't anything else to grab.

3. Doors

(a) Sliding doors are an obstacle to the wheelchair user unless they are automatic and have no obstructing tracks. Revolving doors are impossible.

(b) A spacing of 78 in. (198.1 cm) between two sets of doors (one set behind the other) avoids a wheelchair trap.

(c) Doors must be easy to open. The maximum force is 8 lb. (3.6 kg).

(d) Lever handles on all doors and water faucets are preferred. (This is a must for people with arthritis)

(e) Automatic doors are the best.

(f) Kickplates must be 16 in. (40.6 cm) high for wheelchair users; they are normally 13 in. (33 cm) high.

(g) Door widths must have a 32 in. (81.3 cm) minimum clear opening.

(h) Bathroom doors must swing outward but be placed so that they do not interfere with traffic.

4. Space

(a) Wheelchair "parking" space is required in theaters, auditoriums,

stadiums, and other public gathering places.

(b) Increased aisle space and parking space is required in cafeterias, restaurants, and libraries.

(c) Public toilet stalls, showers, and phone booths need to be large enough to accommodate a wheelchair.

5. Reach

(a) Phones (including the coin slot), drinking fountains, vending machines, light switches, and fire alarms must be within easy reach. The handy reach zone is 36-48 in. (91.4-121.9 cm), measured from the floor.

(b) Peepholes must be 40 in. (101.6 cm) high; they are normally 60 in. (152.4 cm) high. [5].

The peephole presents a very tricky design problem. The 40 inch high peephole in theory seems okay as that is an average wheelchair viewing height. In reality it gives the viewer a look at (usually) the visitors navel. This in fact, is a good example of the problems with "prescriptions" or actual specifications instead of "performance" standards. An entire thesis could be written in this area (the translation of user needs of the elderly criteria) therefore I shall stop at the problem definition stage.

6. Walks and ramps.

(a) The maximum recommended grade for walks is 3 percent.

(b) Walks with a 3-5 percent grade require rest areas. The minimum width is 48 in. (121.9 cm).

(c) Ramps generally have a 5-8 percent grade. They require rest areas every 30 ft. (9.1m), restricting curbs 2 in. (5.1 cm) high, and handrails on both sides.

(d) The maximum grade for ramps is 8-10 percent. Such ramps

require rest areas every 15 ft. (4.6 m), handrails, and restricting curbs 30 in. (76.2 cm) apart.

(e) Rest platforms have a minimum length of 54 in. (137.2 cm).

(f) Ramps should be textured to provide a non-skid surface.

7. Elevators

(a) The minimum size for a residential elevator capable of accommodating one wheelchair and one attendant is 40 in. (101.6 cm) wide by 52 in.

(b) The minimum size for a public elevator to allow for wheelchairs is 66 in. (167.6 cm) wide by 61 in. (154.9 cm) deep.

(c) The minimum elevator door opening is 32 in. (81.3 cm) wide.

(d) Elevators should be easily accessible [6].

(e) Elevator doors should be programmed for slow closure and/or have an electric eye system that works (many we looked at didn't, as a result we saw several old people being hit by the elevator door).

8. Bathrooms

(a) A 360° turn is desirable in a bathroom (see selector 3a); a 180° turn is acceptable and requires a space 60 in. (152.4 cm) square, 54 x 64 in. (137.2 x 160 cm), or 52 x 69 in. (132.1 x 175.3 cm).

(b) Lavatory height from rim to floor is 32.5 in. (82.6 cm) maximum.

(c) Lavatory bowl depths over 6 in. (15.2 cm) interfere with leg room.

(d) The minimum knee well width under the lavatory is 28 in. (71.1 cm).

(e) Pedestals and leg supports on lavatories should be avoided. Counters or wall mountings are preferred.

(f) Exposed drain and hot water pipes must be insulated.

(g) Tub height is 16 in. (40.6cm) minimum, 19 in. (48.3 cm) maximum.

(h) An adjoining tub seat 18 in. (45.7 cm) wide is required, sloped to drain.

(i) Nonskid material should be provided for the tub bottom.

(j) The Water Closet: Each bathroom or lavatory shall have a water closet with a seat height of 17 inches (the elderly have difficulty with seating and standing motions). If users in wheelchairs are anticipated, the seat height should be 20 inches. Where economically feasible, the water closet should be of the wall hung type for convenience in floor cleaning. The toilet-paper holder should be located in front of or directly at the side of the water closet, in a position where leaning or twisting is not required to use it.

(k) Nonslip grab bars are necessary as assists near the tub and toilet.

(l) Medicine cabinet height from top to floor is 60 in. (152.4 cm) maximum. Cabinet should be located on the wall that is free from fixtures [7].

9. Showers

(a) Showers stalls are 36 in. (91.4 cm) square for wheelchair users.

(b) A folding seat should be hinged on the side wall opposite

- the shower head.

(c) The seat size is 14 x 36 in. (35.6 x 91.4 cm) and is 19 in. (48.3 cm) high. If the wall to which the seat is attached continues beyond the stall, the seat should extend 9 in. (22.9cm) outside to facilitate transference from the wheelchair to the shower seat.

(d) Horizontal grab bars are recommended along the three sides of the stall 33 in. (83.8 cm) above the floor.

(e) Water controls and soap tray should be 42 in. (106.7 cm) above the floor.

(f) Shower curb height is 2 in. (5.1 cm) maximum.

(g) The floor should have a nonskid surface and be at the same level as the floor outside the stall.

(h) When two showers are adjacent one should be right-handed and the other left-handed.

10. Kitchens

(a) Sink height from rim to floor is 32.5 in. (82.6 cm) maximum.

(b) Sink bowl depths over 6 in. (15.2 cm) interfere with leg room.

(c) The minimum width for the knee well under the sink is 28 in. (71.1 cm).

(d) Pedestals and leg supports on sinks should be avoided. Counters with knee wells or wall mounting are preferred.

(e) Exposed drain and hot water pipes must be insulated.

(f) The optimum counter and range height is 31 in. (78.7 cm).

(g) The cooking range knee well should be 28 in. (71.1 cm) wide and a minimum of 26 in. (66 cm) high.

(h) Cooking range controls are located at the front for easy reach.

(i) Wall ovens should be 31 in. (78.7 cm) high, measured from oven bottom to floor. Side hinged doors are preferred. The oven should not be below the cooking range.

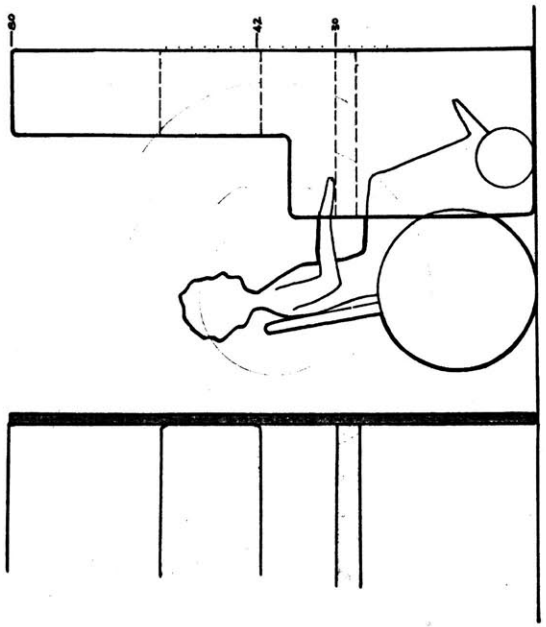
(j) The cooking unit and oven should be electric. Gas cooking devices are not recommended because the elderly often have a poor sense of smell and are forgetful, thus becoming vulnerable to the hazards of fire and explosion.

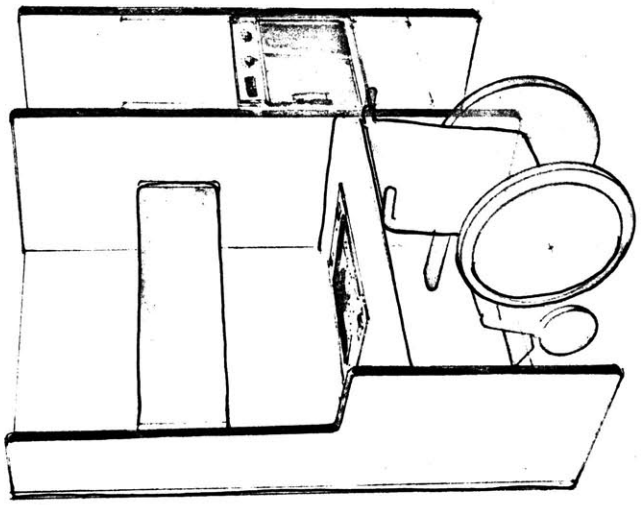
On the other hand a gas stove provides an invaluable sensory cue to the blind person who has an increased sensitivity to smells.

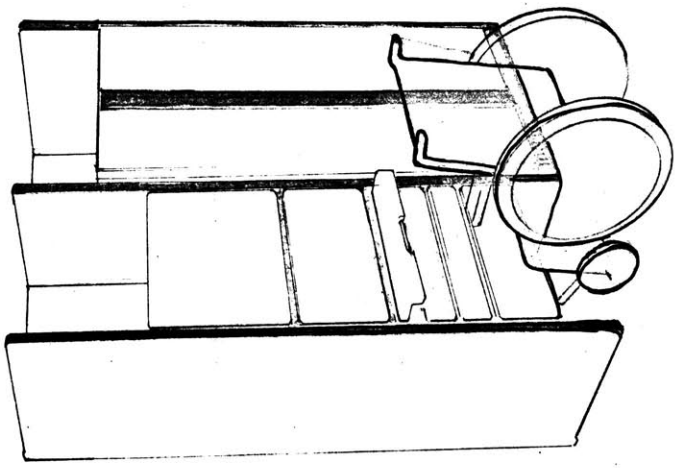
Adaptable Kitchens

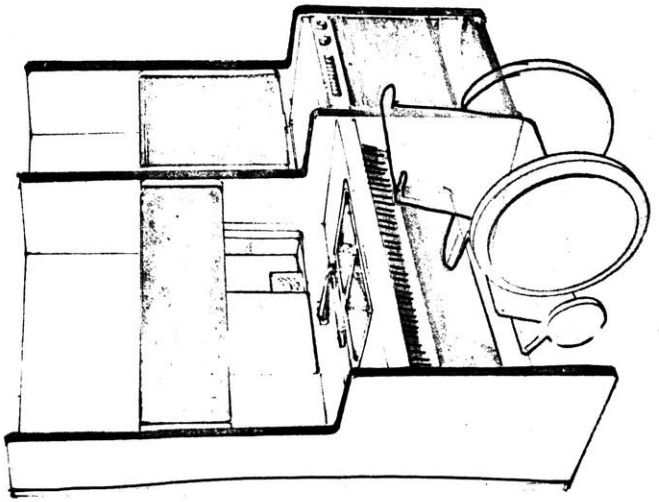
A very important foot-note in the design of kitchens for the elderly and/or handicapped is the notion of an "adaptable kitchen". The technology and prototypes exist (see following pages) for kitchen cores that can accommodate to peoples needs. The shelves and counter heights are adjustable and the various service components (ovens, range tops etc.) can be added and subtracted depending upon the requirements of the user.

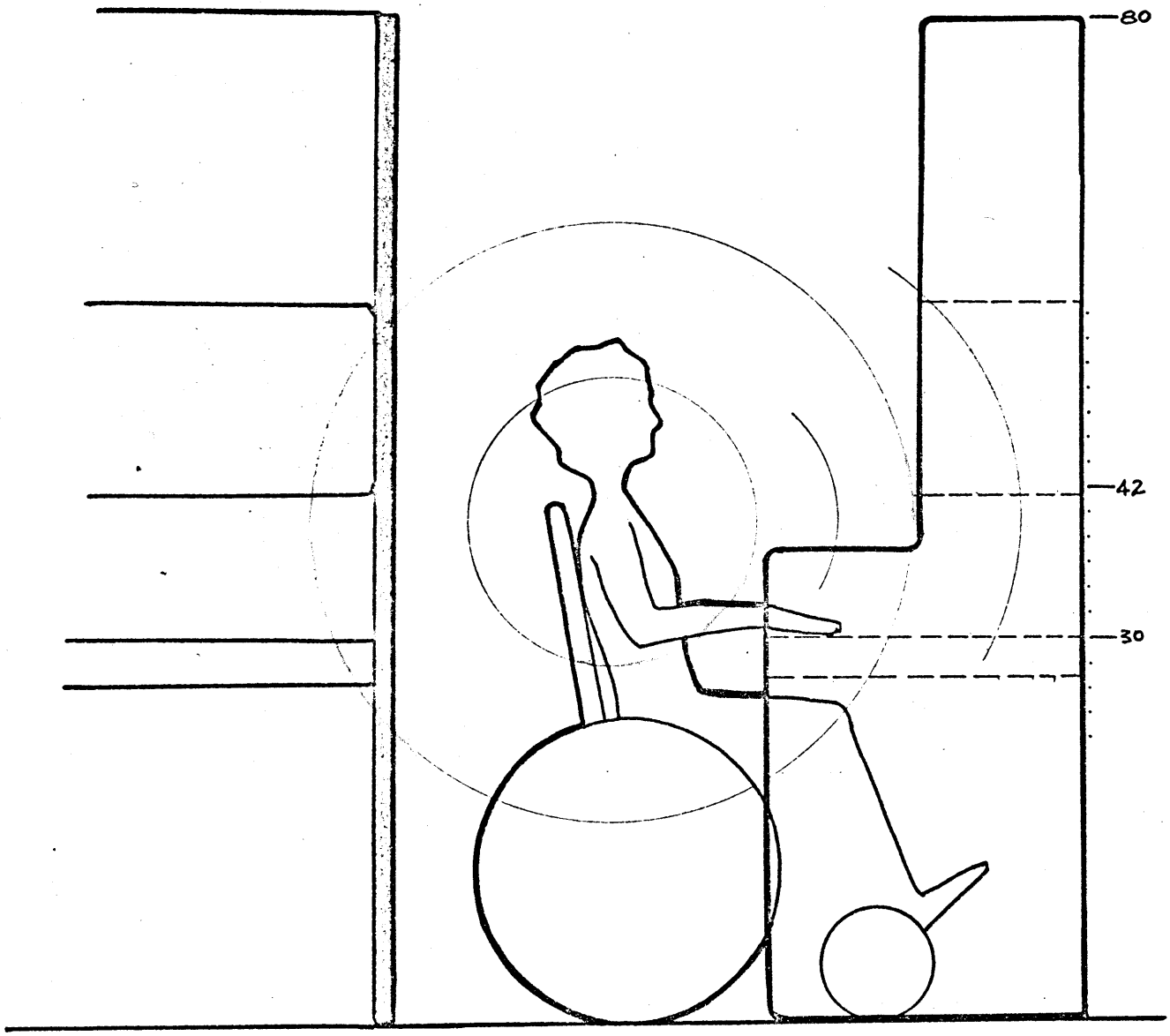
From the national surveys that are coming in as part of the H.E.W. study, one of the main areas of complaint on the part of the respondants, is the kitchen. The issues that are spoken of most frequently are the awkward heights of shelves, and countertops, the bending to get to low cupboards, and the choice of hardware. A kitchen that could be made to "adapt" without a great deal of time and energy seems to be a very reasonable objective, relative to environments for the elderly and handicapped.







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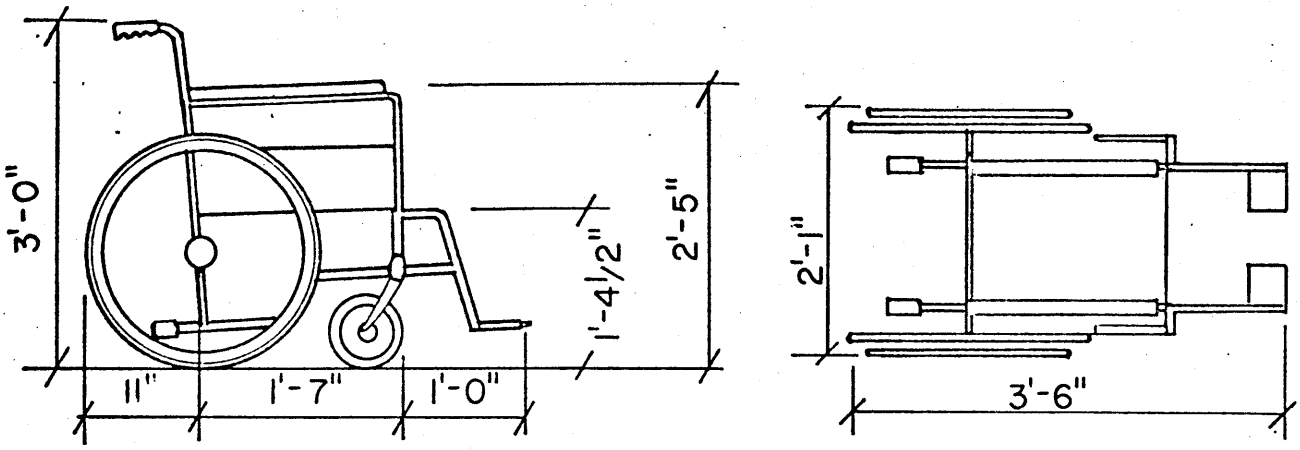
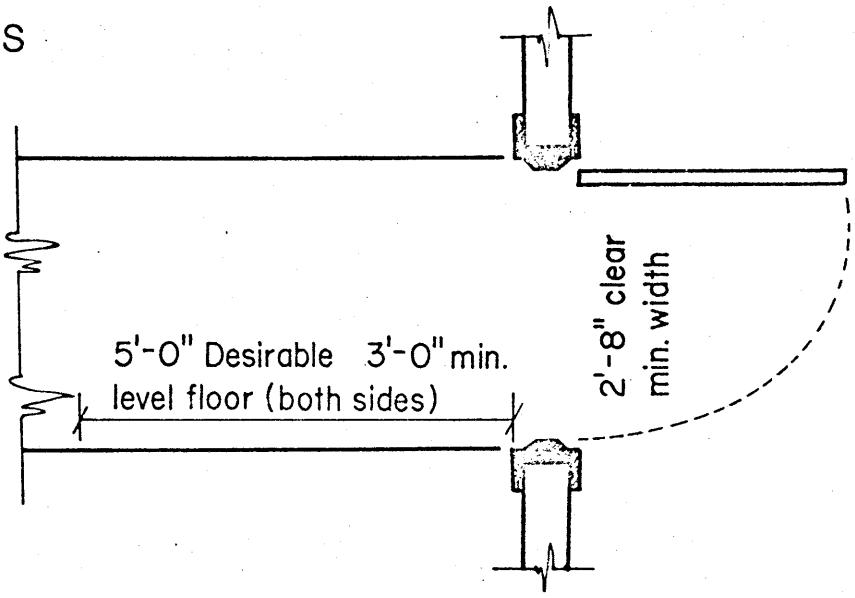
1 WHEELCHAIR



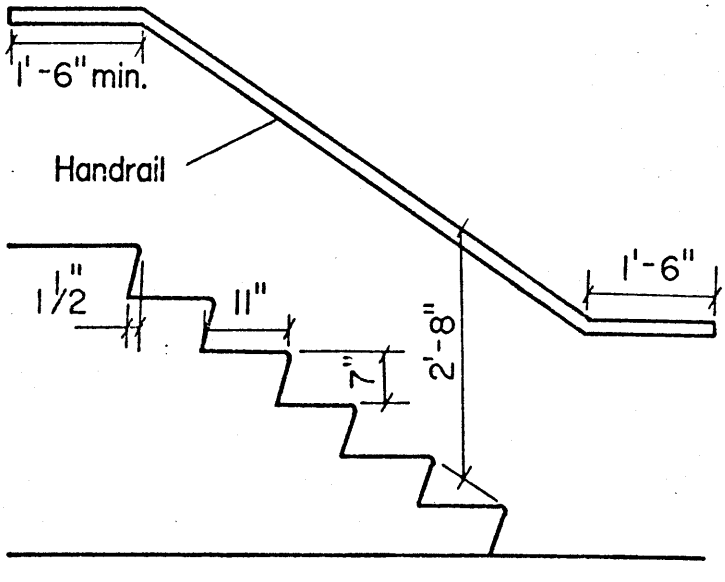
2 DOORS AND ENTRIES

All doors should be a *minimum* of 2'8" wide with door open to 90%. Sills should be flush with the doorway. Door pressure should not exceed eight pounds. The floors on either side of the doorway should be level for at least 5'. Outer and inner doorways less than 6'6" apart are difficult for the disabled to manage. Revolving doors are impossible for those in wheelchairs. Every building should have at least one level entry, accessible to elevators.



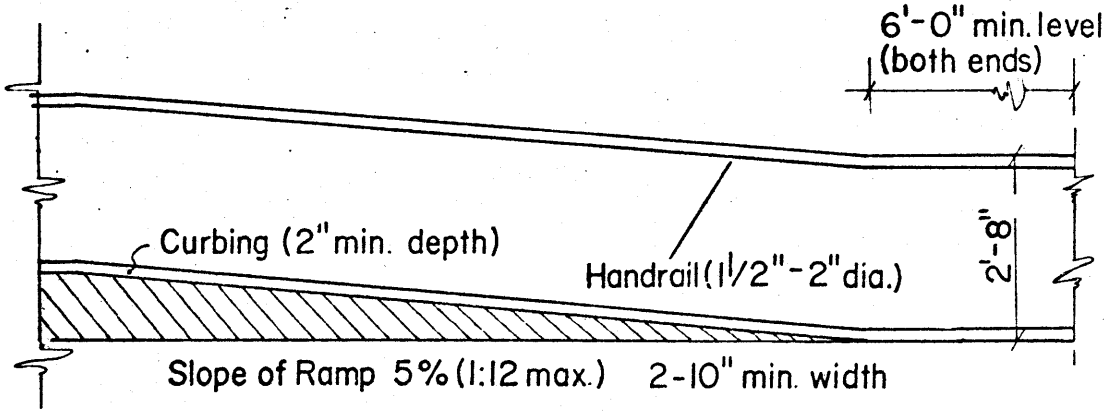
3 STAIRS AND HANDRAILS

Projecting nosings and open risers on stairs are undesirable, since toes tend to catch on them. Risers should not exceed 7" in height. Nosings should be flush with the risers. Handrails should be 2'-8" high and extend 1'-6" or more beyond the top and bottom steps.



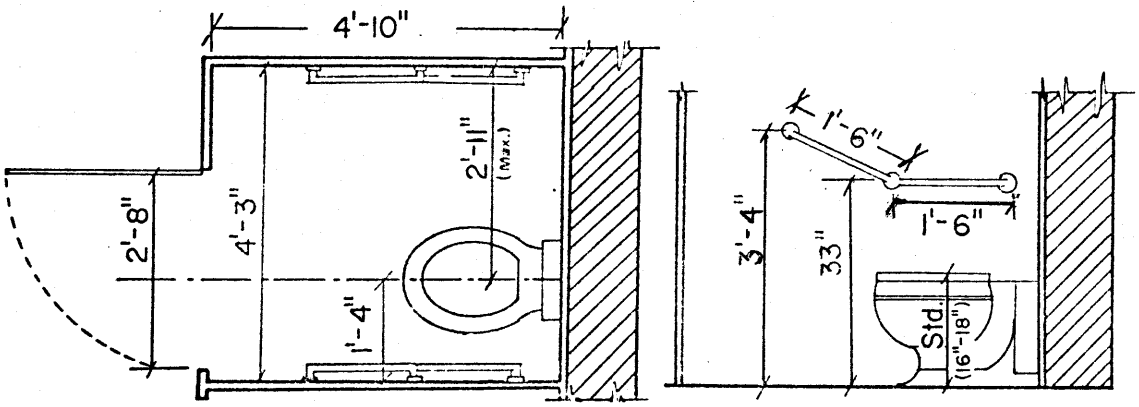
4 RAMPS

When a ramp is necessary, the slope should be preferably 5% or less, but in any event should not exceed 1' of rise for each 12' in length. Ramps should be of non-slip material. There should be level platforms at the top and bottom of the ramps with at least 6' straight, level clearance at the bottom. Curbs, or at least one handrail, should be provided.



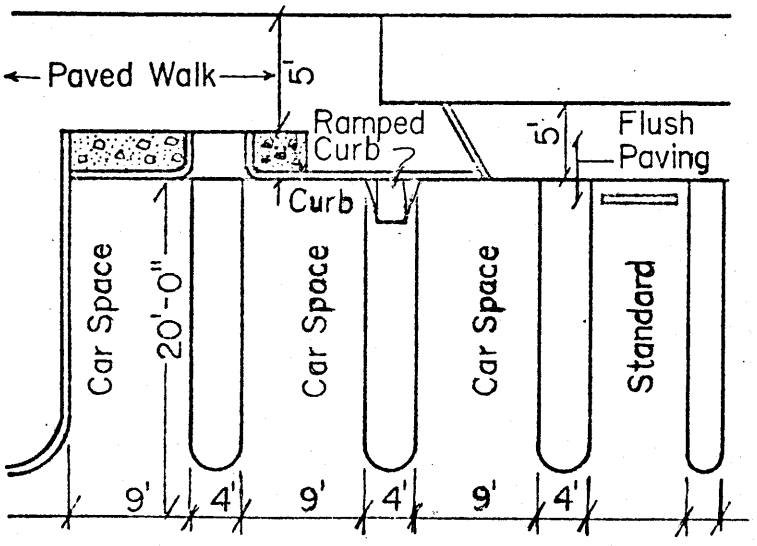
5 RESTROOMS

At least one stall in each major restroom should be wide enough to accommodate a wheelchair inside it (with the door closed) and this stall should have enough space in it to allow a *lateral* transfer from wheelchair to toilet. Otherwise the severely disabled person in a wheelchair will be unable to use it. Mirrors, towel dispensers and shelves should be placed low enough for the wheelchair user. These restrooms should be marked with the *Symbol of Access.*



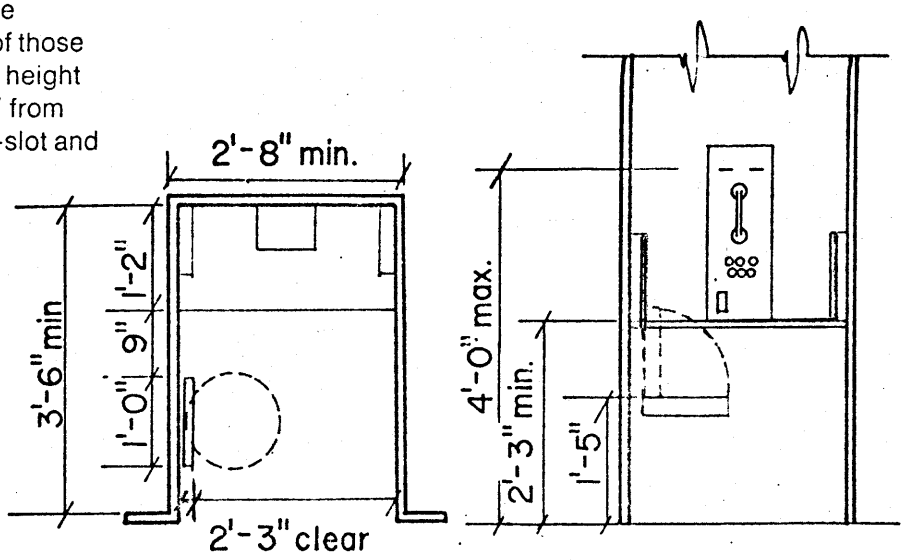
6 PARKING

Parking spaces, marked for the use of the handicapped, should be provided near building entrances to eliminate wheeling or walking behind parking cars. Parking spaces should have level (no curbs or stairs) access from the parking area to the building entrance.



7 PUBLIC TELEPHONES

Telephones should be placed within reach of those in wheelchairs with a height of no more than 4'-0" from the floor to dial, coin-slot and receiver.



Other Handicapped People

In addition to people in wheelchairs, there are others with physical disabilities who require special disabilities who require special provisions. Crutch users, the blind, and those with hearing impairment need safety aids and environmental modifications.

Crutch Users

People on crutches may be only temporarily handicapped, but they too need consideration.

(1) Floors should not be slippery when wet or dry. Slippery floors or thickly padded seating make it difficult for people wearing leg braces to rise out of a chair.

(2) Scatter rugs and rugs with a deep pile should be avoided.

(3) Stairs are better than long or steep ramps for crutch users.

(4) Handrails for stairs must be strong because they are used for pushing and pulling. Decorative, slippery, and over-size handrails should be avoided.

(5) Curbs should be as low as possible and not exceed 6 in. (15.2 cm) in height.

(6) Reach should be limited to an area between head height and knee height.

(7) Crutch users may only be able to have one hand free; for this reason hold-down faucets are impossible.

The Blind

In the Unites States 275,000 people are missing one of their most precious senses - sight. Yet they can move around in places from which handicapped people in wheelchairs are excluded by architectural barriers, and, unlike the deaf, they have litle

difficulty in communicating. Out of necessity, senses such as hearing, smell, and touch become more acute for them, but the blind still require aids and safety considerations.

(1) The blind may be identified by a sign, white cane, or Seeing Eye dog so that others will help if necessary.

(2) If the blind are first led through a situation, memory will help them to repeat it alone.

(3) Braille can be used, but only 10 percent of the blind know Braille.

(4) Room numbers in relief can be identified through touch.

(5) Shape-coded control knobs should be considered.

(6) Textures are useful in identification and in creating interest.

(7) Knurling on the back of doorknobs, levers, and grab bars gives a tactile warning of a dangerous area.

(8) Space should be uncluttered, and it should be organized according to grid patterns.

(9) Hard floors give audible cues by increasing room reverberation.

(10) Visual signals should be reinforced with audible signals.

(11) Gas ranges are preferred to electric ranges because gas gives an audible cue.

(12) Handrails on staircases should have horizontal extensions at top and bottom or be knurled at the ends to indicate the last step.

(13) Railings 42 in. (106.7 cm) high should surround elevated platforms, floor openings and manholes.

(14) Curbs, thresholds, and other tripping hazards should be minimized.

(15) Low-heading objects should be avoided. The head clearance should be 84 in. (213.4 cm) from the floor.

(16) Unexpected stationary or moving objects can be alarming and cause accidents.

(17) Furniture should be steady and sturdy with well-rounded edges and corners.

The Deaf (or Hard of Hearing)

In the United States 9 million people have some degree of hearing loss. Of these 2,340,000 wear hearing aids and 71,000 are totally deaf. Deafness to various sound frequencies can be attributed to diseases, physical accidents, aging, and industrial noise.

Ramps have been considered the ultimate solution to changes in elevation for the handicapped. Recent inquiries of the handicapped tell another story. For those in wheelchairs, ramps are the only means of self-propulsion available for changing elevation. For wheelchair users, a ramp of less than 1 in 12 gradient proved most satisfactory. For others with ambulant handicaps, steps are preferred. Walking on crutches, in leg braces, or on weak legs, these people find ramps unpleasant, tiring, unbalancing, and most of all dangerous in wet or icy weather [9].

This illustrates again the need for CHOICE in the design program, and the validity of Pastalans motions of multiple solution planning.

Stairs

1. Treads

(a) Nonskid surfaces should be used; outdoor steps should be sanded or salted if icy.

NOTE: In many cases a solution that is ideal for one group of people creates a barrier for another. Ramps are a prime example of this situation.

(b) Overpadded carpeting can cause tripping.

(c) Treads 9.5 in. (24.1 cm) are inadequate for descending steps.

2. Risers

(a) Risers over 7 in. (17.8 cm) are too steep; risers less than 4 in. (10.2 cm) are hazardous.

(b) The sum of the tread and riser is best at 18-20 in. (45.7-50.8 cm).

(c) Open risers can cause shin injuires, tripping, and falling.

(d) Variations in risers on the same staircase change the walking rhythm and lead to accidents.

(e) Single risers, which are often overlooked, can be hazardous. Painting risers yellow or white calls attention to them.

3. Handrails

(a) Handrails should be smooth and round for a comfortable, safe grip. The best diameter is 1.5-2 in.(3.8-5.1 cm).

(b) Provide a 2 in. (5.1 cm) hand clearance between the railing and wall.

(c) Handrails should terminate in such a way that they cannot catch clothing.

(d) Handrails that extend horizontally beyond the lowest step and beyond the highest step give a clue as to where the stairs end.

(e) Handrails should be able to withstand a lateral force of at least 200 lb. (90.7 kg).

(f) Handrails 42 in. (106.7 cm) high on landings and balconies are easy to see, and since they are above a person's centre of gravity they protect one from toppling. The optimum handrail height on stairs is 30-34 in. (76.2-86.4 cm) above the tread, measured from the nosing.

4. Landings

(a) There should be a resting point for the elderly at every 72 in. (182.9 cm) rise on indoor stairs and at every 48 in (121.9 cm) rise on outdoor stairs.

(b) A landing must be provided as a transition between steps and a door. It must be large enough to provide clearance beyond swinging doors.

(c) Landings should be used for changing the direction of steps.

5. Stair width.

(a) To allow one person to pass another person going in the other direction, the stair width should be 48-51 in. (121.9-129.5 cm).

(b) To allow two people to pass one person going in the other direction, the width should be 72-75 in. (182.9-190.5 cm).

(c) For each extra person, add 24 in. (61 cm).

(d) The minimum for service stairs (if used by one person) or for deliberate restriction is 24 in. (61 cm).

Doors

1. Material

(a) Door windows should be unbreakable since many door accidents result in injuries caused by broken glass.

(b) Full-length transparent door should have markings to indicate their presence; otherwise people tend to walk into them.

2. Openings

(a) Doors should not open into hazardous areas such as stairs or traffic.

(b) The minimum angle for a safe door opening is 90°.

(c) Doors must swing outward from small continued spaces to permit extrication of a collapsed person.

(d) Folding and sliding doors are much safer than double swinging doors.

(e) Door and jamb edges should be rounded or cushioned to minimize scissor cutting and smashing of fingers.

(f) Sticking doors can release suddenly, creating unforeseen injuries.

3. Hardware

(a) Doorknobs are hazardous to grab if sharp or broken.

(b) Lever handles are easier for most people to operate.

(c) A hand clearance of 2.7 in. (6.9 cm) is required between doorknob and door frame.

(d) Nonlatching or releasable hardware allows a person to escape from a closet.

(e) Strike plates and push bars must not catch clothing.

(f) If a doorstop causes rapid rebounding, injuries may occur. doorstops should be mounted near the top of the door so that they do not cause tripping.

(g) Automatic door closers should be adjusted to make opening doors easy. Doors should be made to close slowly. [10].

Building Checklist

The following is a partial checklist of architectural features developed in conjunction with the design and post construction evaluation of a built housing project designed specifically for the elderly.

The criteria developed is very relative to "meeting houses" and elderly housing in general,and is an excellent tool for testing out, the decisions made throughout the design process.

✓ All light sources baffled, no direct visability of bulbs
✓ Amplified telephone
✓ Bathroom facilities especially adapted to wheelchair transfer:
  Bathing
  Toilet
✓ Bright colors in environment
✓ Central kitchen available to prepare foods for tenants
✓ Compact work space in kitchen
✓ Doorways wide enough for wheelchair:
  Public place
  Entrance to apartment
  Within apartment
✓ Echo free, resonance free environment
✓ Firsr floor or elevator
✓ Frequent pauses, resting places in corridors
✓ Furniture in public places which allows ease in rising
✓ Garbage and waste disposal on the same floor as tenant
✓ Gradual increase in interior light intensity as outside doorway is approached to prevent too rapid adjustment
✓ Handgrips on furniture in public places
  High toilet seat
✓ Humidity in winter 35° or above
✓ Kitchen designed for one hand operation and safety:
  Cabinets
  Refrigerator
  Sink

Stove
Working space
✓ Knurled doorknobs on entranceways leading to dangerous places
✓ Large tactile controls on kitchen applicances, doors, and appliances in the laundry room
✓ Lever or oval type controls on appliances
Kitchen
Laundry room
✓ Lever or oval type controls on doors:
Public place
Entrance to apartment
Within apartment
✓ Lever or oval type controls on all faucets
✓ Light force required to move doors
✓ Loud doorbell
✓ Low pile carpeting or smooth floors
✓ Low shelves
✓ Low stair risers
✓ Low storage areas
✓ Low switches
✓ Matte, non-glare architectural surfaces (floors, walls, etc.)
✓ Medicine cabinet not over sink or obstruction
✓ Multiple door release buttons
✓ No high or overhead shelves
✓ No loud, confused pattern on floor surfaces
✓ No ramps or stairs at entrance to building
✓ No thresholds:
Public places
Entrance to apartment
Within apartment
✓ Parcel shelves
✓ Proximity to social activities
✓ Radiant heat in bathroom for sponge baths
✓ Railings in bathroom:
Bathing areas
Near toilet
✓ Railings on both sides of stairs
✓ Ramps for small changes in grade
✓ Reflective edges or color change at every change in evaluation or direction of walking

✓ Rheostats on all light control switches
✓ Seating closely spaced for conversation in public areas
✓ Shelving at chest height
✓ Shower seat
✓ Single control faucets:
  Kitchen sink
  Bathroom sink
  Shower
✓ Speaker telephone in public areas
✓ Special features for the Blind other than those listed above:
  -Bells at outside of elevator doors to signify approach of elevators
  -Raised numbers on appliances, controls, and doors, when relevant:
    Public Places
    Entrance to apartment
    Within apartment
✓ Special features for the Deaf other than those listed above or below:
  - Flashing light rather than (or in addition to) sound when doorbell is pressed
  - Light next to elevator doors signifying when elevator is approaching the floor and the direction in which it is going
✓ Strong light casting distinct shadows to help lip reading, visual identification
✓ Toilet located next to or off bedroom[11].

Furniture

One of the areas I am very interested in relative to elderly environments is the furniture selection in the public areas. As mentioned before, where it is at all possible people should be allowed to bring in their own furniture for their own living spaces. My contention is that any, anthropometric problems that might exist in these furnishings have probably been compensated for, by the owner. Furniture for the common areas however, must be selected by a more reasonable set of guidlines than the haphazard methods presently used.

After seeing some of the totally unreasonable choices in furniture in many of the elderly housing sites we visited (as part of the H.E.W. design team) I developed an evaluation instrument to determine exactly what was being selected, and how these choices were arrived at. (see appendix).

This instrument was then tied in with the behavior mapping. Its interesting to note that in at least one case an area noted as an activity zone, was active because of the location of the comfortable chairs and not because of an architectural or outside feature. This instrument is a good way of having a documentation of what has been used and comparing it with the following list of seating considerations. The goal would be to set up and institute guidelines for the selection of furnishings. There is a real problem of territoreality associated with sofas in common spaces, as a result they are seldom specified. For this reason the emphasis is on "the chair", one of the most significant elements of the furnished environment.

Seating Considerations

In spite of all the knowledge accumulated through research and tests by experts in the field, seating remains poor. Some chairs today look as though the designer never saw a human body - they do not conform to body curves, they overload certain tissues to the point of fatigue, and they do not support the hollow of the back. Most people are so accustomed to poor seating that they accept discomfort as a matter of course and when purchasing a chair they often place more importance on its appearance than on its comfort.

Once a decision has been reached as to the user of the chair consideration must be given to all the elements that are a part of it: the seat, backrest, armrest, headrest, and footrest.

Seat

1. Seat length

(a) Seat lengths less than 13 in. (33 cm) do not give adequate seat support under the thighs, and the load on other tissues is consequently increased. The resulting discomfort is

reflected in a shorter sitting time.

(b) Seat lengths greater than 16 in. (40.6 cm) do not accommodate the small female. The front edge of the seat comes in contact with the back of the leg, forcing her to sit toward the front or to slide forward away from the backrest support, which results in a poor sitting posture.

(c) Seat lengths of 18 in. (45.7 cm) provide fuller thigh support for large people, giving them greater comfort.

2. Seat width

(a) Seat widths less than 16 in. (40.6 cm) do not fully support the buttocks of the large male or female. Seat edges can be disturbing if they are felt.

(b) Angles of 0-5° are usually optimum for chairs for work at a table or desk.

3. Seat Padding

(a) Hard flat seats are uncomfortable for periods of over an hour and cause the sitter to become restless. The pressure on the tissues under the ischia impedes the blood flow, creating fatigue an pain. A slight hollow in the seat .5 in. (1.3 cm) deep and contoured to fit the buttocks increases comfort.

(b) Deep soft padding allows the ischia to sink too far, and the load is then transferred to the surrounding flesh, creating discomfort. It also rotates the greater trochanters of the thigh bones upward, which causes abnormal tension in the hip muscles.

(c) For comfort, an average padded seat would have about 1.5 in (3.8 cm) of medium foam padding over 5 in. (1.3 cm) of firm closed-cell padding.

(d) "Bottoming" is experienced when a person sits down hard and feels the seat pad with abruptness. To prevent bottoming, a firmer pad is installed under the medium foam cushion.

(e) The chair seat supports most of the body weight. In a relaxing or lounge chair approximately 75 percent of the body weight is on the seat, 8 percent on the backrest and 17 percent (legs and feet) on the floor.

(f) The maximum allowable seat compression is about 1.5 in. (3.8 cm) for the average man, who weighs about 172 lb. (78 kg). Deduct.25 in. (.64 cm) for every 30 lb. (13.6 kg) lighter, and add.25 in. (.6 cm) for every 30 lb (13.6 kg) heavier.

(g) Bucket seats are to be avoided. They cannot be designed to fit everyone comfortably and they prevent the body from shifting to other postures.

4. Seat Front Edge

(a) Hard seat front edges (such as those on deck chairs) compress the tissues hard against the thigh bone and slow down blood circulation in the legs. This compression can cause severe pain or make the legs fall asleep. Sometimes the feet swell, and there is a possibility of venous thrombosis.

(b) A softly padded front edge with a radius of about 1-2 in. (2.5-5.1 cm) reduces tissues pressure to near zero. In a good chair the sitter is not conscious of the front edge.

(c) A clearance of about 3 in. (7.6 cm) is needed behind the front edge to allow the feet and legs to move back as an assist in rising from the chair.

5. Seat Covering

(a) Seat coverings with coarse textures are uncomfortable for people wearing thin clothing.

(b) Slippery surfaces cause the body to slide away from the back support. They can be hazardous in vehicles that accelerate and decelerate rapidly, especially when people are sitting sideways.

(c) Some fabrics, like those with glass fibres can be irrating, while others may actually cause allergic reations.

(d) Seat coverings that feel cold in winter and hot in summer are not desirable.

(e) Seat materials should be porous enough to breathe.

(f) Since people perspire, moisture must be absorbed and evaporated.

(g) Static electrical effects should be minimized.

(h) It is desirable to have seats that can be cleaned easily.

6. Vibration

(a) Proper springing, damping, and vibration control are necessary for seats used in vehicles that are subject to vibrations. Vibration-sensitive people can become ill as a result of vibration.

(b) Intense seat vibrations, the same as the natural frequencies of vibration that exist for the various parts of the body, can be disabling.

Backrest

1. Lumbar Support

(a) A backrest that does not maintain the natural curvature of the hollow in the back (the lumbar region) may induce backaches. Relatively vertical work chairs and secretarial chairs need back support in the lumbar region. Chairs with full backrests

should also include lumbar support.

(b) The centre of forward curvature of the lumbar region for adults is located about 9-10 in. (22.9-25.4 cm) above the compressed seat cushion. It is better to have lumbar support a little high rather than too low in order to support back weight. The height of the centre of the lumbar curve, changes as a child grows.

(c) The depth of the support for the lumbar concavity in the sitting posture is 6-1 in. (1.5-2.5 cm).

(d) A padded lumbar support with a 10 in. (25.4 cm) radius in the vertical plane accommodates most people.

(e) Lumbar supports should measure 6-9 in. (15.2-22.9 cm) from top to bottom. They are uncomfortable if too short.

(f) They should be 13 in. (33 cm) wide. However, a lumbar support wider than this strikes the elbow and interferes with arm motions required in typing and other kinds of work.

(g) A backrest curvature with a 12-18 in. (30.5-45.7 cm) radius in the horizontal plane follows the roundness of the back at the waistline.

(h) Flexing backrests should be avoided because they create a feeling of insecurity.

2. Thoracic Support

(a) Relaxing chairs must support the thoracic region of the back as well as provide correct lumbar support.

(b) Height of the full back support for relaxing is 21-28 in. (53.3-71.1cm) above the seat.

(c) Backrests under 15 in. (38.1 cm) high, measured from the top edge to the compressed seat, permit shoulder movement and can be used occasionally as armrests. This height is too

short for relaxation comfort.

(d) The backrest for relaxing chairs should be at least the same width as the seat, or wider, to provide support for the upper arms and to allow the body to assume many postures.

(e) The area of the thoracic region at shoulder blade level is nearly flat. Backrests with a concavity having a radius less than 40 in. (101.6 cm), measured horizontally, should be avoided as they tend to round the shoulders and create muscular strain.

(f) The backrest-to-seat angle should not create hip angles less than 90° since they cause flattening of the lumbar curve by titling the pelvis, which may lead to abnormal muscle tension and cramping. Backrest-to-seat angles of 95-100° are good for most purposes; 95° angles should be used on dining chairs; 95-97.5° angles are good for the alert posture while driving; lounge chairs should exceed 100°.

3. Sacrum Support

(a) The sacrum is an area about 3.5 in. (8.9 cm) high, beginning about 3 in. (7.6 cm) above the compressed seat.

(b) When added to lumbar and thoracic supports, sacrum supports increase comfort by stablizing the pelvis and by distributing back pressure over a greater area.

4. Buttocks Zone

(a) Back support below the sacral area, a distance of about 3 in. (7.6 cm) to the seat, is not desirable because it presses against the buttocks, which expand during sitting.

(b) Pressure on the buttocks is uncomfortable and tends to make the sitter move forward, thus losing the correct back support. If the backrest meets the seat cushion, the buttock zone must be very softly padded.

5. Backrest Padding and Covering

(a) The requirements for padding and covering the backrest are similar to those for padding and covering the seat.

(b) Padding of the thoracic support should be soft, with protection against bottoming. Padding of the lumbar support must be firm enough to maintain the normal lumbar curve.

Headrest

1. Purpose

(a) If the backrest angle is more than 30° from the vertical, a seat needs a headrest: without one at greater angles the sitter slides forward to obtain support for the head on the backrest, which creates a poor, hammocklike posture. If the backrest is short, the sitter may eventually find himself sliding off the seat.

2. Headrest Size

(a) Minimum headrest height from top to bottom is 5-6 in. (12.7 -15.2 cm).

(b) The height of headrests should be adjustable. (see selector 2a).

(c) Headrests can be included in the backrest; if so, they must be high enough to accommodate the large person.

(d) Minimum headrest width is 10 in. (25.4 cm).

3. Headrest Position

(a) Headrests angled 5-10° hold the head forward of the backrest plane, reducing strain of the neck muscles.

(b) The junction between the headrest and the backrest should

be smooth to avoid an abrupt change in contour, which interferes with the comfort of short people.

4. Headrest Padding and Covering

(a) Headrests should be softly padded.

(b) They should be covered with soft, smooth material.

Neckrest

1. Adjustable pillow should be used as neck supports for reclining seats, since it is impossible to find one location that satisfies the large range of occupants.

2. Pillows should be soft at the centre with more thickly padded sides serving as cheekrests and resisting side titing of the head.

Armrest

1. In addition to supporting the weight of the arms, armrests are useful aids in getting in and out of chairs. They can also act as steady rests for manipulating sensitive controls with the fingers.

2. Armrest length

(a) The most comfortable armrests are long enough to support the full arm and the base of the hand. The minimum dimension for accomplishing this is 12 in. (30.5 cm) measured from the backrest.

(b) On lounge chairs the armrest length can be the same as the seat length, or greater if the backrest reclines. Armrests must always support the elbows.

(c) Short armrests, 8.3 in. (21.1 cm) long, permit a close approach to tables and desks, which then provide additional support for the forearms.

(d) Very short armrests, 6 in. (15.2 cm) long, which support only the elbows, are used for chairs that rotate for work at wraparound consoles, and they also may be used for typists chairs.

3. Armrest Width

(a) Armrest widths less than 2 in. (5.1 cm) create insecurity and muscle tension.

(b) Widths of 2.5-3.5 in. (6.4-8.9 cm) are adequate.

(c) Wider armrests are considered luxurious.

4. Armrest Spacing

(a) Armrests must be separated only enough to permit seat entry of the largest sitter. If they are too far apart, slender people have to either hang their elbows inside or use only one armrest.

(b) The minimum space between the insides of the armrests is 19 in. (48.3 cm).

(c) The maximum space is 22 in. (55.9 cm) which accepts the large male wearing heavy winter clothing, but this is too wide for the comfort of most people.

5. Armrest Height

(a) The armrest height, which is measured from the compressed seat, is 7-10 in. (17.8-25.4 cm) for most adults. An average value of 8.5 in. (21.6 cm) satisfies most people. (See selection 2b for the height for children).

(b) High armrests elevate or round the shoulders, causing stiffness or pain in shoulder and neck muscles.

(c) Low armrests are conductive to excessive body slump and leaning to one side.

(d) Adjustability should be considered in designing for those who sit for long periods at critical work.

(e) Armrests can be at the same level as tables and desks for playing cards and writing.

(f) Armrests can be parallel either to the seat surface or to the floor.

(g) A finger clearance of 1.5 in. (3.8 cm) is needed for armrests that pass under a table to prevent possible injury in pulling the chair into position.

6. Armrest Padding and Covering

(a) On hard armrests, edges and corners with radii less than 3 in. (.8 cm) cannot be tolerated for long.

(b) Armrests should be padded if the seat is to be used for periods of over one hour.

(c) Padding need be only 5-8 in. (1.3-2 cm) thick if its density is sufficient to prevent bottoming.

(d) Armrest covering can be the same as the seat cushion, providing that the covering is smooth.

Footrest

1. Portable Footrest

If the front edge of a seat exceeds the popliteal height plus heel height, a footrest is required. This is frequently the case in seating small females.

2. Footrest Angle

(a) The desired ankle angle is 90-100°, measured between the footrest surface and shank link.

(b) A heel stop is needed if the slope of the footrest is greater than 15° measured from the horizontal.

Chair and Body Angles

1. Seat Angle

(a) Seat angles are 0-25° above the horizontal at the seat reference point.

(b) Small angles, 0-5°, are used for dining and work tables.

(c) Large angles are used for seats with sloping backrests to prevent sliding and for seats in vehicles subject to vibration because they discourage slipping.

(d) Large seat angles maintain the correct knee and hip angles when it is necessary to lower the head height for lower vehicle silhouette.

2. Backrest-to-seat Angle

(a) The backrest-to-seat angle must open the hip angle more than 90° to prevent jacknifing, which allows the anterior hip muscles to shorten and cramp.

(b) The optimum backrest-to-seat angle range is 95-120°.

(c) The most relaxing angle for a reclining chair is 130°, but it makes reading, conversation, or watching television difficult.

(d) When 180° is reached, the chair becomes a flat bed.

(e) Dental and barber chairs have backrests that can tilt back to put the head in a nearly horizontal position. It is desirable to have the backrest wide to support the patient's arms, but interference with the dentist's reach must be avoided.

3. Backrest Angle

(a) Backrest angles are 10-45°, measured from the vertical.

(b) Angles greater than 30° require head support.

(c) The larger the angle, the more relaxing the seat is, since some of the body weight is shifted from the seat to the backrest.

4. Knee Angle

(a) The optimum comfort range is 95-135°.

(b) Angles of 110-120° are optimum for people operating foot pedals.

(c) Angles greater than 135° are used to lower the seat height for reducing vehicle silhouette on race cars.

(d) Knee angles of about 80° are required for placing the feet backward to rise out of a chair. For this reason the chair must be equipped with a setback of at least 3 in. (7.6 cm) under the seat.

5. Ankle Angle

(a) The comfort range of ankle angles is 90-100°, measured between the plane of the footrest and the shank link. This range is used for footrest angles and for the cruising speed position of a vehicle accelerator.

(b) The minimum ankle angle is 55° (dorsiflexion).

(c) The maximum is 128° (extension).

6. Upper Arm Angle at Shoulder

(a) Upper arm angles, measured with the arm in front of the vertical, are assumed to be 0-15° when the sitter is working

at a typewriter keyboard.

(b) The comfort range for operating steering wheels is 10-45° from the vertical.

(c) Angles larger than 45° become fatiguing but may be used in high-torque conditions where a large diameter steering wheel is required.

7. Elbow Angle

(a) Elbow angles are 80-120° for comfort and maximum arm strength when people are seated at work.

(b) The minimum elbow angle is 38°.

(c) The maximum is 180°. (165° is assumed when a person is standing).

8. Head Angle

(a) The head is usually held vertical when a person is looking at the horizon, driving a car, or operating a wall console.

(b) The head angle, measured between the head-rest and backrest reference planes, is 0-10° during relaxation.

(c) The head tilts forward about 15° when a person is typing or working at a table.

(d) A head tilt of 35° may be assumed when a person is working at a kitchen sink, but this position is fatiguing.

Chair Mobility

1. Swivels and Casters

(a) Swivels and casters are desirable on executive and secretarial chairs. They are also useful on seats at consoles, especially

wraparound consoles that require rapid attention to various work areas.

(b) Swivel motion must be limited when used for seats on seagoing vessels. There, locking devices and limits of 45° rotation are advisable, and casters cannot be used.

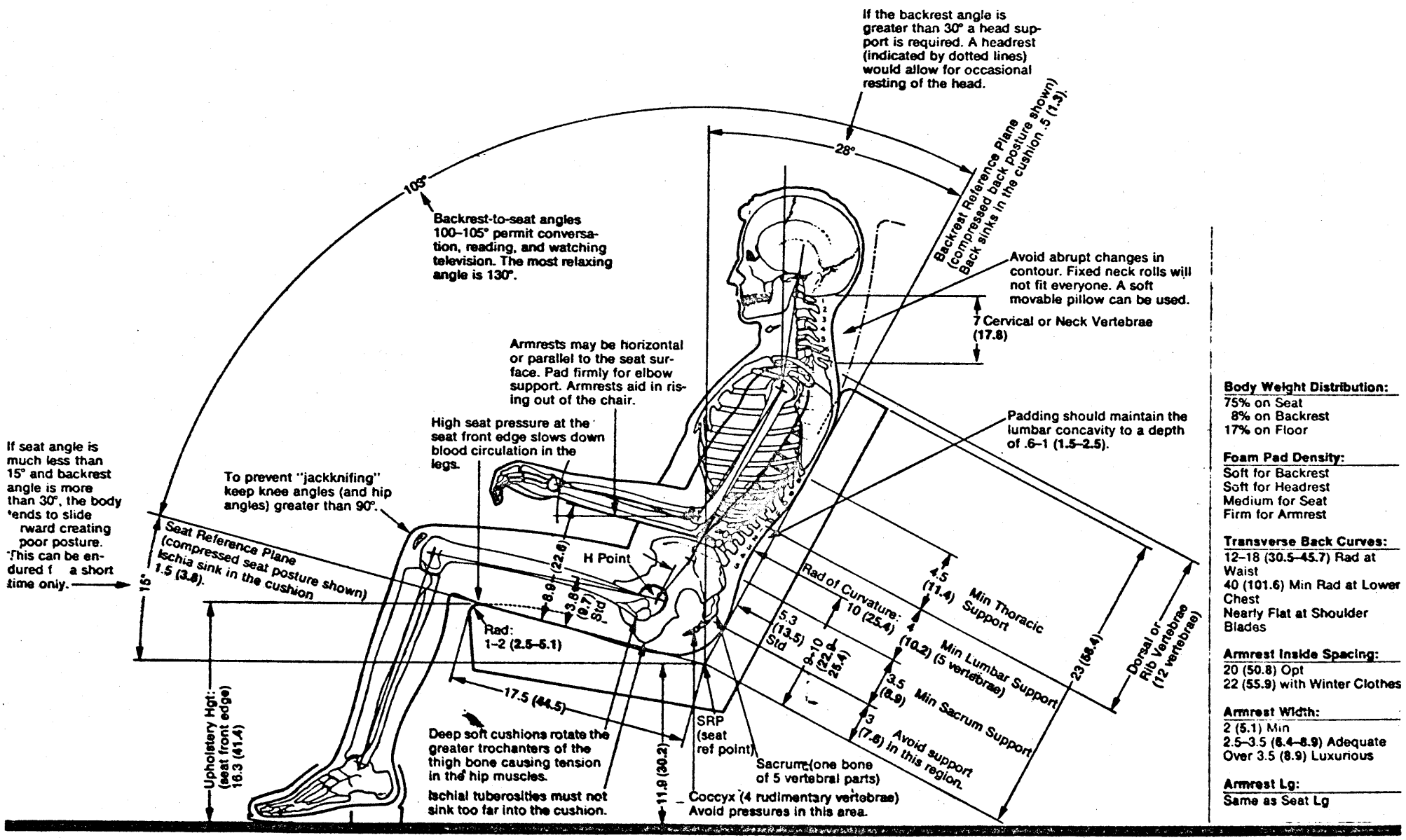
(c) Swivels, but not casters, can be used on high chairs and drafting stools.

(d) Casters aid movement in entering small knee wells.

(e) Sometimes it is more convenient to pull a small table on casters over the chair than to manipulate the chair under the table.[12].

Average Male Seated In a Lounge Chair

Figure 9



Body Weight Distribution:
75% on Seat
8% on Backrest
17% on Floor

Foam Pad Density:
Soft for Backrest
Soft for Headrest
Medium for Seat
Firm for Armrest

Transverse Back Curves:
12–18 (30.5–45.7) Rad at Waist
40 (101.6) Min Rad at Lower Chest
Nearly Flat at Shoulder Blades

Armrest Inside Spacing:
20 (50.8) Opt
22 (55.9) with Winter Clothes

Armrest Width:
2 (5.1) Min
2.5–3.5 (6.4–8.9) Adequate
Over 3.5 (8.9) Luxurious

Armrest Lg:
Same as Seat Lg

Source: Humanscale 1/2/3

DISCLAIMER

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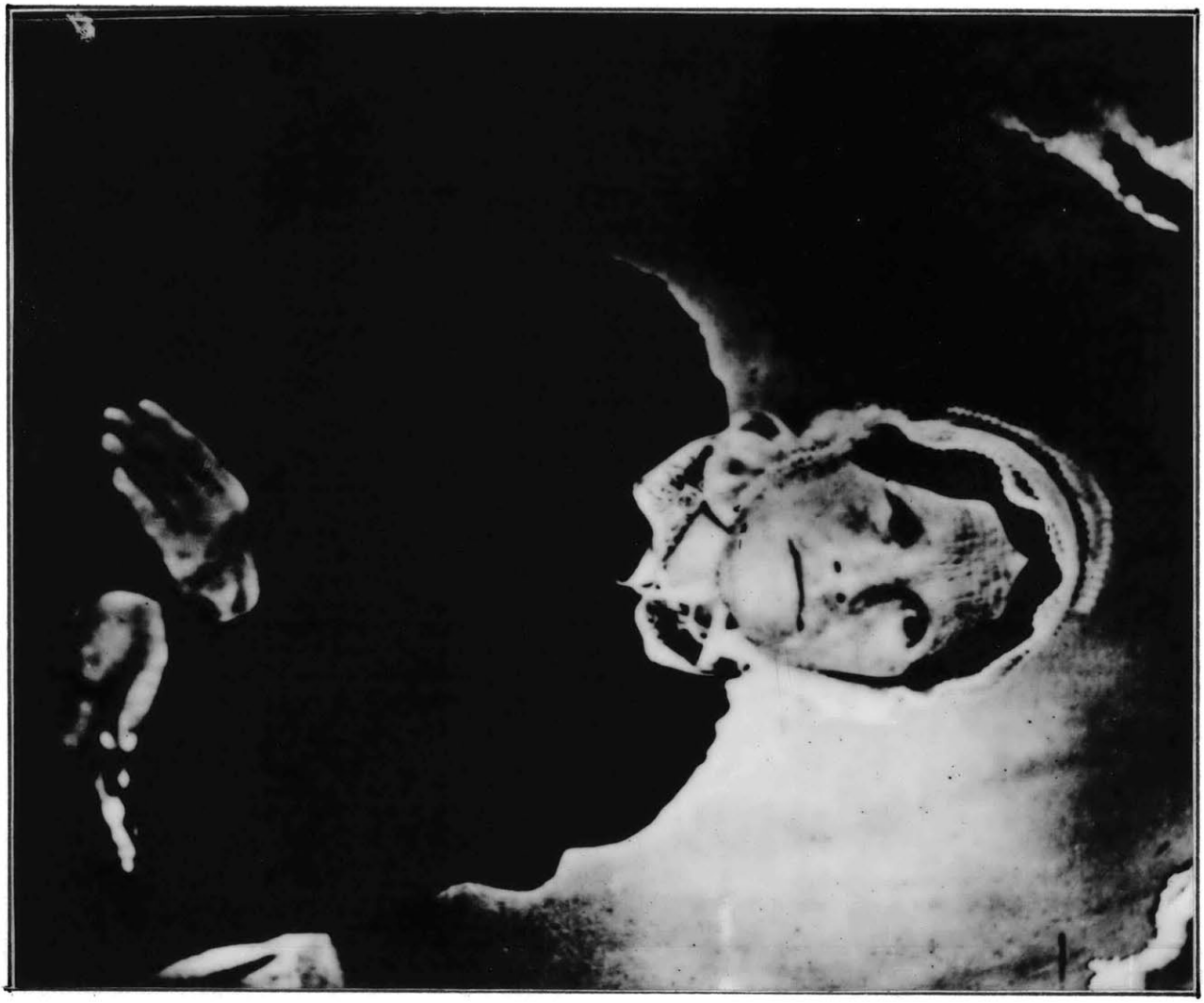
(Page 112)

CONCLUSION

AGE TAKES HOLD OF US BY SURPRISE

Goethe.



APPENDIX

FOOTNOTES

BACKGROUND

1. Michigan State Housing Authority : Housing for the Elderly Development Process. p. 10.

2. H.E.W. pamphlet edited by M. Powell Lawton Ph.D., and Thomas O. Byerts, M. Arch., Community Planning for the Elderly. p. 7.

3. H.E.W. pamphlet edited by M. Powell Lawton Ph.D., and Thomas O. Byerts, M. Arch., Community Planning for the Elderly. p. 8-13.

4. H.E.W. pamphlet edited by M. Powell Lawton Ph.D., and Thomas O. Byerts, M. Arch., Community Planning for the Elderly. p. 15.

5. H.E.W. pamphlet edited by M. Powell Lawton Ph.D., and Thomas O. Byerts, M. Arch., Community Planning for the Elderly. p. 20-22.

6. H.E.W. pamphlet edited by M. Powell Lawton Ph.D., and Thomas O. Byerts, M. Arch., Community Planning for the Elderly. p. 24.

PROGRAM

1. Elaine Brody : Service Supported Independent Living paper from Housing and Environment for the Elderly. p. 110.

2. Michigan State Housing Authority : Housing for the Elderly Development Process. p. 32.

SITE SECTION

1. Michigan State Housing Authority : Housing for the Elderly, Development Process. p. 29-30.

2. Michigan State Housing Authority : Housing for the Elderly, Development Process. p. 32.

3. Sandra Howell Ph.D., : Housing and Environments for the Elderly : Information Translation for Use.

4. Oscar Newman : Progressive Architecture excerpt November 1972 from Defensible Space. p. 94.

5. S. Sherwood, Ph.D., D.S. Green, M.D. and J. Glassman: Part II of Subsidiary Analys s (Hud contract H-1275) Architecture and Site Location of Highland Heights.

DESIGN

1. Michigan State Housing Authority : Housing for the Elderly Development Process. p. 46

2. Niels Diffrient, Alvin R. Tilley, Joan Bardagjy, Henry Dreyfus Associates; Humanscale 1/2/3. p. 29.

3. Michigan State Housing Authority : Housing for the Elderly Development Process. p. 24.

4. Washington/Alaska Regional Medical Program : Barrier Free - Design for the Disabled.

5,6,7. Niels Diffrient, Alvin R. Tilley, Joan Bardagjy, Henry Dreyfus Associates; Humanscale 1/2/3. p. 26-29.

8. Westinghouse, Industrial Design/Mansfield : Kitchen Landscaping.

9. Industrial Design, May 1974 : The Handicapped Majority.

10. Niels Diffrient, Alvin R. Tilley, Joan Bardagjy, Henry Dreyfus Associates, Humanscale 1/2/3. p. 30.

11. S. Sherwood Ph.D., D.S. Green, J. Glassman, Part II of Subsidiary Analysis : Architecture and Site Location of Highland Heights.

12. Niels Diffrient, Alvin R. Rilley, Joan Bardagjy, Henry Dreyfus Associates, Humanscale 1/2/3. p. 20,21,22.

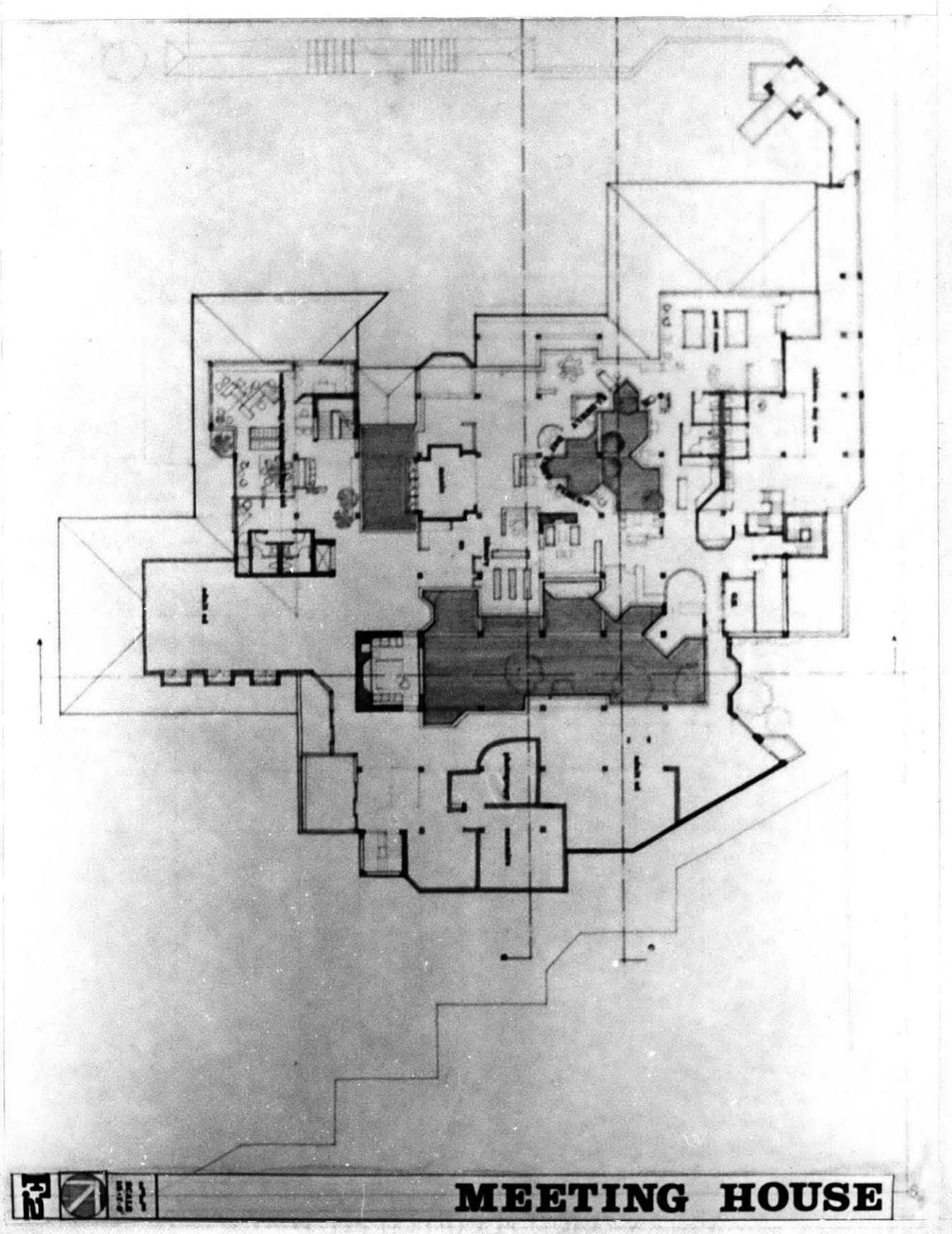
LIST OF ILLUSTRATIONS PAGE

MEETING HOUSE

SCALE 1/8" = 1'-0"

F.1

1



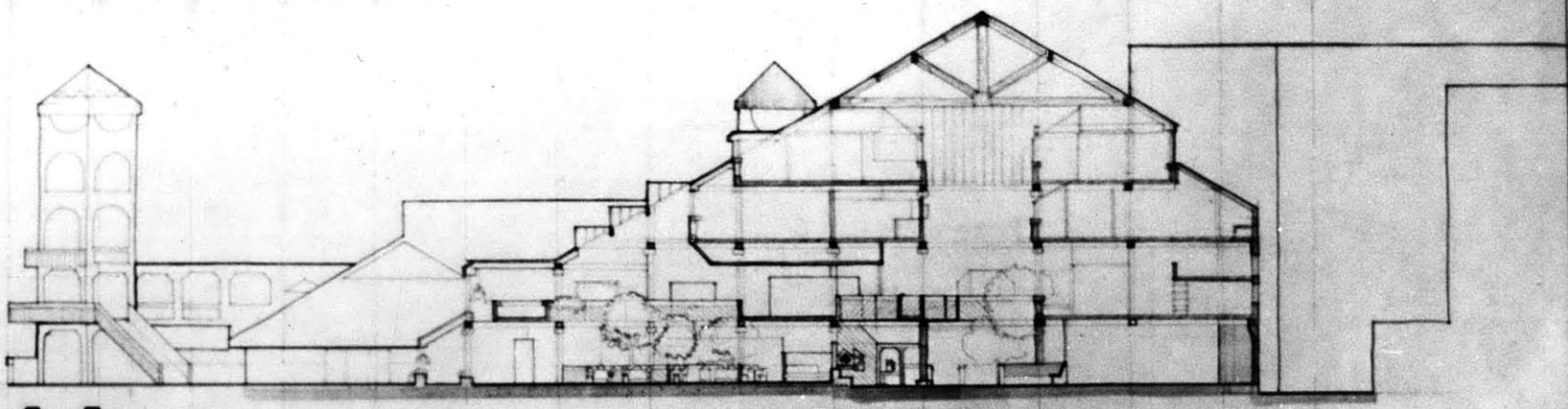
MEETING HOUSE

MEETING HOUSE
F.3
SCALE
1/8"=1'-0"

MEETING HOUSE

SCALE 1/8"=1'-0"

F.4



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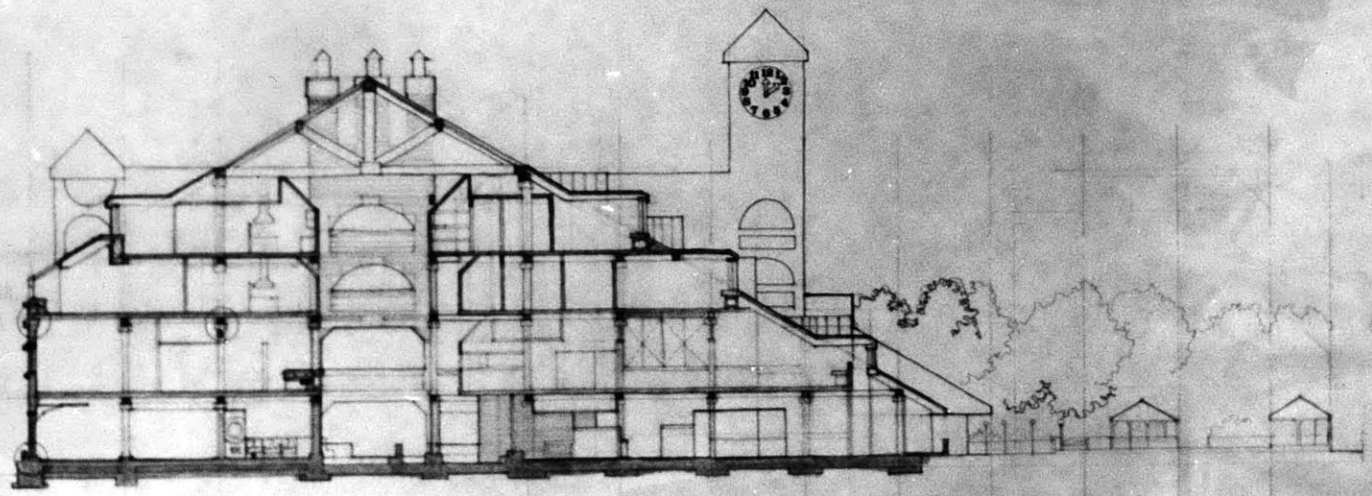
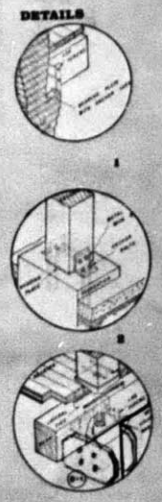


B·B



MEETING HOUSE

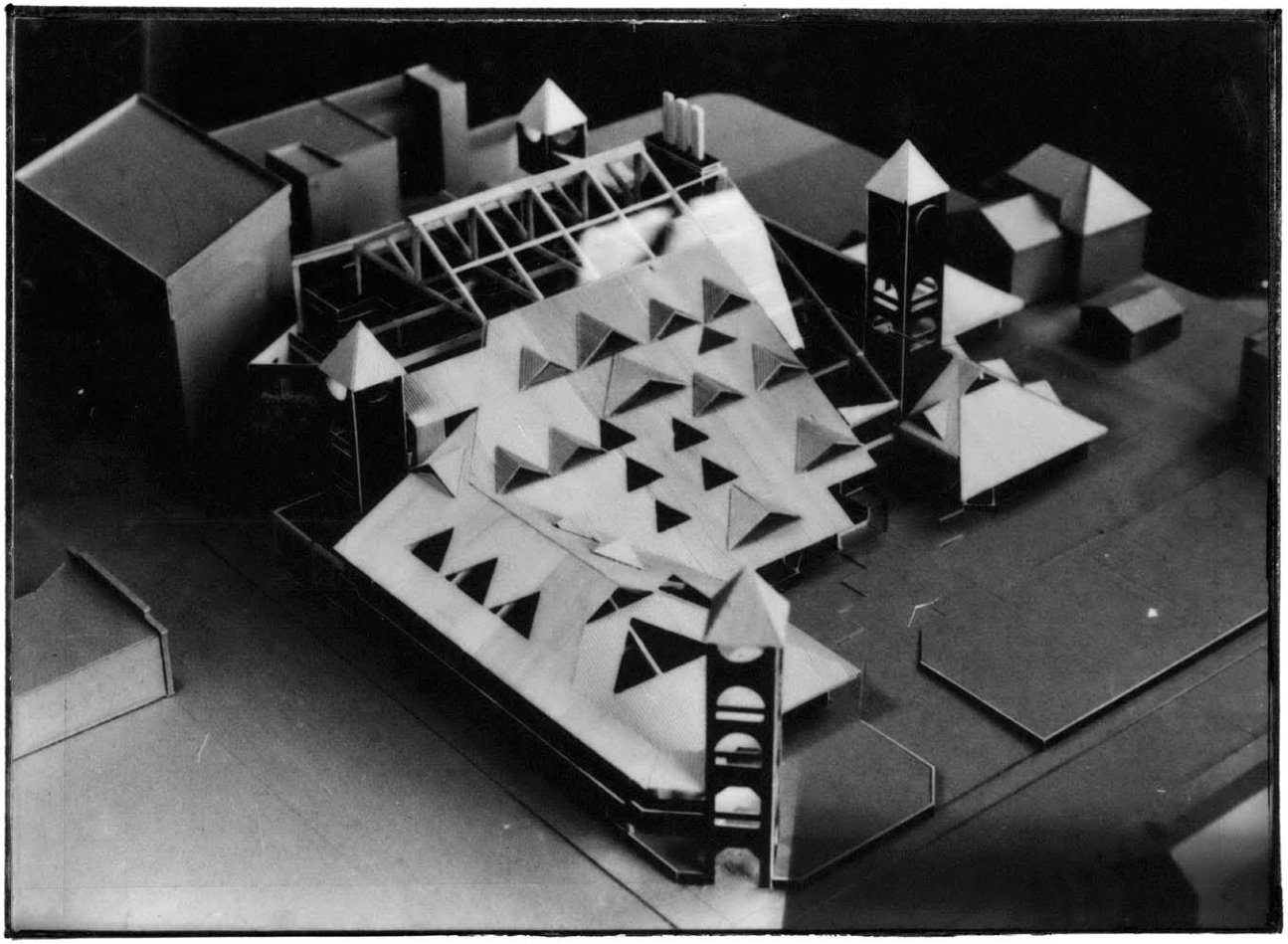
SCALE 1/8 • 1'-0"

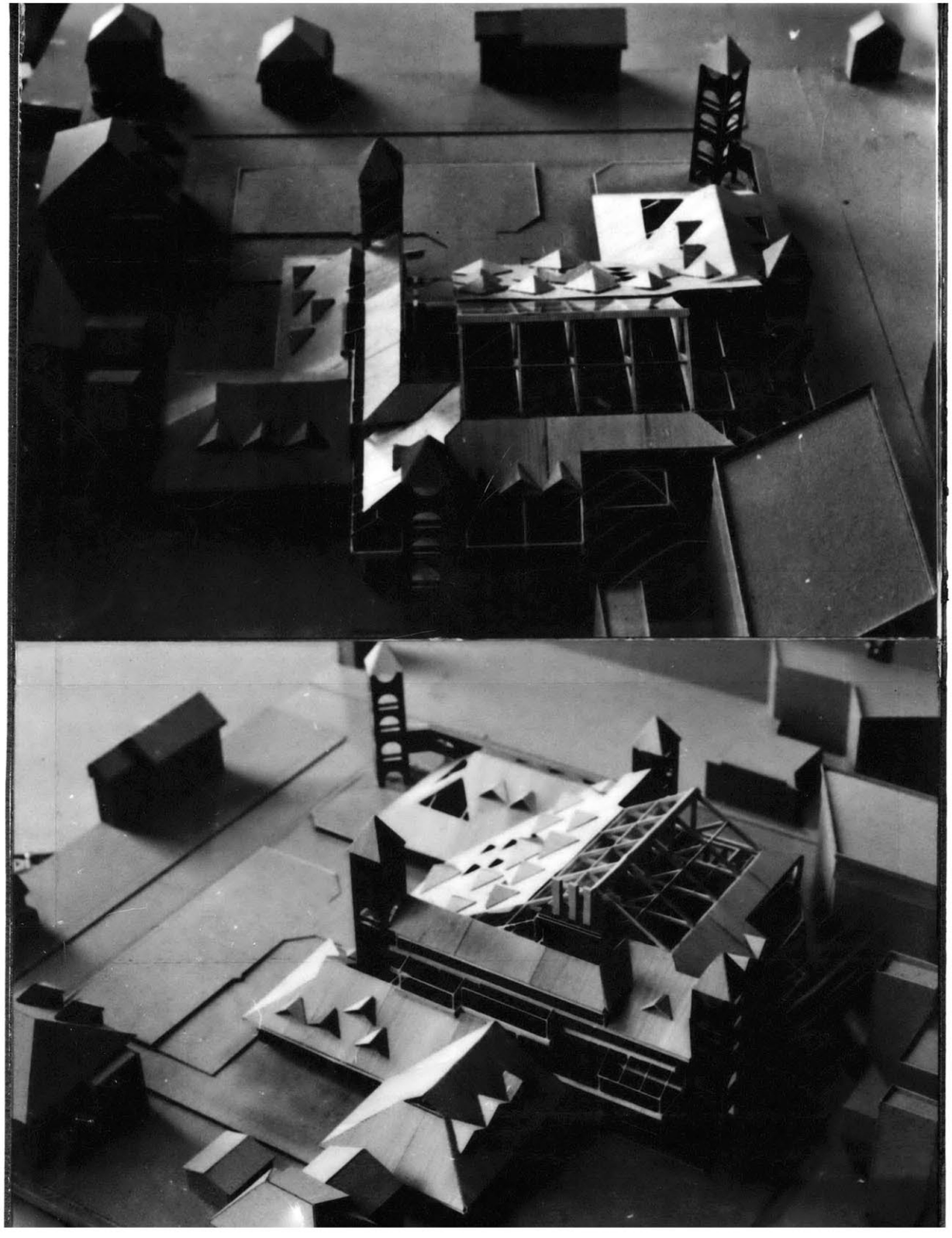
S

MEETING HOUSE

SCALE

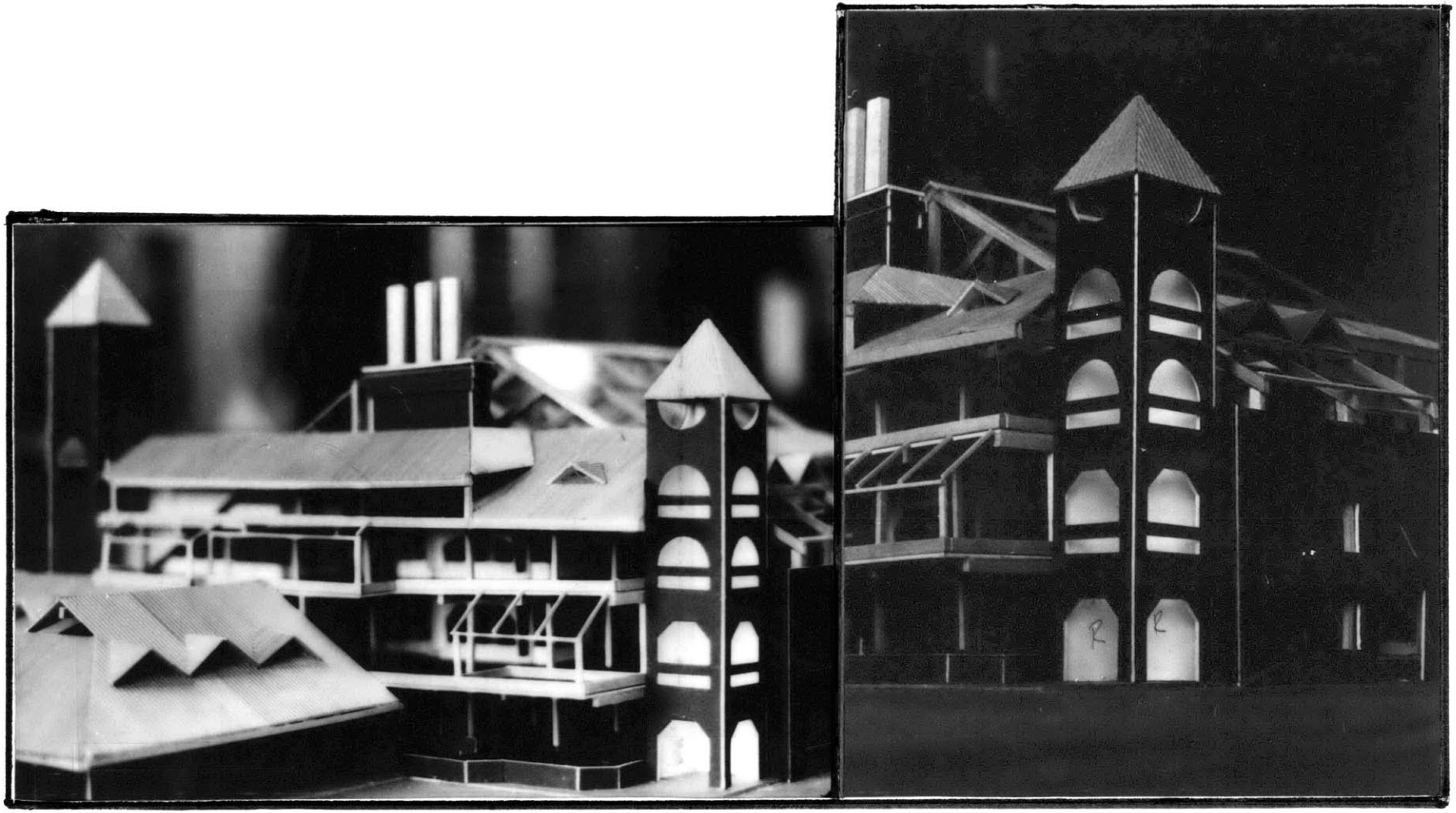
S



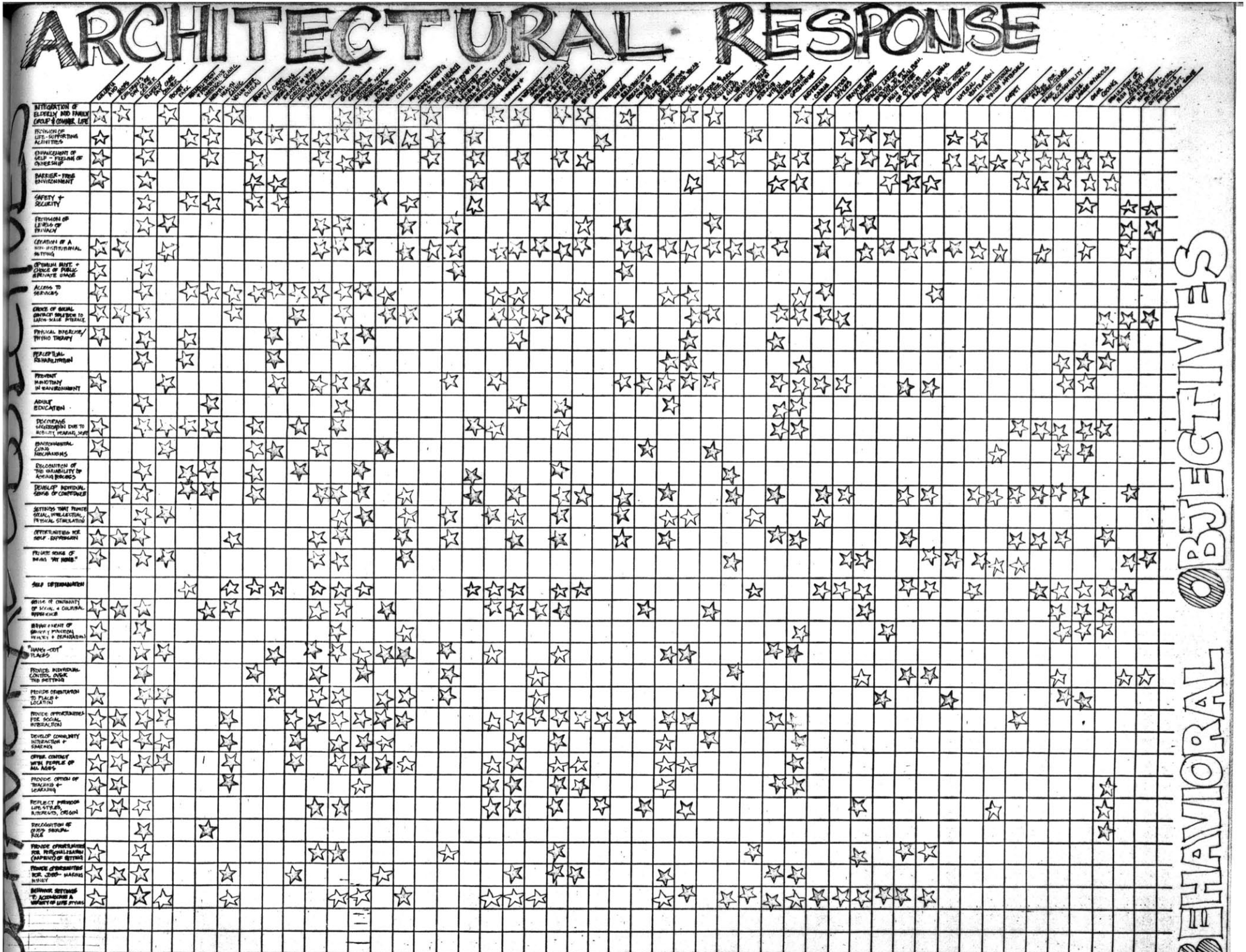


private entry

public entry



ARCHITECTURAL RESPONSE

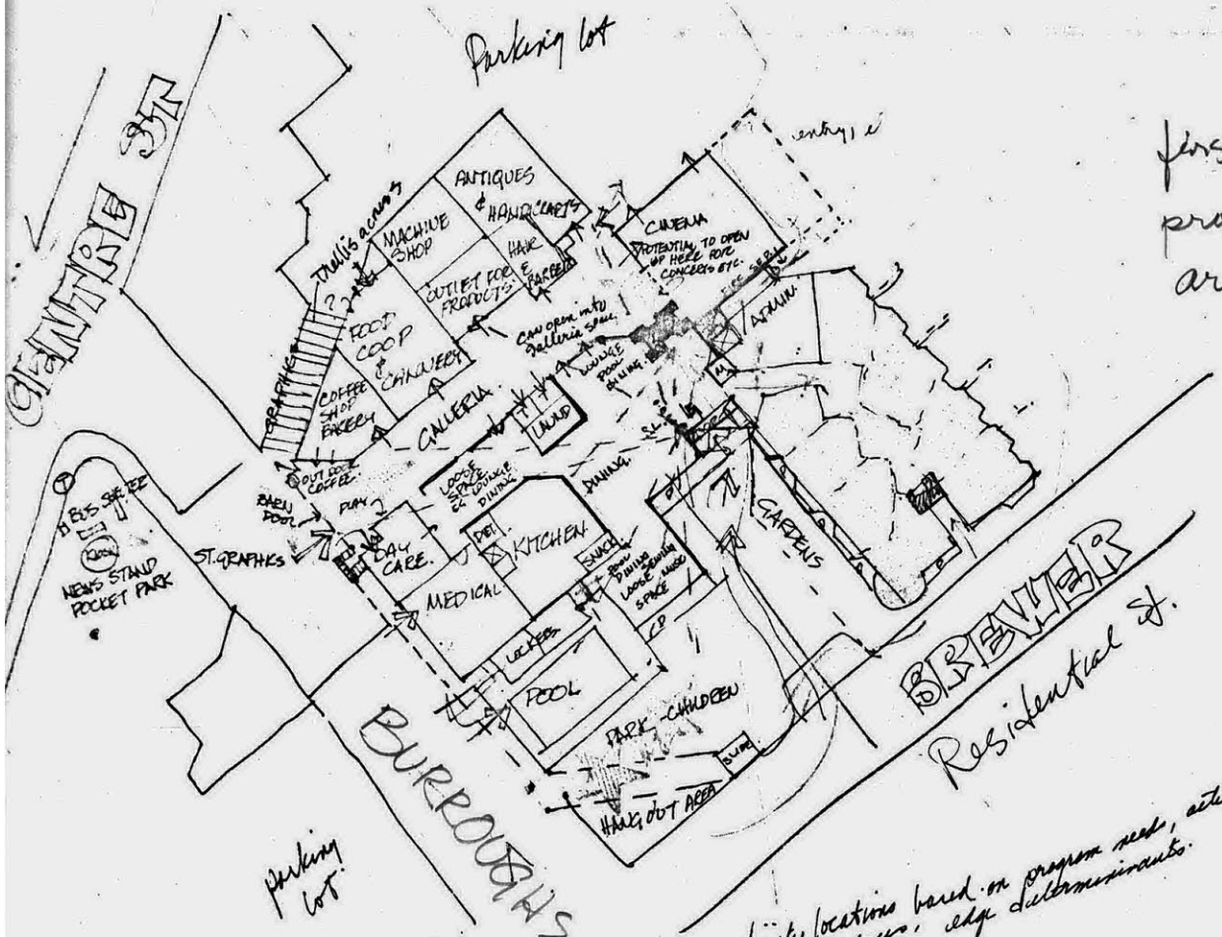


BEHAVIORAL RELATIONSHIPS
ARCHITECTURAL

BEHAVIORAL RELATIONSHIPS
- action zones (watching areas)

first go around at translation of program, behavioral objectives into arch. schematic

Oct 21/74



activity locations based on program needs, action spaces, edge determinants.

VIEW / SIGHT LINES.

ACTION AREAS.

1ST LEVEL

SPATIAL RELATIONSHIPS FLOOR 1

SPATIAL ORGANIZATION

BEHAVIORAL OBJECTIVES

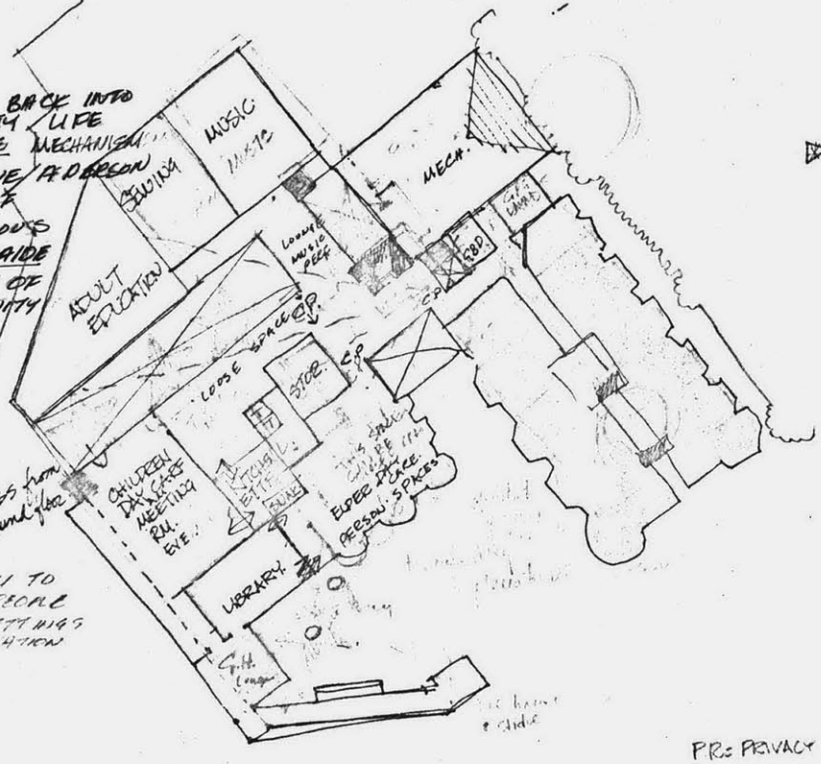
MAX. CONSCIOUSNESS OF PEOPLE IN SPACES BY OTHER PEOPLE IE HINTS OF ACTIVITY WITHOUT EXPOSING THOSE ENGAGED.
VIEWING AREAS
ACTION ZONES
REDUCE ISOLATION
INTEGRATION OF ELDERLY BACK INTO MAINSTREAM OF COMMUNITY LIFE IF THEY WISH IT. A CHOICE MECHANISM
DESIGNED IN TO GIVE A PERSON VARIOUS LEVELS OF INTERACTION OR VICARIOUS INTERACTION/VIEWING TO AIDE IN OR REDUCE THREAT OF RE-ENTRY INTO COMMUNITY
MECHANISMS FOR CHOICE

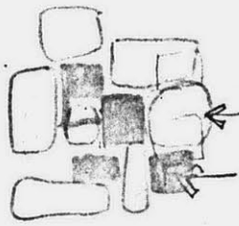
ACCESS TO SERVICES IN A FAMILIAR ENV. TO ELIMINATE VARIETY OF STRESSES.

MAX. SHARED ENVIRONMENT INTERDEPENDANCE access from ground floor

BY PROVIDING OPTIONS OPEN TO RESIDENTS & DAY CARE PEOPLE WHICH OF BEHAVIORAL SETTINGS INVOLVES GREATER MOTIVATION TO INTERACT WITH ENV.

C.P. control point
sight lines





FIXED ELEMENT
HELPS FORM LOOSE SPACE
" " CREATE VISUAL & ACOUSTICAL BARRIERS.

IMP TO HAVE VISUAL CONTACT WITH LOOSE SPACES * FROM MAIN ENTRY POINTS OR MAIN CIRCULATION NODES

in other words these can happen almost anywhere and locations can interchange

* LOOSE SPACE INV.
ELDER DAYCARE.
T.V SPACE
CARD/ POOL " "
SEWING
ARTS & CRAFTS.
STORAGE
DINING

CAN BE USED TO MODIFY & DEFINE SPACES

SEMI FIXED — REASON

MEDITATION — PRIVACY REQ.: ONLY A FEW PLACES COULD BE LOCATED
AUDIO VIS. — EQ. REQ
LOADING DOCK — " " " "
STORAGE.
MAIN ROOM.
ADMIN. SPACES — MUST BE CLOSE TO ENTRY FOR SURVEILLANCE.
DINING

CORE ELEMENTS (FIXED — SEMI FIXED FE. LAUNDRY, LIBRARY & FLEXIBLE — MACHINE SHOP, DARKROOM, WHICH REQUIRE SERVICES (PHYSICAL SEPARATION EG. DAY CARE CENTER)

ELEMENTS, LOCATED ADJ TO FIXED ELEMENTS

REASON
COSTLY TO CHANGE AFTER INSTALLED.
" " " "
" " " "
" " " "

ACOUSTIC REQ

LIGHT REQ + COSTLY TO CHANGE AFTER.
ACOUSTIC REQ + NEED TO KEEP CHILDREN FROM FEELING OVERLOOKED IN ELDER SPACES

- TOILETS
- LAUNDRY FACILITY
- KITCHEN & KITCHENETTE
- STAIRS, EGRESS ELEMENTS
- DARK ROOM
- MACHINE SHOP
- SWIMMING POOL
- LIBRARY
- MUSIC ROOM
- GREEN HOUSE
- DAY CARE
- MECHANICAL.

PR: PRIVACY REQ.
E.R: EQUIPMENT REQ.

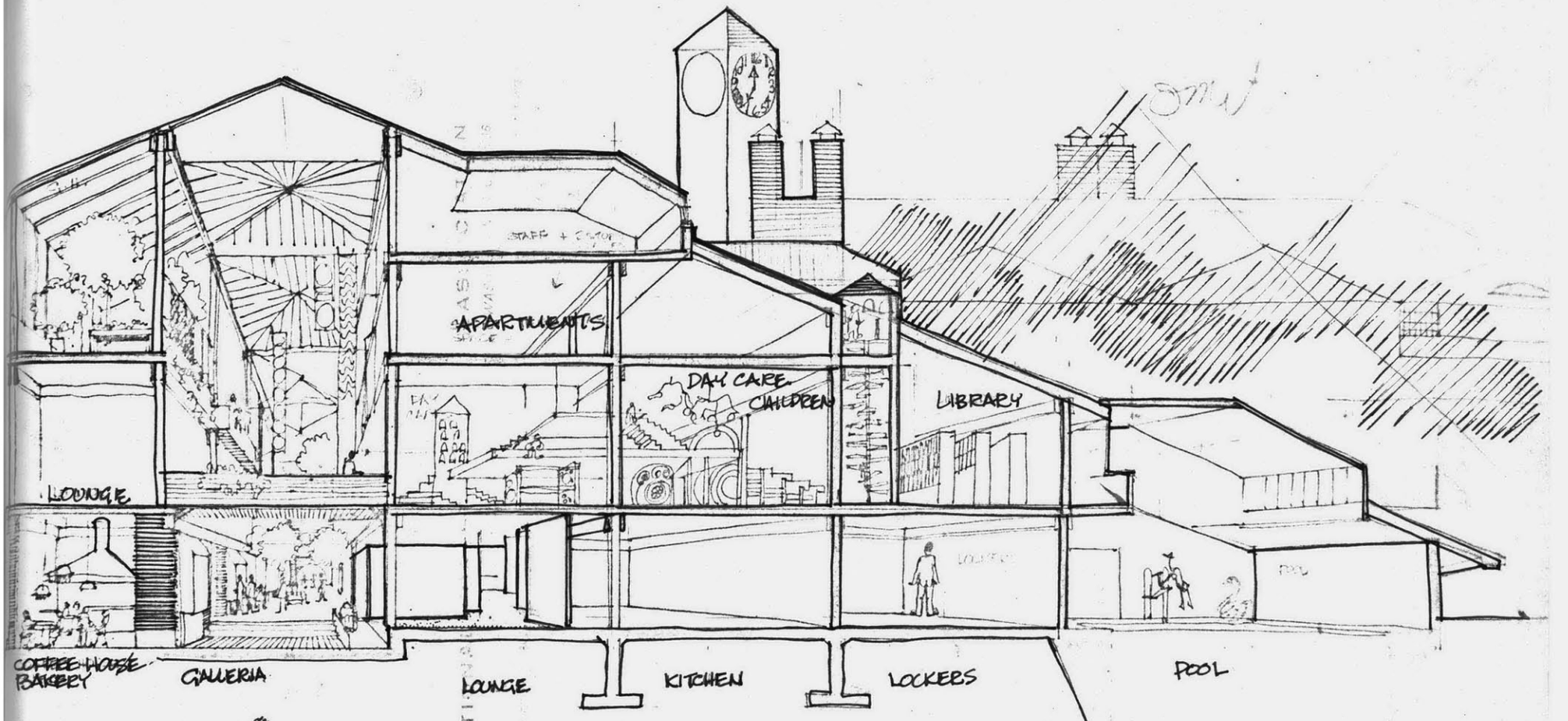
INSC. SPACES

PR. MEDITATION
E.R AUDIO VISUAL.

ACTION AREA

2ND LEVEL

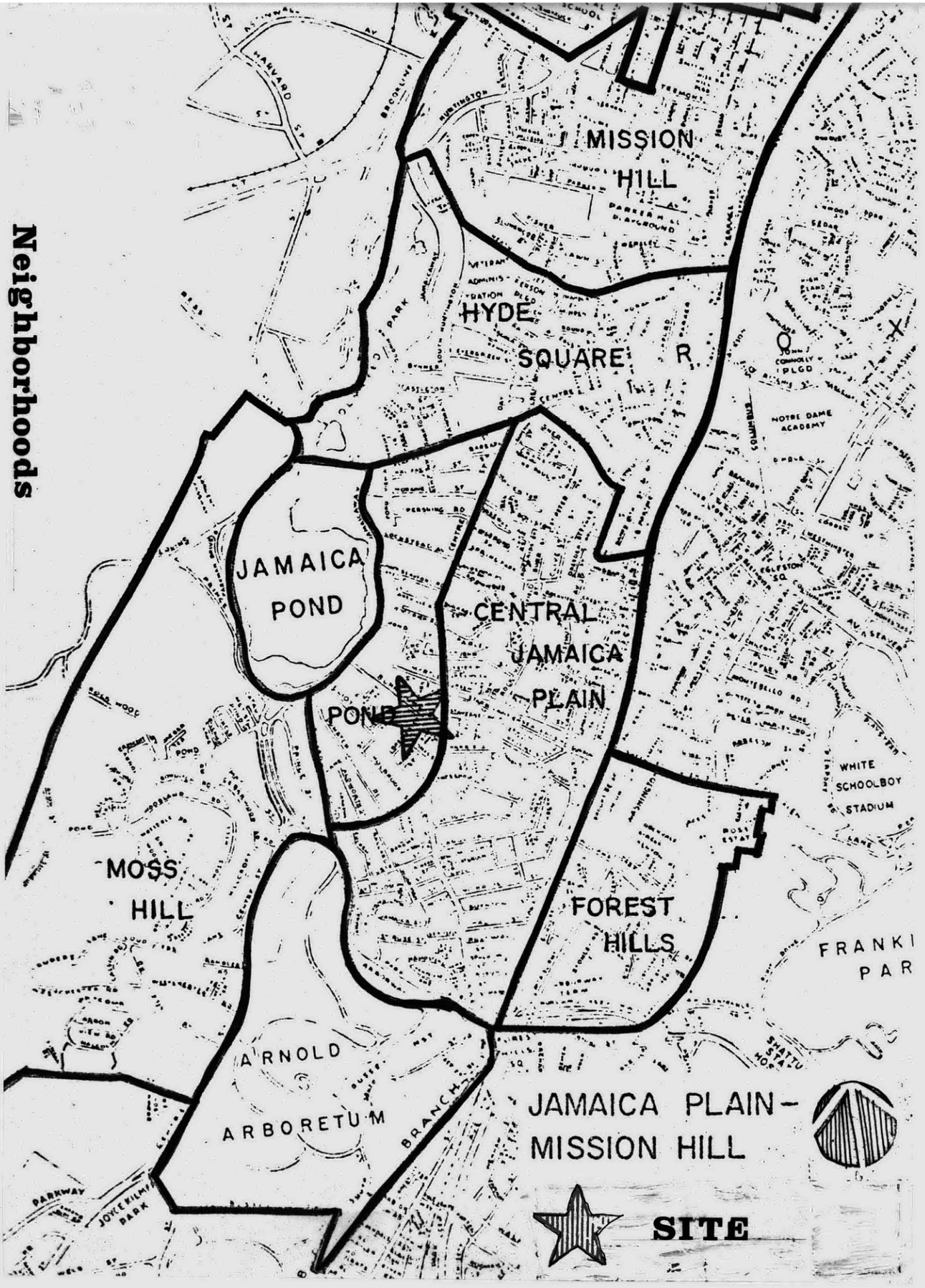
OCT 21/74.

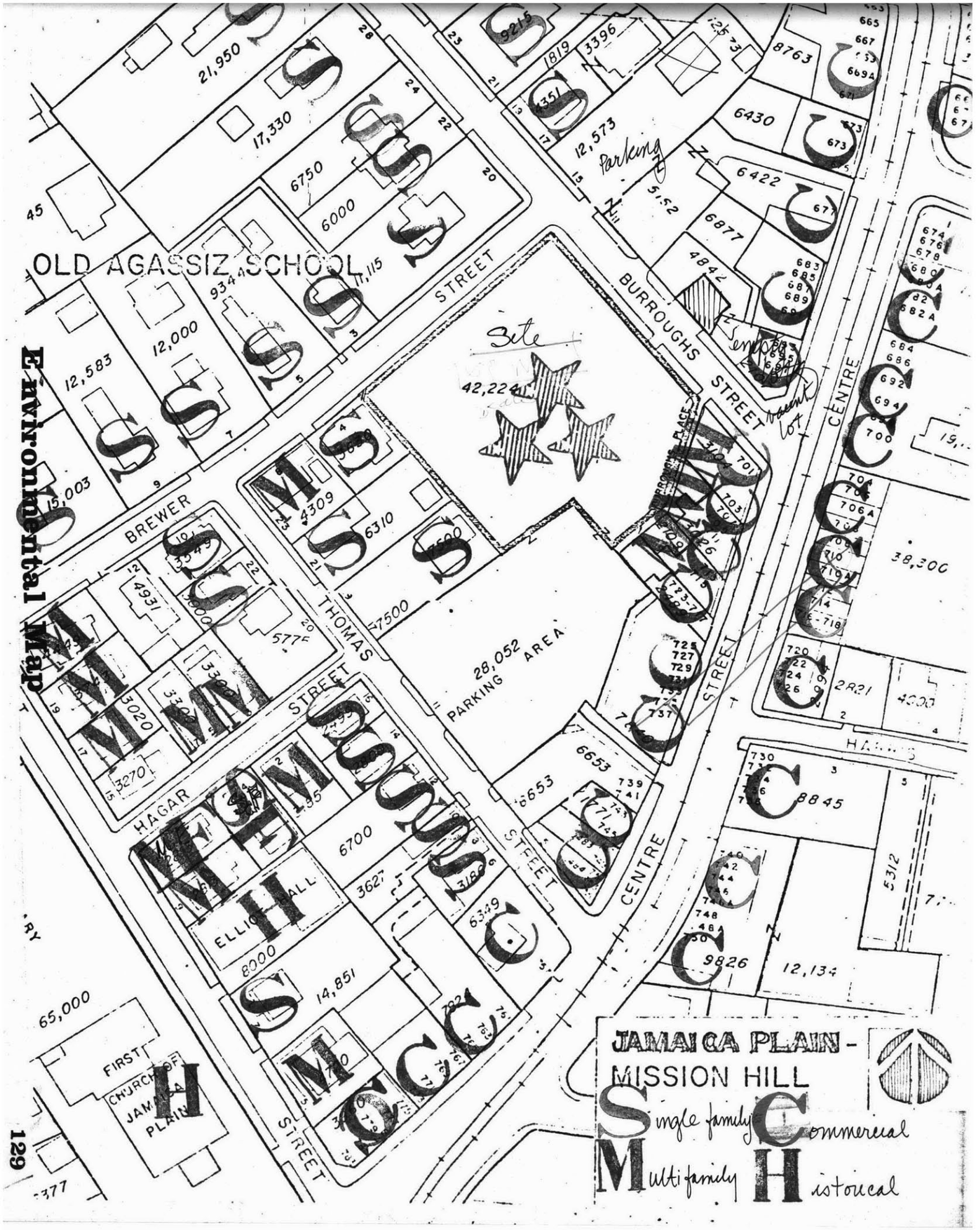


SECTION A-A

OCT 74

ACTIVITY RELATIONSHIP SCHEMATIC


MISSION HILL
HYDE SQUARE
JAMAICA POND
CENTRAL JAMAICA PLAIN
POND
MOSS HILL
FOREST HILLS
ARNOLD ARBORETUM
JAMAICA PLAIN-MISSION HILL
SITE


Environmental Map
OLD AGASSIZ SCHOOL
Site
42,224
28,052 PARKING AREA
Parking
5,152
12,573
BROOKS PLACE
BURROUGHS STREET
CENTRE STREET
BREWER STREET
THOMAS STREET
HAGAR STREET
ELLIOT HALL
FIRST CHURCH OF JAMAICA PLAIN
JAMAICA PLAIN - MISSION HILL
Single family
Commercial
Multi family
Historical

APPENDIX A (CONT.)

SITE EVALUATION SUMMARY

EVALUATION FACTORS	SITES	Site A	Site B	Site C
I.	ACCESSIBILITY TO			
	Shopping	2	2	1
	Public Transportation	1	1	1
	Churches	1		
	Recreation	1		
	Parking	-1		
	Medical Care	-1		
	Personal Service: Beauty Shop, Cleaner, etc.			
II.	COMPATABILITY WITH OTHER PLANS			
	Hospital Master Plan; Regional Medical Plan			
	Land Use & Zoning			
	Social Service Delivery			
III.	UTILITIES AND SERVICES			
	Gas			
	Electricity			
	Water			
	Sanitary Sewer			
	Storm Sewer			
	Trash Pickup			
	Sidewalks			
	Crosswalks			
IV.	NATURAL FEATURES			
	Topography			
	Vegetation			
V.	COMPATABILITY OF SURROUNDING DEVELOPMENTS			
VI.	VEHICULAR CIRCULATION			
VII.	EXPANSION POTENTIAL			
VIII.	ECONOMIES			
	Land Costs			
	Existing Structures Demolition			
	Potential for Sharing Facilities			
	TOTALS			

LEGEND
2 Advantage; 1 Acceptable; -1 Disadvantage; -2 Serious Problem

SOURCE: Adapted from Pastalan, L. Retirement Housing Study, Methodist Hospital of Madison, Wisconsin July, 1972 (Institute of Gerontology, University of Michigan)

APPENDIX A

SAMPLE

SITE SELECTION CRITERIA *

A. Population 55 years of age and over for whom community claims current housing need:

Estimated Number in Each Income Group

Low (under $3,000) _____

Moderate ($3-6,000)_____

High (Over $6,000) _____

B. Method(s) used in estimating current and future need in community for units for 55+ populations:

C. Community Participation:

Have adult residents of total community been consulted on sites and proposed housing?

Describe method of consultation and relate to proposed site(s).

Have potential or eligible low and moderate income elderly tenants been surveyed on neighborhood preferences?

Describe survey and relate results to characteristics of proposed site(s) and surroundings.

D. Sites potentially available for new or converted construction of elderly housing (provide a minimum of three sites by map); map should include major cross streets and average traffic flow, permanent structures now on or within two block radius, current use to which structures being put, age distribution of population in census tract containing site, number of elderly units proposed for site.

*Source: Sandra Howell, PhD, Department of Architecture, Massachusetts Institute of Technology

Appendix A (cont.)

E. Do any of the sites require (specify):

a) Zoning variance (under what conditions-check off issue)

Height limit _____

Number of units _____

Land Use _____

Other (specify) _____

b) Extraordinary site development costs (e.g.: grading; demolition; piling; etc.

c) Modification of immediate neighborhood (e.g.: removal of off-site vacant buildings; promotion of off-site services as grocery/drug store; changes in traffic patterns or controls; sidewalks).

F. For each proposed site, describe and map the primary settings in which people tend to congregate, within two blocks of proposed site. Specify the particular age groups and time of day or night of their congregating e.g.:

High School, 1 block south-weekdays 8-4 _____

Street corner ice cream parlor, 1 block north preteen and teenagers-weekdays 4-10 p.m., Saturdays 10 a.m. - 11 p.m. _____

Parking lot, 1/2 block east, teenagers, young adults, late night _____

Launderette, 1/2 block east _____

Elementary school _____

Park and playground _____

G. Characteristics of surrounding neighborhood

a) Census tract(s) considered part of neighborhood (by community consensus)

b) Presence of health facilities within 2 miles of site

1. Hospital (Gen. or Spec.)
2. Clinic (specify services)
3. M.D. Offices
4. Licensed Nursing Homes
5. Other
6. Presence of open space (specify use)
7. Presence of industrial firms in site neighborhood? Number and nature of products

b) Extraordinary site development costs (e.g.: grading demolition; piling; etc.

c) Modification of immediate neighborhood (e.g.: removal of off-site vacant buildings; promotion of off-site services as grocery/drug store; changes in traffic patterns or controls; sidewalks; improved street lighting).

F. For each proposed site, describe and map the primary settings in which people tend to congregate, within two blocks of proposed site. Specify the particular age groups and time of day or night of their congregating examples:

High School, 1 block south-weekdays 8-4_____

Street corner ice cream parlor, 1 block north preteen and teenagers - weekdays 4-10 p.pm., Saturdays 10 a.m. 11 p.m. _____

Parking lot, ½ block east, teenagers, young adults - late night _____

Launderette, ½ block east_____

Elementary school_____

Park and playground_____

G. Characteristics of surrounding neighborhood

a) Census tract(s) considered part of neighborhood (by community consensus)

b) Presence of health facilities within 2 miles of site

1) Hospital (Gen. of Spec.)
2) Clinic (specify services)
3) M.D. Offices
4) Licensed Nursing Homes
5) Other

c) Presence of open space (specify use)

d) Presence of industrial firms in site neighborhood? Number and nature of product

e) Average age of residential structures in containing census tract

f) Median value of property - census tract

g) Ratio of residential/non-residential structural use in census tract.

c) Average age of residential structures in census tract

d) Median value of property - census tract

e) Ratio of residential/non-residential structural use in census tract.

H. Police reports of crime in neighborhood of Sites _____

a) Frequency and nature of security patrols in vicinity

_____

b) Character and quality of street lighting in vicinity

_____

Appendix 1

POND AREA - JAMACA PLAIN
Neighborhood

COMMUNITY SURVEY: HOUSING PREFERENCES

1. If you were thinking of moving from your present housing, which type of housing would you prefer? (Please check the appropriate box)

- [ ] A house
- [x] An apartment with bedroom, bathroom, kitchen, and living rooom in which I could live independently.
- [ ] An apartment, but with the opportunity to take my meals in a dining room with the other residents.
- [ ] Hotel style with my own bedroom and bath with all services (such as meals and cleaning) provided for me.
- [ ] Other_____

a) Is this the same or different from your present housing? (circle)
b) How long have you lived at your present address? 9 Yrs. 3 Mos.

2. Where would you prefer that your housing be? (Please check as many answers as you wish.)

a.
- [ ] In downtown city
- [x] In _____ neighborhood
- [ ] In _____ suburb
- [ ] Outside of city but in country
- [ ] Other_____

b.
- [x] Near a shopping center
- [x] Near churches
- [x] Near a hospital or other medical facility
- [x] Near parks and recreation facilities
- [ ] Other_____

c.
- [x] Near people my own age
- [x] Near people of all ages
- [x] Near my friends or relatives

*Source: Derived from Pastalan, L. Retirement Housing Study, The Methodist Hospital of Madison, Wisconsin July, 1972.

3. What services would you like provided within the actual building where you live? (You may check more than one answer).

- [x] Shopping (drugs and grocery)
- [x] Restaurant
- [x] Library
- [x] Chapel
- [ ] Other_____
- [x] Barber and beauty shop
- [x] Recreation and hobby rooms
- [x] Gardening plots, greenhouse

4. Would you like health services provided?

- [ ] Yes
- [x] No

If yes, what health services would you like?

- [ ] Nurse on call or scheduled 1/week
- [ ] Doctor on call or scheduled 1/mo.
- [ ] Nurse on duty and available at all times
- [ ] Physical therapy or exercise program
- [ ] Clinic which provided daily medicine
- [ ] Small hospital bed area for residents who become ill.
- [ ] Other_____

5. What features would you use in selecting a new neighborhood?

- [x] Closer to shopping
- [x] Quieter
- [x] Less traffic
- [x] Closer to friends or relatives
- [x] Less crime
- [x] Other good lighting

6. What features would you consider in selecting another home now?

- ☐ Smaller kitchen
- ☐ Fewer bedrooms
- ☑ All on one floor
- ☑ Building with elevator
- ☑ Patio or balcony
- ☑ Central laundry
- ☐ Newer, less maintenance and repair
- ☐ Other Pedestrian

7. If services such as health care, meals and cleaning assistance could be provided to you in this home, would you prefer to remain here rather than move?

☐ Yes ☐ No

8. Are you planning on moving:

Within the next year	☐ Yes	☑ No
Within the next one to three years	☐ Yes	☑ No
Within the next three to five years	☐ Yes	☑ No

9. If you are planning to move within the next five years and if housing is developed at Pegasus site, _____ site, _____ site, would you consider moving in?

_____ site:

1. ☐ Very likely
2. ☐ Possibly yes
3. ☑ Perhaps
4. ☐ Probably no
5. ☐ very unlikely

_____ site:

1. ☐ Very likely
2. ☐ Possibly yes
3. ☐ Perhaps
4. ☐ Probably no
5. ☐ Very unlikely

_____ site:

1. ☐ Very likely
2. ☐ Possibly yes
3. ☐ Perhaps
4. ☐ Probably no
5. ☐ Very unlikely

10. What events that might occur in the future would cause you to consider moving? (list in order of response).

Crime, Police Protection ✓

Fire protection

Traffic

11. What type of housing do you live in now?

- [ ] I own my own home
- [ ] I live in a rented house
- [✓] I live in an apartment
- [ ] I rent a room

12. How many people live with you in that housing?

- [✓] Myself only
- [ ] One other (specify spouse, child, sibling, non-related)
- [ ] Two others (specify)
- [ ] More than two (specify)

13. How much money per month do you currently spend on housing?

$ 246.85 dollars per month,

on utilities_____

14. What type of transportation do you use most often?

- [ ] Car
- [✓] Bus
- [✓] Taxi
- [✓] Walk
- [ ] Other_____

HEW Evaluation Project
June 13, 1974

Mapping the Environment Instructions to Interviewers

PURPOSE:

Housing varies widely in its access to shopping, transportation, medical care and other resources. One of the many factors as to whether older people avail themselves of needed resources is the distance between their dwelling and the resource. Of course, being near the resource does not guarantee that it will be used. However, if the resource does not exist, or is inconveniently located, the older person is faced with the problem of satisfying his needs. The purpose of the mapping is to be able to describe what is physically accessible, and what is utilized by the tenant.

Since aspects in their neighborhood other than resources may be important to the older person's well-being, the mapping is designed also to provide information on the kinds of spaces, natural and man made structures in the vicinity of the housing, as well as transportation, traffic, and barriers to ambulation.

EXPLANATION:

Your description of the "neighborhood" in map and checklist form will be the basis upon which we can determine how elderly use their "neighborhood" and what problems they have with the area as it now presents itself.

Since a non-resident of a neighborhood cannot presume to know what services exist and are used by residents, nor to understand the "why" of use (e.g., fear, safety, unfamiliarity, cost of services or products), a list of resources and other aspects is being provided for the interviewer to observe and record on a detailed block map, prior to any interviewing.

In turn, interviews with tenants about where they actually do and do not go will verify, supplement and modify the interviewer's observations.

MATERIALS TO BE PROVIDED:

(1) maps
  (a) 24" mounted site area map
  (b) large folded site area map
  (c) city map
(2) Code sheet
(3) grid recording sheet
(4) 7 colored markers
(5) slope measurement device
(6) gridded mylar
(7) drafting tape
(8) push pins in small envelope
(9) precut and stamped sheets of tracing paper
(10) dots

Site Area Maps, Explanation of Zone #1

Two types of maps will be provided for every interviewer -- the road map of the locality, and the site area maps (of which there will be two different sized copies). The smaller scale road map is a city map of the locality showing the target site. The smaller site area map is mounted on board for ease of field use. The folded map is the final copy the interviewer will return to M.I.T. along with the city map(s). These site area maps have been further subdivided to show Zone #1 and the target site.

Zone #1 is the area in which the resources tenants walk to are located. Of course, we have no way of accurately determining this area prior to talking with the tenants, therefore the interviewer will be responsible for marking the actual Zone #1 after talking with all the tenants. However, to get an idea as to what area needs to be mapped intensively, a square to show a suspected Zone #1 has been drawn around the immediately-adjacent blocks to the target site, sometimes in red.

Note: Land use mapping is usually done every five or ten years; therefore the interviewer may find maps for a particular site to be out of date. Whole

blocks may have been changed, streets added or eliminated; and often, buildings are shown which are either no longer at a location, or are not being used in the way shown. The interviewer should plan to make hand-drawn map corrections as needed! There will be instances where the staff will not have had enough information on which to make changes, and the interviewer may find this necessary upon the initial scanning of the neighborhood.

Code Sheet

The purpose of the code sheet is two-fold. First, when mapping the environment, it provides information as to how to code and color the essential resources on the map. Second, the code sheet provides the final codes for the grid recording sheet. Hopefully, it is self-explanatory, as to what needs to be recorded, in what color, and how it is to be marked.

Tracing Paper

There should be a precut, prestamped sheet of tracing paper for every tenant you interview. Please remember to fill in the required information on each sheet and draw the registration marks!!

Slope Measurement Device

The slope measurement device is a styrofoam board, plumb and bob instrument designed to measure both the percentage and degree of slope of a given land parcel. It is operated by being held upright with the string and weight dangling toward the ground. Then the upper edge is used as the sighting line which the researcher lines up with his/her eyes. The reading of percentage slope is taken when the researcher is either standing on the crest of the hill, or at the base and sighting toward the other. When sighting uphill toward the crest, sight to your own eye level above the ground, lining eyes with uphill side, and when on the crest sighting down to the base, line eyes up with "downhill" side and sight to a point your own eye level above the ground, as marked on the device. For our purposes, the

percentage of slope measure is most desired. Instructions and practice for use will be included in training.

Grided Mylar

You may have one or two sheets of mylar, depending on the scale of the area site maps for your site(s). The rows and columns are marked and numbered consecutively so that the row numbers run down the left hand side of the sheet and the column numbers run across the top. Each grid number is comprised of the row number and then the column number; e.g. (12,6). Always use the mylar with frosted side up (or the shiny surface underneath) for ease of legibility.

In the case where you have two sheets of mylar, you will need to piece the two together so that the row numbers still run down the left-hand side, column numbers run consecutively across the top, and most importantly, the grids match up as closely as possible. This must be done with transparent tape, so that the map is clearly visible through it.

Please note: this looks like an insurmountable number of grids, but the interviewer will only be concerned with those that fall over those areas of the map which have resources already located.

Grid Recording Sheet

The grid recording sheet has a horizontal row for each grid on the area marked as being used on the site area maps. A vertical column is provided for each category to be recorded and coded (as per the coding sheet), for each of the grids used.

Record the number of each facility from each of the categories found on the grid in the column provided for that category, and the row for that specific grid. (See example.)

	3,8	3,7	3,6	3,5	3,4	3,3	3,2	2,7	2,6	2,5	2,4	
GRID #												LAND USE
LAND USE							I-I			I-I		
RESIDENTIAL TYPE	B	B C	A B	B	B C	B C	A B	A	B	B	B C	
BANK	0	0	2	0	0	0	0	1	0	0	3	

All of the categories are directly transferrable from the map with the following clarifications: all industrial land use should be coded under "land Use" as "I", using a sub-number which makes explicit the number of times industrial facilities are to be found in each grid. For example, I_{12} means that twelve factories/warehouses/other industrial facilities were found in that grid. Vacant lots (S_2) will be included in "Open Land (S_1)", the combined total figure being recorded for each grid under "open"

Other Materials

Colored markers, push pins, and drafting tape are provided in order to do the recording on the maps themselves.

PROCEDURE:

(1) First Day's Visit

The first day's visit to the site should include a scanning of the neighborhood in the predetermined Zone I to locate and record the location of all of the resources directly on the mounted map that are delineated below. This first day's scanning of the neighborhood should also permit you to make any map corrections due to major neighborhood changes since the maps were drawn. Corrections made at this stage will save many headaches later on.

Tools needed: mounted site area map; red marker.

Print the location and name of the following resources on the map itself in Zone #1 in red according to the designated code. Since this map is your own copy and will not have to be returned, you may find it to your advantage to record as specifically as possible the name of each of the resources, so that when a tenant tells you the "First National Bank around the corner", you can refer to the exact location by having the name of that bank on your map.

Resource	Code
Bank	Bank
Bar	Bar
Beauty Shop	Beauty
Barber Shop	Barber
Church, synagogue	Church
Clothing Store	Clos
Doctor's Office (dentist, podiatrist, chiropractor, psychiatrist, etc.)	Doc
Drugstore	Drug
Grocery Store	Groc
Restaurant, Luncheonette, Drive-In, etc.	Eat
Supermarket	Super

(2) Question #33 of the Tenant Interview

Tools: Both mounted and larger site area maps (Zone I with first visit information marked; city map; overlay sheets; red, blue orange and black pencils.

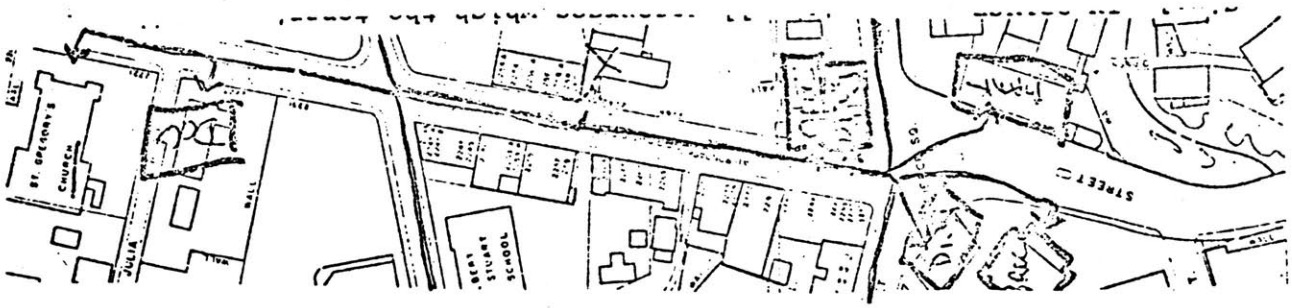
In the context of the tenant interview, the one question directly pertaining to the neighborhood mapping process is Question #33. While interviewing, it is necessary to have the larger site area map and city map on hand. As specific resources are volunteered, they should be recorded on the interview sheet specifically enough to locate later on the map. No recording on the map itself will be done during the interview; however, locational information needs to be as clear as possible so it can be located on a piece of tracing paper immediately after

the interview. Be sure to note the tenant's number & the site number; draw registration marks, etc., as tracing paper is marked.

Use one overlay per tenant. Locate the resources the tenant uses on his/her over lay sheet when possible, recording the code designated below for each resource in the color designated.

It is also necessary to draw pathways on the overlay, for those resources which the tenant walks to and for the routes which the tenant uses for exercise or pleasure. Be sure the directions for the route are recorded specifically on the Q. #33 interview sheet during the interview.

Mark the pathways in black, following the example below.



Circle in orange on overlay all resources which the tenant uses (i.e., write resources codes in red and blue; black is for the pathways.)

Black - Routes walked for exercise or pleasure or to resource.

Blue -Residential Resource: freind/Code: Frein; relative/Code: Rel.

Red - See "First Day's Visit" section for Resources and Codes.

After the second site mapping, circle in orange on the neighborhood area maps all those resources which the tenants walk to. (Go back to the individual overlays and to the interview sheets. Some tenants may use different transportation means to get to the same resource.) A tenant walks, according to the unterview, circle resource in orange; if a tenant uses any transportation, circle resource in red.

From the interview we will also learn about resources in Zone I and outside Zone I which tenants get to by means other than walking. These resources should be circled in red on the neighborhood area maps., instead of orange, for walk.

The resources the tenant does not walk to also need to be located, even though the pathways taken there are irrelevant. There is, however, the possibility that these resources may not be close enough to the site to be found on the site area maps. When this is the case, mark the location of the resource on the city or road map with a dot, being sure to number these dotted locations, and attach a sheet to the map explaining what each numbered dot represents. For those resources located beyond the city map, just note that it is outside the city on the interview form.

After completing all the interviews make (1) a composite pathway overlay; (2) an interview resource list.

(1) Compile all the pathways used by tenants on a new overlay to be used only for this purpose. Begin with the first tenant interview and recopy all the pathways which appear on Tenant I overlay. For each successive interview, add only new pathways not used in previous interviews to the composite pathway overlay. Even though a pathway is used by all 20 tenants interviewed, it would appear only once on the composite. The boundaries of this composite become the "actual "zone I map.

(2) Make a list of all the resources and their locations which the tenants volunteered they used. Take this list into the field on the second site mapping expedition - to fill in resources missed in Zone I and to map for the first time those resources outside of Zone #1.

(3) Second Site Visit : After all interviews

Tools Needed: Actual zone I map with resources located; interview resource list; red, yellow, blue, green markers; instruction-code sheet.

After completing all the tenant interviews, you are ready for the second site visit. Map all the actual Zone I, recording all of the residential, open - space, industrial and commercial land usage as explained in the instruction sheet. Then map just those used and specify resources outside the predetermined Zone I.

The resources that need to be mapped in Zone #2 are those which the tenants specified in the interview. In addition, map the closest hospital (if there was none in Zone #I), the closest police station (if there was none in Zone #I).

All of these Zone #2 resources should be labeled in red according to the code for that resource in the Zone #I instruction sheet. Only those which the tenants volunteered as having used from the interview should also be outlined in red (unless already outlined in orange because it is walked to).

Circled Areas

I. Outline in blue each land parcel by category of residential land use as listed below. Label each outlined parcel with the designated code. Write in red and outline in blue those commercial resources which also have resedences in the same : in the same structure.

Code	Residential Land Use Category
A	1-2 story residence
B	3-5 story residence
C	6 + story residence
(specify on map)	other residential (e.g., nursing home, public housing, hotel, motel)

2. Code and outline in green each land parcel categorized as "open space" in the list below. Label each outlined parcel with the designated code; e.g. "S_3" for Park.

Code	Open Space Land Use Category
S_1	Open land (demolition and cleared)
S_2	Vacant Lots
S_3	Parks

3. Label specifically the industrial use and outline in yellow each of the following two types of land parcels:

Code	Industrial Land Use Category
I	Factory
I	Warehouse and Storage

Labeled Areas

Complete Zone #1 by adding the following resources in red according to the designated code.

The coded words in the right hand column below correspond with categories on the grid recording sheet. However, we need more specific information on the map itself. For example, write "library" on the map rather than "cultural". On the grid recording sheet,"library" will then be tallied under the category "cultural".

Commercial Land Use Resource	Code
Bank	Bank
Bar	Bar
Beauty Shop	Beauty
Barber Shop	Barber
Church, Synagogue	Church
Clothing Store (includes all wearing apparel)	Clos
Cultural (library, legit. theater, museum, etc.)	Cult (specify on map)
Doctor's Office (dentist, podiatrist, chiropractor, psychiatrist, etc.)	Doc
Drugstore	Drug
Dry Cleaner	Clean

Commercial Land Use Resource	Code
Fun (pool room, movie, bowling)	Fun
Gas Station	Gas
General Store (dept. store; 5&10; variety store)	Gen
Grocery Store (a "general" store which sells groceries is coded both Groc and Gen	Groc
Hospital	Hos
Laundry, Washing machines, dryer	Laund
Liquor Store	Booz
Office Buildings (tally only ground-floor occupants; note number of floors)	Off
Parking Lot (include outdoor parking for store if seven parking places or more	Cars
Police Station	Cops
Post office	P.O.
Repair or service shop (shoe repair, TV repair, etc.)	Repair
Restaurant, Luncheonette, drive-in, etc.	Eat
House for sale; vacant storefront	Sale
School (nursery, high school, college, vocational, business, etc.)	School
Social service agency (only those directed at elderly; e.g., drop-in center, legal aid bureau)	Soc
Supermarket	Super
Miscellaneous Commercial	Misc

Note: There will be some resources that are not delineated on the code sheet, and therefore do not need to be mapped explicitly. If you run across any commercial facilities, for example, which do not fit into any of the coded categories, label them "miscellaneous commercial".

(4) Third Site Visit (Accessibility Mapping)

Tools Needed: map; new overlay; purple marker; slope measurement device

The third site visit, then, is the final mapping. The purpose of this visit is to obtain slope measurements in areas of more than 5%, and to locate barriers and public transportation stops in the actual Zone I.

Record the location of the following on a new overlay in the actual Zone I:

(W) - walk light for pedestrian street crossing

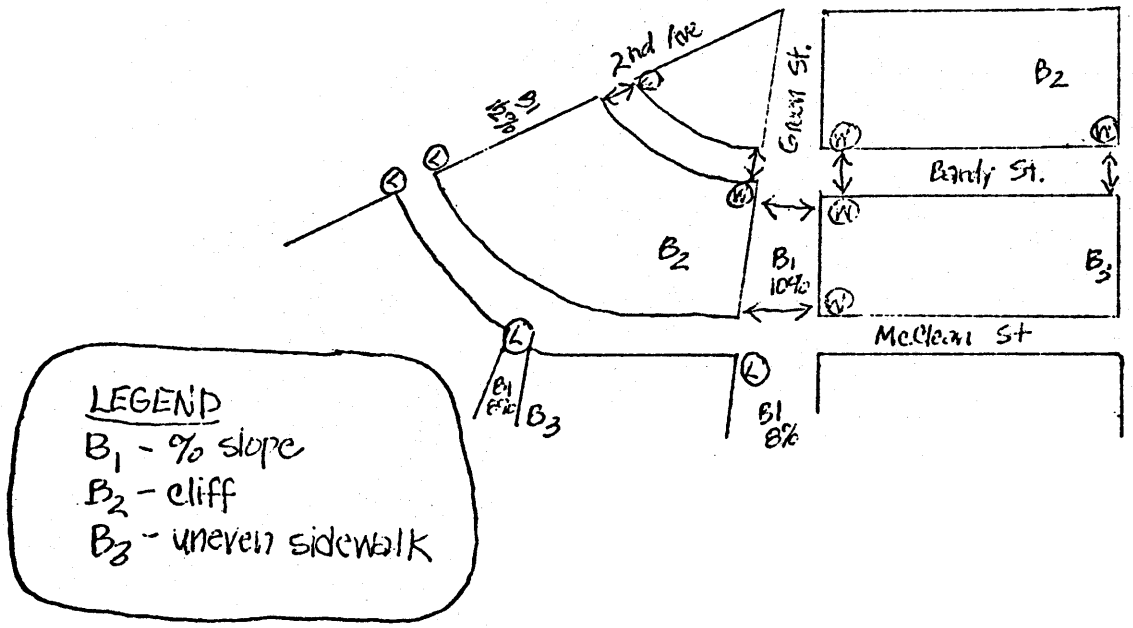
(I) - traffic light

(T) - public transporation stop

B_1, B_2, B_3 - barriers to pedestrian access, i.e.:

* percent of slope over 5%
* stairs other than those leading to buildings, including those leading to public transporation stops
* uneven sidewalk conditions
* railroad tracks
* water bodies
* major highway located at ground level
* cliffs
* other barriers (specify)

Provide legend to your codes as in examples.



(5) Grid Recording

After completion of the third site visit, transfer all of the color-coded and located information onto the larger site area map.

Next, overlay the grided mylar in the way that it covers the greatest percentage of the located resources. Once you have found this position, outline the mylar with a pencil all the way around.

Every grid cell you see with information inside now needs to be recorded on the grid recording sheet, identifying the grid cell by the row number first, column number second. Record quantities as demonstrated under "grid recording sheet" explanation.

(6) Return to M.I.T.:

* large site area map(s) completely recopied from original
* tracing paper
* city map(s), as marked with dot legend
* grid recording sheets

Mailing address:

HEW Design Evaluation--Social Uses for Housing for the Elderly
Department of Architecture
77 Massachusetts Avenue, M.I.T
Room 3-433
Cambridge, Massachusetts 02139

May 2, 1974

BEHAVIOR MAPPING

PURPOSE

1. To locate behaviors (and lacks thereof) to show the use, non-use and mis-use of space (as compared to the architect's expectation expressed in plans).
2. To record the physical qualities of spaces where use/non-use occurs, and to correlate those qualities to type, frequency and density of use.

CHOOSING SPACES TO MAP

You will be provided with 4 or 5 spaces to map which are specifically designed for either group interaction (community room, crafts room, front lobby, etc.) or for community service (elevators, laundries, clinics, garbage collection areas, manager's and/or custodians office, etc.).

After having spent some time on the site, you will choose 3 areas showing (by observation or communication with tenants) heavy individual or interactive use that have not been included in the above list of spaces provided you.

SCHEDULE:

site-specific schedule using stationary-circulation-stationary blocks of observa. (20 min/block)-4 typical spaces pre-scheduled-room for 2 or 3 optional heavy-use areas to be chosen by observer-flexibility so observer can map mail area at delivery time-each area would be rotated through times of day and days of week for complete coverage-

MON	TUES	WED	THUR	FRI	SAT	SUN

1. Find out when mail is delivered and when special events happen in public spaces (that you may want to map), also where heavy use occurs.

2. Rejuggle the mapping schedule to accommodate these-preserving the number of observations of ea. space, not moving any observations pre-scheduled out of its general time block (morning/noon/night).

3. Do basemaps, overlays, and space descriptions (see pgs. 3-5 of instructions) for each space you plan to map. This will help you familiarize yourself with the spaces and choose the best observation position(i.e., the one from which you can see the most within the room and adjacent spaces).

   Then do observations according to schedule:

4. For each 20 min. observation:

   a) check furniture overlay to see if still accurate IF FURNITURE has moved/disappeared, etc., redraw the complete furniture coding on a tracting sheet, noting date, etc.

instrucs p.6 b) do a stationary (instantaneous) mapping (referring to codes)

instrucs 7-9 c) do a 15-min. circulation observation

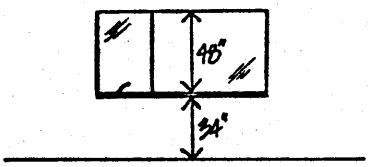
   d) do another stationary mapping

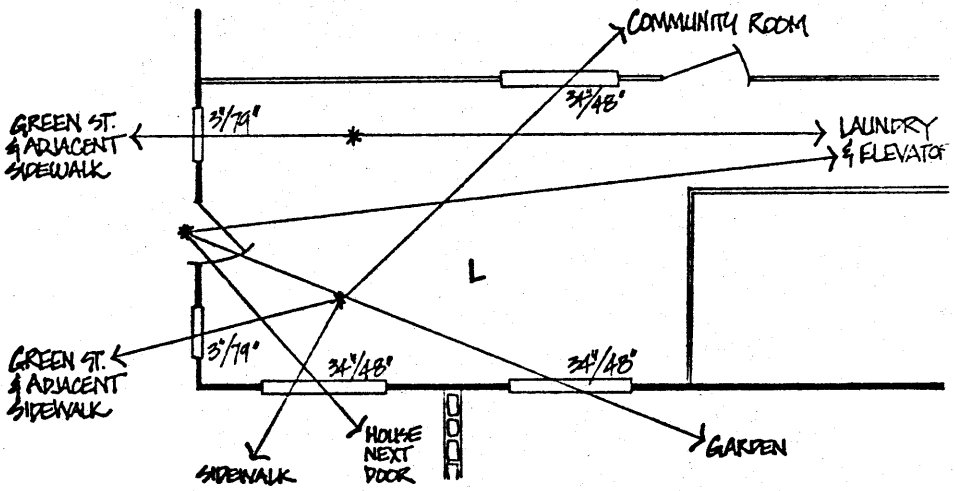
   e) go back and "clean up" data - make illegible things readable, draw in lines for actual paths on circulation map, etc.

BASE MAPS

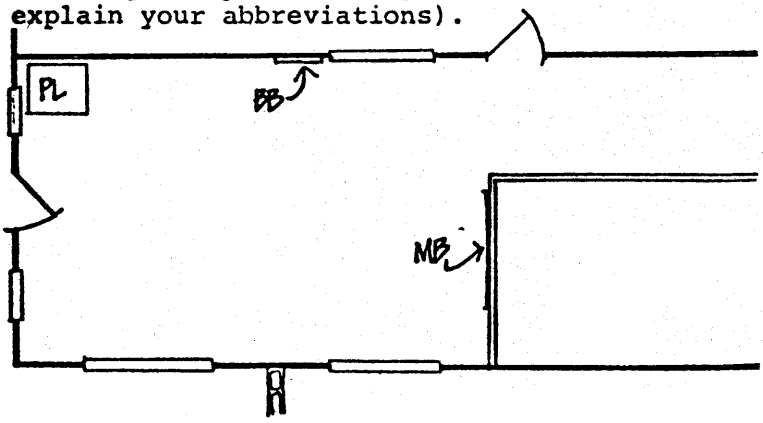
You will be provided with reproductions of the floor plans for each of the areas to be studied (each area will appear on a separate sheet). On each reproduction, please provide the following information where appropriate:

1. Views through windows and doors (from any point in the room), using an arrow from vantage point to outside the room, then describe what you see (in writing). For each window, measure (in inches) from the floor to the window sill and the vertical dimension of the window. Code example: 34"/48"





2. Mark the location of architectural and semi-permanent fixtures such as mailboxes (MB), bulletin boards (BB), water fountains (WF), large planters (PL), or anything else interesting that has been incorporated into the building or space. Example: (be sure to explain your abbreviations).



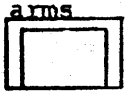
OVERLAYS

Place a sheet of tracing paper (use registration marks) over each base map and draw in (as close to actual scale as possible) the location of furniture and community shared objects according to the following code:

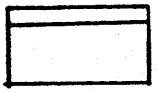
<u>Seats</u>: Stool

Chair with back only

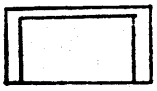
Chair with back and arms



bench

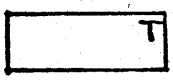


sofa with back only



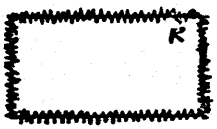
sofa with back and arms

<u>Tables</u>: draw to actual shape and label with T

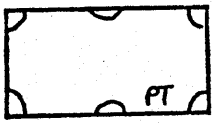


These should be reproduced on codesheet.

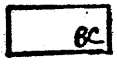
<u>Others</u>:



rug

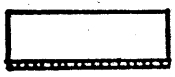


pool table



bookcase

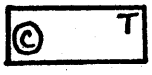
desk (if belongs to specific user, note



piano

lamp

TV



coffee pot/stand

books - BK
magazines - MG
crafts supplies - CR
plants - green.
pictures/wall decorations - <u>red line</u>

All other objects not mentioned above or coded should be written in on the base map in the proper location.

SPACE DESCRIPTION

8 of these (1/area to map) should be included in packet.

The following checklist should be filled out for each separate area under study:

1. **Lighting (replicate for day (natural) and night (artificial):**

   ☐ below reading level
   ☐ barely readable
   ☐ average
   ☐ glarey

2. **Temperature** _____

3. **Floor covering:** ☐ tile ☐ wood ☐ rug

4. **Environmental controls:**

   ☐ movable shades/blinds/drapes
   ☐ thermostat or radiator control
   ☐ closable doors
   ☐ openable windows (or fan) for vent.
   ☐ movable partitions or room dividers
   ☐ movable furniture (w/o major effort
   ☐ light switches/controls

5. **Management policy:**

   ☐ open 24 hours
   ☐ open limited hours (___am/pm to ___am/pm)
   ☐ permission must be obtained (from _____)
   ☐ key must be obtained (from _____)
   ☐ deposit must be made (amount _____)
   ☐ restricted to certain uses (specify_____) or certain groups (specify _____)
   ☐ available to outside groups (specify _____)

Tenants and manager will be asked questions concerning the information in itmes 4 and 5

BEHAVIOR OVERLAYS

Now that you have coded the physical qualities of the specified areas, you are ready to map tenant behavior. Two different types of behavior are under study:

- **stationary** - momentary passes at types of behavior occurring
- **circulatory**- notation of movement patterns within and between spaces/areas

Each observation is to be recorded on a separate piece of tracing paper that is overlayed on the floor plan and furniture overlay for each area (be sure to use registration marks on all overlays). Each overlay should have the following information on it:

- name of room _____
- time and day of week _____
- time of day _____
- observer location coded by *
  (choose a location within the room/space with the best vantage point if possible)

Stationary Behavior

At the scheduled times provided you, you are to mark the location and code the appropriate behavior (on the overlays prepared with the above information) of persons occupying the specified area. Please use the following code system:

a) O to mark the exact location of person (if sitting down, draw circle over the appropriate piece of furniture)

b) use ✝ (female) ↑ (male) } symbols to indicate sex and orientation

Example:  male and female facing one another

c) inside each circle, code the behavior observed occurring at that moment using the following letters:

THESE SHOULD GO ON CODE SHEET

- T - talking
- SG - participating in a social game (cards, pool, etc.)
- O - observing
- R - reading
- S - sleeping
- C - doing crafts or making something
- W - writing
- TV - watching TV

When other types of behavior are observed, please specify.

d) if the person is in a wheelchair or using a walker or cane, use the following code:

wheelchair 

walker/cane 

Circulation

Circulation patterns in each area will be established by mapping movements from node to node. Nodes are places and/or things that are: (a) origins or destinations of movement, or (b) collecting points.

Some of these can be predicted from floor plans and furnishings; some cannot. Below are codings for the types of nodes that usually occur:

Rooms/major spaces:

A_1	main entrance from outside
$A_{2,3...}$	secondary entrances from outside
C	community room
H	hobby or crafts room
L	main lobby
M	manager's office
LA	laundry
R	residential floor
O	outdoors
$X_{1,2,3...}$	unknown areas

These should go on codesheet

Furnishings:

$CG_{1,2,3...}$	chair groupings (one or more chairs)
$TG_{1,2,3...}$	table grouping (chairs around table)
TV	TV grouping (chairs around TV for viewing
CC	coffee center or pot (note if in operation)
P	piano
PT	pool table
DG	door guard's table

E	elevators
MB	mailboxes
BB	bulletin boards
D	desk
W	washer
Dr	dryer
FT	folding table/counter (in laundry)
G	garden
S	sports facility (shuffle board,etc.)
Pk	parking
B	outdoor benches
$O_{1,2,3...}$	other describe in detail

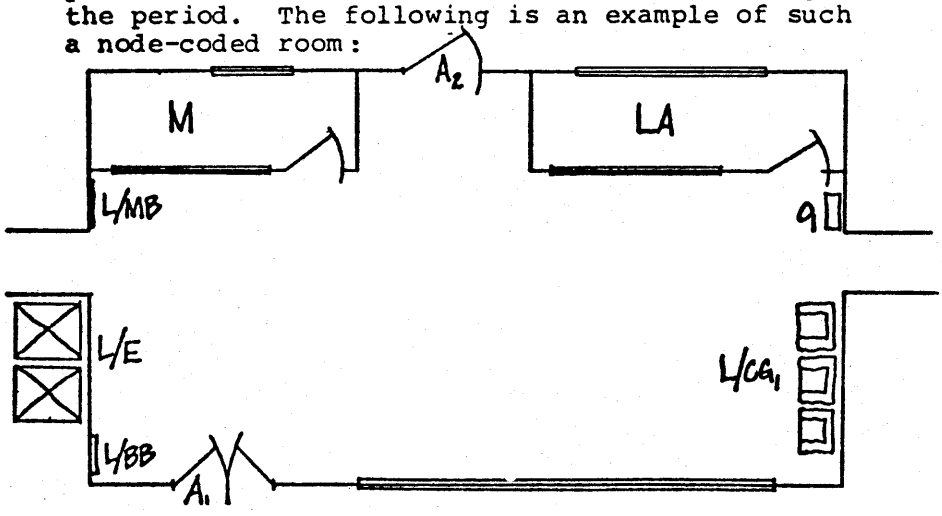
O_1_____

O_2_____

Entrances (inside) to each room should be subcoded with an "e" (ex.: entrance to Community room-C_e)

As you can see from the above code, there are 2 levels of nodes: rooms and the things inside the rooms. Each coding must contain both elements. For example, one of three different chair groupings in a community room would be labeled C/CG_1

You should code all potential nodes on your overlay before the observation period begins so only unpredictable nodes will have to be coded during the period. The following is an example of such a node-coded room:



- Each circulation observation will cover a 15 minute time period. During this time, you will note on the overlay, the origin and destination nodes of each movement.

Example: L/E - L/CG_1 means movement <u>from</u> the elevator in the main lobby <u>to</u> a chair grouping in the same lobby.

- Each stop along a path marks the destination point of one separate movement.

Example: A person entering through the main entrance, checking his mail at the mailboxes and then entering the elevator would be recorded as two separate movements.

A_1 - L/MB and L/MB - L/E

- Each movement along a path should be recorded by writing M (male) or F (female) behind the appropriate origin-destination node path.

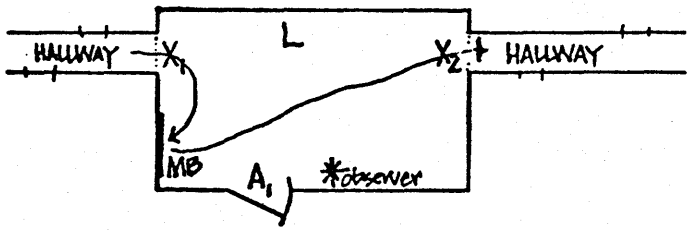
Example: L/E - L/CG_1 MMFMFFF

L/CG_1 - L/E MFM

This means that 3 males and 4 females went from the elevator in the lobby to a chair grouping and 2 males and one female went from the chair grouping to the elevator during the 15 minute period.

- You are not to make any assumptions about where a person is coming from or going to if you cannot see exactly what is happening. You are to mark all places beyond which you cannot see "X" (if more than one place, use sub-notations such as $X_1, X_2 \ldots$) If a person enters from an unknown area, you code it $\longrightarrow X$; if he leaves to unknown places, code it $X \longrightarrow$.

Example:



A person (male) entering from a hallway (down which you cannot see), looking for mail at the mailboxes, and then leaving down another hallway leading to many rooms is coded as:

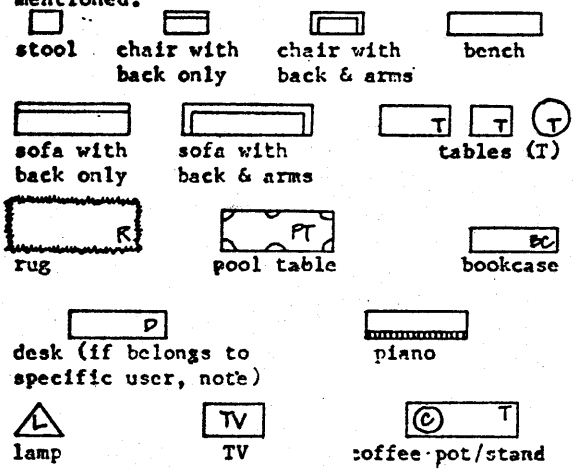
$\longrightarrow X_1$ - L/MB M

L/MB - $X_2 \longrightarrow$ M

CODE SHEET

Furniture Code

Draw all furniture in its appropriate place on floor plan to actual shape and size. Use the following codes and label all other objects not mentioned.



stool — chair with back only — chair with back & arms — bench

sofa with back only — sofa with back & arms — tables (T)

rug — pool table — bookcase

desk (if belongs to specific user, note) — piano

lamp — TV — coffee pot/stand

books - BK
magazines - MG
crafts supplies - CR
plants - green X X
pictures, wall decorations - red line

Stationary Behavior Code

Mark the exact location of person (if sitting down, draw circle over the appropriate piece of furniture) with following symbols indicating sex and orientation: female (facing one another) male

Inside each circle, code the behavior observed with the following letters:

T - talking
SG - participating in a social game (cards, etc.)
O - observing
R - reading
S - sleeping
C - doing crafts or making something
W - writing
TV - watching TV
Specify other types of behavior when observed.

wheelchair code:

walker/cane code:

Circulation Node Code

Rooms/major spaces:

A_1	main entrance from outside
$A_{2,3...}$	secondary entrances from outside
C	community room
H	hobby or crafts room
L	main lobby
M	manager's office
LA	laundry
R	residential floor
O	outdoors
$X_{1,2,3..}$	unknown areas

Furnishings:

$CG_{1,2,3..}$	chair groupings (one or more chairs)
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TV	TV grouping (chairs around TV for viewing)
P	piano
CC	coffee center or pot (note if in operation)
PT	pool table
DG	door guard's table
E	elevators
MB	mailboxes
BB	bulletin boards
D	desk
W	washer
Dr	dryer
FT	folding table/counter in laundry
G	garden
S	sports facility (shuffle board, etc.)
Pk	parking
B	outdoor benches
$O_{1,2,3..}$	other, describe in detail

O_1 _____

O_2 _____

Entrances (inside) to each room should be subcoded with an "e" (ex: entrance to community room is coded C_e)

Each code should contain first the room code, then the furnishings code. (ex: one of three different chair groupings in a community room would be labeled C/CG_1).

Furniture Evaluation Checklist

OBJECTIVES

Δ To develop criteria to aid in the design, selection and evaluation of furniture used in:

Interior common spaces
Exterior spaces

METHOD

Δ Analysis of furniture choices in existing elderly housing (see following checklist)

Δ Determine effectiveness by:

Observation (user preferences relative to choice of chair)

Interviews with users

Δ Users performance based upon :

(1)Behavioral observations
(2)Relationship to anthropometric data in previous section.

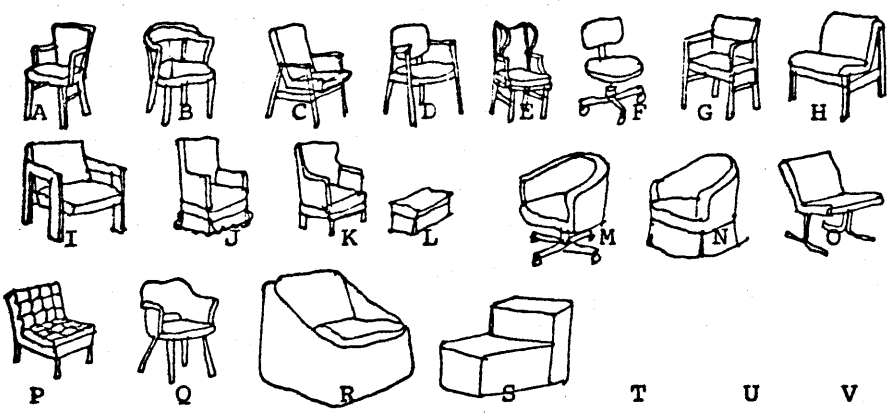
GOALS - develop performance guidelines based upon the above material for future selection of furnishings.

- set up design framework
- produce models, if none are available
- test in field

CHAIR CHART

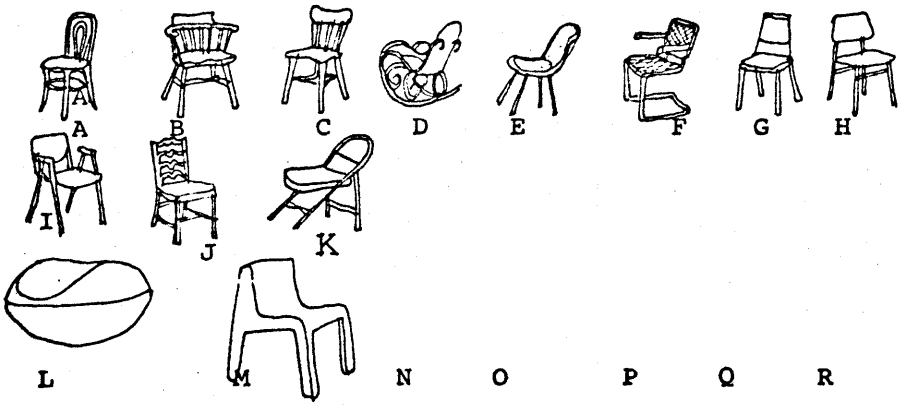
UPHOLSTERED

type UP

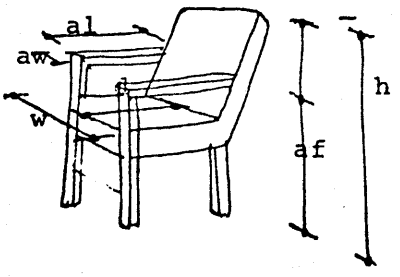


UNUPHOLSTERED

type UN



DIMENSIONS
in inches



h=overall height
al=arm length
aw=arm width
af=distance from arm top to floor
w= chair width
d= chair depth

MATERIALS

FRAME
WD=wood
MT=metal
FG=fibreglass
P=plastic
PL=plastic laminate

UPHOLSTERY
F=fabric(specify if poss. eg velvet,linen)
V=vinyl
L= leather
C=cane

Special condition=SC
specify what this is eg. swivel base
tilt mechanism etc.

C H A I R D E S I G N CHECKLIST

COLOR	PATTERN (describe)	AGE	MAINTENANCE (wearability) (cleanability)	APPEARANCE (YOUR own evaluation)	TIPS EASILY	STABILITY
			easy to difficuit explain		yes no cant tell	when getting into chair? when getting out of chair?

C H A I R D E S I G N CHECKLIST

TYPE	QUANT.	COST (aprox)	SELECTED BY?	MEASUREMENTS	MATERIALS	CAN UPHOLSTERY BE REMOVED (how)	Mfg.
				h= w= d= af= al= aw=		yes no other	

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