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A STUDY OF DWELLING DESIGNS

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A STUDY OF DWELLING DESIGNS

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Dwelling (as a 'noun') can be defined as an organisation of physical elements which are made to cooperate with each other in order to enclose part of the universal space in such a way that it becomes suitable for these activities which are considered to constitute the act of living. Therefore, activities are the determining factor for dwelling design. Further, since most activities involve the use of equipment, this is also considered as determining factor.

A dwelling designer, first and foremost, translates his value-judgements and images of the activity and equipment pattern of potential users into the dwelling design. These three dimensional translations are then modified by economic, legal, technological and other factors but these modifications are less significant if the modifying factors are more or less the same. This study has been conducted to investigate if there are any significant similarities between the "images" which different dwelling designers conceive about the activity and equipment patterns of potential users. This necessarily required development of some methods of documenting these 'images'. Since it is not possible to directly record 'image' of different dwelling designers, the dwelling designs proposed by different designers for mass housing are analysed with a view to discover:

- (a) if there are any common patterns of inter-relationships of spaces, and
- (b) the quantitative* and qualitative* aspects of different spaces.

Plans from various organisations, e.g., PWD, CPWD, MES, Khatri Copper Project etc., have

* Quantitative aspect refers to the magnitude of spaces and the qualitative aspect refers to natural light and natural ventilation conditions in the spaces.

been collected. Some plans have been taken from books and magazines also. The attempt has been to have a cross-section of the various types of dwelling designs.

Many difficulties have been faced in the analysis of dwelling designs, such as incomplete drawings, unreadable drawings, drawings of different scales and different units, etc. Therefore, while reading the drawings and making observations we could not be very exact and judgement of the individual has been important for the purpose of analysis.

About 90 dwelling designs have been taken:

- 31 plans are for three and more roomed houses.
- 50 plans are for two roomed houses.
- 9 plans for the one roomed houses.

The plans for the purpose of analysis have been selected 'ad-hoc' and the sample is at random. The procedure has been that we could collect around 180 plans in all. The plans which were either very old or the drawings unreadable, were rejected and finally 90 plans were left, which of course is a small number for study purposes.

For the purpose of comparative analysis, various elements of the dwellings have been expressed in the form of a bar diagram. The various areas have been plotted to suitable scales to express the quantitative aspects of spaces. The number of openings and if they open in open or closed spaces is important from the point of view of qualitative aspects of spaces—that has also been incorporated with the bar diagrams. We have been interested in reading the areas of various openings so as to have a specific idea of daylight and ventilation available in the rooms but most of the drawings were not able to give the information regarding the size of openings and we had to restrict ourselves only to the number of openings.

(f) Verandahs

Study of verandah indicates that

- (i) seventy per cent one room dwellings have a verandah with floor area around 7.2 sm;
- (ii) ninety-two per cent two room dwellings have verandah out of which 72% dwellings have verandah area around 9 sm. Verandah takes about 70% of the floor area of two room dwellers;
- (iii) ten per cent of three and more room dwellings have no verandah. Eighty per cent of these dwellings have verandah area close to 18 sm. Only 32% dwellings have one verandah; otherwise all of these dwellings have more than one verandah.

(g) Bath and w.c.

Study of bath and w.c. indicates that

- (i) in 88% of two room dwellings bath and w.c. area ranges from 2.25 sm to 4.5 sm. Four per cent two room dwellings have no bath and w.c.;
- (ii) larger percentage of three and more room dwellings (63%) have bath and w.c. area close to 60 sm;
- (iii) a substantial percentage of bath and w.c. 4% in one room dwellings around 20% in two room dwellings and 11% in three and more room dwellings, have no opening. This contradicts the NBC which specifies that bath and w.c. should have at least one external wall for openings.

CONCLUDING REMARKS

- (i) There are common patterns of interrelationship of dwelling spaces but it is not possible to have any standard circulation pattern in any of the three types of dwellings we have analysed. It clearly indicates the absence of any standard living pattern which may be taken as the criterion of dwelling design. There is no set living pattern which may be taken as the criteria of dwelling design. There is no set living pattern of the inhabitants of the dwelling

we have analysed—nor it is possible to determine any living pattern of the inhabitants so that a standing circulation pattern may be obtained for any of the dwelling types. Therefore, living pattern may not be taken as a criterion of dwelling design.

- (ii) The analysis of quantitative and qualitative aspects of different spaces of dwelling express a heterogeneity in plans. The total floor area provided to any of the dwelling types as well as the floor area provided to any of the dwelling spaces have a good degree of variation—there is no standardisation in areas provided for different rooms in a dwelling.

It appears that no standardisation in family size has been done—nor is it possible to decide a family size which may be taken as a criterion of dwelling design and standardisation of various room dimensions.

- (iii) Likewise there is heterogeneity in the qualitative aspect of space also. Understandably the rent paying capacity of the inhabitants is low and cost of construction is very high. Proper window openings and services have not been provided. It emerges out of this that whatever we can invest for a particular type of dwelling has to be the major criterion of dwelling design. An approach for dwelling design may thus be established. A covered area, depending upon the investment and cost of construction is provided keeping proper light and ventilation in mind. Services are suitably located. And lot of flexibility is incorporated in the design so that the inhabitants may live in a way they like. Some light weight flexible partitions may be provided so that the inhabitants may have privacy and any desired use pattern of the total space available to them.

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FINDINGS

(a) Circulation.

Following are the salient points of the study of interrelationship of spaces:

- (i) In a substantial number of cases (40% in one room, 70% in two rooms and 60% in three rooms), entry to the dwelling is directly through a room. In remaining cases either an entrance verandah or a lobby exists.
- (ii) Verandah is the hub of the dwelling with maximum connections with other spaces. In most of the cases in one room and two room dwellings verandah is connected to rooms, kitchen, bath and w.c. In three-room dwelling also, verandah plays a significant role and is connected to at least two rooms and also kitchen. The remaining room, bath and w.c. are, however, generally approached through a lobby-type space.
- (iii) W.c. and bath are almost always separate. Only in 6% of two roomed dwellings they have been found to be combined. Understandably enough, no dwellings less than three rooms have more than one w.c. Three room dwellings have more than one w.c. About 80% dwellings of three or more rooms have two toilets one of which is generally connected to a bed room.
- (iv) In none of the cases of this study, it is possible to reach the w.c. directly from the main entrance (for the cleaning personnel). On the ground floor, however, w.c. is sometimes approachable from the backside of the dwelling. In very few cases of three or more room dwellings, separate 'back-side' entrance is available which is supposed to be used by cleaning personnel and servants.

(b) Plinth Area

Measurements of plinth area indicate that

- (i) in majority of one roomed dwellings (78%), the area ranges between 18 sm to 27 sm.
- (ii) in two roomed dwellings (66%), the area ranges between 45 sm to 63 sm.

(iii) in dwellings of three and more rooms, the area ranges between 54 sm and 108 sm.

(iv) twelve per cent two roomed dwellings have an area less than 36 sm.

Plinth area that goes in walls and wardrobes, etc., shows great variation. It ranges between 3.6 sm to 13.5 sm in one room dwellings, 2.7 sm to 27.9 sm in two roomed dwellings and 13.5 sm to 49.5 sm in three and more roomed dwellings.

(c) Floor Area

Measurements of floor area indicate that

- (i) for one room dwellings the floor area average comes out to be 22.5 sm;
- (ii) for two roomed dwellings the floor area average is about 45 sm;
- (iii) for dwellings with three and more rooms, the average floor area is 67.5 sm;
- (iv) eight per cent of two roomed dwellings have floor area less than 27 sm.

One can conclude that the general trend of sample shows that addition of each room brings an increase in other areas as well, e.g., bigger verandah, more number of w.c.s and more circulation spaces, etc.

(d) Habitable rooms

(1) Quantitative aspects

The measurements of floor area that go in habitable rooms indicate that

- (i) in 100% cases in one room dwellings, the area of room ranges between 9 sm to 13.5 sm;
- (ii) in two room dwellings in 80% cases the area of rooms ranges between 18 sm to 27 sm. In 6% cases the area of rooms is less than 18 sm;
- (iii) in three and more room dwellings obviously still larger area goes in rooms; around 27 sm goes in living and dining room and around 36 sm goes in bed rooms;

(iv) 45% of three and more room dwellings have living-dining combined and 55% have separate rooms for living and dining;

(v) seventy per cent of three and more room dwellings have two bed rooms.

(2) Qualitative aspects

The study of qualitative aspect of the space of habitable rooms indicate that

(i) no rooms in one room dwellings, two per cent in two room dwellings and 13% rooms in three and more room dwellings, have no window openings. Understandably these rooms are very poorly lighted and ventilated;

(ii) in most of the cases 67% in one room dwellings; 53% in two room dwellings and around 60% in three and more room dwellings, rooms have one window opening. These rooms are not expected to be adequately lighted and ventilated.

(iii) other rooms in other cases are having more than one window opening and are, therefore, expected to have good lighting and ventilation.

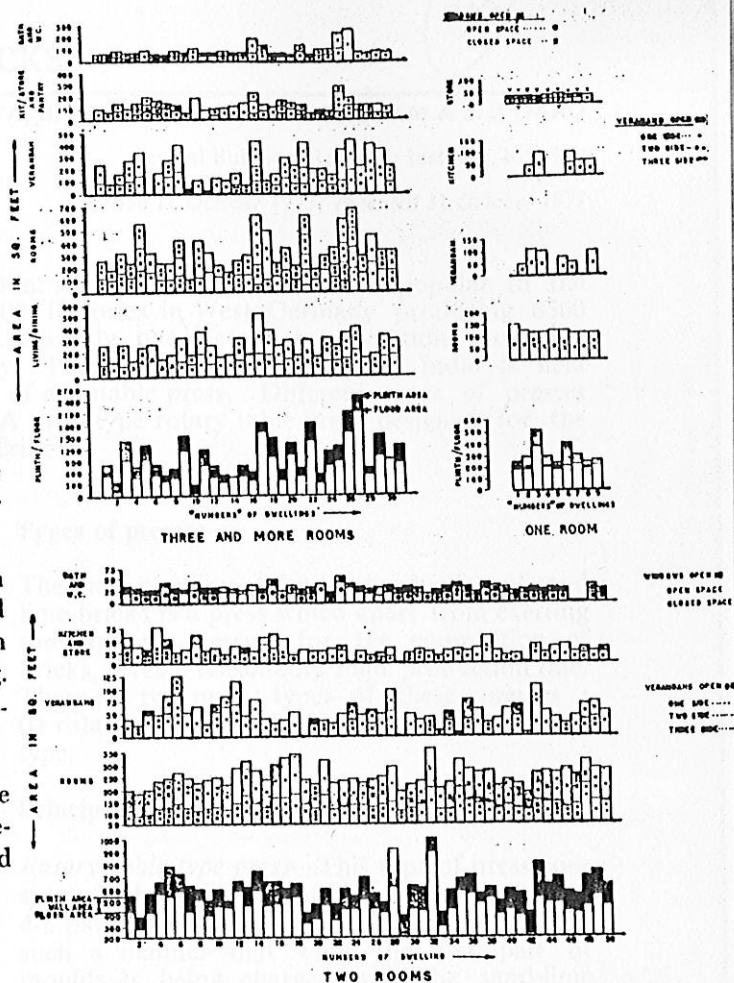
(e) Kitchens

Measurements of floor area of kitchens indicate that

(i) in one room dwellings, 45% dwellings have no kitchens, 45% dwellings have kitchen area between 5 sm to 9 sm and 10% dwellings have kitchens less than 5 sm which is the minimum specified by NBC;

(ii) in two room dwellings, 70% dwellings have kitchens with floor area between 5 sm, 13.5 sm being the minimum specified by NBC for kitchens with storage. In 24% cases where kitchen area is less than 5 sm separate storage has been provided;

(iii) in three and more room dwellings, 65% dwellings have kitchen area between 5 sm to 13.5 sm. Twelve per cent dwellings have kitchen area less than 5 sm.



The study of qualitative aspect of kitchens indicates that

(i) one hundred per cent one room dwellings have kitchen with one window opening which appears to be adequate;

(ii) in two room dwellings 14% dwellings have kitchens without any window opening. Very poor light and ventilation is expected in these kitchens. Sixty per cent two room dwellings have one window opening; in these cases adequate light and ventilation may be expected;

(iii) in three and more room dwellings, very few dwellings have kitchens without any window opening. Most of the dwellings (70%) have kitchens with one window openings.