Integrated Building System An Alternative To Bridge Theoretical And Practical Approach Of Housing Problems In Developing Countries

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The Need for Large Scale Housing

Every developing country has acknowledged that it is urgent that we find the most suitable approach for addressing mass housing problems. This issue is especially serious in big cities because urbanization has made the problem more complicated. The quantitative approach, which only considers how to provide a high number of housing units in order to meet the target, has proven ineffective. This approach has failed to recognize that housing cannot be viewed as a physical aspect, such as humanization and ecodesvelopment. We need a more integrated design process to answer housing problems, a process that doesn’t view a building as just a building but as an integrated system. In fact, many of the “problems” associated with spontaneously generated urban housing may be able to contribute to a solution.

Actually what we need is to find a way to use the inherent potentials existing inside urban informal society. By using this strategy, we will actually save more money than by using the conventional one. If people are encouraged to use their own potential, we won’t need to use as many architects. Architects will play a role as one that conceptualizes and directs the design process.

Urbanization as the Root of the Problem

The natural growth in urban population was not the only determining factor in the growth of large cities. Indeed, urbanization has been recognized by all countries as an unstoppable phenomenon, even in developed countries whose leading economic sector is industry and agriculture such as Canada and Australia (Urbanization 27). Many large cities in developing countries will have the same experience in the near future. Between 1960 and 1980, the number of “million” cities nearly doubled to 222, increasing from 62 to 103 in the developed countries and from 52 to 119 in the developing countries (Urbanization 27). As noted by one writer, “By the year 2000, 2 billion people and developing counties will live in urban areas, and 75 per cent of people will be urban; developing counties will have 13 of the largest 15 cities” (Celik 2). Most of these urban people are the poor in each country, recently come from the rural areas, uneducated, working seasonally in the city, and living mostly in the slum areas.

Families inhabiting the areas raise their children and mostly pass on their quality of life to these descendants. They get married and have their own children, and the need for new houses grows greater and greater, while the capability to fulfill it is still low (Tipple 161). On the other hand the subject of houses concerns many aspects of social life. It is normal if we find many urban ills have their roots in slum areas, but it can be
questioned how far their life patterns are responsible for urban deterioration; one must also consider the impact on industrialization of high class society, which surely uses more resources. Moreover, according to Kempe Ronald Hope, the problem of urban inefficiency should not be blamed on high-rate of urbanization, or inefficient city size. City government never reevaluate their inappropriate policies, such as inequitable public policies and tax policies (Hope 47).

Developing countries have realized that they can not learn only from the experiences the developed countries had in anticipating these problems. The progress of human civilization nowadays is much more complicated. Environmental deterioration, traffic congestion, technological and industrial impact are some problems that were not yet a determining factor when developed countries faced the urbanization phenomenon. To address present conditions, Dasmann identifies three components of city development in anticipating urbanization, a system that he calls “ecodelopment”: fulfillment of basic needs (food, clothing, and shelter); selfreliance; and ecological sustainability. “Sustainability” is defined as a “a symbiotic relationships with nature”; or “development..within the constraints of ecosystems” (as qtd.in urbanization 26)

**Housing in Developing Countries**

The emergence of many problems in housing matters have resulted in many efforts to find new solutions for this case, solutions which go farther than typical supply-policy. Experts have started to find a more comprehensive approach, including many aspects, which had never been thought of before. One concept, formulated by Jhon F.C Turner, is called the liberal approach, and this is especially relevant to the condition in developing countries, where many people have their house as a ready-to-use building, without any involvement at all. Here is a summary of turner’s main concept of this approach (as qtd. in Nientied 312):

1. The concept of housing should be viewed as a verb, rather than noun.
2. House should not be seen through its physical characteristic (what it is), but the meaning for those who use it should be the main point (what it does). Material values of house are replaced by human use values.
3. Because of the various characteristics of the users, the main components of a housing process should be left to them, though this doesn’t mean they build their own houses.
4. Government should play its role in the areas as mentioned below:
   a. providing infrastructures, such as main road and sewerage plants
   b. formulating the prescriptive laws that define the limits of what people and local institution may do.
   c. protecting access element to housing process for users, such as: land law, building material, credit, tool, etc.

In to this concept we can see a big shift in designing housing policy, a shift away from identifying the house as physical object, top-down planning, government-centered, towards creating a more livable strategy, house as living process, bottom-up solution, and people centered. One thing that has to be recognized is that this approach will save much in the government budged for housing sector because the past typical strategy has proven
that all the money could not reach the target in terms of increasing urban environmental quality.

**Sustainable Housing Development**

According to Dasmann’s components of ecodevelopment in cities, we can identify that housing will be the determining factor in planning the quality of city life. The problem for the design sector is that designing mass housing is more complicated than designing single houses. A most famous architect’s object in terms of housing is the single house. This fact indicates that designing large housing projects requires a definite strategy. Hasan fathy said that no architect should design more than ten or twelve houses at a time. With ten or twelve, the identity, privacy, and other things housing should have can be provided. If the greatest surgeon in the world were asked to operate on two hundred people a day, he would kill them all (as qtd in Correa 2). That, in terms of housing, is the central problem that is affecting the product. But the consequence is, if we need to build ten thousand houses, should we provide a thousand architects?

Two other issues according to Dalmann’s ecodevelopment are self-reliance and ecological sustainability. If we explore further we can see that inside the “informal city” created by fast urbanization, and now a slum, there are potential resources for developing these two aspects. Urbanism requires of the citizens a high level of self-reliance in order to live in the formal system of a big city; this is difficult because they often come from an informal and unorganized system, a characteristic of rural life.

However, people living in this informal city also have the ability to maintain the balance in the ecological system. Actually they only use a little amount of energy and urban infrastructure compared to those of the more formal society in the city. The source of most urban deterioration is in the formal and established system: pollution from industry and vehicles, traffic congestion, and abundant waste of energy. The goal is not to keep them in poor conditions but to determine how to use and keep their inherent potential in conserving energy while their quality of life is being improved.

One aspect that is always ignored in developing mass housing is people involvement. People who will live in the housing are just viewed as an object which will be ready to accept any shape of housing, while, in fact they have built their own houses, mostly without any construction skillbackground at all, though under very unfavorable conditions (Celik 5) Why don’t we see this as potential instead of an urban ill? As Jhon Turner Views it, slums and shantytowns contain the solution not the problem (Coit 120).

No matter how modest the result as a physical object, people always regard it highly and are proud on their own work. They will find part of themselves in the work. These facts are always neglected in the context of developing housing. Pride of achievement will overcome the problems of aesthetic or hygienic building but not as the result of top down planning. “Community empowerment is better than citizen participation on bodies that are manipulated from above”, said Katharine Coit. In other words self-help is the process of “releasing and creatively using peoples’ energy”; these are the words of a community worker (Coit 120).

**What Kind of Architecture?**

The final result of a long process of housing development is building; although we can argue its further polemics, such as post occupancy problems, the root is still in how
the built environment accommodates communal and individual needs. In other words, it is architecture that has to find the answer, and what approach should it take to anticipate the problem?

It is interesting to discuss a statement of Richard Sennett that dwelling process should be regarded as playing music, or more specifically, jazz. The space given by current process should doesn’t give enough opportunity for people to improvise; as a result what we see now is a musical performance without harmony at all. So how can we appreciate life as art? (Sennet 55). His based on proper analysis can create dwelling” (Sennet 56). In viewing how the idealist architects work in this field, Christian Devillers, a french practicing architect, suggested that the process of invention in this design case should not be an exploration of purely geometrical and lifeless forms, but it should be an examination of space and form in cultural meanings “which are diverted, alerted, or simply evoked” (Devillers 28).

Another disadvantageous phenomenon for promoting an ideal architectural solution in mass housing in architecture design is that very few publications discuss this area. At least this could indicate rarely good design has resulted, or how only “lower level” architects have been interested. It is the task of architectural critics and people in publications to be more active in promoting and cultivating greater participation of genius architects. If people are still in the problematic situation of waiting to educated in architectural sense, it is more realistic to educate architects themselves and raising their concern through various kind of information media (Eberhard 115). This is the opportunity for the genius of idealist architects to prove their capability as a pure architects because they will find the original challenge of design here, that is, people, rather than just a building as an objective art form that sometimes, at certain point, separates building from function, which means it separates building from people. So, what really is the built environmental for?

### Citizen Participation an Some Case Studies

People themselves have an inherent ability that many of use haven’t recognized. If it is explored appropriately it can provide a potential solution for the complicated problem of housing. The facts have shown that most of urban people in slum areas have a reliable ability to build their own house. There is saying in Brazil, “when the government sleeps, the people move” (Fisher 103). It’s true, people have a great mobility in building their own shelter, and we just have to organize and direct them with a little subsidy. So, why should we rely on government programs in which most projects are built by general contractors spending a lot of the national budged just for ineffective use by the people? But, the implied question is how far citizen participation should be done in mass housing development project. Doesn’t it just direct our city towards urban sprawl?

When we include as much citizen involvement as we can, what kind of technology should we apply? Do people have the capability to manage modern building construction with such a complicated system? But we must also remember that housing built in a modern system could not find a suitable solution for this problem. Experts have said the appropriate technology for this typical problem should be an indegenous one. But this solution was usually followed by another problem; the population explosion is such that pseudo traditional construction, even when planned, can not produce enough housing (Fisher 107). It seems it’s better to have a dialectic process in this case, between
traditional and modern system, an intermediate technology, which is less based on handcrafted technologies, yet less energy and resource intensive than most advanced western technology (Fisher 108).

People participation in housing development can be divided into different types, and each type consists of certain level of involvement, from only collecting people’s idea about their houses, to direct participation in the building construction process. The facts have shown that although not all the cases could be evaluated as a success, at least they had indicated better situations than the development without people involvement.

Byker Wall (1969-75) at newcastle upon tyne, England has been categorized as one of the most successful examples of mass housing. The complex, which consists of mide-rise building and town houses, must house several hundred families. Each occupant was given an oppurtunity to put his/her own identity, either in their house or in the environment, such as doorways, front porches, and access corridors. It looks very different from the typical block mass housing in its area, far from monotonous. Even the mide rise building is more appropriate to be called as a “village rise bilding”. So far this is a project that architectural criticism that both sides give their positive evaluation to as a good design. However, there are still critics questioning how far people participation in design should be taken before it only results in an ugly built environment. As correa said in a seminar on large housing projects: “The danger in this approach is that it tends to be what has come to be called a “crumbly”, instead of making a clear statement, it tends toward the funky” (Correa 2).

The approach taking by Hassan Fathy for most of his housing projects in egypt is another kind of bright phenomenon in this field. When discussing in the context of people participation and cultural relevance or vernacular architecture, we should not miss this great architect. His genius solution for housing problem in egypt has resulted in many awards for him, but it is not for these that we have to notice his achievement. The main point of most successful projects are people involvement, local contents for the building, and vernacular solution either functionally or technically. Most of these steps contributed to abundant efficiency compared with typical projects on the same scale. Another important point is great concern in his works, and we can see it through his dedication by living in the housing he designed. The only problem in this case, relating to the effort to overcome housing problems in egypt, is that there is only one Hassan Fathy. So his works seem to make little effect in answering the enormous housing needs.

Other cases around the world tend to use prefabricated systems as the solution, although most social and cultural problems can not be solved this way. Many projects have indicated that prefebrication can reduce not only the cost for initial investment but also that for maintenance. A study in this field showed that besides efficiency in building material, this system can reduce construction time of as much as 66% (Deb 369). Another good concept that should be noticed here is the one from Maurice Dybees which was inspired by the concept of people’s car, which were popular in the 60’s and 70’s, such as Fiat and Renault: the smaller car was affordable to more people. By applying prefabricated system and smaller houses Dybees hoped that more people would be able to have their own houses. However, small house didn’t mean small environment because he proposed to unify some house units and their lots. Every occupant could obtain more exterior space although it is a common one. Unfortunately facts have shown the system was only successful in solving practical matters, and sometimes a few psychological
needs. But until now it is still recognized that prefabricated system is needed as the solution in technological aspect. The following step shows how to adopt this system into a manifestation of cultural and social concept in building design.

**Integrated Building System as an Alternative**

In the words of a participant in the 1969 Nordic Ideas Competition: “No new design, form or production, or combination of materials, can in itself solve the housing problem of the developing countries (as qtd. in masalah bangunan 2).

As Hassan Fathy said we can not rely on the conventional method of designing buildings for mass housing. This would require many architects, many more than we can provide; this also requires much greater financial resources and, worst of all, as has been shown recently, it traps our government into building mass housing just based on a target. Consequently many mass housing projects have turned back into yet another slum area. Many concepts have been offered, as we discussed before, although most of them can not be an ideal preference yet, still, there are many lessons that should be taken and reconsidered in order to find better solution. The ideas of architects from a unitary vision and those from an idealist vision should be compromised here.

In practical matters it seems that prefabricated system is still the best solution in term of technological matters. The problem then, is how to create room for accommodating the untouchable “cultural and social” aspects in that frame.

From the unitary point of view, it is still possible to find many alternatives, which can avoid the typical monotonous performance of prefabricated system. Building simulation through computerized approach will enable those efforts. On another side, the idealist should be more interested in finding new brilliant concepts of architectural design in this area. There will be more challenges for them, since they are drawn to exploring new forms of architecture, to conceptualize their abstraction of design problems among the many restrictions they will find. And of course, all of their steps must be in the frame of a system, so that the two approaches from both poles will still be in ideal interaction.

The design process of housing in such a method is based on identifying building as an integrated system. In general, a building consists of four main systems: structural, architectural, mechanical and interior. The architect’s task is to define the scope of each system and the interrelationship among them (Rush 4). People would be free to develop their own houses as long as the development and the building are still within the boundaries of the building system.

**REFERENCES**


