

# A BARRIER-FREE ENVIRONMENT FOR THE ELDERLY AND THE HANDICAPPED

---

---

HEARINGS  
BEFORE THE  
SPECIAL COMMITTEE ON AGING  
UNITED STATES SENATE  
NINETY-SECOND CONGRESS  
FIRST SESSION

---

PART 2—WASHINGTON, D.C.

---

OCTOBER 19, 1971



Printed for the use of the Special Committee on Aging

U.S. GOVERNMENT PRINTING OFFICE

70-555 O

WASHINGTON : 1972

## SPECIAL COMMITTEE ON AGING

FRANK CHURCH, Idaho, *Chairman*

HARRISON A. WILLIAMS, Jr., New Jersey	HIRAM L. FONG, Hawaii
ALAN BIBLE, Nevada	JACK MILLER, Iowa
JENNINGS RANDOLPH, West Virginia	CLIFFORD P. HANSEN, Wyoming
EDMUND S. MUSKIE, Maine	PAUL J. FANNIN, Arizona
FRANK E. MOSS, Utah	EDWARD J. GURNEY, Florida
EDWARD M. KENNEDY, Massachusetts	WILLIAM B. SAXBE, Ohio
WALTER F. MONDALE, Minnesota	EDWARD W. BROOKE, Massachusetts
VANCE HARTKE, Indiana	CHARLES H. PERCY, Illinois
CLAIBORNE PELL, Rhode Island	ROBERT T. STAFFORD, Vermont
THOMAS F. EAGLETON, Missouri	

WILLIAM E. ORIOL, *Staff Director*

DAVID F. AFFELDT, *Counsel*

JOHN GUY MILLER, *Minority Staff Director*

Part 1. Washington, D.C., October 18, 1971.

Part 2. Washington, D.C., October 19, 1971.

Part 3. Washington, D.C., October 20, 1971.

<sup>1</sup> Senator Winston Prouty, Vermont, served as ranking minority member of the committee from September 1969, until his death September 10, 1971. Senator Robert T. Stafford, Vermont, was appointed to fill the vacancy on September 17, 1971.

(II)

# CONTENTS

Opening statement by Senator Hiram L. Fong-----	Page 71
---	------------

## CHRONOLOGICAL LIST OF WITNESSES

Hilleary, James, architect, American Institute of Architects, Potomac Valley Chapter-----	71
Sherwood, Dr. Sylvia, director of social research, Hebrew Rehabilitation Center of Boston-----	74
Saltzman, Henry, president, Pratt Institute, Brooklyn, N. Y.-----	80
Koncelik, Joseph A., assistant professor, Department of Design and Environmental Analysis, Cornell University-----	88
Bright, Cooper B., director, Center for Transportation Studies, Eagleton Institute of Politics, Rutgers University-----	92
Baker, Martin Stuart, Ddmov, Morris, Levin & Shein, New York City---	95
Lindheim, Roslyn, architect, and professor of architecture, University of California, Berkeley-----	101
Parriott, Joseph M., professor of design, School of Art and Design, Pratt Institute-----	112
Meridith, Dean R., dean, School of Architecture, Pratt Institute-----	113

## APPENDIXES

Appendix 1: Additional material submitted by witnesses:	
Item 1. News release announcing the Prattaxi—submitted by Henry Saltzman, president, Pratt Institute-----	117
Item 2. Picture of Prototype Prattaxi—submitted by Henry Saltzman, president, Pratt Institute-----	120
Item 3. Superimposed view of Prattaxi—submitted by Henry Saltzman, president, Pratt Institute-----	121
Item 4. Prepared statement of Cooper Bright, director, Center for Transportation Studies, Rutgers University-----	121
Item 5. A description of the study for independent living-----	130
Appendix 2: Letters from individuals and organizations:	
Item 1. Letter and statement from Thomas O. Byerts, project director for architecture and environment, Gerontological Society, Washington, D.C.-----	135
Item 2. Letter from Joseph Scanlon, Alpha Phi Omega National Service Fraternity-----	137

# A BARRIER-FREE ENVIRONMENT FOR THE ELDERLY AND THE HANDICAPPED

TUESDAY, OCTOBER 19, 1971

U.S. SENATE  
SPECIAL COMMITTEE ON AGING,  
*Washington, D.C.*

The committee met at 10:02 a.m., in room 1114, New Senate Office Building, Senator Frank Church (chairman) presiding.

Present: Senators Church and Fong.

Staff present: William E. Oriol, staff director; John Guy Miller, minority staff director; Patricia Carter, professional staff member; and Pamela Phillips, clerk.

## OPENING STATEMENT BY SENATOR HIRAM L. FONG

Senator FONG. The hearing will please come to order.

Senator Church is unavoidably detained for a few minutes and asked me to proceed.

The first witness today is Mr. James F. Hilleary, architect, American Institute of Architects, Potomac Valley Chapter.

Mr. Hilleary, you may proceed.

## STATEMENT BY JAMES HILLEARY, ARCHITECT, AMERICAN INSTITUTE OF ARCHITECTS, POTOMAC VALLEY CHAPTER

Mr. HILLEARY. Good morning.

At the risk of oversimplification, I want to point out the basic three-point program which makes a building available to all handicapped.

Quite simply, the first step is an entrance door which can be navigated.

Second, to be sure there is accessibility to all floors.

And third, that there is at least one washroom for each sex within the building than can be used by the handicapped.

If these three basics are followed, we have at least opened the door to all.

I realize this is a simplification of the problem. There are refinements beyond these basics.

To accomplish these three steps is not an expensive proposition from the standpoint of design or construction money. To make the entrance door easily accessible is quite simple, since most building codes require a door of sufficient size. The thing to be sure of is that the door can be approached by someone in a wheelchair.

Frequently the main entrance is put at the top of a grand staircase without consideration or it has a raised doorstoop that makes it difficult to navigate. If they can get to the front door and the door sill is level, then they can go through.

Now, as far as accessibility between floors, most high-rise buildings, or I should say every building of several stories is required to have an elevator. The standard elevator has a 3-foot door as standard equipment. This makes all floors automatically available, since a wheelchair can navigate.

#### ELEVATORS NECESSARY

The only circumstance I could think of where it would be a slight hardship on the owner is that if he were constructing a public building with only two stories where an elevator, by code, would not be required, barrier-free conformance would require that an elevator be installed at additional expense. It doesn't represent a change in the budget to indulge in the refinement of changing the locations of the control panels from the standard height to lower height from that used normally.

The third item, usable washroom, doesn't represent a substantial change in budget either. The two basic requirements there would be to have the water closet 18 inches off the floor rather than the standard 14.

This fixture is readily available today and is manufactured by Standard Manufacturers. Its additional cost over the standard fixture is about \$13, which is not prohibitive.

The other requirement is that the toilet stall be of sufficient size and have a door sufficiently wide for the passage of the wheelchair. This is no problem from an expense standpoint, nor from an execution standpoint.

So if these three basics are adhered to, I think we have succeeded in opening the door to everyone. Beyond this point there are refinements of the basic program which are defined and put into the American standards which came out in 1961, and which are being used by many States as a guide to the standards for barrier-free architecture.

Senator FONG. In a building where you have no elevators, this is a problem isn't it?

Mr. HILLEARY. Yes, but there are very few buildings—well, the residence would probably be the greatest.

Senator FONG. Or three-story apartment, which the apartment builders are going to because this is the cheapest.

Mr. HILLEARY. Yes, walkup. That is what I said would be the one exception where requiring an elevator would cost the builder additionally. Otherwise I think most of these points can be incorporated in the building at no appreciable expense to the builder.

Senator FONG. Your prepared statement will be accepted in full.  
(The prepared statement follows:)

#### PREPARED STATEMENT OF JAMES HILLEARY, AMERICAN INSTITUTE OF ARCHITECTS

Since the hearing on A Barrier Free Environment for the Elderly and the Handicapped is now into its second day, I hope that what I have to say will not be too repetitious of ground already covered.

My comments shall stress the relative ease and economy with which a barrier free architecture can be accomplished.

A basic three point program will permit all to use a building :

Point 1—One entrance easily negotiated by all regardless of means of locomotion.

Point 2—Accessibility to all floors.

Point 3—A usable washroom.

Application of the three point program is relatively simple.

#### POINT ONE—EASE OF ENTRANCE

Where most entrance doors are of sufficient size for wheel chair entry, these doors may have hardware which is difficult to use or the doors themselves are inaccessible by placement up a flight of stairs. To overcome the obstacle, one entrance to every building should be accessible by wheelchair either through placement of the door at ground level or by the provision of a ramp to entry.

#### POINT TWO—ACCESSIBILITY TO ALL FLOORS

With most buildings today being multi-storied and equipped with an elevator, this obstacle is automatically overcome.

The required stairways in the building would be more usable with a slight adjustment of riser height and profile. Projecting stair nosings tend to trip the infirm while too high a riser is hard to negotiate.

#### POINT THREE—A USABLE WASHROOM

Here the obstacles can be overcome if one stall is of sufficient size for maneuvering a wheel chair, if grab bars offer added maneuvering assistance and if the water closet is elevated for ease of use.

To accomplish these basic points need not add appreciably to construction cost.

It is not a cost item to provide a roll in door sill nor hardware that is easy to operate.

Where an elevator is planned for a building, there is no additional cost in making it available to the handicapped as a standard cab has a door of sufficient width to permit the passage of a wheel chair. A nicety of lowering the control panel to put it within easy reach would have no effect on initial cost either.

The only circumstance where there would be additional expense would be in the construction of a two-story building not requiring an elevator by building code. If it is to be usable by the handicapped, at both levels, an elevator would have to be provided.

Easing the stair riser would affect the building cost slightly since it would require more risers between floors, adding to the length of stair tower. The average adjustment would be about one foot of length or approximately eight square feet per floor, a negligible cost difference to the building.

Providing one usable washroom facility with toilet enclosure of sufficient area for navigation has no appreciable effect on budget. A water closet with the convenient height of eighteen inches rather than a conventional one at fourteen inches add about thirteen dollars per fixture.

Accomplishing these basics means the difference between limited and total usability.

If it is that simple, one might ask why all the fuss, why is barrier free architecture not automatic?

It is not automatic because, unfortunately, the designer is not always conscious of the problem or the solution. One has only to be aware in order to end this form of discrimination. The American Institute of Architects is making a positive effort to increase awareness in its membership. But total effectiveness must rely on enforceable legislation.

Many states presently have standards for barrier removal. We must see that they are enforced—that designers are provided the necessary standards to obstacle removal. Much of this information is presently available but scattered. There is a need for a set of standards to be followed by planners, architects and designers, a handy reference in book or poster form for drafting room use.

We have to think about the problem in order to remove it. It is that simple.

Senator FONG. In your prepared statement you say the AIA is making a positive effort to increase awareness in its membership.

What is AIA actually doing to do this?

Mr. HILLEARY. Well, the AIA has been cooperating with the Government for the past several years in conducting studies. The chapter of the AIA to which I belong, the Potomac Valley Chapter, has been active in the field for the past 3 or 4 years.

#### INCREASE AWARENESS OF ARCHITECTS

We initiated a program to increase the awareness on the part of the architects because I think primarily the architects have to be made aware of the problems and solutions.

I think the obstacles are not difficult to overcome. It is simply thinking about it or doing something positive about it from a design standpoint. That is why the American Institute of Architects initially got interested in developing an awareness and an interest on the part of architects and promotion of standards that would guarantee the—

Senator FONG. Do you find this in your literature?

Mr. HILLEARY. What is this?

Senator FONG. Do you find this in your AIA literature?

Mr. HILLEARY. Yes, our chapter has published two magazines on the subject, and this was followed by articles in the AIA National Journal with the refinements and bibliography:

Senator FONG. And our schools are making the students aware of that?

Mr. HILLEARY. Very much so. As a matter of fact, we have also initiated a program that when the AIA gives its national honor awards annually, a committee of architects reviews the building from the standpoint of a barrier-free architecture and an award is given to the builders that have provided and consistently used the techniques necessary to make them usable. An additional award is given to the architect for his ability to abide by the barrier-free concepts.

Senator FONG. Thank you, Mr. Hilleary.

Dr. Sherwood.

#### STATEMENT BY DR. SYLVIA SHERWOOD, DIRECTOR OF SOCIAL RESEARCH, HEBREW REHABILITATION CENTER OF BOSTON

Dr. SHERWOOD. As attested to by these hearings, there is obvious effort being directed toward creating barrier-free environments for elderly persons in this country. There also appears to be recognition that the range of barriers must be broadly defined to take into account not only the elimination of actual physical barriers, but must include considerations of the social, economic, and political barriers that must be dealt with, the need for manpower and resources including specialized services, equipment, housing, special architectural features, and so forth, and the need for more knowledge through controlled research.

While most of my discussion today is directed at consideration in creating barrier-free environments for the usually low-income handicapped and debilitated elderly, particularly in terms of sheltered housing, it should be emphasized that there also exist in society serious impediments to barrier-free environments even for those elderly persons who are functionally healthy and have no apparent financial problems.

For example, in regard to home financing, an arbitrary economic barrier against the elderly is the recent action by the Federal National Mortgage Association, FNMA, a quasi-public agency with ties

to the U.S. Department of Housing and Urban Development. Fannie Mae, as the agency is commonly called, has issued credit underwriting guidelines which will have a standardizing effect, if they are accepted, on conventional mortgage lending practices across the United States. These guidelines clearly discriminate against the elderly. I am inserting in the record a joint statement in opposition to FNMA's guidelines restricting mortgage credit issued by a 30-organization coalition organized under the leadership of the Center for National Policy Review. I am also inserting the individual statement of Nelson Cruikshank, president of the National Council of Senior Citizens, which was delivered at a joint conference held on October 4, 1971.\*

Senator FONG. Do you usually find that the leading agencies follow FNMA?

Dr. SHERWOOD. It is my understanding that, if the guidelines are accepted, they will have an important effect on banks—particularly conservative banks. When there are guidelines specifying restrictions, particularly when they are put out by an agency like Fannie Mae, they will undoubtedly end up making banks more hesitant in lending out money to elderly people.

Senator FONG. Or take a little insurance by being sure if they have a selling market, FNMA would buy it?

Dr. SHERWOOD. That is right.

Senator FONG. Yes.

#### DISCRIMINATION AGAINST ELDERLY

Dr. SHERWOOD. But in any case, the elderly are discriminated against—and, incidentally, the guidelines also discriminate against the minorities, blue collar workers, and families with working women.

The elderly are discriminated against because one of the guidelines instructs lenders that loans generally should not be made in cases where the age of the borrower plus the term of the loan exceeds 80 years. When one considers that the average conventional mortgage loan has a term of greater than 25 years, this 80-year rule clearly threatens to deny many elderly persons the opportunity to purchase a home.

Senator FONG. That means if you are over 55 years old, you would not be able to get a mortgage.

Dr. SHERWOOD. This means if these guidelines prevail and banks adhere to them, even if the old person is solvent, it would make it very difficult for him to buy a retirement house.

It should perhaps be pointed out that even when laws have been enacted with clearly constructive intentions concerning the elderly, economic pressures may negatively affect their implementation.

A good example of this is the way the Medicare law has been interpreted by the various States. I am inserting into the record testimony which expands upon this and other relevant issues which was presented by me on April 14, 1971, at the regional hearing, region I of the White House Conference on Aging—1971.\*

Furthermore, in the frenzy to act, there seems to be resistance to spending available moneys on research. Although there is certainly ample evidence of need for action, it should be understood that the

\*Retained in committee file.



desire to create barrier-free environments and the philosophy favoring the matching of services to individual needs with emphasis on the rights and dignity of the elderly and the handicapped do not, by themselves, produce the desired ends nor, for that matter, the knowledge of how best to accomplish them. Rather than being fixated on specific programs, it is important to view efforts as learning experiences. Flexibility should be the keynote. If research is minimized it may very well be that billions of dollars may be spent without gaining concrete knowledge of what works or being better equipped for introducing new procedures to effect the desired ends. For a more detailed discussion of this point I am inserting into the record a copy of two articles: H. E. Freeman and C. C. Sherwood, "Research in Large-Scale Intervention Programs," *The Journal of Social Issues*, volume XXI, No. 1, pages 11-28; and S. Sherwood, "A Demonstration Program in a Home for the Aged: Observation, Research, and Practice," in *Duke University Council on Aging and Human Development: Proceedings of Seminars 1965-69*.\*

Despite such resistance to research efforts, overall strides are in fact being made at the present time in knowledge concerning resources and services needed if we wish to give more than lip service to creating barrier-free environments for the elderly.

#### LACK OF COMMUNITY RESOURCES

On a purely descriptive level there is ample evidence that there is a lack of community resources—particularly alternatives to institutionalization—for adequately meeting the individualized needs of the elderly population. For example, and this is in my own studies in Boston, of 416 recent applicants to the HRCA—the Hebrew Rehabilitation Center for Aged in Boston, a long-term care facility combining chronic hospital, social service, and residential functions—226, over 54 percent, were evaluated by the intake unit of the social service department as being appropriate for sheltered apartment living rather than institutionalization, were such resources available. Many of these people actually had to be institutionalized because such resources were not available in the Boston area.

Evidence of the feasibility of sheltered housing as an alternative to institutionalization for at least some type of nursing home populations has been found in the experience of the first year of the Highland Heights housing project for the physically impaired and elderly in Fall River, Mass., which is currently being studied under a combined DHEW-HUD funded contract between the Fall River Housing Authority and HUD, of which Dr. David Greer and myself are codirectors. A description of the "Study for Independent Living," the combined DHEW-HUD funded contract, H-1275, including a description of the facility is being inserted into the record.\*\*

Of the 208 apartments, 23 have been occupied since the opening of the facility in September 1970 by persons who moved in directly from nursing homes. And this, by the way, includes people with multiple sclerosis, muscular dystrophy, paraplegics, quadraplegics—not people just using nursing homes as a residence.

\*Retained in committee files.

\*\*See appendix 1, p. 117.

Senator FONG. Does this mean when they move from a nursing home they do not require the constant care by nurses?

Dr. SHERWOOD. This is a federally sponsored, low-income sheltered care facility. There is a nurse that is available in an emergency because it is physically connected to the Hussey Hospital for the Chronically Ill, a municipal hospital in Fall River. The outpatient clinic of Hussey Hospital is actually in the basement of the apartment facility. It is my understanding that it is the only low-income, federally sponsored housing project of its kind in the United States.

#### ANCILLARY SERVICES AVAILABLE

But the point is there are ancillary medical and social services available. Most people in nursing homes do not require constant nursing care, although they require some supervision. And these 23 people from nursing homes have been able to live successfully for over a year in this facility. In fact there is at least one person who was in a nursing home for over 14 years, and most of these people were in nursing homes for at least a year or more before they moved in to Highland Heights.

Senator FONG. But the staff is larger in the nursing home than in these ancillary facilities?

Dr. SHERWOOD. That may very well be. These, of course, are just ancillary services: The outpatient clinic of the hospital is located in the basement, for one; and at night, if there is an emergency, the bell is connected to the hospital so that somebody can come up. Those constitute really the basic kinds of services available. But there are actual people—quadraplegics, paraplegics and others—who have been able to live successfully in this kind of apartment facility.

An additional 27 units are occupied by elderly persons who were transferred from other low-income public housing for the elderly. The unique features of the Highland Heights apartments—the building's proximity to Hussey Hospital for the Chronically Ill, the medical services within the building—remember, the Hussey Hospital outpatient clinic is located in the basement of the building—and despite some major architectural blunders, some of the special architectural features incorporated in the building, as well as the recreational and social services provided—were important in the decision to transfer these elderly persons to the Highland Heights facility. But for the sheltered aspects of the Highland Heights apartments, these are persons who could no longer maintain themselves in the community, in their former public housing, and would have had to be institutionalized.

These data point to the importance of providing services along with special architectural features if we wish indeed to create barrier-free environments for the elderly and the handicapped.

While the need for trying other interventions exists—and certainly it is of utmost importance that the impact on the health and well being of their residents be studied on a long-term basis—it is also clear that sheltered housing, consisting not only of mortar and bricks but also of ancillary medical and social services, is a viable alternative for some types of persons who tend to be institutionalized in areas where such an alternative is absent.

## INCREASE IN FUNDING NEEDED

There must be serious thought given to ways of increasing funds and enlarging opportunities for housing authorities to include services along with the specialized features. HUD at this time, before allocation of space for services is approved, demands that a community provide specific commitments concerning the financing of such services. HUD itself demands that the local community pay for such services.

This may mean that the communities which are the poorest and cannot afford to make such commitments—communities that may need the services the most—are the ones not likely to obtain such services in their buildings either now or in the future, because no provision for space for potential services are allowable under present regulations.

There is also a good deal of restriction in funding that provides serious impediments to the inclusion of needed architectural specialized features.

In the long run, these strictures may be penny wise and dollar foolish. Initial costs for a specific housing project may be cut, but it may force some older and handicapped persons into institutions who might otherwise be able to remain in the community. In addition to the greater monetary cost of institutionalization, this presents a strain on resources and is at the expense of much emotional cost to the elderly person or the handicapped person and his family.

Although many other points could be raised at this time, because of the shortness of the allotted time, only one more will be mentioned. Hopefully it will be possible to bring up and discuss some of the other points during the discussion period.

This is in regard to the architectural decisions made and the necessity for an architectural program that carefully spells out the reasons for the site selection and the architectural features to be included in the building in terms of the needs of the target population. Unfortunately an architectural program and a mechanism for review are not among the preconstruction criteria demanded by HUD. Despite the magnitude of questions that remain unanswered to date, there is an accumulating body of literature concerning architectural features that might meet the physical and behavioral needs of the chronically ill and elderly populations.

## STUDY SUITABILITY OF BUILDINGS AFTER CONSTRUCTION

Unfortunately, however, architectural firms may be selected to construct buildings for the elderly and the handicapped on other grounds than demonstrated understanding and competency in the field—the bid is lower, political reasons, and so forth. Such firms could—and in my opinion any architectural firm involved in the construction of specialized housing should—take advantage of the opportunity to learn and indeed contribute to current knowledge concerning the ways in which architectural design might improve physical and mental functioning of the handicapped and elderly by returning on their own accord after the building is in operation to study in an objective manner the ways in which the building did and did not suit the needs of the target population.

It is my understanding that this is rarely the case. What is worse, regardless of the architectural blunders and barriers they may actu-

ally have created, the fact that an architect and his firm have been involved in the design and construction of a building for the elderly may be used as evidence of the expertise of the architect and his firm in this specialized field. They now may be sought out for other housing projects and structures for the elderly. They may even be appointed to special advisory committees to local and State governments interested in facilitating barrier-free environments for the elderly and physically impaired. Under such conditions, rather than learning from previous mistakes, their architectural blunders may be perpetuated.

Senator FONG. You have quite an indictment against the architects here.

Now, are we going to get them to really conform to what you are trying to say?

Dr. SHERWOOD. I hope so.

Senator FONG. How is the Highland Heights housing project funded?

Dr. SHERWOOD. It is a HUD funded building. As a matter of fact, the history of Highland Heights is very interesting because it came about as a result of the efforts of Dr. David Greer, who is the head physician at Hussey Hospital. He tried some innovative techniques with the physically impaired and tried to send them back out into the community. He found that they couldn't remain without some necessary ancillary medical resources. Among other things he tried to get a specialized apartment facility for the handicapped and elderly built, this was eventually accomplished; and it was built right on the grounds of Hussey Hospital, attached to it by a tunnel.

#### DUPLICATION OF FUNCTION

One of the real problems at the time Highland Heights was being funded was the financial stricture concerning what HUD considered a duplication of function. At that time, for example, HUD ruled that Highland Heights could not have a dining room facility in the building and then have kitchens in the apartments. The way in which this problem was handled was that the city of Fall River donated the land to the housing authority and for that, the city was then allowed to rent, for \$1 a year, two floors; and the city has put in the ancillary services on the two floors. That is how they were able to get around some of the regulations.

In any event it is actually a HUD, federally sponsored low-income housing project for the handicapped and the elderly. And there is a lot of input—a lot of community input—into that particular apartment house.

(At this point Senator Church assumed the chair.)

Senator FONG. Do you think HUD should do a little more subsidizing in some of these areas?

Dr. SHERWOOD. Yes, I do. I think it is very rare for a community to have a Dr. David Greer able to manipulate and do what he was able to do in Fall River.

Senator FONG. Because the cost increases with the various things you have to put in?

Dr. SHERWOOD. Right. I think the problem is that the communities that need it most are those that are least able to give it on their own.

Even if the law is changed or even if there are increased moneys available in the communities to provide such services, it will not be possible to take full advantage of these new opportunities since there has been no space allocated for such services.

Senator FONG. I am happy Chairman Church has come. And I have to run; I have another meeting.

Senator CHURCH. I want to thank you very much for opening the hearing and for conducting it in my absence.

I had to be in the Foreign Relations Committee meeting this morning; an old friend of mine was up for confirmation, so I am sorry that I missed part of this testimony.

I think perhaps we should move on to the next panelist, because I do not know what questions, Sylvia, to ask you, having come in at this point. I will look back over your testimony. I am sure questions will occur.

But let's go on now to Henry Saltzman, Brooklyn, N.Y.

Mr. Saltzman will discuss the sociological view of architecture as applied by Pratt in developing principles of design.

Mr. Saltzman.

#### **STATEMENT BY HENRY SALTZMAN, PRESIDENT, PRATT INSTITUTE, BROOKLYN, N.Y.**

Mr. SALTZMAN. Thank you.

Sir, I brought along some material relating to the Prattaxi and this material will be available to other members of the committee if you wish it.\*

I am pleased to have this opportunity.

Clearly the aged and handicapped suffer most from our societal devotion to the interests of producers at the expense of consumers. The serious problems of the aged and handicapped epitomize the problems confronting all of us. Their problems arise in part, and will continue to beset us, so long as the organization of the manmade environment largely ignores the consumer, the person who lives in and uses the environment.

At present the producer of goods and services controls the nature of our environment. He determines the extent to which consumer needs are met. Consumers, particularly the aged and handicapped, are given little choice but to accept what they are given.

In fact, I believe one can look at the history of civilization as the history of producer monopolies and only in rather recent years do we begin to see the reestablishment of some form of balance between the power of consumers and those of the producer.

#### **EDUCATE STUDENTS TO CONSUMER INTERESTS**

By educating students to master professional skills and techniques and to use them in the interests of people, we at Pratt Institute are seeking to raise the effective level of concern of producers for the needs of people generally, including those of the aged and handicapped.

At Pratt Institute our concern with that condition in which people find themselves surrounded by impediments to even such ordinary

\*See appendix 1, p. 117.

activity as traveling from place to place led a group of students to design a new, multipurpose urban vehicle called the Prattaxi.

Our concern and our search for solutions that favor the consumer without harming the producer are also expressed in the Pratt School of Architecture. There we have developed a "sociological approach" to designing and organizing space for use by people.

I would like to present the design-for-people principles taught at the institute by briefly describing the Prattaxi, and then explaining our sociological approach to architecture.

The Prattaxi is a "people package" that is 2 inches longer than a Volkswagen and provides more head and leg room than a Cadillac limousine. It was designed from the inside out with prime consideration given to the various needs of passengers, the drivers, and fleet-owners. For ease of manufacture, the design uses existing automobile parts almost exclusively. The Prattaxi is functional without, in our judgment, sacrificing esthetics.

#### DESIGNED FOR EXTREME SITUATIONS

It was designed to accommodate extreme situations, which are the ones that confront the aged and handicapped. The standard definition of "handicapped," of course, includes obese individuals, extremely tall and short people, and women pregnant beyond the 3d month as well as wheelchairbound persons, those relying upon crutches, the blind, aged, and others with physical afflictions.

We have found that by designing for the needs of the handicapped, the needs of the general population are fitted in. For example, the Prattaxi doors measure 32 inches wide and 5 feet high—providing ample room for a wheelchair patient to roll himself in and out of the vehicle, or for a person to push a baby carriage in.

There are ramps at the side of the vehicle for these purposes.

And, therefore, the ordinary passenger can step in and out quickly.

Now, each design feature connects to another one. The reason a baby carriage can be rolled in is that the floor of the Prattaxi is flat—no tunnel hump, because the engine is mounted in the rear in a special crib that "plugs" and "unplugs" for ease of repair. By "plugging in" a replacement engine, the taxi returns to the streets more quickly. And the plug-in characteristic makes the Prattaxi especially valuable in testing the potential of low-pollution powerplants.

So the design, we believe, is integral, comprehensive, and useful to people.

Senator CHURCH. Mr. Saltzman, a design so practical and useful to people has very little chance of survival in our society?

Mr. SALTZMAN. Sir, that is what we are determined to find out.

Senator CHURCH. How have great minds reacted to such practical ideas?

"THUNDERING SILENCE"

Mr. SALTZMAN. Up to this moment, with thundering silence.

Senator CHURCH. "Thundering silence."

Mr. SALTZMAN. However, we have had rather encouraging interest in this from England. We have received a letter from the manufacturers of the famous London Cab who have indicated they have interest in changing their model. Sir Cooper-Keys will be coming here to discuss the Prattaxi.

Everyone here talks about the London Cab as being the supreme example of the comfortable taxicab. We have discovered that they are having some second thoughts and they think our model may indeed present some advantages.

Senator CHURCH. You can at least get into a London Cab without being a contortionist.

Mr. SALTZMAN. Or embarrassed or hurting your back. Correct.

Senator CHURCH. But this model seems to me to be ideal for general use for everybody.

Mr. SALTZMAN. Well, this was one aspect of the students' interest and our professors in the design.

Senator CHURCH. How many passengers can it carry?

Mr. SALTZMAN. It can carry at least four, three on the rear seat and then, if you notice adjoining the driver there is a luggage compartment which can be used as a seat as well. You could probably get four skinny people on the back seat, too.

Senator CHURCH. I am told you have applied for a Department of Transportation grant on this vehicle.

Mr. SALTZMAN. Yes, with the Taxi Commission in New York and the Department of Air Resources.

Senator CHURCH. I was interested in your statement that the economy was dominated by producers, that this was the normal condition most of the time; that it has only been in recent years that the consumer has begun to assert himself. That notion certainly conflicts with the doctrinal idea of the market economy in which the consumers make the choices and the producers simply supply what the market demands. That is a myth we have lived with for a long time, but it is a sacred part of the American way of life, sacred belief.

I would have thought that if the market economy ever existed in the classical sense, it did so when our manufacturers were small, when there were many competing with one another, and these huge conglomerates had not grown to the point of utter domination of our economy, when competition between them is no longer real and enormous advertising campaigns instruct the public on what the public wants and creates artificially the appetite for the kinds of products that are produced.

Why do you say that the producers have always dominated and that only now the consumer is beginning to come into his own?

It seems to me the consumer has never been weaker. There may be some talk about consumers now and a few organized efforts on behalf of consumers, but as compared to the tremendous size of these conglomerates that predominate our production and the diminishing importance of competition as a real factor, I should have thought that now the consumer would be in a lesser position than ever before.

#### CONSUMERS ARE BEGINNING TO BE HEARD

Mr. SALTZMAN. I take hope from the fact that "consumers"—and I use that in quotation marks, not just the goods but also services, public as well as private—are beginning to gain an access to the media through mass media, through mass communication which has never been the privilege in any organized fashion of consumers who have generally been scattered and without a united voice.

It seems to me there are a number of straws in the wind that would indicate that the voice of consumers is beginning to be viewed as of equal importance by the mass media as the voice of the producers.

So, for example, in the school decentralization conflict in New York City, which I was privileged—or condemned, as the case may be—to work in during the height of it, at city hall, we now are seeing, increasingly, the concerns of parents and students being reflected in the media to a much higher degree than was previously the case.

Before, the producing group, the bureaucracy, was essentially informing the public about what it could have or should have or needed to have.

I see the same pattern, hopefully emerging throughout this country under the OEO and the effort, abortive and limited and unsuccessful as it may have been, to give low income people throughout this country a reasonable opportunity to express their preferences as to how goods and services and money were to be spent on their needs.

### YOUTH SPEAKS OUT

And today I am encouraged by the emergence of Naderism, a movement of young people, on the Pratt campus as well as on thousands of others, who begin to address seriously the needs of people in intelligent and enthusiastic ways. The ability of this generation of college students to take their environmental interest and translate it into writing, into speech, into legislation, into products, and to present these products and ideas and legislation to the public through the media, is getting so well developed that it encourages me to believe that perhaps consumers are beginning to have the kind of access through mass educational media that is essential if we are—or to achieve a balance between the role of the producer in inserting something into the market and the role of the consumer in saying what is or what is not inserted into the market.

Senator CHURCH. Well, I certainly hope you are right about that. I do think that Ralph Nader has been a remarkable phenomenon, but it is such an unequal contest, kind of David against Goliath. And I see so little evidence that this effort despite the great publicity that was given to it, has affected either the quality or the design of any products on the market.

I know you are attempting to do your best in this field, like him. In connection with this taxi, in your effort to design it, did you get any encouragement or any help from the manufacturers—automobile manufacturers?

Mr. SALTZMAN. Yes, we have had a large number of manufacturers look at the cab.

### INTEREST FROM LARGE MANUFACTURERS

Senator CHURCH. Did they give you suggestions concerning the design and assistance in working it out?

Mr. SALTZMAN. Yes. Originally the students and faculty who worked on this project were funded by various grants, I think about \$8,000 if I remember correctly, which came from the automobile manufacturers. That is, there was an interest in Detroit in helping our industrial design department look at the taxi problem and new vehicle



design. So there was a role originally for this. And I am quite an optimist, Senator, otherwise I would not be a college president. I think there is a possibility that we will see a partnership between industry and educational institutions in developing this type of aid to consumers.

Senator CHURCH. Well, I am an optimist too, otherwise I would not be in the United States Senate.

[Laughter.]

Mr. Miller, do you have any questions you would like to ask?

Excuse me, you have not quite finished your statement?

Mr. SALTZMAN. Yes, please, if I may.

Senator CHURCH. Yes, please, would you finish.

Mr. SALTZMAN. Certainly.

Clearly the sense of dignity of a wheelchair bound individual is preserved, perhaps enhanced, when he controls his own entrance and exit. And, in practical terms, he has simple and direct access to public transportation.

One example of such a need is an 8-square-mile section of the Bronx where an average of 9,000 elderly persons live in each square mile. That is half the elderly population of the Bronx. Unsafe streets, hilly terrain and inadequate public transportation are so difficult to surmount that the existing services the elderly and infirm need cannot be reached without great cost and effort. The area has 19 hospitals and facilities of 15 social and governmental agencies. They are seriously underutilized. The problem is not provision of services in this area, but provision of access to services.

The extent of the problem can be recognized with just a few statistics. Some 942,000 people over age 65 live in New York City, and more than 50 percent of the aged households have an income under \$3,000 a year.

There is clear demonstration of response when some access to service is provided: When New York City introduced a reduced bus and subway fare system, some half million elderly persons registered for it in the first month of operation.

We have received an expression of the need of a vehicle such as the Prattaxi from the architectural barriers coordinator of the Eastern Paralyzed Veterans Association of New York City.

In a letter to us, the coordinator, Joseph L. Mandella, wrote in part:

It is impossible to fully express my enthusiasm upon testing your mock-up model of the Prattaxi. Being wheelchair bound since World War II, I have had the opportunity to utilize many modes of transportation, but none with such ease of access and interior room as this vehicle. I foresee this as the answer to what was once an impossible situation, comfortable transportation for the handicapped at a reasonable cost.

There are many other valuable characteristics to the Prattaxi, such as a 360° view of the road for the driver, that I won't detail here. I prefer to concentrate on the principles and philosophy we regard as essential in designing for people.

#### DESIGN SHOULD REFLECT HUMAN NEEDS

Good design describes human behavior. Whether it involves a playground or a steam iron, the design should reflect the consumer's needs and predilections. At Pratt we are educating designers, architects, and others in a range of professions to resolve fundamental problems raised by the inability of people to satisfy their needs.

By training this way, we hope the Pratt graduate will play his role in industry to find lasting rather than merely convenient solutions.

Now, that requires in the designer a sense about people. The designer holds one of the most powerful positions in our society. He is able to make it easy or difficult to get along in a thousand ways: He can ignore left-handed people or accommodate them; he can design a comfortable physician's waiting room and put your mind at ease, or upset you without your knowing why; he also can design attractive doodads that are useless in the interior of a car, but that can kill you in an accident.

Such consumer-oriented considerations extend to other disciplines at the institute—architecture, city and regional planning and urban design, and, increasingly, engineering.

We strive to graduate architects who are equipped by attitude, experience, and study to translate their social awareness into physical design. Our sociological approach fosters coalitions with other professions. That means students of architecture, city and regional planning and urban design become aware of other processes; namely, the socioeconomic political forces that determine the outcome of any effort to manipulate the physical environment.

In practice, then, Pratt architecture students are encouraged to face human needs such as child care centers, health facilities, basic housing systems, and parks, along with office buildings, shopping malls, and airports.

#### EDUCATION THRU ENVIRONMENT

We learn from and we learn in our immediate surroundings. Brooklyn is called the Nation's fourth largest city. Most of our students have grown up in an intense urban situation. They know intimately the frustrations and anxieties of urban life. In addition to the classroom and studio, they earn academic credit by combining theory and action in community-based store-front operations where solutions to urban problems are hammered out with people. We constantly encourage students to work with people before attempting to design for people.

The students are expected to act imaginatively and realistically. Our students testifying before the New York City Planning Commission on a project in which they have worked with community residents is quickly becoming the rule in our curriculum. The educational rationale is that such encounters enliven theory and redefine it. And then the student goes beyond the norm and develops his own theory, rooted in his experience. That is when true learning takes place. And that is the kind of activity in which higher education increasingly must engage itself.

The architecture and design student enters professional practice and brings to his work an understanding of people, hopefully. In addition to providing hard training in the elements of a student's craft, we are increasingly stressing the responsibility of the student to create workable solutions to human problems.

While the Pratt School of Architecture is among the Nation's largest, and we hope the best, it isn't our goal to win accolades for being the best in a technical sense. Certainly, we care about the mastery of the fundamentals. But our chief interest is to enable each student to lift his eyes from the drawing board, and to look at and understand his fellow creatures.

We do seek to be the most significant architecture school in terms of our positive impact on the social and physical needs of metropolitan areas.

#### CONCERN FOR FUTURE

If one accepts the premise that urban problems are national problems, that they aren't being solved well but that the answers can be found, then the principles in the Pratt curriculum are durable. We are teaching concern for the future by teaching realistic action today.

Our students are educated to work with people. Frequently they are employed by producers, or become producers themselves. It is our hope that Pratt-trained professionals will bring to bear their skills and techniques to articulate consumer, human, needs while appreciating producer interests so that the present imbalance toward producer concerns can be redressed.

Thank you for this opportunity.

I would like to have join us at the roundtable, if I may, Prof. Joseph M. Parriott, professor of design of the school of art and Design, a member of our faculty, former president of Industrial Design Society of America, former member of the President's Committee on the Handicapped appointed by President Johnson; and R. Dean Meridith, dean of the school of architect.

Thank you very much.

Senator CHURCH. Where are these gentlemen?

We are very happy to have you both with us.

For just a minute, if I can return once more to the role of pessimist, I would like to examine this question of design.

I think you know, rationally speaking, everything you said is right and the design ought to be an extremely important ingredient in the production process. But I am wondering whether rationality matters very much any more when the advertising system is so large and persuasive.

You can think of so many examples. We happened to have become the proud owners of a new blender. We used to have an old blender which did the job very well.

You really only need 2 speeds on a blender. Ten years of experience has demonstrated there is no need for more than 2 speeds on a blender. And the simplicity of this is commendable. And also it is less costly to design a blender this way.

But the new blender has a keyboard on it that looks like a piano. This is a good deal more expensive. And you can punch any one of 7 buttons to determine exactly what speed you are supposed to get.

I can see endless difficulty with the machine. Likelihood is that it is soon going to break down; one button or another will not work. There is confusion now in the kitchen when it comes to the blender because no one knows which button to push. And it does not matter anyway. It does not matter a bit which button you push.

#### ONLY IN AMERICA

The whole thing is a kind of thing that could only be designed in the United States and sold to the American people, because we are so gadget conscious that anything that looks like the dashboard of a rocketship is going to sell, if it is glamorized sufficiently—and this is

really glamorized. It is built with all kinds of cheap plastic and color blending schemes that make it appealing.

Now, what does design have to do with it? This was obviously designed to prey upon the weakness of the consumer, to capitalize upon his lack of discrimination, to gouge him unnecessarily for a high price for a gadget he does not need. But it is all packaged and commercialized and advertised in such form that it sells.

Now, I think that is the kind of society we have today, and I do not think the design, although rational, plays a large role. It gets little attention, because producers do not have to pay much attention to it.

Now, you are in the field to try to bring a larger measure of rationality to the process. I would like to know why you feel optimistic.

Mr. SALTZMAN. For that I would almost have to go back to Freud to see why I feel optimistic sometimes, but generally I do.

I would say I think we are going to get some rationality into this area. It is only going to be if there is an effective partnership between Government, the consumer and industry: Government, which has to set some standards that ought to govern our lives in terms of the parameters of usefulness, of ugliness or of irrelevance. The consumer, who must find a way to speak early in the design process—I am using the word "design" very broadly here, including the design of legislation as well as the design of a product or the design of a school system—and industry, which I think will be responsive, has always been responsive, if given a very clear economic and social basis for responding.

I do not think that the young people that we are seeing today on the campus are particularly interested in designing that kind of gadget. And I want to point out to you that across the United States, enrollments in the design departments of schools of art and design, like ours, have been dropping the past 5 or 6 years. Professor Parriott can tell you more about this; that is, our fine arts enrollments are increasing. Students are pulling away from the design.

#### YOUNG PEOPLE ARE BEING TURNED OFF

Now, there are many speculations for this. Many people believe that the uselessness and indeed the insult of such items as you described are turning off young people who do not want to spend their lives doing that kind of design either in advertising agency or in industrial design laboratory. Instead, students increasingly want to identify themselves with the real needs of people.

For example, the School of Architecture at Pratt is having a hard time trying to enroll all the students who want to come to us. We are turning away students in architecture. There is something about this effort that we are making to marry the skills of the architect with the needs of the consumers that is attractive to the value system of many of today's young people.

So I invite you, Senator, to come to the campus and to talk to some of these young students in architecture and design and from them I draw a measure of hope.

Senator CHURCH. Well, that is reassuring. Maybe the members will visit.

Mr. Joseph Koncelik, assistant professor, Department of Design and Environmental Analysis, Cornell University, Ithaca, N.Y.

**STATEMENT BY JOSEPH A. KONCELIK, ASSISTANT PROFESSOR,  
DEPARTMENT OF DESIGN AND ENVIRONMENTAL ANALYSIS,  
COLLEGE OF HUMAN ECOLOGY, CORNELL UNIVERSITY, ITHACA,  
N.Y.**

Mr. KONCELIK. Senator, before I read my statement, I would like to say I am pleasantly surprised to be sitting beside the president of the school from which I graduated in 1962.

So it would seem Pratt is relatively well represented this morning. Senators, the issue of a barrier-free environment for the aging and the handicapped is really a broad one. At first glance, one might consider the definition is either the aging or the handicapped or both should be able to negotiate a physical space without being impeded by either the environment itself or components of the environment. In other words, any environment should provide free unobstructed movement for everyone. Certainly this is part of the definition of "barrier free," but not all of it in my estimation.

To my mind, a barrier-free environment for the aging—especially the ill aging—and the handicapped also includes the provision of a supportive effect: supportive of normal human function. As a person becomes dependent upon his environment for support, the physical environment, as well as other components of the milieu, should be so designed as to lend this support without stealing independence or encouraging further disability.

I speak to this issue primarily from my experience as a project director of research now in progress in which a team of designers and behavioral scientists is working together to establish a greater understanding of the interface of physical environment and human behavior in long-term care institutions for the aging. These projects have enjoyed the cooperation of eight institutions in the upper New York State area and one in New York City.

#### PSYCHOLOGICAL BARRIERS

Although the data from the projects is not yet completely collated and analyzed, you may find some of our observations interesting from the standpoint of a broadly defined concept of "barriers."

Example 1: An elderly woman in her eighties, fully capable of interaction with others, sits alone in a solarium which is capable of being occupied by 50 or 60 people. She does not have the opportunity of talking with people very frequently because there are so many public spaces in the institution in which she lives that maximum occupancy—all spaces filled with all patients, including the nonambulatory—would be six and a half people per day.

Example 2: In this facility, very few patients use the dining room any longer. Most of them are in geriatric wheelchairs which are too large and bulky to fit beneath the surface of the tables chosen for the dining area. Reaching food from these chairs is difficult and for someone with advanced arthritis, embarrassing. Most of the patients now eat in their rooms or in the hallways outside their rooms, missing the therapeutic value of interaction with their friends over the highly anticipated daily meals.

Example 3: In this facility a patient is not allowed to hang pictures or personal memorabilia on the walls for fear, on the part of the administration and the maintenance staff, that he or she will mar the surfaces of the wall even though some residency in this long-term care facility has been recorded at 3 years.

Example 4: An elderly gentleman is taken for disoriented when the light in the hallway of his facility does not permit him to see his own room's door on a corridor with perhaps 20 doors.

Example 5: A patient nearest the window, in a facility with one particular furniture arrangement, is quite possessive about who "owns" the right to control the available light and air circulation. Although she is quite robust, her roommate is not and is constantly wearing sweaters in order to remain in her room. Locations of chairs next to beds also may be treated in this manner, even if there is one comfortable lounge chair per room.

Example 6: In comparing two extended care facilities with about the same number of beds and same staff size, one facility had rooms that allowed patients to be visible to the nursing staff as they briskly walked through the halls while, in the other, a nurse had to enter the room of a patient to see the patient, usually triggering a conversation about that person's condition.

I could continue almost indefinitely with observations and anecdotal evidence of this kind. We have recorded 169 interviews, conducted 103 "behavior mapping" observations in public spaces, and shot over 500 photographs which will all be correlated to provide far more conclusive evidence of this kind of interface.

What these things mean to me is that the physical environment, space and objects in space, are clearly determinants in the behavior and psychological well-being of the ill aging and the handicapped aging. This evidence suggests kinds of environmental barriers, perhaps not as immediately perceived as a long staircase to a wheelchair bound person, but there nonetheless.

In other words, a physical environment that does not support normal human function and impedes rehabilitation instead of assisting it, constantly reminds the aged that they are ill and supports a self-image in a patient that he or she is dependent and depreciating, is a barrier laden environment.

As you gentlemen know, the Federal and State governments have created generous mortgaging programs which have been responsible for the creation of a veritable explosion of construction in the long-term care field. It has been a very necessary process in my estimation.

As I have mentioned, these facilities vary greatly in their accomplishment of providing a supportive environment to the ill aging and especially in supporting rehabilitation of the ill aging to the maximum extent possible.

Although building has taken place with very well intentioned ideas, there has been precious little evaluation of these facilities in terms of the accomplishment of providing the desired environmental effect. And this goes back to Mr. Sherwood's statement previously.

It is far too easy to envision a time in the future when the certified nursing home being built in the seventies is decertified and razed in the nineties because it is outmoded for some reason or other and the same mistakes are rebuilt in a more contemporary version. Therefore, I make these three recommendations to this special committee:

One, that future mortgaging programs or those in existence that can be modified include provision for funded evaluation of any construction that receives a mortgage in the field of long-term care or extended care.

#### DIFFERENCE BETWEEN EVALUATION AND INSPECTION

Now, there is a distinct difference between "evaluation" and "inspection." Inspection is a process whereby a facility is judged to be in or out of compliance with some established set of regulations governing its contents or upkeep. Evaluation, as I see it, is a process by which a facility is judged in accordance with its mission or purpose. In evaluation, the good and the bad are part of the composite picture of the assessment of that facility. It is implied that evaluation is meant as a device to continually update the design process so that building in accordance with human needs is continually optimized.

Two, a procedure or mechanism should be established whereby an existing facility or a planned facility on the drawing board could receive a variance from code when there is evidence that this variation will be supportive of human function and providing that the variation is evaluated and its relative success relayed to the authorities who administer the code.

Three, that training grants be made available to support the training of evaluation personnel from the fields of architecture, related design areas and the behavioral sciences.

There are currently being developed techniques that allow the assessment of precisely the elements I have been discussing today and other qualitative areas of environmental interface. If evaluation becomes a more desirable component of the design and building process in the future, personnel will have to be trained to carry on this type of work.

As I stated in the beginning of my remarks, I am at the beginning of my work in this area. I would very much like to believe that what I feel to be an extremely important area of work has a chance of continuing and growing in order to find design decisions on a more substantial structure of research.

I believe that the aging population will be the immediate beneficiaries of this work, which, of course, means that we shall all benefit.

Thank you.

Senator CHURCH. Thank you. That is a very fine statement that you made.

Mr. KONCELIK. Thank you, sir.

Senator CHURCH. When it comes to designing the long-term care facility, where there may be a Federal mortgage involved, what are the problems presented by local building codes?

In other words, are there frequently requirements in their local building codes that run contrary to good design for the elderly or the handicapped?

Mr. KONCELIK. I would have to say yes.

I recently had an experience where I went to Rochester to consult with an administrator who is currently building a health related facility attached to a nursing home that he already has in existence. At that meeting were myself, my graduate assistant who is a behavioral scientist, his architect, an interior designer, and the rest.

He showed us the plans and asked us whether or not we would render our opinions as to certain characteristics of the building, the design they had planned to build.

I was a little reluctant at first because we have not gotten to the point in our own research where I feel very assured that I can make a comment on the basis of the research that we have already conducted, but in any case I tried to inform him of this and then suggest that I would make any comment that I could within reason.

Well, it would seem that they had certain features of the design that were clearly advantageous to human behavior. Without having a floor plan in front of me, it is difficult to describe, but there were certain areas of the hallways which would act as conglomerate meeting places, because they were open and free spaces. There were areas where one might put up a tack board, where one might actually set up a display of some kind.

In other words, an area that would attract the elderly on that floor where they could meet and start to interact, which is a very important function therapeutically as well as just in terms of making friends and alliances.

When this plan was presented to the State mortgaging authorities, they stated that the entire space would have to be enclosed by walls so that one would have to enter this area as a room in order to participate in the activities they had planned there.

#### ELDERLY ENJOY ACTIVITIES REGARDLESS OF PARTICIPATION

In our opinion this was far less attractive because from our research, we can state at this point, I believe, that the elderly like to observe activity going on and they like to be a part of everything going on. They like to see or vicariously enjoy it if they are not a part of it themselves, even so.

The walls around this space would have restricted that very much and I would think that the space would have been far less used if this were the case.

I do not know what has resulted from this, but this is under discussion right now between the architect, the administrator and the State mortgaging authorities.

Now, I am not condemning anyone. What I am saying is that on the basis of the code and on the basis of their knowledge of things in the past, the mortgaging authorities must render a decision and they must render a decision with regard to human safety, with regard to their own experiences. Where they have no data to support a decision of the kind the architect was making, I don't feel they could feel safe in granting a variance.

Now, that is one specific example as an answer to your question, Senator Church.

I think that it is possible to have an evaluation process whereby information of this kind could be supplied to both the mortgaging authorities and to the architects. Then in dispassion, where it is hard data, the architect could act upon it and the mortgaging authorities could feel much freer and much safer in making a decision in behalf of human behavior.

Senator Church. Thank you very much.

Our next panelist is Mr. Cooper Bright, director of the Center for Transportation Studies, Rutgers University.

Mr. Bright.



**STATEMENT BY COOPER B. BRIGHT, DIRECTOR, CENTER FOR  
TRANSPORTATION STUDIES, EAGLETON INSTITUTE OF POLITICS,  
RUTGERS UNIVERSITY**

Mr. BRIGHT. Thank you for this opportunity, Senator, of being invited to speak before your committee on behalf of this subject.

Before I start, I would like to have an aside here, the fact this is the first time I have met President Saltzman of Pratt Institute or one of his graduates.

I am not a graduate of Pratt Institute, but I really like their work in the past and I can attest to the worthiness, the excellence of their work. But particularly I like to share his enthusiasm for the rational youth that might be coming up in the future to aid us in these so-called projects as to go forward with the aged and handicapped.

My work parallels his. I have optimism today because of what our youth is seeking—not necessarily doing at present, but actually seeking for the future.

At Rutgers we were brought into this business of providing transportation for the aged and the handicapped at the suggestion of Senator Williams, a member of your committee in 1968. And after 2 years' work with the various agencies of the handicapped and the aging, we became, you might say, caught up in the cause. We thought here was a group of people who needed help and who were inspiring to work with.

**STUDIES TO DEVELOP EXPERTISE**

We did three studies to develop an expertise that we think is of value and can be of help in the work of this committee.

The first study had to do with developing a model that would make us able to locate a rehabilitation facility in such a position in a county in New Jersey whereby the access to it by handicapped people would be increased many fold as compared to this haphazard way of locating rehab centers, because of political considerations and the forces exerted by special interests, et cetera.

Having achieved this with some success, because we were asked, again by the State of New Jersey, to broaden our study to include a seven-county area and do an actual study whereby a \$3.5 million rehabilitation center could actually be positioned on a site, according to our study. This rehabilitation center has been built.

Then the Department of Health, Education, and Welfare stepped in with funds to match the State funds and we did a bistate study, principally considering Philadelphia and Camden, N.J., for transportation for the aged and the handicapped.

In doing these studies, we found out to our amazement, that really no one, even today, has ever on a national scale developed the needs of the handicapped.

Now, I listened to Mr. Hilleary and Mrs. Sherwood here speak this morning. I am impressed with what they said. But, Senator Church, I have heard this same story from many people in many agencies many times. I find dedicated people like these two this morning who speak out and have a real message to tell, but it is one of the most uncoordinated group of people I have ever had the privilege to work with—dedicated yes, and they can tell you very effective stories. But look upon the problem of the aged and handicapped from a national point of view—it has never been done.

We have illustrations, for instance, of the laws passed in California, which leads the way in State legislation. Study of its laws backs up the need for enforcement to insure the excellent ideas, the people here today speak about, become reality.

In New Jersey we have an illustration where we lack this kind of enlightened legislation. When you work with these people interested in the problems of the aged, they are great to rally into action such as writing letters to their Congressmen and Senators, in a great rush, once a year. But from then on they meet and talk about—like we used to say in the Navy, “sea stories”—very effective sea stories. They can tell you stories that are amazing, but they are very slow to gather together to determine the needs of the aged and handicapped on a national scale.

The reason I bring this to you this morning is because I feel that the Biaggi amendment, which is made part of the Transportation Act, was one of the best things that happened for the aged and for the handicapped. For the first time we have muscle in a transportation act whereby when you have ideas and present proposals to the Department of Transportation, you have something to refer to that guarantees a hearing.

#### NEW AND STRONGER LEGISLATION

However, I feel that the Biaggi amendment, if we sit back and say, “This is good,” and just give it praise, does us a great disservice.

We in Rutgers feel this is a policy statement that needs to be backed up by new legislation which will put teeth into it and require that people who are concerned with architectural barriers, transportation for the aged and handicapped, will be more in a position of being forced to comply.

They desire to comply, but need to be forced by laws for which this committee must take the responsibility.

I know that in the past it has always been that the committees of the Congress listen, and if it buys, it looks to the departments of the Federal Government for implementation. But I think in this particular case we have reached the point where your committee must take a more active—if you will pardon my giving jobs out here—but a more active role in the way of getting legislation on the books that will put teeth into the Biaggi amendment. The kind of teeth that will be a model for the other States in the United States.

They are looking for someone to give uniformity to State legislation and the only place we at Rutgers feel that such comes from is your committee. It must be a legal guidance in the statutes that you people put on the books.

We found in our final study, using Philadelphia and Camden as a model, that there are grave differences that exist between the needs of the handicapped in various regions throughout the United States. We have no studies today that considers the need of the aged and handicapped on a national scale. Except for maybe the Boston areas and some areas in the State of Georgia, and the work we have done in New Jersey and very small efforts on the west coast, is about the sum total. Senator Church, the studies you will need must look at the national picture. You will find the studies now available are of a very local nature and have been extrapolated to national needs. To assume they define national needs will lead you astray.

## MAKE STUDIES ON NATIONAL LEVEL

What we need—and I have mentioned this in my statement—is a study that will look at and establish the needs of the aging and the handicapped on a national scale and constitute a source of information that will be of real value to the committee in framing legislation.

Now, if you do this, you will find that when you endeavor to frame legislation, you must not be in a position of having just another paper study delivered for your files. You and your staff are familiar with these kinds of studies that do not provide the information you need or in a form that can be readily used in your work.

This proposed study must be done in conjunction with your committee and with your staff. The study should reflect the needs of you and your staff. If it does not do this, it will be just another paper effort which will be cast aside with all of the others. I have come here this morning to make you aware of what we have found to be true. You can say we are out of place when we say we are giving you a job, but that is not what we intend to do. We intend to make a strong case for a partnership that would be set up now that will make it possible for your committee to take the initiative to make national needs known to all the people that are working today or are interested in providing better facilities for the handicapped and the aged in transportation, in buildings, et cetera.

Thank you.

Senator CHURCH. Thank you very much, Mr. Bright. You have made a very concrete suggestion which I think we should follow up.

If I understand you correctly, you spoke of the Biaggi amendment which establishes the national policy for the elderly and handicapped person in connection with urban mass transportation.

You said that this was a breakthrough, an important legislative step.

Now do I understand that you feel there are ways to enlarge upon that amendment and make it more effective in its actual application?

Mr. BRIGHT. Yes; we could.

Senator CHURCH. And would you like to work with the committee in trying to design language that would accomplish that purpose?

Mr. BRIGHT. Yes; we would feel highly honored to be able to do this.

Senator CHURCH. Well, I think that we should pursue this, Mr. Oriol, and see what can be worked out in the way of legislation.

And your written statement will be made a part of the record.\*

Senator CHURCH. In your written statement you make the assertion that what is lacking today is a knowledge of what the needs of the aged and handicapped are on a national basis.

Would you tell us a little bit more about the gaps of the knowledge?

## SITUATIONS VARY ACCORDING TO LOCALE

Mr. BRIGHT. Let me give you one illustration of the study we did in Philadelphia and Camden. We found out in transportation that the traveltimes that the handicapped and the aged, particularly the handicapped, used in journeying to work every day differ in the city of Philadelphia from that of Camden. First of all there are more jobs available in Philadelphia, so they spent less time going to work because they can have a choice of being able to get a job closer to home.

\*See appendix 1, p. 117.

In Camden they do not have as many opportunities and must travel further going to work. The jobs in the area of Camden are also different. The transportation modes available for use by the aged and handicapped differ greatly between Philadelphia and Camden. Also a difference exists in the topography, so that the travel times of the handicapped going to work differ. They start to work later in Philadelphia and Camden, they come home early than the average community worker. Compared to the travel habits of the daily commuters who have peak travel habits between 7 a.m. to 9 a.m. and 4 p.m. to 6 p.m., handicapped persons go to work during periods that do not interfere. Consequently mass transit systems can program better use of buses, et cetera, to meet the needs of these people.

At the university it is believed that by taking a sample say of 11 areas throughout the United States, it is conceivable you would come up with real needs that should be reflected in both National and State legislation.

Senator CHURCH. Yes; it would seem to me that these studies really have to be made locally in order to accommodate the local situation. There will be great differences from one community to another.

Excuse me just a moment.

(At this point, Chairman Church withdrew from the room.)

Mr. ORIOL. Had you finished, Mr. Bright?

Mr. BRIGHT. Yes, thank you.

Mr. ORIOL. If I may ask one quick question while Senator Church is away, you attached to your statement the description of the proposed research project.\* From a fast reading of it, it seemed to apply only to the handicapped.

Can it be adapted in some way to include elderly too? Is that what your intention is?

Mr. BRIGHT. Yes, it does include the aged as well as the handicapped. It was through an oversight we did not put the word "aged" in when we should have.

Mr. ORIOL. Mr. Baker, I notice in your statement you discussed the Biaggi amendment, too, as well as others. Perhaps while Senator Church is out, you could begin.

#### **STATEMENT OF MARTIN STUART BAKER, OF DEMOV, MORRIS, LEVIN & SHEIN, NEW YORK CITY**

Mr. BAKER. Mr. Chairman, members of the committee, my name is Martin Stuart Baker. I am an attorney maintaining the practice of law with the firm of Demov, Morris, Levin & Shein, in New York City.

It is my pleasure to accept your invitation to testify on the legal framework supporting environmental design in Federal programs, and specifically as certain laws relate to environmental design problems of older and handicapped members of our society. This legal framework is recognized to be a key element of your broader inquiry into the problems of the elderly and the handicapped.

These hearings come at a particularly appropriate time. Landmark Federal legislation regarding the environment generally and the Federal Government's responsibility to consider the environmental implications of all of its major actions and policies is now 21 months old.

\*See page 123.

It is very timely for this committee to oversee the response of the Federal Government to this environmental legislation as it pertains to Federal agency concern for environmental problems of the elderly.

In attending to the environmental design problems of the elderly as they relate to Federal and federally assisted construction, the Federal Government not only meets its direct responsibility but it also influences the design and construction of facilities which do not receive Federal assistance. The Federal Government can, through meeting its own legal responsibilities, greatly advance the state of the environmental design arts and can thereby influence the quality of the built environment.

This opportunity I believe, was referred to earlier by one of the other panelists. It has direct applicability through architects and other people designing specific facilities for the elderly.

The National Environmental Policy Act of 1969 (Public Law 91-190, 83 Stat. 852) establishes basic Federal policy for consideration of the environment. Section 101 of this act broadly defines the environment, declaring it to be "the continuing policy of the Federal Government . . . to use all practicable means and measures" to maintain environmental quality.

Section 102(1) of this act directs that "the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies" of environmental quality enhancement as set forth in section 101.

A clear mandate to each agency of the Federal Government which is of particular import to improving our built environment is contained in section 102(2) of this act. All agencies of the Federal Government are required by section 102(2) (A) to:

\* \* \* utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment \* \* \*

I call your attention particularly to the terms "interdisciplinary approach" and "environmental design arts," two terms which are new to the law; which are not defined in this statute; which are not judicially defined; and which, it is my thesis, form the basis of the legal authority for Federal agencies to approach many of the problems.

Of course, the Biaggi amendment is a specific example relating to the elderly and the handicapped of the mass transportation program.

By virtue of this statutory mandate, each agency of the Federal Government can actively strive to have its own programs evidence a concern for an advanced state of the environmental design arts. It is particularly appropriate for this committee to examine the degree to which environmental design sensitivity is incorporated into these Federal programs.

#### PROGRAM ADMINISTRATOR ALLOWED WIDE DISCRETION

The broad mandate which the National Environmental Policy Act gives to each Federal program allows wide discretion to each program administrator. Because the term "environmental design arts" is neither generally understood nor legislatively defined, conscientious administrators should be striving to identify and to apply "environmental design arts" while seeking guidance as to the substantive requirements

of this term. This committee has the opportunity to solicit the views and comments of recognized experts and interest groups in this regard.

I am pleased to note from the witness list it is doing so. In this regard such organizations as the Gerontological Society, the American Institute of Architects, the American Society of Industrial Designers, the Environmental Design Research Association, the Association for the Study of Man-Environment Relations and others have a particular role to play in defining what the substantive requirements or opportunities of determined environmental design arts may be.

This activity can be valuable both to the committee in its evaluation of the degree of administrative compliance with broadly mandated legislative policy and to program administrators seeking policy and technical guidance.

Guidelines and regulations implementing certain provisions of the National Environmental Policy Act have been issued by the Council on Environmental Quality and by various Federal agencies. Most of these regulations and guidelines apply only to the requirements of section 102(2)(C) of the act. This section establishes a procedure for administrative consideration of the environmental consequences of Federal decisions. It requires the preparation and consideration of an "environmental impact statement" on "every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment." It is entirely appropriate that regulations exist to implement this provision.

However, no Federal agency has to date issued regulations or guidelines relating to section 102(2)(A) of the act, which requires "the integrated use of the natural and social sciences and the environmental design arts." It is on the basis of this legislative mandate that Federal design activities for both the elderly and the handicapped should be encouraged. It is pursuant to this language that each Federal program could be modifying its basic regulations and design standards to accommodate the special environmental requirements of both the elderly and the handicapped.

#### SURVEY OF ENVIRONMENTAL DESIGN

In this regard, an important survey of the environmental design interests of most major Federal programs was recently undertaken at the University of Pennsylvania. This study solicited from each major Federal agency that agency's interpretation of its environmental design responsibilities and activities. Though this survey concentrated on Federal research activities, it concluded that there is a low level of awareness in most Federal agencies relating to the opportunities presented by environmental design and there is a low level of Federal interest in this field.

Attached to my testimony is a copy of an article devoted to the Federal aspects of this survey.\* The findings of this survey may be at least partially attributable to unfamiliarity and discomfort with this new concept. I commend this survey to the committee as an appraisal of the state of the environmental design arts as perceived by the Federal bureaucracy.

The architectural barriers law (Public Law 90-480, 82 Stat. 718) requires that public buildings financed with Federal funds be design-

\*Retained in committee files.

nated and constructed so as to take into account the needs of the physically handicapped. This law authorizes the General Services Administration in consultation with various other Federal agencies, to prescribe standards for the design and construction of public buildings "to insure that physically handicapped persons will have ready access to, and use of, such buildings."

This law specifically mandates that all public buildings are to be accessible to those members of our society who are physically handicapped. This is particularly appropriate in the case of public buildings as the Government has a particular responsibility to provide access to its services for all its citizens.

The Public Building Service has done a commendable job in modifying the design requirements of public buildings in this regard.

There is, however, a vast amount of Federal and federally assisted construction which does not fall within the requirements of this law.

For example, the majority of federally assisted housing programs—and we talked earlier about the FNMA program—do not specifically require design sensitivity to the physical and psychological needs of the handicapped and the elderly. Programs specifically conceived for the elderly, such as the Housing for the Elderly program and the Nursing Homes program of HUD, and the aging programs of HEW, specifically address these design requirements. However, the Public Housing program and the range of HUD programs generally do not, in their regulations, specifically address or require attention to these design opportunities.

Mr. ORIOL. Mr. Baker, may I interrupt?

If I may, though, before we get further away from the National Environmental Policy Acts—you have Capitol experience do you not?

Mr. BAKER. Yes, sir.

Mr. ORIOL. What was your title?

Mr. BAKER. I have been a staff member to both the Senate and House Committees on Public Works.

Mr. ORIOL. Did you have something to do with the development of the National Environmental Policy Act?

#### NATIONAL ENVIRONMENTAL POLICY ACT

Mr. BAKER. Not with that act, but with other environmental legislation.

Mr. ORIOL. In talking about the environmental design arts, are you attempting to broaden an interpretation of existing language or do you feel that in the development of this legislation which most people look upon as antipollution that your particular interpretation of the pollution here did not arise, or perhaps did arise, in the development of that legislative language?

Mr. BAKER. There is no legislative history, either in the committee documents or in the floor debate, relating to either the definition of the terms I cite, or generally to sections 102(2)(A) of the act which refers to "environmental design arts."

As an attorney and as one who has been deeply involved with advising clients as to the interpretation of this act, 102(2)(A) stands on its face as a clear mandate to the Federal Government, to each major Federal agency, and to the federally aided programs of those agencies.

I think one of the reasons why attention has not been given to section 102(2) (A) in the form of regulations by the Federal Government is because there is a low level of understanding of what the opportunities of these terms are. As an attorney these terms stand as Federal law. While the general concern of the term "environmental" relates to air and water pollution and to measurable pollution activities, I think that as qualified professionals recognize that this statutory authority does exist and as they come forth and help define the terms, conscientious administrators are constrained to incorporate the influence of this legislative mandate into their activities.

One clear opportunity this committee has is to solicit that kind of testimony from people who are here today and from others who can help build the record as to what the opportunities in this field are. That endeavor helps you then in your work as you oversee the activities of the Federal agencies.

I commend that opportunity to this committee.

Mr. ORIOL. I am glad you keep referring to it as an opportunity and we will try to seize it.

I will keep the interruptions down, because we want to hear the rest of your statement; we want to hear from Dean Lindheim, and find out whether she is an optimist or pessimist; then we want to have group discussion. So I will keep the interruptions down.

Mr. BAKER. It is particularly appropriate that the Urban Mass Transportation Act of 1964, as amended in 1970, (Public Law 91-453, 84 Stat. 962) specifically addresses the special needs of the elderly and the handicapped. Section 16 of that act, sometimes referred to as the Biaggi amendment, declares it to be national policy \* \* \* that:

\* \* \* elderly and handicapped persons have the same right as other persons to utilize mass transportation facilities and services; that special efforts be made in the planning and design of mass transportation facilities and services so that the availability to elderly and handicapped persons of mass transportation which they can effectively utilize will be assured; and that all Federal programs offering assistance in the field of mass transportation (including the programs under this Act) should contain provisions implementing this policy.

This section of law also contains specific authority to implement this national policy, including specific money for this purpose. In addition, this section broadly defines a handicapped person, \* \* \* as:

\* \* \* any individual who, by reason of illness, injury, age, congenital malfunction, or other permanent or temporary incapacity or disability, is unable without special facilities or special planning or design to utilize mass transportation facilities and services as effectively as persons who are not so affected.

I commend that definition to the committee and to people who have expertise in problems of the handicapped, such that the definition can be continually defined.

In conjunction with the broader environmental protection section of this act, the Urban Mass Transportation Administration thereby is specifically authorized and directed to make mass transportation facilities accessible to all.

#### FEDERAL DESIGN STANDARDS

As approximately 95 percent of the mass transportation needs in this country are potentially met by buses, and as the Federal Government contributes significantly to the purchase of the vast majority of all transit buses purchased in this country, the Federal design stand-



ards can effectively determine the design for all transit buses built in this country.

It would be particularly appropriate for this committee to inquire into the degree of compliance by the Urban Mass Transportation Administration with this provision of the law, to ascertain whether the UMTA regulations or grant conditions now require that all buses be accessible to the elderly and handicapped as required by the Biaggi amendment.

In this regard, I would suggest to the committee that there is a significant body of research presently available as to the needs of the elderly and handicapped. I will concede, however, that it by no means is complete.

I submit that on the basis of some of the existing knowledge, it is possible to bring regulations and guidelines and grant conditions up to a level which represents the present state of the art while conceding that these regulations may have to be improved as more information becomes available.

The Federal Government has sponsored many research projects regarding the medical, psychological, and social needs of the elderly and handicapped, and of the relationship between behavior and socio-physical design technology. Notable, for example, is the research sponsored and conducted by the National Institute of Mental Health and by the HEW Bureau of Community Environmental Management. Much of this and similar research, has yet to be incorporated into the regulations, design standards, and guidelines which apply to the mass transportation program and to the preponderance of federally assisted housing.

#### ACCESSIBILITY TO ALL—A MUST

Accessibility to all should be legislatively stated as a specific requirement of all Federal and federally assisted capital construction projects.

The specific mandate of the architectural barriers law should be extended as appropriate to all residential construction supported by the Federal Government.

The basic legal standard of "decent, safe, and sanitary housing," as this standard is frequently used throughout the Federal law, should be broadened to read "accessible, decent, safe, and sanitary housing."

For example, the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970 (Public Law 91-646 84 Stat. 1894) utilizes the standard of decent, safe, and sanitary as a basis for replacement housing for all persons relocated by Federal or federally supported action. That law requires that each replacement dwelling be "a decent, safe, and sanitary dwelling adequate to accommodate such displaced person" and which is "reasonably accessible to business services and places of employment."

This accessibility requirement is entirely appropriate. However, it relates to the location of such replacement dwellings—not to their design.

The simple legislative amendment, together with a legislative definition incorporating both the location and design aspects of accessibility, could open new vistas to the handicapped and the elderly.

It is my conclusion that the National Environmental Policy Act provides sufficient legislative authority to each Federal agency to address, in the context of its programs, the particular environmental design needs of both the elderly and the handicapped. Specific legislative mandates, as in the laws you have asked me to discuss, such as the Biaggi amendment, have legally required specific programs to address these needs—additional specific programmatic mandates may be warranted.

This committee is to be commended for launching a continuing oversight into the administration of these laws and of the degree of incorporation of advances in the technology of sociophysical design into the Government regulations and standards on the basis of which Federal and federally aided construction activities are conducted.

Mr. ORIOL. Thank you, Mr. Baker.

As I indicated, we will hold questions until later.

I have not introduced the minority staff director, John Guy Miller.

Do you have any questions?

Mr. MILLER. Not at this point.

Mr. ORIOL. May I introduce myself. I am William Oriol, staff director.

Dean Lindheim, would you care to make your presentation?

**STATEMENT BY ROSLYN LINDHEIM, ARCHITECT, AND PROFESSOR OF ARCHITECTURE, COLLEGE OF ENVIRONMENTAL DESIGN, UNIVERSITY OF CALIFORNIA, BERKELEY**

Dean LINDHEIM. I am an architect, a member of the American Institute of Architects, and a professor of architecture at the College of Environmental Design, University of California, Berkeley, Calif.

I, too, am an optimist. I direct a special program which focuses on the interrelationship of social, behavioral, cultural, and economic factors and the actual physical environment. I served as an assistant dean until June of last year.

I now direct a program, and it is because of this program that I am here.

I am a registered architect in the States of New York and California.

I am not a doctor—a letter was addressed to me as “doctor”—but I am a newly elected member of the Institute of Medicine, National Academy of Science.

I am delighted to be here to give testimony.

I was asked to testify on two questions: One, my concept of consciousness raising for the total environmental design, and two, to discuss the involvement of College of Environmental Design in developing design standards for the elderly.

To answer these questions it is first necessary for me to explain that my approach to environmental design goes beyond the concept of a physical building or group of buildings and recognizes that people, depending on their background, cultural habits, and traditions, see the environment differently. They use it differently.

It is like the famous story of three blind men feeling an elephant; one described his trunk, one his ears, and one his legs. The elephant's size and shape obviously was different dependent on the individual vantage point of the observer.

The points I want to emphasize are :

One, that barriers must be seen as social and cultural as well as physical and economic.

Two, that physical barriers can also be overcome by a people support-system which may require special funding and legislation.

Three, that often many things that are called amenities, or frills, and consequently eliminated from legislative budgets, are necessary tools which enable people to overcome these barriers.

Four, that getting to and from place to place, or the linkage between buildings, is an important barrier to overcome, as important as barriers within buildings.

And five, that opportunities and money must be provided to enable both the elderly and the handicapped to exercise their own initiative and to develop new solutions themselves to their own special problems.

Six, lastly, that building regulations must be stated in terms of the goals to be accomplished or in terms of performance standards instead of in terms of specific solutions.

### EVALUATING EXISTING STRUCTURES

At the department of architecture, some of us have spent a great deal of time this last several years evaluating individual buildings and groups of buildings as well as larger communities to determine the fit between the physical environment and the needs of diverse user groups.

We have looked and will continue to look at environment used by the elderly and the handicapped including housing projects, Leisure World developments, hotels, rooming houses, medical centers, nursing homes, community centers, restaurants, city sidewalks and streets, parks, theaters, buses, and shopping centers.

As we examined each building type, it became obvious that environments which allowed an elderly person to care for himself and participate in the social functions of society were preferable to those which increased his dependence on nurses and other types of service personnel.

Environments which allowed persons with physical disabilities to perform more and more functions for themselves were preferable to those which confined them and isolated them to restricted areas.

As we proved the questions further, it was apparent that the elimination of physical barriers such as stairs, narrow doorways, et cetera, was only one part of the problem—an important part, but nonetheless only one part.

In a housing project for the disabled, the architects had successfully minimized the barriers for the wheelchairs, but had, in effect, created alternate barriers by providing efficiency apartments. And for most of the people living in that project, the efficiency apartments were so small that they compromised the ability to entertain in their own home, thus setting up a barrier to socialization.

Another project which enhanced locomotion and access to medical care by its structure and its site selection—it was contiguous to a hospital—limited desirable interaction and independence by removing the residents from buslines, churches, and shopping areas.

The most serious barrier to an older Spanish-speaking citizen in the use of public buildings may well be the fact that the signs are in English and there are no Spanish-speaking personnel to answer their questions.

#### BARRIERS OTHER THAN STRUCTURAL

In Berkeley, a leisure home development for the elderly was ideally located near shopping, theaters, and a park, and yet students found that despite this desirable location, few residents used these services. One of the barriers which prevented its use was the fact that the traffic light was not long enough for an elderly person to cross the main thoroughfare.

In evaluating a medical center, we found that there was no physical barrier within the building. Moreover, on the map it seemed centrally located to residential areas.

In actuality it required three bus transfers to travel from homes to the medical center. It took an hour and a half of time. Thus time and inconvenience became the barrier to the medical center's use.

In yet another case, shopping facilities were ideally located within a short distance of housing for the elderly. Although the location was physically near and would have met many legal standards, a major highway had to be crossed to get there which became a formidable barrier to its use.

In a series of small rooming houses we visited, it was apparent that several of the elderly persons could lead an active and happy life in their present accommodations if they just had some help with housework and marketing. The barrier to the physical environment could in this case be overcome by a people support system.

In yet another case garbage disposals were eliminated from apartments for the elderly as representing an excessive amenity or frill. In fact, the garbage disposal was not a luxury but a personal support which allowed an elderly person, who could not take the garbage out, to be more self-sufficient in his own kitchen.

#### BARRIERS IN MOBILITY

My students observed that in many cases the greatest barrier to leading a self-sufficient life on the part of older persons was not in the barriers within the buildings but rather in the barrier to maneuver from place to place of residence, to shopping, recreation, et cetera. They suggested that the school buses used to bus children in the morning and in the afternoon be used to pick up older persons at their homes and transport them about in the interim hours.

In summary, I would like to state that I wholeheartedly support the legislative goals of providing the elderly and the handicapped the same right as any other person to utilize public buildings and mass transportation facilities, and I in no way want to minimize the importance of eliminating physical barriers in buildings and transportation systems. I believe in the need for ramps, elevators, doorways large enough for wheelchairs, toilets easily accessible for the handicapped and the elderly, but it must be recognized that there are other types of barriers—cultural, economic, and social—which also deprive the elderly and the handicapped from access to or the use of public buildings and transportation.

Moreover, I believe there are a variety of ways to overcome barriers, that there is no one solution to the problem but a variety of possibilities depending on time, place, and resources.

Some communities can accommodate elderlies in housing, as I believe was mentioned by the second speaker, and that the institutional forms are not the only way.

I appreciate the difficulty of providing legislation on a Federal level which can accommodate the diversified needs of persons with many specific sets of problems on a local level. Yet it is absolutely necessary to develop a method of legislating both regulations and resources which can be flexible enough to eliminate a number of types of barriers in a number of different ways.

To help in this effort I am participating in a program developed through a grant from Social Rehabilitation Services to the Gerontological Society. Under this grant we plan to bring together 50 outstanding researchers, educators, and practitioners, hopefully legislators and administrators, to identify the problem as well as to develop some educational packages for design professionals in the schools of architecture which will recommend appropriate policy to the Government in this field.

This modest effort addresses itself to the issues I think were discussed in yesterday's hearing and were told to me by Thomas Byerts,\* of the Gerontological Society.

Although the Administration on Aging has initiated this program which I have just discussed, I feel that this type of effort must be extended and urge that the Housing and Urban Development fully support this program as well as initiate others which will develop research and develop manners in which standards can be developed to provide for this diversity of need and diversity of solution.

Thank you.

Mr. ORIOL. Thank you very much, Dean Lindheim. And I would like to thank you and the other members of the panel for getting so many good ideas and so much helpful information in such a short period of time.

We would like to throw it open for general discussion—but a few points of information.

The last project which you mentioned, is that to be a conference of some kind? And if so, when will it take place?

Dean LINDHEIM. It will be a conference on "Environments for the Aged," a working conference on behavioral research, utilization and environmental policy, to be held in Puerto Rico December 17-20, 1971.

Mr. ORIOL. Well, we would like more information about it when it becomes available and after discussing with the chairman, we will find out whether this committee can take a part in that.

Dean LINDHEIM. I am sure we would be delighted to have you.

Mr. ORIOL. Fine.

Another question. You mentioned you evaluated Leisure World development, at least a few of them. Are they perfect models of accessibility? Are they designed with all the elements in mind.

\*See appendix 2, p. 135.

## PROBLEMS IN THE FUTURE

Dean LINDHEIM. No; they are not designed with the elements I have in mind. They are designed, most of them, for people who are quite mobile and these same people who are quite mobile over time obviously are going to have a whole set of different needs.

In relation to this project, they do not provide for accommodating people as they progress and develop or retrogress. And so, in a sense, they may solve at the moment something for some of the people.

Mr. ORIOL. Have you been to Seal Beach?

Dean LINDHEIM. No.

Mr. ORIOL. Most of them you see have that wall around them, do they not? Does that have an effect on people's attitude, where they live?

Dean LINDHEIM. I think it has an effect. But I think some people who have a wall should have a right to the wall. It is one solution, but not a solution for everybody.

Mr. ORIOL. Options?

Dean LINDHEIM. It is an option.

Mr. ORIOL. You mentioned a people-support system.

Dean LINDHEIM. Yes.

Mr. ORIOL. I would like to know a little bit more about that.

## PEOPLE-SUPPORT SYSTEM

Dean LINDHEIM. I can conceive of a variety of types of programs where if there were the proper kind of people support, older people and handicapped people could actually navigate and function in a variety of types of environments. They could stay in their own community. They could even live with their families if some of the tensions which were developed because of having so much time and efforts devoted to their needs were alleviated by certain kinds of help.

So somewhere, again, the option to be able to live where you are for a longer amount of time can very often be given by certain kinds of people services. And in a way, this is one of the kinds of relationships that are being developed as part of any kind of legislative bundle.

Mr. ORIOL. Another question—well, I guess this is related to point 2—that opportunities and money must be provided to enable both the elderly and the handicapped to exercise their own initiative. That is pretty closely related to what you just described, is it not?

Dean LINDHEIM. It is partly related to what I just described, but I am actually suggesting that we do not make sufficient use of people's own ideas, the actual users, by not bringing them in to help them solve specific problems. And it would seem to me that one could actually initiate a program where we asked both handicapped people and older people to participate on a variety of levels in the type of environment they wanted and the type of tools they wanted and what they recognized as barriers.

In other words, we do not use the resources of the people themselves to help formulate the solutions for these people.

Mr. ORIOL. I would like to introduce Patricia Carter, who is a professional staff member of the committee on leave from the University of Rhode Island.

I believe you had a question?

Miss CARTER. Dean Lindheim, I am wondering what role a school of architecture could play in developing architectural designed programs that would determine the potential effect of the construction before that construction took place?

Dean LINDHEIM. Well, as most architects know or other people know, architectural programs previously begin in the heads of people and have not been articulated.

### ROLE OF SCHOOL ARCHITECTURE

It is our intent that we are developing a whole series of what we call programing courses which requires that an architect put down ahead of time what he is doing, the goal he plans to achieve by what he is doing, why he thinks this will in effect perform what he is doing.

This enables other people, both legislators and gerontologists and doctors and administrators, to participate and evaluate what the architect says the reasons are for doing certain kinds of things. And ahead of time have the discussion of whether they think this can actually occur. In this way it is not left to some kind of hidden agenda that you do something that you think there will be a reason for without being very explicit about what this reason is.

In other words, let me give you an example, if one of the goals in a project for the elderly is that you want to create socialization of some of the older persons, then let's say if you provide some social space, say opposite an elevator, you think that will provide the opportunity for this socialization.

Now, this is an assumption. It gives other people a chance to react to that assumption and see if this is a valid thing.

It also gives you a basis to evaluate an existing building as to whether indeed you did provide additional socialization.

Miss CARTER. Are you working on developing this?

Dean LINDHEIM. Yes, we are developing on a variety of levels, developing both architectural programs and methods of evaluation.

Mr. ORIOL. Mr. Miller.

Mr. MILLER. Yesterday's testimony commented about a number of barriers, including the matter of differentiation of colors between ceilings, floors and walls, and the problems created by clear glass.

In your observations of such retirement communities as Leisure World and others, have you detected any efforts to meet these particular problems?

Dean LINDHEIM. I do not want to answer specifically relative to that.

I have seen a lot of suggestions made and a lot of variety produced to differentiate different types of environment by color and textures, but I have no idea whether they are valid or not.

Mr. MILLER. I ask the question in part because of the glass; you have the solarium in so many of these communities and institutions and this strikes me as a particularly dangerous situation for those who have visual handicaps.

Dean LINDHEIM. Of course, much would depend, if you have bars along the glass—there are ways of differentiating.

Mr. MILLER. That is all I had to ask here.

I have a couple of other questions of the others if you would like me to go ahead.

Mr. ORIOL. I would like to ask one other overall question, then maybe we can get to the specifics.

Mr. MILLER. All right.

Mr. ORIOL. I have a very incomplete list of the numbers of Federal agencies and Federal programs that would be effective in one way or another by the recommendations made here today and those made yesterday.

There is new legislation, there are several housing programs related to nursing home construction, Social and Rehabilitation Services was mentioned here today. The NIMH has granted certain research funds—Mrs. Sherwood, what did you say?

Mrs. SHERWOOD. Public Health Service and combined contract.

Mr. ORIOL. And, of course, the Architectural Barriers Act today, the National Environmental Policy Act. So I would just like to raise this question.

Now, as I understood Mr. Baker's testimony, he sees the National Environmental Policy Act as opening an opportunity for a sort of broad gaged approach to many of the issues we are discussing here and perhaps the keystone or the umbrella for an interest in this.

He also has several specifics for actions on other legislation which I presume would be in conjunction with strengthening other legislation.

Dean Lindheim talked about a bundle of legislative possibilities here.

Well, first, what is the reaction of the group here on the National Environmental Policy Act as the keystone?

I mentioned before, in most people's minds I believe this is regarded as an antipollution program. Can it be made broad enough without stretching it too far to do what Mr. Baker wants to do?

(At this point Senator Church resumed the Chair.)

Mr. BAKER. Mr. Chairman, in response to that particular question, I rely on the legislative language, on the statute which is presently on the books. Section 102(2)(A) of the National Environmental Policy Act, refers to all agencies of the Federal Government—and there is no modifier either in the law or in the legislative history. It states that it is the Federal Government's responsibility to "utilize a systematic interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and decisionmaking which may have an impact on man's environment."

#### NOT A SPECIFIC MANDATE

This is, of course, general legislation; it does not specifically require any Federal legislator to take any specific act, but I submit that as the law of the land, it stands as legislative support to any reasonable activity taken by any Federal administrator in this field. And I think it is the committee's obligation or opportunity to oversee the administration of this provision of the act which has been on the books now for 21 months.



Senator CHURCH. Mr. Saltzman, did you have a remark?

Mr. SALTZMAN. I am not enough of an attorney to be able to comment on this, but if Mr. Baker's hypothesis is correct, then your committee has an extraordinary opportunity to test as to whether in fact that language would apply as broadly as Mr. Baker believes. Because if it does, then in our existing legislation we have a yardstick with which all kinds of refinements in the application of present legislation can be established. It's a very exciting concept he has unfolded here this morning.

Senator CHURCH. Well, I think if it is, it is rendered as a service.

The problem I think he himself has alluded to, that being that the language is very general, and whenever you have very general language of this kind, it tends either to be ignored or avoided by Federal agencies. And I think that our responsibility on this committee is to try and find ways to give the specific direction to this general language and thus mandate the Federal bureaucracy to apply, expand.

Mr. BAKER. I would be specific. It is an opportunity for this committee to solicit from appropriate professionals and interested groups their interpretation as to what the opportunities of this legislation suggest, such that a record is built in your oversight of the range of Federal programs.

Senator CHURCH. Well, we certainly will follow up on that suggestion.

I notice your second recommendation, "basic legal standard of decent, safe, and sanitary housing," should be broadened to read "accessible, decent, safe, and sanitary housing."

You also recommend that the specific mandate of the architectural barriers law should be extended as appropriate to all residential construction supported by the Federal Government.

Yesterday we touched upon the scope of the Architectural Barriers Act and it developed that there was some question concerning its applicability to post offices, of all things, where there is the largest concentration of public use.

Do you see any practical difficulties in applying this act to houses, ordinary houses that the FHA might finance, or that might be financed through the Veterans' local program?

#### DESIGN STANDARDS

Mr. BAKER. It is clear that both under the range of Federal HUD programs and of Veterans' programs, and of many others, that there are design standards relating to the type and the nature of details of construction.

It would be certainly both legally feasible and appropriate for those design standards to relate to the kinds of environmental concerns about which this committee is soliciting testimony.

I do not feel competent as an expert to testify as to the cost increment and other construction problems except to suggest that our experience in New York and with various Federal and other government assisted housing programs suggest that the cost limitations are so tight that an appropriate issue is the incremental cost of such modifications.

If this committee continues to receive testimony as it has this morning to the effect that the cost increments are virtually negligible, then I see there being no practical barriers to incorporating this kind of sensitivity in the design standards.

Senator CHURCH. Well, I think these hearings are proving very useful because specific suggestions are being made the committee can follow up on. And some of them will take the form of bills that could be introduced and considered by the appropriate legislative committees.

#### INSTANT EMPATHY

Yesterday, I am reminded, the General Services Administration witness testified that in a management course of theirs, trainees are required to spend 1 day in a wheelchair in order to acquire instant empathy to the problems that are faced by people in wheelchairs in connection with the design of the public facilities.

I just address this question to the whole panel: Do any of you think such instant empathy techniques should be employed in schools of architecture?

Excuse me, I will be right back.

(At this point Senator Church withdrew from the room.)

Mr. ORIOL. Dean Lindheim.

Dean LINDHEIM. I think instant empathy is a good thing, but it could put someone with money, sitting without any money, in another's shoes and he would feel what it is like to live there without any money, as well as a wheelchair.

What I am talking about is there are a lot of types of barriers you need empathy for, and that is a very important one. Any way you could be put in the place of somebody else is a very important one.

Mr. ORIOL. Mr. Koncelik.

Mr. KONCELIK. Yes, I would like to speak to this point. Because perhaps empathy does have some value—I do not know exactly what value—and that is just the point. I do not know what value, and no one knows exactly what value or how it would affect the person who is going to sit in that wheelchair.

In other words, someone might be so reviled by the idea that he never considers this part of his task, to consider this kind of person ever again, so we do not really know what the effect will be. That is the first part.

The second part is we seem to be neglecting something that Dean Lindheim brought up before, which is to use the people who are handicapped as the resource for the research information and general information that we need.

Now, in our studies we have approached the elderly, the ill aging, directly in nursing homes about their physical environment and much very useful information has been obtained this way. The same can be done across the board.

Good research techniques exist; there are good interview techniques that can be used to get much reliable information that can assist in the design process rather than using unreliable empathic techniques.

Mr. ORIOL. In the committee we know not what we build—and I

think you are talking about long-term care institutions. I think both you and Mrs. Sherwood said negative attitudes on the part of people who are to be served could be a barrier, too.

Dr. SHERWOOD. I would like also to make another comment. I am going to say that a number of questions have been raised and as has been suggested, for example, in Dean Lindheim's testimony, when you asked her a question, she said, "I do not know."

I think we have got to start looking at behavior. All of these questions must be answered in terms of behavior.

In other words, what is the impact? Let's take the question you just raised about instant empathy. There are really various ways we can tell about it. One, we can argue about it. But second, we can look and find out. We can conduct small studies and find out what differences it does make. Maybe we ought to take random samples of architects and find out what happens, whether they continue in the field or not, whether or not they produce better results.

The other thing, I do believe you have to go to the handicapped and find out how they feel. But I think we ought not to be limited by what we now know. We should be creative and innovative.

There are ideas none of us now has that might prove very productive in our final testing grounds, for health and welfare of recipients.

I think that is what we ought to have in mind when we test for effects. That is what we ought to look at—not what experts think, not any rationalization, but rather how does it—or any such program—in fact affect the target population? Many of the questions raised here can only be answered by controlled studies.

#### DATA STOREHOUSE NEEDED

Mr. ORIOL. To pursue that, we have already discussed the fragments of research, each complete piece of research in themselves. But is this panel satisfied we have any clearinghouse, any central information point on the many aspects discussed by this panel and by others at the Federal level or elsewhere?

Dr. SHERWOOD. I know I am not. Although I can say there are many people who are building up some considerable bibliographies and libraries.

Mr. ORIOL. Are they talking to each other?

Dr. SHERWOOD. Once in a while.

Senator CHURCH. Mr. Bright.

Mr. BRIGHT. I would say, to answer that question, that is one of the things I think we have found out at Rutgers; there is no clearinghouse for information at least on the Federal level. The need for it stands out.

You can be impressed with a panel like this and what it says, but it speaks about the separate problems but no one ties it together.

We feel strongly after 3 years of working in the field, that the one thing that is lacking is this overall national guidance that can only come from the active interest of a committee like this.

When the answers are obtained, and with this committee behind it, it will carry the power that is necessary to insure the necessary implementation and action.

If you do not have a committee interest like this, you just have another paper study that will be filed away in a data bank where it will probably remain unused.

Senator CHURCH. Mr. Koncelik.

Mr. KONCELIK. Yes, I would also like to speak to this point.

I believe that I would agree that there are not sufficient methods by which information can be distributed. That is obvious from what I have seen where mistakes are repeated in construction, year after year, after year.

I have photographic evidence of places that were built 30 years ago and places built a couple of years ago and similar things have been repeated, probably not by the same architect. That is the reason why.

However, I would like to speak to something else, and that is the ability of the architect or designer to implement research and especially economic and sociological research.

I think as an educator, one must know, even after very limited experience, that by giving someone a course in psychology and sociology along with the requirements of design, one does not create a designer who then implements behavior and sociological information in the design process.

He may be more aware and he may be thinking about it, but that does not really get at the heart of the matter.

#### DISSEMINATION OF INFORMATION

The problem is how do you get information into the design process that the designer can act upon? And it is at that level that no work really has been done.

There is a large body of information on behavior and sociology, and the sociological and psychological aspects of aging.

There have been many excellent pieces of work relating behavior to design done by people like Lawton, Pastalan, Sommer, Hall, and others. There are other related works on aging and other age groups. But how you apply what they have and what they have found to design process is something else. It requires a new kind of expertise or new kind of ability.

It is the kind of thing that we have been working on in our research but it is not easy.

I went through an exercise recently where I broke down a budget for a nursing home that was building a health-related facility in order to look at whether or not an architect could honestly afford to commit himself to do a research project before he could design anything. It was impossible. He could not do it. He only had enough time to design that building and that was all.

He must be presented with information before he begins which he can act upon, otherwise he will not be able to get it himself.

Senator CHURCH. Well, that really gets us down to the basic question of how information is gathered and disseminated so that it is available at the right time to the right people.

Bill Oriol calls to my attention a very thick study on "Travel Barriers" that has been done by the Department of Transportation. I do not know how widely this study has been distributed or what use has been made of it, but obviously a great deal of work has gone into it.

I am not at all sure it is too realistic, because it is addressed to the problem of barriers for the aged and the handicapped in our transportation system and it comes up with the suggestion at the end that we

build a separate transportation system for the elderly and the handicapped—which may be the only kind of conclusion that can only be reached in a Federal bureau. [Laughter.]

But there must be a good deal of data in here that would be relevant to our needs.

I want to apologize for not having been here during the whole hearing today.

I had three other committees that I had to look in on for rather urgent reasons and I also had to go to the floor on one occasion.

I do not want you to think that I am like the judge of the court out in Idaho. The story is told about the judge hearing a case up in a little mountain county in Idaho, witnesses were being called to present the testimony, and in the middle of the trial he stood up and told the witness to proceed with the evidence, he had to go out and irrigate the north 40, but not to let that interrupt the proceedings.

I have had to be away throughout the morning from time to time, but fortunately the staff here did not let that interrupt the proceedings so we have a complete record, and it will, of course, be a printed record and made available to other members of the committee and to all other interested persons.

I think we are about at that point, it being 25 minutes after 12, to conclude the hearing this morning.

I do not want to do so, however, without giving everyone one last chance. And I know there are two very patient people who have been sitting and listening all morning, Professor Parriott and Dean Meridith.

Is there anything you gentlemen would like to say, any particular contribution you would like to make at this point?

**STATEMENT BY JOSEPH M. PARRIOTT, PROFESSOR OF DESIGN,  
SCHOOL OF ART AND DESIGN, PRATT INSTITUTE**

Mr. PARRIOTT. Yes, sir. I am Professor Parriott.

I would like to pick up the point of Mr. Koncelik.

The problem is getting out of the heavy input stage that seems available from all sources, studies—I think this transportation study you referred to, Senator, is something that was initiated some 5 or 6 years ago, proposals were passed around, exhibits, on which people could bid. And it reminds me of the masses of data that are available on human factors, primarily coming from the aerospace industry, initiated some 15–20 years ago for studies having to do with hostile environment of the military.

The human factors people will publish reports as thick as this [indicating] and more of very valuable data about the human being anatomics and all kinds of things, but there is no interpretive body or discipline that seems to lie between that kind of information and getting it out where people can go to work with it.

**GUIDANCE DOCUMENTS FOR DESIGNERS**

As a recommendation which might not be specific at this point, it might be possible to have the committee begin to initiate efforts to have interpreters for available information available on the design level for the design of transportation, design of architectural facilities, build-

ings, and dwellings, that would have leadership capability of offering the designers who have the contract for designing places reference that will make it possible for them to proceed right into the design phase, knowing what they are doing, toward alleviating some of these problems.

I think we need a bible, or perhaps three bibles, in these areas that would be guidance documents to a person who is involved in the first human engineering section of the handbook of instructions for ground equipment design as for the Air Force.

Being an industrial designer, I can move between the scientific people and the people who had to put something into some kind of a form that would relate the records to the human beings, and I think we need these kinds of guidance documents if we are going to start to move toward helping the handicapped and the aged in this full, broad problem of accessibility of facilities, whether they be buildings or functioning in some way or whether they would be transportation.

We did find an age lot in the design of the taxicab that had to do with human factors, and as we proceeded into it in greater depth, it was obvious that the extremes were the things that generated the real form that took place.

Where clearances were the problem, the big people had to be considered; and where the height was a problem, it was the smaller people that had to be considered. Because the large person can still sit down, and so on.

By combining these things, a configuration emerges which tells others that they can also benefit from these configurations. And we are talking against the possibility here of getting some movement going and taking the legislation which our attorney has so skillfully put together, citing legislation which has been passed—this means there has been recognition, real recognition of the problem. And now we need to move toward some kind of guidance information, whether it be official or whether put into law, or published by the Government under the proper researches.

Senator CHURCH. Well, I think that sums up the need very well.

Any other comment?

Let's hear first from Dean Meridith.

**STATEMENT BY R. DEAN MERIDITH, DEAN, SCHOOL OF  
ARCHITECTURE, PRATT INSTITUTE**

Mr. MERIDITH. First I would like to comment as a former Federal employee.

I was an urban planner, urban design specialist, in 1966 to 1968. I suspect that you have some grant programs, in HUD and HEW, which could be cleaned up; and, I think it takes a lot of effort at the regional office and newer area office levels to really make certain that there is a concern for design.

I think, too often, that program requirements override design considerations.

I think you can build in too many restrictions. You may overemphasize certain things, at the expense of other considerations.

I think there are times when you need a design review process which deals more nearly with performance standards and requirements, so that you do not get locked in one way or the other.

## CONSIDER ALL AGES

The only other comment I would make is that I hope that your concern will also take into consideration the very young as well as the old, and the handicapped. Because it seems to me as our cities get more complicated, we are building without the concern for children.

If we cannot have cities where children can live—and, by and large, they cannot—there are too many things we are not doing right. I think it is a healthy mix when we have the very young and old, as well as the handicapped, living in an environment where they can interact with other people. So I think the very young, the environmental barriers against the very young, is an important consideration.

Thank you.

Senator CHURCH. I agree with that. I think that the segregated character of our lives has become more pronounced in recent years by virtue of the way that suburbia has grown.

I recall that after we purchased a home and moved into suburban Washington, shortly after I came here to the Senate, that for a year or more I could not quite figure out what was wrong with the neighborhood. Because the people who lived there were perfectly nice people and we liked them very much, but finally it dawned on me one day that what was wrong with the neighborhood was that we were all alike.

It was a completely homogenized neighborhood. We were all about the same age, with about the same kinds of families engaged in about the same financial level of work, and we all lived in houses that looked alike. And our youngsters were living unconnected—utterly unconnected with people of a different age, older people, infirmed people. Never—it was like Camelot, that was prohibited—poor people? Of course not. Preposterous. Financial requirements of living in the neighborhood were such that poor people were automatically excluded, and in the process most of the blacks were excluded.

And so youngsters are being raised in an utterly artificial environment.

I think the process has gotten much worse. All our talk about integration and our efforts in the courts, as important as these efforts have been and as important as the progress we have made has been, I think it has not caught up with the general process of segregated living that is going on with most of the people.

We have one more question from the podium.

Mr. MILLER. Actually two, sir.

Senator CHURCH. Two? All right.

Mr. MILLER. Mr. Baker, in your prepared statement, you say "Approximately 95 percent of the mass transportation needs are potentially met by buses."

This has created a little bit of a problem and it may be purely a matter of my interpretation of that statement.

Is this to minimize the importance of the rail mass transportation, particularly in urban areas?

Mr. BAKER. Certainly not, sir. I mean only to suggest that the capital life of a bus is so much shorter than of a fixed rail transit system that we are constantly replenishing our capital stock. Therefore, we constantly have an opportunity to upgrade in the nature of the discussion this morning.

I come from New York City. In New York City our subway system, by my observation, is almost completely inaccessible to the handicapped and to a large majority of people who are elderly. The costs of redesigning the system in New York are enormous.

In Washington, however, the subway system is presently being designed. The incremental cost perhaps is very small.

Clearly the rail transit needs have to be met—I use this only as an example of continuing opportunity in the purchase of transit buses.

Mr. MILLER. The question refers in part to the obvious barrier created by time under which framework bus transportation is severely handicapped. And, of course, you have the good fortune to be in New York where you have a system, but the ill fortune where you have the old design in New York.

Philadelphia also has rail transportation. Where else?

Mr. BAKER. There are five cities in the country that have existing rail mass transportation systems. You will have testimony tomorrow from two more cities.

To add to the observation as to time, buses do allow much more flexibility of routes such that as our population concentration becomes more dispersed, perhaps buses will become more appropriate.

Mr. MILLER. Coupled with the rapid rail transportation.

Mr. BAKER. I certainly do not underestimate the desperate need for rail mass transportation.

Mr. MILLER. To get from one end of the city to another you will ultimately need the bus, but you need speed to get from the far reaches to the other far reaches.

Mr. BAKER. I am certainly in support of rail mass transportation.

Mr. MILLER. Mr. Chairman, I would also like to address a question to Mr. Hilleary.

#### ENLIGHTEN THE BUSINESSMEN

Yesterday Senator Fong raised a question about bringing to the attention of the businessman, who is in good measure profit motivated, the factor of the profit element in removing barriers.

You have made reference to the extensive efforts of the American Institute of Architecture to acquaint its membership with this whole area. I wonder if there has been any effort in that process to bring to their attention elements that might be helpful to them in calling attention to potential builders, buyers of buildings, where profit beneficial to them, might result from barrier-free design?

In other words, how well are you, in the final analysis, equipping your architects in this to do a selling job on their clients?

Mr. HILLEARY. I am glad you asked that particular question, because there were two aspects to the question to which I would like to address myself.

One, through the efforts of the AIA, we have attempted to point out to the business community the desirability and the advantage of incorporating barrier-free concepts into their particular buildings. However, I think despite all the efforts that we might put into this sort of education, that the real problem is one that Mr. Bright discussed to some extent, "the importance of legislation," since so much of our building today is speculative in nature.



You will find this so in nursing homes at the present time. The largest builders of nursing homes, particularly in our metropolitan area, are speculative developers. Now, the speculative developer does not want to do anything beyond what is required by code. Therefore, studies are great, improvements are wonderful, but if they are not made a matter of code, the builders will not accept them.

So I think that the only way, if we are going to really enforce standards, would be through legislation.

Now, strangely enough, I think a lot of business people are quite naturally employing all the means they can. This is particularly prevalent, we have seen, in the shopping centers; the new suburban shopping centers have gone to considerable pain, as do national exhibitions, but, there is need for improvement in other areas.

I am pessimistic enough to think it has to come through legislation, because the speculative builder will not go one step beyond that which he has to perform.

Senator CHURCH. On that realistic note we will conclude the hearing, with my thanks for all of you who have come to participate.

(Whereupon, at 12:42 p.m., the hearing was adjourned, subject to the call of the Chair.)

# APPENDICES

## Appendix 1

### ADDITIONAL MATERIAL SUBMITTED BY WITNESSES

#### ITEM 1. NEWS RELEASE ANNOUNCING THE PRATTAXI—SUBMITTED BY HENRY SALTZMAN, PRESIDENT, PRATT INSTITUTE

##### PRATT INSTITUTE UNVEILS DESIGN FOR NEW URBAN TAXI

NEW YORK, N.Y., September 23, 1971.—The design of a new urban taxicab, called the Prattaxi, was unveiled here today by Pratt Institute President Henry Saltzman.

The Chairman of the New York City Taxi and Limousine Commission, Michael J. Lazar, was also present and examined the full-size mock-up of the vehicle, which is the product of three years of field and classroom research by Pratt students and faculty.

Mr. Saltzman announced that Pratt, jointly with the City of New York, has made application to the U.S. Department of Transportation for a \$1.2 million grant to aid in construction of working prototypes for testing and development on the streets of New York City.

"We hope to see the first Prattaxi prototype on the road carrying passengers in service, within 18-24 months from today," Mr. Saltzman said.

The Taxi Commissioner said "the Prattaxi is the type of innovative design we are looking for in a city taxicab. It takes into consideration the driver and the passenger, as well as the owner-operator, and it is a big step toward helping us develop basic standards and specifications for the kind of taxi we want to see in New York City."

Joining Mr. Saltzman in making the presentation of the new Prattaxi was Professor Joseph M. Parriott of the Department of Industrial Design, who directed the program that led to the new design.

"We are proud that the Pratt students and faculty members who worked on this project over the past three years have been able to apply their academic work toward a solution to the problems of mass transportation," Mr. Saltzman said. "We believe that their consideration of human factors and environmental needs in developing this design is the proper role for an enlightened urban institution in this time of crisis in the city."

The Prattaxi is designed with the kind of human considerations in mind that seem logical for an automobile that serves hundreds of different people in the course of a week, said Professor Parriott. The design also considers the driver who must spend hours at a time behind the wheel, and the owner who seeks economy in maintenance and servicing. And, just as important, the vehicle is smaller and has the potential for low-pollution service that must soon be required in the City, he added.

The Prattaxi is 156 inches long—only two inches longer than a Volkswagen sedan—and inside has chair-height seats, with 45 inches of head room and 64 inches of leg room (compared to 35 inches of head room and 48 inches of leg room in the Checker sedan, the nearest comparable vehicle). It will seat four persons in the passenger compartment, and entry is through 60-inch doors, nearly full-standing height, for many people. Large windows and a skylight provide full views for both passenger and driver. The vehicle mock-up has the engine in the rear, mounted in a removable frame, so that it may be taken out of the car for repair, while a spare engine package goes back into the cab, allowing immediate return to service. A front location for the engine package is also possible with the same feature.

The engine compartment is large enough to accommodate any of the new low-pollution engine designs—such as the Wankel—easily. The replaceable-engine feature makes testing of a number of different power plants readily possible.

Because the engine is located in the rear, there is no tunnel hump along the centerline of the car. The design also calls for a completely separate compartment for the driver, with a special hatch for passing money or change. Luggage, when carried, is stored in a rack in the passenger compartment. The design also calls for built-in ramps on each side, which slide out to allow entry into the cab in a wheelchair.

New York City alone represents a market of about 12,000 taxicabs. In order to provide for a lower unit-cost through production, this new vehicle was intended to serve as the basic package for a municipal-general delivery service vehicle with slight interior modifications.

The Taxi Commission is currently surveying all major U.S. cities, representing a total livery market of about 100,000, in an effort to standardize vehicle design.

Pratt Institute, where the work was conducted that led to this design, is a leading institution of higher education, founded in 1887 and located in Brooklyn, New York. The Pratt academic structure includes a number of professional level programs, including the School of Architecture, School of Art and Design, School of Engineering and Science, School of Continuing Professional Studies (Fashion Merchandising and Management, Food Science and Building Science) and Graduate School of Library and Information Science. Pratt's undergraduate and graduate enrollment is about 4,300.

#### BACKGROUND STORY : TAXI TRANSPORTATION IS HERE TO STAY SAYS PRATT STUDY

The taxicab is an integral part of the mass transportation system of New York City and other urban centers, and will continue to be so because of its flexibility and convenience.

That is the conclusion of a three-year study at Brooklyn's Pratt Institute that has resulted in the design of a new urban taxicab, called the Prattaxi, and development of plans to put a prototype on the road within the next 18-24 months.

The study said, "The modern taxi satisfies neither the passenger, the driver, nor the owner; it seems to satisfy only the manufacturers and the junk dealers, and it accomplishes that feat in the short span of two years."

This design represents the first practical approach in decades to the task of creating a vehicle designed specifically for use as a city taxicab, taking into consideration the human environmental factors that affect this form of mass transportation, according to Henry Saltzman, Pratt Institute President.

The new design, and the news that Pratt, jointly with the City of New York, has applied to the U.S. Department of Transportation for an Urban Mass Transportation Grant, were announced at the first public showing of a full-size mock up of the Prattaxi at a New York City press conference held at the Pratt Manhattan Center, with New York City Taxi and Limousine Commission Chairman, Michael J. Lazar, attending.

The Prattaxi is the product of a student-faculty team working in the Pratt School of Art and Design's Department of Industrial Design, under the direction of Professor Joseph M. Parriott. The research that led to the design is a voluminous accumulation of in-field, as well as academic research, touching on all the groups with an interest in the taxi as a mass transit component.

Even before the first sketches were put on paper, the group completed an exhaustive study that covered passenger considerations, safety factors, human factors, overall and powerplant engineering. The result is the design of a vehicle that requires neither radical technological nor systems changes and can be used on today's roads under present conditions.

In studying *passenger considerations*, the group observed, photographed and interviewed passengers and their use of taxicabs under all possible conditions. The result is a taxicab providing more leg room than any limousine; more head room than any automobile made in the United States for nearly 40 years; and a luggage area, fare meter and driver identification within the convenient view of passenger and driver.

In studying passenger usage it was found that many invalids are forced to use the taxi as transportation to and from doctors, shopping and work: thus a door 32 inches wide and 60 inches high that swings out at right angles to the body

of the car. A ramp is built into each side of the taxi and may be pulled out easily for use by wheel chair passengers. A fully-padded passenger compartment with chair-high seats provides 45 inches of head room and 64 inches of leg room for the rider.

"*The driver seems to be the forgotten man.*" according to those who studied driver considerations. The study group said, "If the passenger in an ultra-low taxicab is cramped and uncomfortable during a ten minute ride, what of the driver who sits behind the steering wheel for hours on end?"

The result: the Prattaxi driver sits in an adjustable posture formed chair-height seat with a 360 degree view of the road and with a steering wheel placed in a position that will be comfortable during long hours of city driving. The driver is positioned in his own safety-glass enclosed compartment with a ventilating system operated independently from the passenger compartment's system.

*Owners' problems considered by the study* ranged from downtime of cabs to tax depreciation schedules. To help cut the time that a cab is out of service for repairs, the Prattaxi has been designed with a completely detachable power plant and drive train.

When time for overhaul comes, or when there is a problem with the engine or transmission, the entire power plant is simply "unplugged" from the rest of the vehicle and a replacement is "plugged in"—putting the cab back on the street in short order. It is envisioned that an operator would have one or two "extra" power packages for every 10 taxis he operated.

Initial cost of the new vehicle is expected to be somewhat higher than cabs presently used. While it is still difficult to give precise costs, the Pratt study estimates that the Prattaxi should cost in the neighborhood of \$3,000 on a mass-production basis. Designers anticipate that the life expectancy of the vehicle will be five years, nearly three times that of the average cab today.

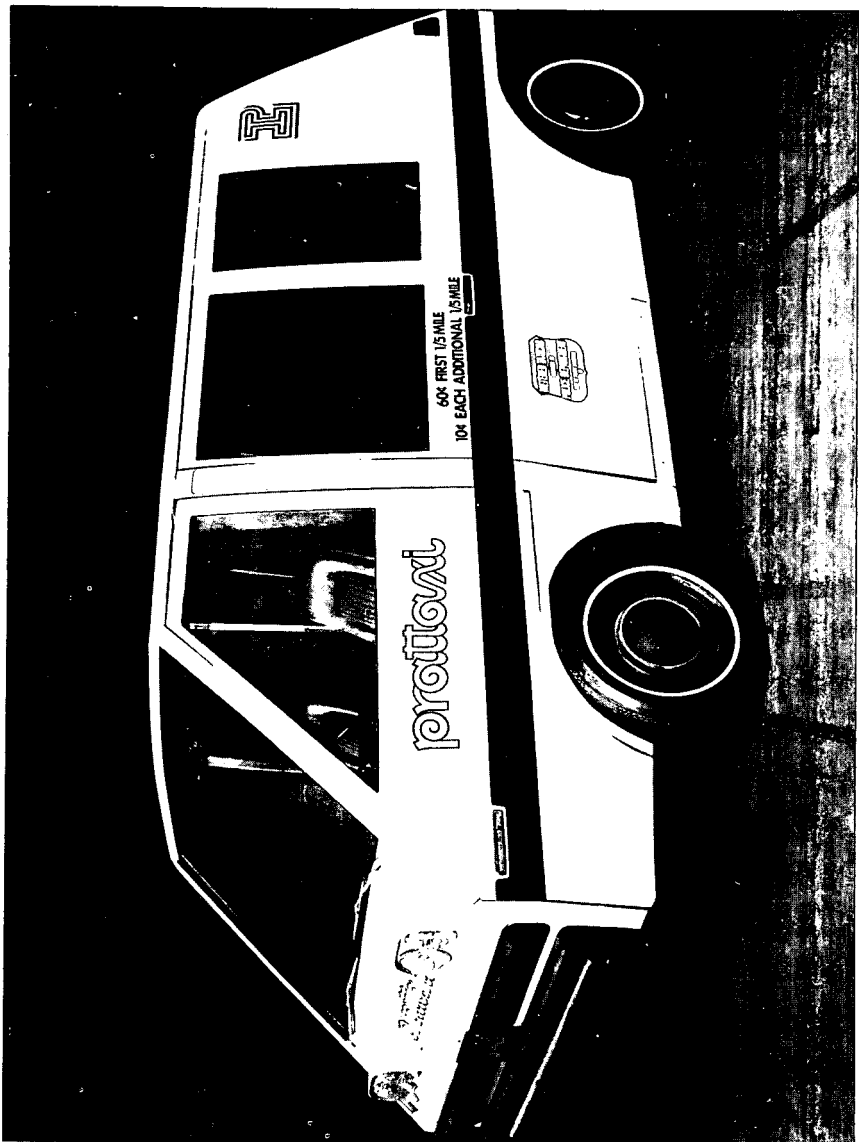
Pollution is an important aspect of any new taxi design, said the Pratt study, citing figures from the New York City Department of Air Resources. The Department's study said that 30-40 percent of the vehicular pollutants in the Central Business District of New York, by weight, come from taxicabs, and that in Midtown Manhattan, the figure may be as high as 60 percent.

The urgency of reducing this pollution is the basis for one aspect of the joint City-Pratt proposal for funding from the U.S. Department of Transportation which calls for the testing of a variety of low-pollution engines in the taxi. Because of its removable power plant feature, the Prattaxi lends itself to this testing, and ultimate conversion to whatever engine or engine system proves to be the "cleanest".

In size comparisons, the design of the Prattaxi fares well. It is 50 inches shorter than the Dodge and Chevrolet cabs now in use, and is twenty inches higher—the feature that permits ease of entry and exit for passengers. Wheelbase is 108 inches, about 10 inches shorter than conventional cab. The driver could turn a Prattaxi around inside a circle with a circumference of 35 feet.

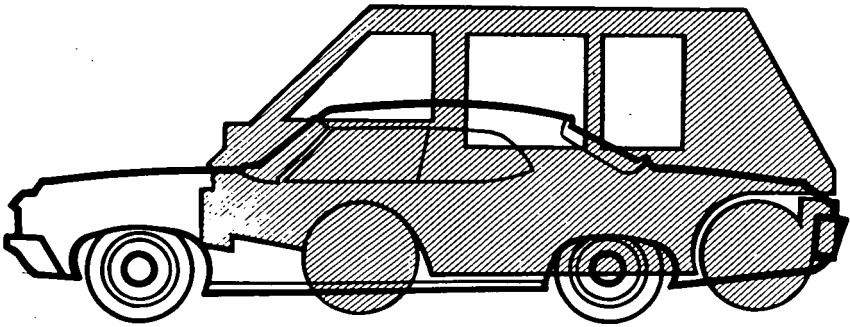
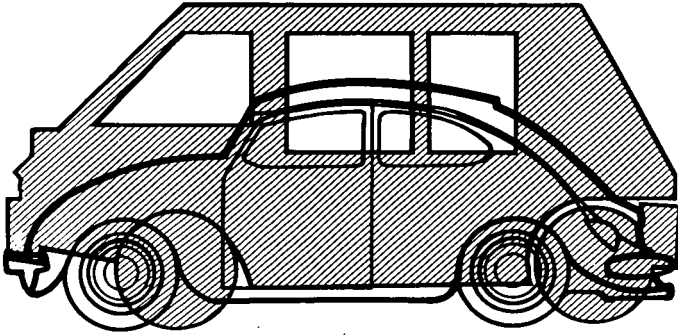
Photographs of the Prattaxi follow:

ITEM 2. PROTOTYPE PRATTAXI—SUBMITTED BY HENRY  
SALTZMAN, PRESIDENT, PRATT INSTITUTE



ITEM 3. SUPERIMPOSED VIEW OF PRATTAXI, SUBMITTED BY  
HENRY SALTZMAN, PRESIDENT, PRATT INSTITUTE

prattaxi



ITEM 4. PREPARED STATEMENT OF COOPER B. BRIGHT, DIRECTOR,  
CENTER FOR TRANSPORTATION STUDIES OF THE EAGLETON IN-  
STITUTE OF POLITICS

At the suggestion of Senator Harrison Williams, in 1968, the Center for Transportation Studies at Rutgers University conducted its first study into the planning and design of mass transportation facilities and services with regard to their effective utilization by elderly and handicapped persons. Based upon this work conducted over the past three years, it is my considered opinion that the Biaggi Amendment in establishing national policy for elderly and handicapped persons is a most necessary addition to the Urban Mass Transportation Act. Before this Amendment to the Urban Mass Transportation Act, persons interested in providing for the needs of the aged and handicapped lacked the necessary muscle to have their efforts recognized. The Biaggi Amendment is needed to assure that planning and designing of mass transportation facilities and services by government officials considers the needs of the elderly and handicapped.

What is required now to assure that this well-developed policy is carried out is to develop, on a national scale, the specific needs for transportation that, if

satisfied, will serve the aged and the handicapped. Once these needs are established, then both national and state laws can be written to ensure they are complied with.

Studies completed at Rutgers University to date have established that these needs vary considerably within the Philadelphia-Camden metropolitan area.

What is lacking today is a knowledge of what the needs of the aged and handicapped are on a national basis. Likewise, uniformity in lawmaking within the 50 states does not exist. However, where sufficient interest has been aroused, state laws have been passed that are very effective in assuring consideration of the aged and handicapped in transportation. But such states are the exception rather than the rule.

In view of the Biaggi Amendment, what is now needed is a study that will determine the needs of the aged and handicapped on a national basis. These needs can then be the guidelines in writing new federal and state laws that will insure that these specific needs are met and the Biaggi Amendment is fully implemented.

Since 1968, three separate studies have been completed. The first two studies were supported by the New Jersey Rehabilitation Commission. The third was supported by the New Jersey Department of Transportation and the U.S. Department of Health, Education and Welfare.

The first study, titled *Transportation Model for Location of a Rehabilitation Center for Handicapped Persons* developed models and procedures to determine the location for constructing a rehabilitation center that would best serve the transportation needs in one county of New Jersey.

The second study, titled *Site Selection for a Comprehensive Rehabilitation Facility in Southern New Jersey* applied these same models and techniques to a seven county area where it was contemplated constructing a new rehabilitation center. Based on this transportation analysis, a new center, costing \$3.5 million, was built in Berlin, New Jersey.

The third study, titled *Transportation for the Handicapped*, substantiated the validity of these models and techniques by applying them to the bi-state region of Philadelphia, Pennsylvania and Camden, New Jersey. The results established that the validity of these techniques provided a solution to the problems of transportation for the aged and handicapped. Two major findings resulted from the third study. The first was the determination that differences in transportation problems and employment requirements may exist within one major metropolitan area. These differences underscored the potential pitfalls involved in trying to project the results of a local area sample to the nation and using these projections as a basis for finding solutions to transportation. The second major finding was the pressing need for a legislation analysis to include evaluating ways and procedures of formulating legislation concerned with transportation for the handicapped and aged on a nationwide basis. Such an analysis of existing laws would include consideration of all pertinent legislation to determine the relative importance of each bill and act to the needs of the handicapped and aged. The results of this analysis conducted in cooperation with the designated staff members of the cognizant committees of the Congress should encourage framing national legislation that could be a model for legislation to be passed in the separate states.

It is this kind of analysis which should provide the legislation needed to assure the highest degree of compliance by both federal and state governmental agencies, and builders and operators of urban mass transportation. It will mean that many disabled veterans, elderly persons, permanently and temporarily handicapped individuals, the blind, children suffering from such diseases as muscular dystrophy and polio will be able to use mass transit facilities with the same ease as other Americans.

The enclosed proposal has been prepared to demonstrate specifically how a study conducted on a national scale to establish the needs of the aged and handicapped can be conducted in conjunction with a legislative analysis. It is believed that such a study conducted for the United States Senate Special Committee on Aging with participation by members of the staff will provide the information needed to realize "A Barrier-Free Environment for the Elderly and the Handicapped."

[Enclosure]

TRANSPORTATION FOR THE HANDICAPPED AND AGED, A NATIONWIDE RESEARCH  
PROJECT\*

## PROJECT PLAN

*Purpose*

This full-scale research project will evaluate the transportation needs of the handicapped on a nationwide basis, by studying selected population centers throughout the United States. The major hypotheses in this analysis are that transportation needs and occupational characteristics vary according to the handicapped person's work status, services received, chronic disability, and geographical location.

## TYPE—RESEARCH

*Justification of the project*

The pilot study determined that differences in transportation problems and employment characteristics vary between geographical locations. These differences underscore the potential pitfalls involved in trying to project the results from a local area sample to the nation and using this projection as a basis for finding solutions to transportation problems of the handicapped. The background of theory and practice out of which this full-scale research project is based on includes three studies conducted over the last two and one half years at the Center for Transportation Studies. In these studies, a step-by-step method of analysis, starting with a county, progressing to a state and then a bi-state region, developed procedures and models that were used in the recently completed study of *Transportation for the Handicapped*. This developmental testing provides a sound basis on which to evaluate the transportation needs of the handicapped capped on a nationwide basis.

The Center for Transportation Studies at Rutgers University obtained a grant from the New Jersey Rehabilitation Commission to initiate studies concerning transportation of handicapped residents of New Jersey. In the first study, entitled *Transportation Model for Location of Rehabilitation Centers for Handicapped Persons*, a method was developed for determining the optimum location of a new rehabilitation facility in Middlesex County and its surrounding area. This analysis considered both the need of handicapped persons for rehabilitation services and their transportation problems in reaching the rehabilitation site. In applying this model, the following factors were taken into account: distances between towns and established centers in a given area; distances between towns and possible locations for new centers; possible locations in terms of the present and future distribution of clients.

This first study showed conclusively that travel by handicapped persons from homes to established rehabilitation centers could be accomplished at reduced distances of 17 per cent with highway travel and 40 per cent with air travel. Based on the findings of this initial study, the New Jersey Rehabilitation Commission requested that Rutgers apply these models to a larger area within New Jersey. The second study, entitled *Site Selection for A Comprehensive Rehabilitation Facility in Southern New Jersey*, applied these techniques to a seven county area comprised by Burlington, Camden, Gloucester, Salem, Cumberland, Atlantic, and Cape May Counties. A planned center in this area could provide physical restoration, social and vocational adjustment services. The most accessible location within these seven southern counties was determined by two methods. These methods are the average position or mean geographical center of the projected 1975 distribution of handicapped individuals and the center of the highway network providing accessibility.

Predicated on these studies and the recommendation of the Task Force No. 5 of the Comprehensive Statewide Planning Project of the New Jersey Rehabilitation Commission, the next step in the ongoing research program concentrated on the transportation problems of journey-to-work for the handicapped in a multi-state area. The bi-state area of New Jersey and Pennsylvania was selected for the pilot study (RD-2776-G) and was conducted under the auspices of the U.S. Department of Health, Education, and Welfare; the New Jersey Department of Transportation; the New Jersey Rehabilitation Commission; and Rutgers University.

\*Prepared by Center for Transportation Studies, Eagleton Institute of Politics, Rutgers University, New Brunswick, N.J.



In the proposed full-scale research project, the extent to which the problem of transportation for the handicapped is of general significance in the area of vocational rehabilitation is indicated by the following categories under which the data will be collected :

- (1) Movement Difficulty.
- (2) Type of Employment.
- (3) Reasons for Present Job.
- (4) Reasons for Unemployment.
- (5) Modal Split.
- (6) Problems in the Journey-to-work.
- (7) Perceived Modal Improvements.
- (8) Modal Capability.

In addition, the three research areas to be encompassed are journey-to-work, homebound employment, and legislation. In the case of journey-to-work, travel patterns of separate population centers located throughout the United States will be delineated by drawing desire lines on street maps. Homebound employment will be analyzed by conducting field interviews with employment agencies located throughout the areas to be studied. Legislation, now in force and pending in certain selected states and in the U.S. Congress, will be evaluated in terms of the need for government aid and vocational rehabilitation services. Government aid will be considered to include a tax deduction for travel expenses. The analysis of vocational rehabilitation services will deal primarily with services required to assist the handicapped in maintaining their employment.

The importance and uniqueness of the expected contributions to rehabilitation theory and practice, including unmet needs of the handicapped are :

(1) Generating new data that is essential for sound planning of transportation for the handicapped and collecting and cataloging this information for ready reference. The need for assembling such data is based upon two years of research experience at the Center for Transportation Studies, Rutgers University.

(2) Determining how transportation can satisfy the needs of all the handicapped rather than present transportation, which serves the disabled only on an individual basis.

(3) Expanding handicapped research to include an analysis of journey-to-work. This was recommended by Task Force No. 5 of the Comprehensive State-wide Planning Project, New Jersey Rehabilitation Commission, following completion of a rehabilitation center location study entitled *Transportation Model for Location of Rehabilitation Centers for Handicapped Persons*.

The usable results from this study that might be expected to benefit the handicapped individual include :

(1) Increased accessibility to employment through improved vehicle design, new transportation routes and schedules that would best meet the needs of the disabled.

(2) Increased job opportunity for the homebound by identifying job types suitable for the handicapped, with particular attention given to the severely disabled.

(3) Assess the need for follow-up under the Vocational Rehabilitation Amendments of 1968 in selected population centers throughout the United States.

(4) Determine, on a national basis, the need for government aid, such as tax deduction for travel expenses, required by the handicapped in obtaining gainful employment.

(5) Determine, on a national basis, the need for state rehabilitation commissions to include more of the homebound in their rehabilitation programs.

#### METHODOLOGY

The methodology is closely related to the purpose of the project in applying procedures and models for collecting and processing data to evaluate the transportation needs of the handicapped on a nationwide basis. This is done in a manner so that the procedures described can clearly be seen in testing the hypotheses that transportation needs and occupational characteristics of the handicapped population vary according to work status, services received, chronic disability, and geographical location.

The procedures and models to be followed for collecting and processing data concerning transportation for the handicapped on a nationwide scale are as follows :

*Step 1.*—The fifteen Standard Metropolitan Statistical Areas (SMSA's) located throughout the United States that have been selected for analysis in the proposed full-scale research project are listed in Figure 1. It has been assumed that the largest concentrations of handicapped persons will be located within major population centers. This was demonstrated in the pilot study. These 15 SMSA's are selected from 100 major population centers determined by provisional estimates of population on July 1, 1967.<sup>1</sup> Eight of the ten most populous SMSA's are designated areas for study. Philadelphia, however, as the fourth largest SMSA has not been considered as it was included in the pilot study.<sup>2</sup> Pittsburgh, as the ninth ranking SMSA, has also been omitted as Pennsylvania is considered to have been tested sufficiently in the pilot study.

FIGURE 1.—STUDY AREA OF SELECTED SMSA'S

Standard metropolitan statistical areas	Rank in 1967	Population, July 1, 1967	Social and rehabilitation service regions
New York, N.Y.....	1	11,555,900	2
Los Angeles-Long Beach, Calif.....	2	6,857,200	9
Chicago, Ill.....	3	6,770,700	5
Detroit, Mich.....	5	4,113,600	5
Boston, Mass.....	6	3,249,800	1
San Francisco-Oakland, Calif.....	7	3,009,100	9
Washington, D.C.-Maryland-Virginia.....	8	2,704,100	3
St. Louis, Mo.-Ill.....	10	2,311,400	7
Baltimore, Md.....	12	1,990,000	3
Newark, N.J.....	13	1,888,500	2
Houston, Tex.....	14	1,888,500	7
Minneapolis-St. Paul, Minn.....	15	1,636,200	6
Milwaukee, Wis.....	18	1,342,400	5
Atlanta, Ga.....	21	1,288,500	4
Denver, Colo.....	27	1,089,800	8

Source: "Provisional Estimates of the Population of 100 Large Metropolitan Areas, July 1, 1967," Current Population Reports Series P-25, No. 411, U.S. Department of Commerce, Bureau of the Census, Washington, D.C., Dec. 5, 1968.

Seven other SMSA's not among the top 10 were included in the study sample for reasons other than total population. Baltimore, Maryland and Newark, New Jersey were selected to provide comparisons with the Washington and New York SMSA's respectively. As evidenced in the CTS pilot study of Philadelphia and Camden, contiguous bi-state areas of major population centers highlight the differences in transportation needs for each geographical area. The remaining five SMSA's, Houston, Minneapolis-St. Paul, Milwaukee, Atlanta, and Denver, while they rank 14th, 15th, 18th, 21st, and 27th in population, respectively, are included primarily because of their geographical diversity and to insure inclusion of the nine Social and Rehabilitation Service Regions. Additional reasons for selecting Atlanta, Georgia and Milwaukee, Wisconsin are that they lead in research into problems of the handicapped and the comprehensiveness of their rehabilitation programs. In particular, because the State of Georgia is rural in nature, it has received sufficient funding to conduct rehabilitation programs.

The selection of SMSA's provides for at least one SMSA in each Social and Rehabilitation Service Region. This should interest each of the regions in providing support to the study and insure the findings to be representative of the nation. In making the final selection of SMSA's, the state rehabilitation commissions and Offices of the Social and Rehabilitation Service Regions will be consulted to establish if adequate records exist and sufficient help can be provided in conducting the proposed full-scale research project. Approximately two months will be required to accomplish this step.

*Step 2.*—Conduct surveys of each individual study area using the enclosed questionnaire.

The sample will consider the six categories of chronic disabilities as defined by the Vocational Rehabilitation Administration of the U.S. Department of Health, Education, and Welfare. These categories are: 1) hearing impairments, 2) speech impairments, 3) visual impairments, 4) orthopedic deformity or func-

<sup>1</sup>"Provisional Estimates of the Population of 100 Large Metropolitan Areas: July 1, 1967," *Current Population Reports Series, P-25, No. 411*, U.S. Department of Commerce, Bureau of the Census, Washington, D.C., December 5, 1968.

<sup>2</sup>Center for Transportation Studies, *Transportation for the Handicapped*, Eagleton Institute of Politics, Rutgers University, New Brunswick, New Jersey, October 1969.

tional impairments, 5) absence or amputation of major and minor members, and 6) mental, psychoneurotic and personality disorders. The principal concern of the study will be the last three categories, as these disabilities cause the most severe transportation problems among the handicapped. The guidance for this population sample is a result of the analysis of transportation problems by chronic disability conducted in the pilot study. The subjects will be individuals receiving complete rehabilitation services provided by state rehabilitation agencies in 1968 and 1969 within the areas selected for study. These services include physical and occupational therapy as well as job placement. The names and addresses for individuals receiving these services will be obtained from the R300 forms of the various state rehabilitation agencies. As established in the pilot study, this information is readily available when the confidentiality of individual case histories is maintained. Another portion of the sample will be drawn from hospital records of outpatient physical services rendered in 1968 and 1969. As determined in the pilot study, the names and addresses of former outpatients receiving physical services from hospitals can be obtained if personnel are sent to tabulate them. This is necessary because clerical staffs of hospitals are not provide the service due to budgetary restraints. Other hospitals having physical service departments will send the questionnaires directly to former clients for a specific charge per number of questionnaires. To guarantee the most valid findings possible, a broad base will be created by obtaining the largest possible number of responses from individuals on hospital and rehabilitation records.

By dividing the sample into two groups, a comparison is facilitated between handicapped individuals who have undergone the complete rehabilitation process as opposed to those who received physical services only.

It was established in the pilot study that when employing the questionnaire, no control or comparison group is required.

Approximately four months would be required to complete this step.

*Step 3.*—Analysis will be made of movement difficulty, type of employment, reasons for present job, reasons for unemployment, modal split, problems in the journey-to-work, perceived modal improvements, and modal capability.

The methods of statistical treatment to be used in the sorting of information for analysis is the vector scan program using a 7040 IBM computer. This will separate the information into data stacks, according to the type of treatment provided, and for individual or combinations of hospitals or state rehabilitation agencies. Computer runs will be repeated for the unemployed and employed respondents to establish their transportation and occupational needs. At the same time, these runs will be programmed to tabulate information according to chronic disability. This method allows separately programming individuals or combinations of hospitals or rehabilitation agencies. This prevents the possibility of skewing the total returns from all individuals receiving complete rehabilitation or physical services only. This method ensures accurate frequency distributions so that each of the data inputs are given the correct relative weight.

Figure 3 from the pilot study is an example of the analytical presentation which results from use of the vector scan program. The figure summarizes the existing modal split among respondents who received services from the New Jersey Rehabilitation Commission between 1966 and 1968.

FIGURE 3.—NEW JERSEY REHABILITATION—MODAL SPLIT

[In percent]

Variable	Physically limited		Amputee		Mental disorder	
	Workers	Nonworkers	Workers	Nonworkers	Workers	Nonworkers
Bus.....	17	28	0	13	44	44
Train.....	0	0	0	0	0	0
Taxi.....	3	0	6	13	4	8
Subway.....	3	3	0	13	2	0
Trolley.....	0	0	0	0	0	0
Car pool.....	7	3	0	0	10	0
Auto.....	63	44	94	50	29	40
Multimode.....	7	23	0	13	10	8
Total responses.....	30	39	16	8	48	25

Approximately two months will be required to complete this step.

*Step 4.*—Delineate journey-to-work travel corridors on desire line maps and identify peak travel periods for each population center selected for study which can be used to improve public transportation routes and schedules to best meet the needs of the disabled.

The travel patterns of handicapped workers in an SMSA are determined from the home and work addresses of respondents to the questionnaire. These home and work addresses are collated on an origin-destination grid to determine the total number of trips between any two locations in an SMSA. This information is then plotted on a map of the population center or SMSA to yield a desire line pattern for daily journey-to-work trips. Desire lines will be drawn between place of residence and work place for each respondent. Refer to pages 33 to 35 of the pilot study for the manner in which this methodology is applied to the Camden, New Jersey area.

Plotting these journey-to-work desire lines shows concentrations of travelers in travel corridors. Within each of the travel corridors, percentages of total trips will also be determined. These trips include only movement originating and terminating within each corridor.

Having established the magnitude and direction of journey-to-work travel, the next aspect of analysis is determining the peak hours in which this travel occurs. Morning and afternoon peaks will be identified by tabulating percentage departures for each 15 minute interval. Refer to pages 41 to 43 of the pilot study for analysis of peak travel periods which occur in the Camden and Philadelphia areas.

Approximately two months will be required to complete this step.

*Step 5.*—Identify jobs suitable for the homebound handicapped in each SMSA in terms of the needs for separate state rehabilitation commissions to include more of the handicapped that are homebound in their rehabilitation programs. This will include both transportation of the homebound to work and transportation of work to homebound people. These jobs will be determined by analyzing results of the questionnaire and interviewing agencies who are engaged in employment of the homebound.

In conducting the pilot study, it became evident that very little consideration has been given to employment of handicapped individuals who are homebound. The category of agencies to be contacted in the national study will be similar to those in the pilot study. These were Referrals, Inc. in Hanover, New Jersey; The Human Resources Center in Albertson, Long Island, New York; and the Federation of the Handicapped in New York City.

Though these type agencies offer varying services for the handicapped, their evaluations of the homebound handicapped are largely the same. Of primary concern is the conclusion that there are few, if any, efforts to provide employment for homebound. When employment is provided, it consists of menial tasks such as craft-work which neither supplies a decent wage nor offers much personal satisfaction. In occupations where more substantial work and salary are provided, the jobs are subcontracted from a manufacturer by an agency and subsequently distributed among the homebound. One of the problems encountered with subcontracting is the fluctuation in the amount of available work that these agencies can provide.

The Federation of the Handicapped and the Human Resources Center have identified the following kinds of work that can be accomplished in the home: insurance claims adjusting, rating, and coding; computer programming; telephone advertising; opinion polling; telephone sales; and transcription typing.

Approximately one month will be required for Step 5.

*Step 6.*—Legislation is now in force in the SMSA's and pending in the state legislatures and in the U.S. Congress will be evaluated in terms of the need for government aid and vocational rehabilitation services with respect to transportation. In the pilot study, government aid in the form of a tax deduction for travel expenses was found to be one type of legislation that should be included in the evaluation. In this regard, one in six respondents who are amputees, physically limited, or mentally disabled recommended government aid in the form of a tax deduction for journey-to-work expenses as a transportation improvement.

The following are examples of legislation evaluated in the pilot study which indicate the kinds of legislation that would have to be included in this study.

Since January, 1969, there have been four bills introduced that would provide a tax deduction for the journey-to-work expenses incurred by handicapped per-

sons. Three of the bills allow for deductions up to \$600 per year for travel expenses and an additional deduction for a taxpayer's disabled spouse. Two of these measures have been introduced in the U.S. House of Representatives by Ellberg (D-Pa.) and Mills (D-Ark.). These measures are now in the House Ways and Means Committee. Senator Javits (R-N.Y.) has introduced a third bill in the Senate, which is currently in the Senate Committee on Finance.

The fourth measure has been introduced by Representative Bingham (D-N.Y.) and is now in the House Ways and Means Committee. This bill provides a tax deduction for journey-to-work expenses in excess of the normal commuting expenses if the excess is caused by a person's handicap.

In the case of legislation to provide follow-up services to assist the handicapped in maintaining their employment, the pressing need for allocation of funds to permit implementing the "Vocational Rehabilitation Amendments of 1968" would be stressed. This results from the findings in the pilot study that only 52 per cent of the respondents whose cases were closed upon receiving job placement by the New Jersey Rehabilitation Commission and the Pennsylvania Bureau of Vocational Rehabilitation between 1966 and 1968 are employed in 1969. The 349 respondents, on which this employment rate of 52 per cent is based, reside in Philadelphia County, Pennsylvania and Camden, Burlington, and Gloucester Counties, New Jersey. The transportation problems causing this unemployment will be assessed in terms of expanded services which would assist the handicapped in maintaining employment.

This analysis of legislation includes evaluating ways and procedures of formulating the legislation concerned with transportation for the handicapped into a nationwide program. This program would permit comparative review of all the pertinent legislation to determine the relative importance of each bill and act. The result should provide guidance for a task force approach to bringing the transportation needs of the handicapped before the state and federal legislative bodies for implementary action. In addition, deficiencies in legislation required to meet the transportation needs would be evident and could be rectified.

The time required to accomplish this step will be approximately two months.

*Step 7.*—Assess the changes necessary to eliminate architectural barriers in transportation vehicles to satisfy the needs of the handicapped. This will include altering doors, steps, and seats on buses and trains.

The specific needs by each chronic disability will be identified. This type of information enables transportation planning to be responsive to the varying needs of all chronic disability groups.

This will be accomplished in the vector scan program by analyzing problems concerned with the trip to work. The information will be processed in a manner responsive to the problems associated with travel by the handicapped such as entry on trains, buses, and autos and seating on trains, buses, and autos. The manner in which this has been previously accomplished in the pilot study is shown in Figure 4. This analysis will include consideration of the practical knowledge of transportation vehicle manufacturers and operators.

FIGURE 4.—PENNSYLVANIA BUREAU OF VOCATIONAL REHABILITATION—PROBLEMS IN TRIP TO WORK

[In percent]

Variable	Physically limited		Amputee		Mental disorder	
	Workers	Nonworkers	Workers	Nonworkers	Workers	Nonworkers
Bus stops at work.....	8	4	12	0	0	12
Bus stops at home.....	8	8	8	25	0	12
Train stops at work.....	8	6	4	25	0	12
Train stops at home.....	4	4	4	0	17	0
Inconvenient schedules.....	12	14	4	0	0	12
Bus entry.....	16	24	12	0	33	25
Train entry.....	4	6	4	25	0	0
Auto entry.....	4	10	0	25	0	0
Subway entry.....	4	4	8	0	0	0
Total responses.....	25	51	24	4	6	8
Bus seating.....	16	10	12	0	33	0
Train seating.....	4	0	8	0	0	0
Auto seating.....	4	4	8	0	0	0
Excessive transportation cost.....	8	4	8	0	17	25
Other.....	0	4	4	0	0	0
Total responses.....	25	51	24	4	6	8

The value of this particular phase of the analysis was demonstrated in the pilot study. In this case, a working cooperative agreement with Minibus, Inc., Pico Rivera, California combined the findings from the research at Rutgers with the practical knowledge of bus manufacturers for the handicapped. Another case is the employment of an architect to work with planners of the subway system being planned for the Washington, D.C. area. In this case, it has been possible to bring before designers the transportation needs of the handicapped. This includes such items as the installation of elevators in subway stations and ramps to facilitate movement of the handicapped.

This step will require approximately one month.

*Step 8.*—Conduct symposiums to provide essential guidance during the time in which the study is conducted.

In the pilot study, the results of the analysis were presented at midpoint at a symposium held on March 18, 1969, at the Center for Transportation Studies, Eagleton Institute of Politics, Rutgers University, New Brunswick, New Jersey. Representatives of various hospitals, associations, state rehabilitation commissions, and other concerned individuals in the rehabilitation field, who cooperated in the pilot study were present.

The discussion and questions which followed the presentation served to provide major guidance for completing the pilot study. This guidance resulted in conducting further research which indicated the following:

- (1) Government provided transportation facilities between home and work and a tax deduction for travel expenses are most often cited as solutions to transportation problems.
- (2) Comparison of travel patterns of the handicapped and the general population revealed that the handicapped individual's peak travel periods begin earlier than that of the general population.
- (3) Allocation of funds should be made to provide follow-up services in maintaining employment after job placement under the terms of "The Vocational Rehabilitation Amendments of 1968."

This technique would be expanded to the control mechanism for complete analysis of each SMSA in this full-scale research project. These meetings could be programmed over the entire period of study as analysis of each individual SMSA reaches approximately the midpoint of completion. It has been demonstrated in the pilot study that such a coordinated effort between Rutgers University and professional expertise in the field of rehabilitation, including the Social and Rehabilitation Service, state rehabilitation commissions, hospitals, manufacturers of transportation vehicles for the handicapped, and legislators will insure adequate interchange of information and project evaluation required for complete analysis of the transportation needs of the handicapped.

The national program that could result from this series of symposiums would enable all of the varied findings to be integrated into a single program for achieving adequate transportation for the handicapped. Actually, the timing and the best way in which to conduct these meetings would depend on the manner in which the study developed. Because this step would be accomplished simultaneously with the other steps, no separate time allowance is made.

Perhaps, the greatest value that will accrue from carrying out this step will be the creation of sincere interest on the part of all the participants to engage in and contribute to the study and join forces in a national effort to implement the findings. In addition to this program of symposiums, an advisory council will be constituted to review and advise the Center for Transportation Studies as to the manner in which the full-scale study is conducted. A list of the people who have signified their agreement to act in this capacity is enclosed. These same people performed a similar function in the pilot study.

Although the total time required to complete the study is 14 months, the study is planned to be completed in 12 months. This is possible as steps 3, 4, and 7 can be conducted simultaneously. It is assumed that the normal 60 day period allowed for writing the final report, following the completion of the study, will apply.

## ITEM 5. A DESCRIPTION OF THE STUDY FOR INDEPENDENT LIVING

(A DHEW-HUD jointly funded contract\* (H-1275) between The Fall River Housing Authority, Fall River, Mass., and U.S. Department of Housing and Urban Development Contracts and Agreements Division, Washington, D.C.)

### HIGHLAND HEIGHTS HOUSING FOR THE ELDERLY AND PHYSICALLY IMPAIRED

The Highland Heights housing project—the medically oriented specialized housing facility available for this study—developed as a result of the experiences of Dr. David S. Greer. In his capacity as Medical Director of Hussey Hospital, the municipal hospital for the treatment of chronic diseases in Fall River, Dr. Greer discovered that many physically impaired patients who had received adequate rehabilitation could not resume semi-independent community life because of the absence of helping people and ancillary services in close proximity to their physical environment. As has been found in many communities, individuals with only relatively minor residual impairments were forced to accept institutionalization as a solution to their problems. The observed need for innovative concepts in serving the chronically ill and handicapped older adult gave impetus to seeking shelterer apartments attached to the Hussey Hospital as an alternative in long term care.

Through the joint efforts of the Fall River Housing Authority and the municipal hospital (Hussey Hospital), HUD approved the building of a low income fourteen story apartment house designed specifically for the physically impaired adult. The segment of the population for which the building was constructed is the low income physically impaired (generally speaking this will be an aged population). The construction was completed and the building opened for occupancy in the fall of 1970. Consisting of 108 studio and 100 two room apartments, the building is constructed to house adults who live alone or with one other person. It is in close proximity and attached by tunnel to the Hussey Hospital. The outpatient clinic of the hospital is located in the basement of the apartment house and includes physical therapy, occupational therapy, and out-patient treatment rooms. Stability and continuity of the program has been guaranteed by the hospital's governing body. The low cost nature of the program is insured by the non-profit nature of the hospital operation.

Recognizing the necessity for a broad spectrum of ancillary services and activities, rooms and office space were also provided for ancillary services, meeting halls, social and other activities. Congregate dining facilities, some social and other ancillary services, as well as activity programs have become operational during the first year after Highland Heights was opened for residency.

Although several HUD sponsored housing projects for the physically impaired adult (in Toledo and Seattle, for example) are now in operation, to our knowledge the Highland Heights Apartment Complex is the first HUD sponsored low income housing unit designed specifically for the physically impaired that is connected physically to a hospital for the chronically ill and with designated provisions for medical and social services to the occupants of the apartments. Furthermore, the hospital therapy team coordinates with several community agencies providing therapy for the physically handicapped including the Homemaker-Home Health Aid service (a coordinated home-health care program) and the Visiting Nurse Association. The Fall River Highland Heights Housing Project therefore represents a new approach or alternative in long term care. It is envisioned that its basic features—the specialized architecture (despite some major architectural blunders), the building's proximity to the hospital, special community services housed at the facility, and efforts to promote physical and social functioning, will result in a therapeutic environment for the residents. Certainly the goal of this type of sheltered housing is to foster a more "normal" social life and psychological well being as well as functional health in activities of daily living (or at least to slow down physical deterioration). Hopefully, as well, this type of housing will provide a viable alternative to institutionalization.

Good intentions, however, are no substitute for knowledge. Even before the opening of this sheltered housing facility it was recognized that a valuable opportunity would be lost in gaining knowledge concerning this new approach in long term care—particularly a determination of whether or not it achieves its envisioned goals—if procedures were not carefully defined and developed and

\*Co-Directors of the H-1275 Contract: Sylvia Sherwood, Ph. D., David S. Greer, M.D.

if baseline data required for future planning and research were not collected. In June 1970, several months before Highland Heights was opened for residency, combined DHEW-HUD funded contract (H-1275) was signed between the Fall River Housing Authority and HUD that was based on these considerations.

#### THE STUDY FOR INDEPENDENT LIVING—THE H-1275 PROJECT

The H-1275 contract between the Fall River Housing Authority and HUD had a number of immediate action aims, including the development of appropriate screening techniques to select the occupants of the housing project, the implementation of the screening process, and the development and stimulation of a program to help meet the medical and social service needs of the residents as identified in the screening process. Recognizing the opportunity to learn from the Highland Heights experience, the H-1275 contract provided for a number of short term and long term research goals. One of the tasks specified in the H-1275 contract, for example, was to design precoded application forms that provide baseline data needed for future research. Because of the specialized purposes of the facility, the screening techniques developed take into consideration not only the usual Housing Authority eligibility criteria for any applicant to public housing, but also medical-social eligibility requirements. A three-part precoded application was devised consisting of three forms. The first to be filled out is the precoded Housing Authority form on which Housing Authority interview data are recorded. No changes were made in the standard questions usually asked by the Housing Authority of applicants to public housing. However, as part of the application process, Housing Authority Tenant Selectors are contributing significantly to the H-1275 contract tasks in that they are collecting other precoded data as well that are useful both for assessing suitability for residency at Highland Heights according to medical and social criteria and for research and planning purposes. The second part of the application is a precoded medical form that is sent to the private physician. The third part of the application is a precoded social interview form on which data collected by a member of the medical-social screening team (usually a social worker or public health nurse) are recorded. (See Attachment A, p. 132, for a detailed description of the Tenant Screening Procedures.) The core of the interview items needed for action and research purposes included in the housing authority and social interview forms were standardized scales selected and refined and items and scales developed and tested in other research studies conducted by Sylvia Sherwood, Ph. D.

In particular, the forms designed for the Fall River study included standardized scales such as the Powell Lawton Morale Scale, the Katz ADL Scale and the Rosow Functional Health Scale utilized by a number of investigators on a variety of elderly and disabled populations. Such use of items and scales developed and used in other research projects is of both economic and scientific value, providing comparable data from a broad array of populations as well as refining these measures so that they may provide useful and increasingly reliable predictive instruments.

Other items necessary for the tenant selection and to meet the aims of both short- and long-term evaluation were added to the precoded forms. These new items were modified and refined during the H-1275 contract period. In addition, outcome variables appropriate for long term as well as short term analysis of impact were operationally defined and built into these precoded forms.

Another important goal of the H-1275 contract was to develop a research plan to evaluate the effectiveness of this type of sheltered housing of the health and well being of the physically impaired and to initiate the implementation of this design during the H-1275 funding period not only by collecting the pre-test and baseline data discussed above but also by identifying a population of individuals comparable to those admitted to the housing project which can serve as a control group and by conducting a short-term impact study.

Because the H-1275 study included a requirement for a short-run evaluation of the impact of the facility on the lives of the residents, some sort of estimate of what the residents would have been like without the Highland Heights facility was needed. Although it was hoped in the design and implementation of Project H-1275 that a randomized design could be used at Highland Heights, the possibility that it could not was anticipated, and it turned out to be in fact impossible. Substantially less than the required number of needy, eligible applicants came forth soon enough to allow for even the consideration of actually implementing a randomized design. (See Attachment A, Tenant Screening Pro-



cedures). The financial pressure on the Fall River Housing Authority to fill the facility and the fact that on the scheduled opening date there were only a few more eligible applicants than available apartments decisively ruled out the possibility of a randomized design.

The alternative selected to randomized allocation of applicants to control and experimental groups was individual to individual matching. A somewhat unique methodology was used in that it included both multivariate statistical handling of theoretically important variables along with detailed case by case clinical judgments as to the appropriateness of individual matches. Some 100 residents (the "experimentals") were matched with 100 applicants to the facility (the "controls") for the short-term impact study. [This research strategy developed for selecting "experimental" and "control group" samples provides the basis as well for matching additional experimental and control group persons that will be required to satisfy the design for the study of long term impact that is being developed as one of the products of the H-1275 contract.]

The post-testing (using social interviews similar to the pre-test instrument) period for the short-term impact began approximately a year after the initial pre-testing period—some eight months after the opening of Highland Heights for occupancy, (September, 1970). It should be pointed out that given the limited time and funds available for the H-1275 project it will be possible to analyze only a portion of the post-test data gathered as part of the short term impact analysis. Other data are also being gathered during the H-1275 time with the expectation that they will be analyzed in a subsequent research project. Process data concerning the impact sample, being gathered from community agencies during the course of the H-1275 contract period, are in this category.

In addition to that being collected by the project team, this category includes medical and functional assessment data which are being collected as a result of a unique opportunity to integrate the H-1275 research aims with those of other project teams. Recognizing the potential significance of the H-1275 study, Drs. Gresham and Granger of the Tufts University Regional Rehabilitation Research and Training Center made contributions to the project in the form of funds and research tools and initiated contact between the H-1275 project team and Mrs. Jones of the 1-RO-1H5006-01 project team at the Harvard Center for Community Medicine and Health Care. This collaborative effort of the H-1275 project team, the Tufts University Regional Rehabilitation Research and Training Center, and the 1-RO-1H5006-01 project team (which contributed a research nurse and precoded instruments for data collection), resulted in the collection of extensive precoded medical and functional status data on 100 persons in the Impact Sample (including experimentals and controls). This data can be valuable in generating hypotheses relating to the impact of the facility on the health of subgroups of physically impaired and elderly which can, in turn, be tested in a subsequent long term study.

The final products of this contract will include a report of the results of the evaluation of the facility and its short run impact on the health and well being of the residents as well as a report that, based on the first year's experience at Highland Heights, suggests guidelines which, hopefully, can be useful to Local Housing Authorities.

#### ATTACHMENT A—TENANT SCREENING PROCEDURES

The Highland Heights apartment facility for the physically handicapped was designed by the Fall River Housing Authority to house low income elderly and disabled individuals more handicapped than those usually residing in public housing. The primary purpose of this specialized apartment facility is to help such persons so that they can function more successfully in the community than they could in ordinary housing. It was envisioned that, in addition to the special architectural features of the apartments, ancillary services would be provided by Hussey Hospital for the Chronically Ill and by other special community resources that become readily available to dwellers of the Highland Heights apartments.

The screening techniques developed for selecting occupants to the Highland Heights Housing Project, therefore, take into consideration not only the usual Housing Authority eligibility criteria for any applicant to public housing but also medical-social eligibility criteria. Essentially, Housing Authority criteria for admission to efficiency and one-bedroom apartments in public housing include income, size of family, and age restrictions. The Highland Heights Apartment Facility is a low income housing project consisting of efficiency and one-bedroom

apartments. Therefore, occupants must be below a specified income bracket; this facility can be occupied only by a one-person or two-person family unit; and the applicant must be of legal age to sign the lease (21 or over).

In developing appropriate screening techniques, no changes were made in the standard questions usually asked by the Housing Authority of applicants to public housing. However, as part of the application process, Housing Authority Tenant Selectors were asked to obtain other data as well that might be useful both for assessing suitability for residency at Highland Heights according to medical and social criteria as well as for research and planning purposes. A specially developed precoded Housing Authority application form is used for applicants to Highland Heights on which the information necessary for determining eligibility for housing as well as other data obtained during the Housing Authority interview are recorded by the Tenant Selectors.

As an additional source of information, with the permission of the applicant a letter is sent by the Housing Authority to the private physician of the applicant requesting information pertinent to the applicant's medical condition and physical functioning. To simplify the process for the physician and with the hope that comparable data for each of the applicants will be obtained, a short precoded medical form is enclosed upon which the physician is asked to check the appropriate medical and physical functioning categories that describe his patient.

Housing Authority Tenant Selectors are entirely responsible for determining eligibility of applicants to Highland Heights according to the usual criteria for occupancy in low income public housing. However, although they make important contributions to the data necessary for such assessments, Housing Authority Tenant Selectors are not directly responsible for determining eligibility and assessing need according to medical and social criteria.

According to the medical and social criteria established, to be eligible for residency, "the disability of the applicant must be sufficiently severe so that the individual could not be expected to function independently without ancillary services." This would include handicapped persons who are residing in housing ill suited to their physical well being and/or are isolated and severely restricted in their mobility in the community because of physical impairment. Particularly appropriate for residency would be disabled persons who, without the specialized architectural features and/or the type of services readily available to the residents, might need to be institutionalized either now or in the foreseeable future. (It should be emphasized, however, that residency in this facility would *not be considered appropriate* for disabled persons who need round-the-clock professional nursing care.)

In addition to the data obtained by the Housing Authority Tenant Selectors for these purposes, as part of the application process, information pertinent to screening according to medical and social criteria are obtained from a social interview with the applicant and, when relevant, with the spouse or family member with whom the applicant expects to reside at Highland Heights. The social interviews are conducted by professionals (usually a social worker or Public Health nurse) who have training and experience in making medical and social assessments and in recommending needed services. The data obtained and the judgments made (including recommendations concerning needed services) are recorded on a specially prepared precoded Social Interview form.

Attached are the three-part precoded application forms currently in use: the Housing Authority Form on which Housing Authority interview data are recorded; the medical form sent to the private physician; and the form on which social interview data are recorded.

An assessment team consisting of medical social workers and a Public Health nurse is responsible for the assessment of eligibility and need for residency in the specialized housing facility according to medical and social criteria. For questionable cases, consultations are held with a physician. Both to promote an interdisciplinary perspective and to develop reliable standards for assessing need, such assessments are generally made jointly, usually by a social worker and a nurse. This was the procedure established for assessing the first two hundred or more applicants. Since then, a slight modification in the medical-social screening procedure has been introduced. For straightforward cases that are immediately and easily categorized, the assessment may be made by either a social worker or a nurse, subject to review by the other professional. In most cases, however, there continues to be at least a minimum of joint involvement in the assessment procedure.

Although in a majority of cases the social interview is conducted by one of the professionals in the assessment team, this is not mandatory. The social inter-

views are also conducted by cooperating professionals from the physical therapy and nursing departments at Hussey Hospital who had received training in conducting the social interview (including making judgments concerning social needs) and in recording the data appropriately on a standardized precoded interview schedule.

In summary, data from a variety of sources are used in making the medical-social judgments, including: the interview conducted by a Housing Authority Tenant Selector; medical records when available; and the social interview with whom the applicant expects to reside at Highland Heights. Each applicant being screened is placed by the medical-social assessment team into one of five categories:

1. The applicant has no need for the Highland Heights facility and/or the ancillary services provided. In other words, the judgment is made that the disability of the applicant is not so severe that he needs ancillary services in order to function independently in the community.

2. Either the applicant has need for public housing primarily but does not require the special architectural features for the disabled or the ancillary services available at Highland Heights or, although he could use the ancillary services at Highland Heights and/or the architectural features of the facility are helpful for his disability, he is already receiving needed services and the necessary architectural features already exist in his current housing.

3. Residency in the specialized apartment facility is likely to help the applicant function more successfully in the community than he would if he remained in his present housing. In other words, residency in Highland Heights would be of distinct benefit.

4. Residency in Highland Heights is most needed, it is a viable alternative to institutionalization at present or is likely to prevent institutionalization in the foreseeable future.

5. The disabled person is too ill (i.e., he needs around-the-clock professional nursing care) for residency in the Highland Heights Facility.

Because of the pressure felt by the Housing Authority to have all the apartments rented as soon as possible, when the facility was opened for residency apartments were offered to all of the applicants eligible by Housing Authority criteria, regardless of the rating by medical-social criteria. Currently applicants with a rating of a "3" or "4" by social-medical criteria—are given a higher priority should a vacancy occur.

## Appendix 2

### LETTERS FROM INDIVIDUALS AND ORGANIZATIONS

ITEM 1: LETTER AND STATEMENT FROM THOMAS O. BYERTS, PROJECT DIRECTOR FOR ARCHITECTURE AND ENVIRONMENT, GERONTOLOGICAL SOCIETY, WASHINGTON, D.C.

NOVEMBER 18, 1971.

Hon. FRANK CHURCH,  
*Chairman, Special Committee on Aging, New Senate Office Building, Washington, D.C.*

DEAR SENATOR CHURCH: The following response is the statement of the Gerontological Society as requested by the Special Committee on Aging concerning "A Barrier-Free Environment for the Elderly and Handicapped." The important issues being explored by the Committee are of great interest toward the improvement of the environmental condition of this nation's elderly.

Sincerely,

THOMAS O. BYERTS,  
*M. Arch., Project Director, Architecture and Environment.*

PREPARED STATEMENT OF THOMAS O. BYERTS, PROJECT DIRECTOR FOR ARCHITECTURE AND ENVIRONMENT, GERONTOLOGICAL SOCIETY, WASHINGTON, D.C.

Mr. Chairman, and Members of the Committee: The Gerontological Society, which has been active in Aging Research and Education since 1945, enthusiastically supports the activities of the United States Senate Special Committee on Aging in its study of "A Barrier-Free Environment for the Elderly and Handicapped." Following a thorough review of Public Law 90-480, Public Law 91-205, and the American Standard Specification for "Making Building and Facilities Accessible to, and Usable By, the Physically Handicapped," it is obvious that the majority of our elderly and many of their special problems have been clearly overlooked. It should be noted that less than 20% of the 20,000,000 elderly in this country are considered to be seriously handicapped. This includes the categories of bedridden, institutionalized and those who require major aids and assistance such as wheelchairs.

The point that must be emphasized is that while many of the elderly have limited physical disabilities, chronic maladies and various sensory decrements, the majority are reasonably mobile. Our older citizens are often endangered or prevented from interacting in society by such physical "hardware" barriers as noted in the above legislation but are just as significantly hampered by excessive glare, fast closing elevators, poor graphics and directional signs and other such inhibitors. Beyond this are the many physically related sociological and psychological constraints which often have strong long term manifestations.

Therefore, the Gerontological Society calls for a broad and systematic approach to humanize existing and future building, urban planning and transportation programs. Thus the Society proposes the following recommendations:

1. To broaden the definition of "barriers" to include parameters beyond physical access and physical use to include the psychological and sociological impact of environments.
2. To expand performance specifications and measurement methods to consider the special needs of the elderly.
3. To produce a consistent policy of strong Federal enforcement of current and expanded future legislation promoting "barrier free" environment on federally funded programs.
4. To induce and encourage voluntary compliance to the "barrier free" concept on the part of the private sector.

5. To provide for and fix responsibility and coordination for the following functions:

a. Establish a national clearing house relating pertinent environmental issues of the elderly to building programs, urban planning, transportation and rehabilitation of existing facilities both public and private.

b. Systematically coordinate a pre-programming, inspection and post-construction analysis, feedback and trouble shooting service.

c. Elaborate, publish and distribute the latest research, practice and useful guidelines in related areas.

d. Sponsor inservice training workshops and model curriculum for practitioners, administrators, technicians and students.

6. To organize a permanent committee of active professionals in the field of research, environment and aging to work in an advisory capacity to the Department of Housing and Urban Development, Department of Transportation, Department of Transportation, Department of Health, Education, and Welfare, the General Services Administration, Department of the Interior and other branches of the Federal Government that sponsor or operate environmental facilities in which the elderly may participate.

It has been noted numerous times that the actual cost of producing supportive environments is not significantly higher. Furthermore, the values and benefits of access and use of buildings and facilities by the aged and handicapped is rewarding endeavor and a deserved right of every citizen. Beyond this, the benefits of comprehensive "barrier-free" design affect *all* potential users whether they exactly fit the dimensions of the youth culture's nonexistent "average man" or are temporarily disabled due to a skiing injury or the person who accidentally forgot his bifocals.

Consistent with the Society's leadership role in the field of aging research, Gerontological Society President, Carl Eisdorfer, Ph.D., M.D., and Society member, Roslyn Lindheim, AIA, are co-principal investigators of a unique Social Rehabilitation Services—Administration on Aging Title IV grant to the Gerontological Society. This research implementation program, an effort to promote a sound research approach to the environmental condition of this nation's elderly, is designed to call on national expertise to analyze and explore the current scene in housing and environment for the elderly. Priorities will then be proposed and approaches developed toward solving the problems that exist in current policy and practice. These will be accomplished through development of communication links, through analysis of the various segments of the design, construction, and evaluation sequence; translation and identification of needed information for better design; expansion of research programs; stimulation of innovative design through incentives such as awards and competition; the formulation of educational programs; and the appropriate analysis and implementation of environmental policy issues. We trust that as programs of this nature are designed, additional support will be generated to carry them effectively to the national scene.

Finally, the Gerontological Society would like to compliment the Social Rehabilitation Service—Administration on Aging of the Department of Health, Education, and Welfare for its support and call on the Departments of Housing and Urban Development and Transportation to be more active in generating and supporting such programs.

It is clear that concerned Federally supported environmental programs—those which recognize user needs and especially the vulnerable status of our elderly—can take the initiative to become models for national expansion and broad application. This approach founded on a sound research base, appropriate legislation and allocation of resources will greatly alleviate existing inadequacies and reinforce positive efforts for the future.

## ITEM 2

ITEM 2. LETTER FROM JOSEPH SCANLON, ALPHA PHI OMEGA  
NATIONAL SERVICE FRATERNITY, KANSAS CITY, MO.

OCTOBER 19, 1971.

HON. FRANK CHURCH,  
*Chairman, Special Committee on Aging, U.S. Senate,*  
*Washington, D.C.*

DEAR SENATOR CHURCH: Thank you very much for sharing with Alpha Phi Omega a notice of a study by your committee on "A Barrier Free Environment for the Elderly and the Handicapped."

This National Collegiates Service Fraternity has made the removal of Architectural Barriers to the handicapped a National project.

The approach to this can be found in the enclosed Booklet,\* prepared by the Alpha Phi Omega Chapter at Syracuse University. I believe they have been in touch with you and that you have given them a great deal of encouragement. This is deeply appreciated.

I think there are two approaches to this. One is to get this problem before architects, particularly those who are in the field involved in the construction of City, County, State, and Federal Buildings and the like. This also should apply to those who are working with Colleges and Universities. Unless our Public Buildings and our educational tax supported Institutions set the example we can hardly expect private businesses to go and do likewise. Our second observation would be that a great deal of knowledge about this is tied up in the experience of organizations such as the Staffs of United Fund raising organizations. They should be a source of not only community factual knowledge but also it seems to me they ought to be interested in developing a community conscience about this sort of thing.

Anything that Alpha Phi Omega, as a National Service Organization on College and University Campuses, can do to assist will be done gladly.

Sincerely yours,

JOSEPH SCANLON.

---

\*Retained in committee files.

