Progress Report for the National Design Council

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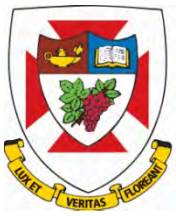
by William Teron & Lloyd Axworthy
1971

The Institute of Urban Studies



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PROGRESS REPORT FOR THE NATIONAL DESIGN COUNCIL
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The Institute of Urban Studies is an independent research arm of the University of Winnipeg. Since 1969, the IUS has been both an academic and an applied research centre, committed to examining urban development issues in a broad, non-partisan manner. The Institute examines inner city, environmental, Aboriginal and community development issues. In addition to its ongoing involvement in research, IUS brings in visiting scholars, hosts workshops, seminars and conferences, and acts in partnership with other organizations in the community to effect positive change.

PROGRESS REPORT

for the

NATIONAL DESIGN COUNCIL

Prepared by

William Teron

and

Lloyd Axworthy

November 1971

The National Design Council in January 1971 commissioned Mr. William Teron of William Teron and Associates to undertake an exploratory study of "Environmental Design for Living Accommodation - Housing Interior-Space Systems".

The stated objective of this study was to develop "performance and measurement standards and design criteria for those aspects of living accommodation related to space division, flexibility, storage, equipment and furniture, which can serve as a basis for improved design of living accommodation, equipment and furniture".

Such a study was long overdue. For many years, research on interior living accommodation had been limited to work done on safety requirements and building regulation. Whatever innovation occurred in matter of layout, furniture design, the use of interior space was a product of intuitive creative acts of individual designers or stylists, not of intensive research.

New Knowledge

Meanwhile, major advances are being made in the area of systems construction of housing. Innovations are beginning to appear in the techniques of designing and erecting the building framework and new forms are beginning to emerge. Yet, the interior of these forms tend to be ignored. Habitat 67' was an exciting structure, but the interior layout, furniture, and use of space was quite conventional.

Similarly, new knowledge is beginning to appear dealing with the relation of man to his physical environment. Through the work of men like Hall, Sommers, Chermayev, Alexander Habraken, Gutman, it is becoming evident that the behaviour of human beings is significantly affected by the nature of their physical surroundings and that those surroundings should be designed to fit human needs. The question of how to plan physical space based on a realistic appraisal of user requirements is affecting all areas of urban design.

In March of 1971, in a volume of Canadian Interiors, it was remarked that,

> "After years of almost total uniformity in apartment planning the consumer has no alternative between which to state a preference. He tends to see requirements in terms of existing solutions of which he has experience. The only way social scientists, architects, designers, other professionals and the tenants can study whether apartments are desireable for families and how they can be improved is to undertake a complete study of daily living patterns of families living in various kinds of projects."

In addition, there is a growing volume of research in the fields of anthropometric and volumetric research which has direct application to housing needs. NASA, for example, has established a number of important findings on the basic space, light and energy requirements of human beings. Yet, very few of these findings are reflected in the design of interior space in the North American home. The fact is that these insights on the way humans use their space are directly relevant to the design and manufacture of furniture and the structuring of the interior aspects of housing, but very little of it is being incorporated in the work of designers, builders, and manufacturers.

It is important, therefore, that some initial effort be made to examine how the advances being made in building technology and behavioral science can be used to help create designs for interior living accommodation that would better suit the needs of Canadians. The guiding principle of this effort should be to secure information that can be translated in plain terms to the designers and manufacturers so that they might produce better use of space, with greater efficiency.

Primary Study

It was with this objective in mind that the exploratory study on interior space was undertaken thus summer. It was obvious that a total, comprehensive examination was not possible, but that initial probes should be utilized to determine where the most fruitful research could be started. The first phase of the study was elementary but necessary. It was to survey the existing state of knowledge and research. This was done over the summer of 1971 with the assistance of three university graduate students - one in Interior Design, one in Architecture, and one in Sociology, working under the supervision of Professor Lloyd Axworthy, director of the Institute of Urban Studies at the University of Winnipeg in consultation with Mr. William Teron. They were responsible for examining literature and gathering what material was available. At the same time, letters of inquiry were sent to over three hundred faculties of architecture, interior design, research centers and government departments in Canada, the United States and Europe, seeking information on current research in the field.

The material acquired from these efforts was reviewed and assembled. Some effort was made to develop a series of categories in which to organize the material and some initial efforts at relating the work of the social scientist to the requirements of the designer were attempted. In these efforts, it was apparent that one of the major difficulties faced in research of this kind is to find methods of analysis and working principles common to both. The translation of behavioral data in terms usable to the designer is not an easy one to overcome. As Robert Sommers notes "The visual thinking of the architect contrasts with the analytical thinking of the social scientist, philosopher and most laymen and represents a serious impediment to fruitful dialogue between them".

The first phase then was basically an exercise in elementary survey, assessment of information and ideas, and a testing of working methods and hypotheses. It produced a fair assessment of what research is available and what is now being pursued.

It also resulted in a number of return enquiries from groups throughout North America and Europe, asking for any results that might be available from this study. The characteristic reply was one of great interest and applause in the fact that a body such as the Design Council would initiate such an investigation, and a hope that research of major significance would be initiated. There is therefore an obvious, unsatisfied need.

Findings

The findings of this first phase of research were highly instructive, if somewhat demoralizing. What was first apparent was the insufficiency of hard, useful data which could be presently usefully employed by designers or manufacturers. The areas of information were broken down into categories

related to forms of individual and group functions carried on in the household. Categories related to individual functions were items such as body maintenance, sleeping, food preparation, etc. Group activities included such activities as eating, child rearing, entertaining. There was of course, overlapping in several areas.

These categories of activity were then placed on a matrix, matched with factors relating to the use of space, such as frequency of space required -- in physical, time, space used, equipment used, relationship to other activities. The available information was then sorted and placed on this matrix. What was readily apparent when this was accomplished was the total lack of any consistency or pattern to the information. There were only bits and pieces - nothing capable of developing any comprehensive analysis of behaviour patterns related to any one particular use of space. The data available was simply too discrete and unrelated to be of any major significance.

There were some interesting insights such as the optimum height and levels of shelving that would result in less fatigue for the housewife, that could be applicable to new design, but there was not enough of such information (see Appendix for full results of information and bibliography).

The data that is available serves primarily to demonstrate the potential benefit that would result if more extensive research were to be initiated. For example, in examining the question of social needs of human beings, survey studies undertaken by the Lund Institute in Sweden showed the utility of providing movable partitions and room dividers.

Swedish families in the Diset Black altered the layout of their apartment units on an average of two to three times a year and found that it suited the changes in family activities and styles of life. This was corroborated by studies undertaken by the American Public Health Association which showed how space requirements are altered as the age of the children progresses. As children grow older there is greater need for areas of privacy by both children and parents.

More extensive work in this field would suggest more specific kinds of facilities to promote greater flexibility of layout. This could then be related to questions of acoustical design, light fixture to produce information useful in designing accommodations where occupants could obtain a high degree of privacy in a relatively small space.

Similarly, in work done by Cornell University, it was shown how multiple family activities are carried on in the kitchen which are in no way provided for in the design of kitchen layouts, furniture or equipment. Child rearing is a major activity that takes place within the confines of the kitchen, but is never considered in the design. The kitchen occupies sometimes 80% of a families daily activity, but occupies only 18% to 20% of the interior space. It is often poorly located to provide for supervision of children. The use of the kitchen also varies with social class, family size and life styles. There are particular requirements in the kitchen for the aged, and disabled. Yet rarely are those considered in matters of design.

Studies have also shown the energy level expended reaching for high cupboards; the maximum and minimum spaces needed for eating purposes; the optimum location of door knobs; the idea level of kitchen sinks. These have significant effects upon the fatigue level of women and upon the degree of convenience of the space. For example, studies by Agan and Luchsiger provide measurement for the most efficient working zones for women. These could be combined with survey analysis to show how kitchen activities alter with family size and life style to begin providing the design with information on how to re-work the layout of kitchens to increase flexibility and efficiency of working space.

The space uitilization surveys conducted by Nivachuku and Handa provide time studies on various activities conducted throughout the various rooms in the living unit. The data shows that some areas of the housing unit are rarely utilized, while others are the areas of a majority of family activities. Again this is not reflected in design. The obvious conclusion is that housing is not built to conform to use.

Equally important were the issues raised in some of the sociological studies that noted the strong variance in use of space exhibited by families of different cultures, ages and life styles. With the many changes in family life being imposed by the fact of urbanization (as noted in the work of Richard Sennet), it would seem of some importance to relate the interior space of houses to these changes.

In other words, there is a clear indication that the design of interior space must be related to information on human needs and activities and that it is possible to effect savings in space, provide greater choice in use of space, and obtain more efficient location of equipment and artifacts through the use of such information.

But, at present, this is not possible. A general summary of the findings from the initial phase of research revealed the following problems:

1. The limited, almost random nature of the information available. There are some areas of excellence. The Cornell studies on the Bathroom, the NASA study on anthropometrics. There is not, however, the range or depth of data that would be sufficient to offer any realistic use by practitioners.

2. Particularly lacking is information or data on Canadians. Most of the studies are of European or American behaviour patterns. While these have some relevance, especially in terms of basic physical needs, they are not applicable in assessing social patterns. We know very little about the Canadian family, its life style, habits of child rearing, all of which are necessary for design purposes. And, there seems little initiative by either public or private organizations in the Canadian housing field to obtsin such information or undertake experimentation.

3. Equally serious is the minimal number of tested, experimental uses of space that would result in quantifiable measured data. There is now an increasing rhetoric - but very little applied research on human needs related to space. The kind of space utilization work undertaken by the Ministry of Local Government in Great Britain has not been followed here.

4. Also lacking is a useful methodology for collecting, organizing and analyzing the material. Data must come from many different disciplines of study. There must be some basis for determining which information is useful for design purposes and which isn't, and framework for relating the data.

   Some effort was made in the first phase of study to develop a rough breakdown of categories to fit the material, and to determine how the translation from research data to design might be attempted. These efforts were only beginnings, however, and there is need for more serious methodological work.

5. Almost no work on the cost-benefits of new design innovations and what the trade-off should be between convenience and cost. The literature that was examined revealed almost no work in what might be called the "economics of interior space use".

Future Course of Action

The need is obvious. There must be a research program suitable in scale and comprehension to fit the importance of the task. Such a research program would be designed on the following formula.

A) Definition of human needs and activities in the interior environment, broken down into social and physiological needs.

B) Data and Information on the needs.

C) The way these needs are expressed in human functions and activities with data on how these functions can best be performed.

D) Development of design criteria to fit those functions.

E) Cost-benefit analysis of the design proposals.

There is now available a compilation of research data from the first phase of the report. This indicates the gaps in information, suggests further areas of research and provides a primary source of information that could be correlated and perhaps used.

Equally important is the need to develop a more precise and useful method for organizing the data and a means of issuing the information in usable terms to practitioners.

The critical requirement is an extensive research effort designed to provide an on-going and continuous supply of information. This is an effort that goes beyond the present resources assigned to this study. A relatively wide scale series of efforts at directed research to acquire, analyze and disseminate the data is needed.

The next step for the Design Council therefore should be to map out a research program that is sufficiently detailed and comprehensive to be presented to major government agencies such as CMHC and OHC, and to major private concerns.

This is a program that would involve directed research by these organizations. The research task itself is beyond the scope of the Design Council as it would involve a very high degree of organization and substantive resources. It should be the responsibility of an organization such as CMHC, it being the senior housing organization in the country. They could then enlist the co-operation of the provincial housing corporation and major private firms. The resources yet remaining in this study however could be used now to prepare the outline of a research design so that the Design Council could present to the government agencies a ready-to-implement research program that could begin right away.

I The program could be divided into short-term and long-term tasks.

The production of a manual similar to that issued by CMHC on building standards where information now available would be laid out and where new information could be recorded as it is produced. This requires first a more careful organization of categories for data. This could perhaps be done within a year so that a manual could be offered on a test basis in a very short time. Perhaps a Design of Interior Space Handbook could be issued in a looseleaf form where information could be indexed and stored. It would obviously be incomplete but would begin to provide areas of information.

Accompanying the development of a manual would be an immediate translation of available information and ideas into new design models for purposes of illustration. There are already ideas available on how to design for more flexibility and better use. There could be drawn a series of illustrations

and also issued in the manual. The value of this kind of dissemination of existing information, with examples of new design possibilities, would be to stimulate innovation and experimentation on the part of the practitioners. Even though the information might be incomplete, it might implant certain ideas and initiate a series of practical improvements which in themselves could provide additional information.

II The Longer-Term Task will take a greater degree of organization. First there would be a research design detailing needed areas of research. This would be followed by the commissioning of research efforts and demonstrations to begin acquiring new data and information. If CMHC were to adopt this as a priority and support it with an assigned research fund and inform different researchers in universities, design centres, firms, etc. then the investigation of data could be organized on a national basis and proper testing and experimentation could be carried out. As the new information was made ready, it would be inserted in the handbook. The research would be directed in the areas suggested above and could be envisioned as lasting a three to five year period. The spin-off effects from the research occurring in a continuous way would be a series of innovative steps in the design and manufacturer of interior functions to artifacts and materials. There thus could be a continual process of related research and product innovation.

In conclusion, this report has a single message. It states how important the task is of continuing to find ways of improving design of interior space, and it indicates what we don't know. The value of research is often just that - to show the areas of missing information and to provide indicators on how and where to begin correcting the problems.

It was apparent from the replies received from researchers in other centres, that even the simple exercise undertaken this summer to begin assembling available information and assessing the state of the art, put this country ahead of what is going on elsewhere. The next important issue to face is whether and how this initial exploration can be used as a basis for a significant research undertaking by this country to improve the way people can live inside their home as well as out.