human spirit - touch a chord or

tionship between housing com-

plexes and the city. On the one

hand, a city is made up of the

tial models for the many differ-

ent communities that inhabit

it. There is either poor plan-

ning, or too much uncontrolled

Sen to tell us how the situation

is, and, by the way, he is abso-

lutely right in not recommend-

ing anyone to live in Dhaka,

including Gulshan or Banani.

The situation, by any standard,

We would then like to add a

sixth, in fact, a vital item to The

Daily Star list of concerns:

housing must be conceived as

enhancing the quality of life.

both the life of the immediate

The housing issue is two-fold

dwellers and the life of the city.

: numerical and environmental.

Numerical implies a statistical

concern, something which is

fact-based, and understood by

most of us immediately. It in-

cludes issues like housing back-

log: how many people are mi-

grating to the city each year,

and how many dwelling units

are available through various

mechanisms - public, private,

or corporate. There is no doubt

a massive numerical urgency in

Dhaka; the total need is far

greater than what is decently

available. However overwhelm-

ing and pressing the numbers

seem to be, this should not keep

out of focus something which is

generally not easily measurable

the cultural, environmental,

the physical and spatial fabric

of the housing enable the cul-

tural and collective life of the

inhabitants? This is often a

vague matter, but it is the most

essential aspect of hosing.

There are innumerable exam-

ples from all over the world of

well-intentioned housing com-

plexes that were vandalized.

abandoned, or altered because

it came in conflict with the so-

cietal and cultural values of the

inhabitants. A successful hous-

ing, for whatever income group

it may be (but specially for lim-

The key concern is: How can

or human side of the issue.

It does not need an Amartya

There is a reciprocal rela-

disrupt it.

growth.

is pretty grim.

HE recent government

Leapital for building

affordable housing is welcome

news for one primary reason.

that we have failed miserably

in addressing the housing needs

of a vast majority, the limited

income groups. Our housing

institutions, and the platoon of

housing experts have not been

able to provide any notable

model of how we should live as

a group in new urban

(January 7) lauded the govern-

ment decision as significant

and sensible. The same edito-

rial also sounded five fair and

reasonable warnings. The Daily

Star pointed out that the low-

cost "flats" must not be sub-

standard, that the ownership

and transfer rules must be regu-

larised, that areas and facilities

for common use must be prop-

erly managed, that there must

be a code for living in "flats".

and that the housing complexes

need to be well connected with

the greater urban facilities.

These are all points which, if

not addressed well, may lead to

the deterioration of the hous-

ing. But, has enough been

developmental context. As the

Aga Khan, a leader in some

major architectural and devel-

opment initiatives, noted, "The

lack, and deterioration of hu-

man habitations, as economies

grow, urbanisation accelerates

and demographies explode, pose

some of the greatest practical

and ethical problems that de-

veloping countries face... In the

seamless web we call national

development, housing is only

one factor influencing the

quality of human life. But how

vital it is to health and human

safety. Still more fundamen-

tally, the state of a person's

home touches deep chords in

the human spirit." Housing is

not just a numerical and fiscal

man spirit.

matter, the key issue is the hu-

does not imply "looks" as archi-

tecture, unfortunately, has

come to mean, but how spaces

(rooms) within the units of the

housing, and spaces that make

up the public domain are knit

together in a harmonious fab-

ric. And, eventually, how this

well-knit fabric is linked with

streets, its various institutions

and resources. It is this set of re-

lationships that could affect the

the larger urban structure, to its

The architecture of housing

Housing is a key issue in any

pointed out here?

A. Daily Star editorial

conditions.

decision to invite foreign

## FOCUS

## Housing is the Fabric of the City

by Kazi Khaleed Ashraf

Housing is a matter too vast to be left with architects and planners, and too sensitive to be left alone with statisticians and politicians. Investment is a very fine idea, profit-making is also fine, but let us not lose sight of the quality of life in housing. The life of the city depends upon it.

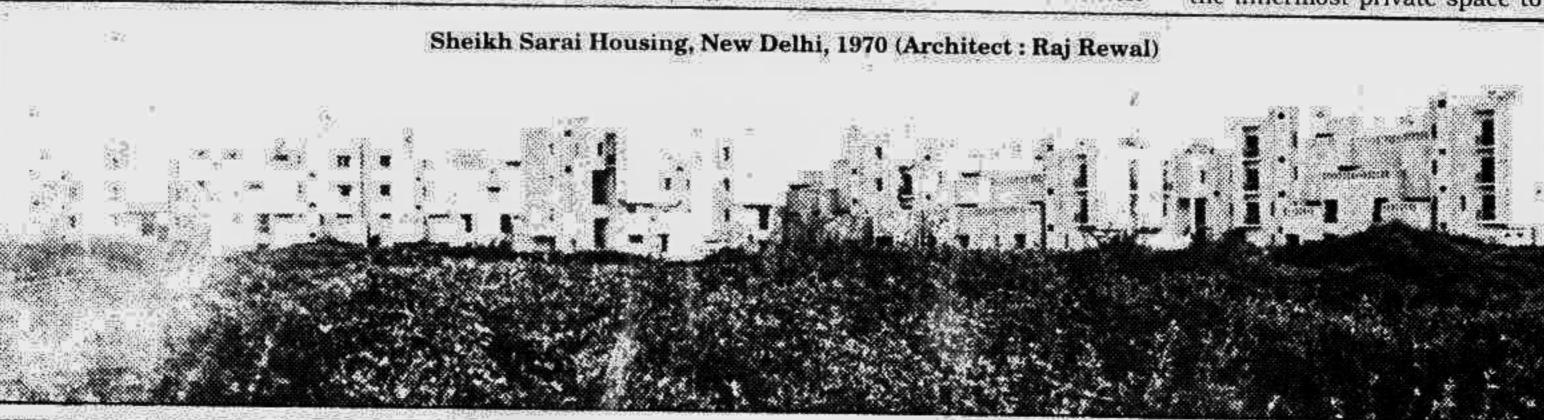
aggregation of housings. On the other hand, the web of spaces in a housing reflects a miniature ited income groups), is one where the physical fabric amcity. How we define and frame housing is how we see our cities, plifies, and not inhibits, the soand vice versa. One reason for cial fabric, that is, the collec-Dhaka's current chaotic conditive and community life. Numtion is we have not been able to bers do not make housing, evencreate new and suitable residen-

tually it is people and their life that matters. Charles Correa, the eminent Indian architect, has spoken eloquently in this regard about

the significance of two things :

(1) the necessity of open-to-skyspaces in tropical conditions, a necessity arising out of a social. pragmatic, psychological, and even, spiritual reason, and (2) the intricate, and often invisi-

ble, chain that is formed from the inner sanctum of a house to the public, community space. Almost every community makes a chain stretching from the innermost private space to





that gathering space that could be the tree in the chowk, or the court of a mosque. A variety of open and semi-open spaces form the rest of the chain. It might include the veranda of a house, or just the steps, the neighbourhood street, the street corner with a shop or two, the elementary school with its forecourt, the playground, etc.

The most important decision, however, is the selection of the building type. It is not at all useful to jump to the "flat" type; the "flat" is just one of a kind among many dwelling types, including rowhouses. semi-detached houses, or even independent houses. All types should be considered to see what each offers in terms of the nature of arrangement of "rooms" in the unit, and what impact each type can have on the overall — social and spatial - fabric of the housing. It is expected that many of the targeted inhabitants of the lower income group will have come from rural areas, or will still be maintaining a strong tie with the villages. How to provide a setting for their lives in an urban context?

There are a number of strategies here. In most cases. the primary success of a housing lies in the selection of dwelling types, and how the dwellings are arranged to create a social and spatial fabric for a particular group. The task of the architect and the planner is to make that crucial selection. Again, in many cases, decisions about types and the nature of the fabric may be taken in close conversation with the potential inhabitants. A good example of that is the work of the legendary Egyptian architect Hasan Fathy.

It should be acknowledged honestly that we have done poorly in the area of large-scale housing, public or affordable. The low and limited income groups have been completely ignored in our housing visions, whatever there is. Even the public sector housing, catering to government and corporation employess has no exemplary models, despite the undeniable fact that quite a large number of housing complexes have been built all over Bangladesh in the last twenty-five years. Azimpur Housing, one of the earliest models of mass housing in Dhaka (1949), and others that have followed it, are examples

of wasteland. They are characterized by a run-of-the-mill plan where flats are stacked like pigeon-holes, and buildings are placed in barrack-like formation with no or little articulation of public spaces. Such models have been proven to be quite inadequate and unimaginative, yet are still touted by some of our planners, as can be seen in such reincarmations as the T&T Colony (and all such colonies), the so-called "Bailey Dump" housing, and many others. If we must learn from else-

where how to handle numbers,

from China or Singapore, or the

"Million Houses Programme" in Sri Lanka, we must also look at successful examples of how to address the quality of life in housing. There are a number of acclaimed housing projects in our region, from those geared towards limited income to middle-income groups. There is, for example, the Aga Khan Award winning low-income housing project in Indore by Balkrishna Doshi, the Angoori Bagh Housing in Karachi by Yasmeen Lari, Raj Rewal's Asiad Village in New Delhi, and the Shustar Housing by the Iranian architect Kamran Diba. All the projects provide standard dwellings, but more than that, they speak about the intertwining of the spatial and social fabrics, the enhancement of the collective life, the strengthening of the economic life, and the continuation and innovation of tradition.

It might be profitable for the government to set up a commission to study different housing fabrics, to see what kind of fabric offers what kind of spatial and social matrix, population density, growth potential, common facilities, traditional situations, etc. The result of the study then could be recommended to the decision-makers and to the investment and building groups.

Housing is a matter too vast to be left with architects and planners, and too sensitive to be left alone with statisticians and politicians. Investment is a very fine idea, profit-making is also fine, but let us not lose sight of the quality of life in housing. The life of the city depends upon it.

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## Housing in the Coastal and Flood-prone Areas: Affordable Technologies

INTERNATIONAL housing experts at a recent learly Febru-Lary) seminar on "Affordable Village Building Technologies : From Research to Realisation" discussed ways to devise low cost, better and safer housing for the rural poor.

Analysing the peculiar situation of Bangladesh that has made it vulnerable to natural hazards that kill people and destroy houses, international experts talked about ways and means to extend the longevity of existing rural and coastal houses and make them more resistant to flood, cyclone and

earthquake. In recent times, natural disasters have been causing enormous loss of lives and property, resulting in colossal damage to the economy. In earlier times, the terms 'natural hazard' and 'natural disaster' were used almost synonymously. But during the last few years a clear distinction has gradually emerged between the two. A natural hazard is a "natural phenomenon or a combination of phenomena which affect people or physical assets while a natural disaster is an event sudden or progressive which impacts with such severity that the affected community has to respond with exceptional measures." While it is extremely difficult to reduce natural hazards, developments in science and technology have made it possible to reduce the impact of natural hazards. Global efforts are now underway to mitigate the loss due to natural disasters. One such plan was originally proposed by Dr Frank Press but later on it was adopted by the UN General Assembly in 1987 under the aegis of IDNDR (International Decade for Natural Disaster Re-

duction). More than any other places in the world, the housing situation in Bangladesh presents a bleak picture. According to the 1991 housing census, the backlog in housing was 3.1 million units with 2.15 million units in rural areas and 0.95 million units in urban areas. By the year 2000, the housing shortage is likely to exceed five million mark. If one takes into account the replacement needs of the most ordinary type to thatched houses the target will be much more. About 90 per cent of dwellings in rural areas and about 60 per cent in urban areas are non-durable which implies that even if they were not subjected to extreme natural hazards, they would have to be replaced within 10-15 years.

Bangladesh is fortunate that by sheer God's grace no major

earthquake has hit this country during the last 78 years. But the last major earthquake that hit Srimongal in Sylhet with its epicentre in Bangladesh caused extensive damages to houses far up to Kishoreganj. A review of the damage statistics of the great Indian earthquake in 1897 shows that most of the brick masonry buildings in Dhaka collapsed or sustained major damage. But the effects of similar earthquake on the city (which has now a population 65 times more than in 1897) would be catastrophic now. Moreover, many of these buildings are now on fills, with a possibility of ground failure during earthquake. The traditional light weight low rise buildings in the north-east part of the country with timber frame and thin bamboo mat walling had excellent earthquake resistance but these are being replaced by multistoried brick masonry with RC floors and roofs which are extremely vulnerable to earthquake damage. Although all sectors of the economy are affected by natural disasters, destruction of infrastructure constitutes one of the major

## Natural hazards in Bangladesh

Bangladesh, one of the most

components of this loss.

disaster-prone countries in the world is subjected to hazards like tornadoes/thunderstorms. or tropical cyclones accompanied by storm surges, river floods, river erosion and earthquakes. Precisely known to all by now, that buildings which are designed as well as supervised by competent engineers and termed as "engineered buildings" are governed by building codes which specify the loads and the design methodology and the details to be followed to enable the structure to resist the onslaught of natural hazards. But in Bangladesh such efforts have only recently been initiated and that also in only some select urban areas. Most of the existing housing and also houses now being built in rural areas are non-engineered i.e. they lack the benefit of being designed and supervised by qualified engineers. These houses mostly designed and built by owners are extremely vulnerable to natural hazards. Speakers in the seminar mostly dwelt on directing efforts in reducing the vulnerability of these nonengineered constructions against extreme winds, floods, storm surges and river erosion. Experiences of other countries suggest that post-disaster re-

construction provides an excellent opportunity for introducing improvements in housing technology. Following the 1985 typhoon in Tonga, few thousand houses were built by using the help of BRE, UK. Happily. these constructions resulted in a dramatic improvement in building practices in the island.

Experts suggest that the obvious measure which may be adopted for flood-prone areas like Bangladesh is to raise the floor level above the level of floodwater. This may be achieved by either raising the level of ground on which the building rests or by building structure on stilts or constructing floating houses with floor level rising along with the flood water. However, raising the whole village above the flood level by earth filling may not appear feasible under the prevailing socio-economic conditions, but buildings on stilts are quite common in the coastal areas as well as along the river banks. It may be mentioned that "permanent" "emergency shelter-cum-roofing" unit particularly designed as disaster preparedness hardware for use in the cyclone high risk areas by AIDECOM with the approval of the Government of Bangladesh appear to be ideal for disaster preparedness because of long life and effective use in all situations. It offers a good value for money (Tk 14,000 for ten persons with 10 different uses)

In the choice for materials used in low cost housing in rural areas of Bangladesh bamboo features most prominently, because it is the cheapest and most easily transported material. Houses made of bamboo can be extended easily when more money is available later and as such it is the choice of those on the lowest incomes. Bamboo price in recent times has shot up because of diminishing supply mostly exacerbated by rising demand as well as due to natural hazards like flood and unusual monsoon rains and population boom causing depleting of the resource. Precisely known to all. bamboo can't grow on waterlogged land and needs a welldrained site. Despite the fact that structural forms practised earlier represent generations of experience of living in Bangladesh's hazard prone environment, the coping mechanisms of previous generations are not so effective now since the pressure on the production potential of the land has caused

the price of basic materials to

rise faster than other prices.

by Md Asadullah Khan

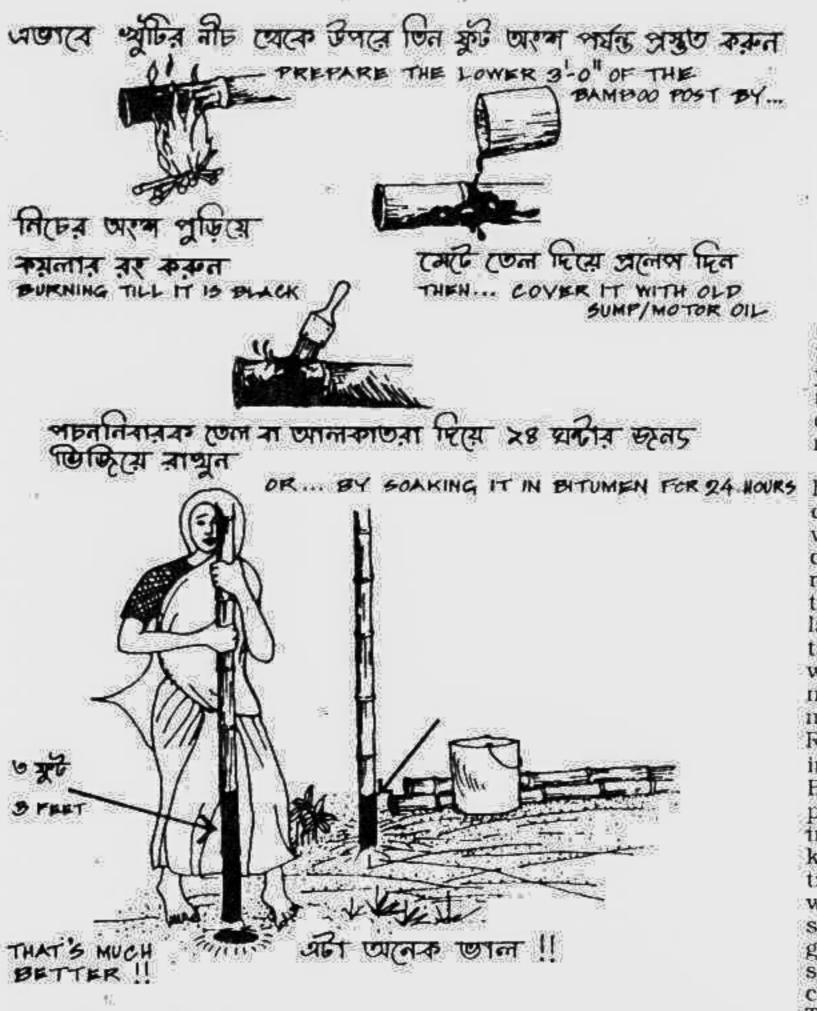


Figure: Inexpensive treatment method for bamboo post base (Ahmed, 1994, adapted from Chisholm 1979)



Thus each disaster reduces a family's capital and increases its vulnerability to future hazards. Increasing the resistance capability of housing could help stem or reverse the trend. Poor quality bamboo framing is liable to be associated with walls made of bamboo-mat or jute stick panels which not only have poor durability but also

limited protection against monsoon rains. Bamboo has other shortcomings. It is vulnerable to borer attack and has

poor resistance to rolling. Experts addressing the seminar referred to improvements in the rural housing. The proposed improvements in frame suggested by the experts call for

borer attack, treatment of poles against rotting in the ground, better anchoring of poles into the ground, inclusion of crossbracing and substituting galvanised wire binding for jute

Dr Hodgson of the University of Exeter reported in the seminar that his feam has been able to develop some strengthening techniques that can be incorporated into a kutcha house for an increase in cost that will not go beyond 8 per cent. As an experiment they have found that a bit expensive "char-chala" (hipped) cgi (corrugated galvanised iron) roof could be cheaper over 25 years since it is more or less maintenance free than the cost of replacing a cheap thatched

roof every two or three years. Precisely true, mud wall housing is still the poor man's choice because of so many advantages. Because cohesive mud can be procured from ponds or river banks. By paying a little transportation cost or price of labour, the mud itself can be obtained free of cost. Thus people who have access to suitable mud on their land can opt for more durable mud walling. Dr J R Choudhury, keynote speaker in the seminar, suggested that a BUET Civil Engineering Department project for such housing developed in 1979 used kerosene and asphalt in the ratio 1:1 and expenditure involved was affordable by the poorest section of the country. With 740 gms of the components used per sq meter in the suggested construction the cost rose up to Tk 28.00 per 100 sq ft which is affordable by even the poorest section of the population in the countryside of Bangladesh. The result: the experimental structure proved to be durable against natural hazards.

Professor J R Choudhury further explained that the country has, at present, a shortfall of 3.5 million rural housing units and the country's population which is likely to reach 170 million by 2020 out of which 110 million would be spread in the rural areas, the shortfall would be more acute. Prof Choudhury added that research findings of his team found that most houses in rural areas did not last over 10 years even without any natural hazards and the longevity of these houses could be raised up to 20 years with a little cost and addition of materials as mentioned earlier. Dr Choudhury further elaborated that mud walls can be made more resistant to flood water by using polythene and

kerosene coat. He observed that there were still impediments to dissemination of these research findings because of total lack of media (TV) coverage and he urged the agencies concerned for taking effective measures in motivating people to follow these technologies taking into consideration the durability

and afford ability they promise. In analysing the housing practice in Bangladesh, it has been found that majority of the houses in the hazard prone zones of Bangladesh fall under the category of non-engineered structures. All these traditional self-built housing for the poorest class of people mostly with thatched roofs are not covered by any code. They exhibit little or no resistance to extreme winds. Collapse of this category is responsible for such colossal loss of lives and injury during cyclone or storm. Dr Choudhury suggested that to sustain cyclonic storms and tidal surges houses can be built on concrete columns in coastal ar-

eas where about seven million people live. Structures in these areas should be sited with trees so as to protect each other. Clustering achieves a degree of mutual protection that linear layouts do not. Frame could be improved with the inclusion of crossbracings. Frame members that are normally lashed with jute rope could be substituted with galvanised wire nails and openings can be improved by placing door in the centre of the wall and placing a small window opening in the rear will. Roof system can be improved by increasing the pitch of the roof to between 30 and 40 degrees, tying down the thatch and arranging improved fixing for cgi sheet. It was revealed in the semi-

nar that factors such as siting, design, construction methods and materials constitute a strong influence on the vulnerability of housing in the country side. Dr Choudhury indicated that simple guidelines have been proposed for use by non-technical people and pre-sented in a booklet titled: "43 rules - How Houses Can Better Resist High Wind" (NBS 1977). By following these guidelines, it should be possible to reduce significantly the damage to housing due to natural causes leading to a reduction in loss of human lives and property during calamity. Sadly true, the fruits of Research and Development are not being transferred to the field. Most people in the rural or coastal areas' designing and building houses for themselves have no access to

these booklets. This calls for bridging the gap by transferring technology to the people. The Keynote speaker urged the government to take up the follow-

(i) Translating the guidelines into Bangla with some modifications to suit the conditions in Bangladesh.

(ii) Training of trainees may be arranged by BUET and HBRI (House Building Research Institute) with NGOs involved in housing and banks providing micro-credit for housing.

(iii) Training programmes for artisans (masons, carpenters and other building related technicians). These may be organised by NGOs.

(iv) Use of mass media (e. g. TV) to demonstrate good prac-

Evidently, in spite of the fact

that government policy envisages soft loans for construction of low cost houses in coastal areas with monitoring by the local bodies, hardly any action has been taken so far. Professor J R Choudhury mentioned in his speech that a design for rural housing developed by Grameen Bank after the devastating flood of 1987 could still be followed with some modifications. It is worth mentioning that the "Four Pillar Technilogy" that the Grameen Bank introduced in their "basic housing programme" could prove to be safer, durable and resistant to natural disasters like flood and high wind. With little maintenance cost this fit-for-all weather structure can be shifted from one place to another during flood and disaster. The structural components comprise four reinforced concrete pillars on brick foundations at the corners of the house and six intermediary bamboo posts with bamboo tie beams, wooden rafters and purlins supporting corrugated iron roofing sheets.

Speaking on the occasion. BUET Vice-chancellor Professor Nooruddin Ahmed stressed the need for such joint collaboration for establishing co-ordinating bodies. The Vice-Chancellor expressed optimism that the link between BUET and the University of Exeter could provide the nucleus of such a body. The VC expressed his satisfaction over the pace of research activities in BUET in finding various simple, effective and low cost technologies for strengthening non-engineered housing structures for fighting natural hazard and disasters that have been taking a heavy toll of human lives livestock and property in the country year after year.

TOM & JERRY CIZMOLATOR.









