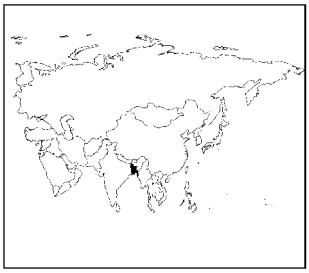

User initiated extension activity in Bangladesh: "building slums" or area improvement?

A. Graham Tipple and Md. Shahidul Ameen

SUMMARY: *This paper presents the findings of research into the house extensions or alterations undertaken by the occupants of a government 'core-housing' estate in Dhaka. It shows that these extensions or alterations did not 'help to create slums', even though government officials often assume they will do so - and have policies which are meant to stop such changes. In fact, these changes brought more rooms as well as more room per person, increased house size and improved service levels and physical conditions. They also increased the value of the housing and helped contribute to an increased supply of cheap and relatively good quality rental accommodation. The paper ends with some recommendations on the need for changes in official attitudes and more 'enabling' government regulations on such house extensions.*

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I. INTRODUCTION

DURING MANY YEARS of research into user initiated extensions and alterations (transformations) of government-built housing in four countries, the first named author has often visited bureaucrats in Third World cities and engaged in roughly similar conversations. He would explain his interest in the phenomenon to a government housing officer or planner, or give a talk to a local institute of town planners on the results of an extensive study in Bangladesh, Egypt, Ghana and Zimbabwe sponsored by ODA (now DFID). The response was invariably words to the effect that such activity is only "building slums" out of what was intended to be well-ordered government housing.

There is no clear idea of what is meant by "slums" except that it is a catch-all term intended to imply that housing conditions are worse after the transformation activity than they were before it. Such housing conditions would include issues of space occupied per household, services available, physical condition of buildings, and neighbourhood and house layout (including availability of privacy, open space, etc.).

We may, however, posit assumptions which underlie these judgements:

- that the new buildings are of poor quality and either:
  - degrade the general conditions of the formerly satisfactory neighbourhood (the "there goes the neighbourhood" syndrome); or
  - create poor conditions in the midst of otherwise satisfactory neighbourhoods;
- that property values would deteriorate;
- that there would be a flight of capital as either:
  - those with higher incomes would remove themselves leaving only the poorer households in residence; or
  - investment would be withdrawn from the area through lack of maintenance, discounted sales, etc.

In our study of four countries, however, we have found that this is not the case. In this paper, we demonstrate how transformers' activities are not "creating slums" in our Bangladesh study area. We will show that housing conditions are at least as good and, in some aspects, actually better, while the housing added through transformation is benefiting more people.

II. DHAKA AND THE *BASTUHARA* HOUSING IN MIRPUR

DHAKA, BANGLADESH, IS the largest city in one of the most densely populated countries on earth. It is situated on the northern bank of the Buriganga River about 150 kilometres from the sea. Large areas of the present site of the city flood annually and are left clear of official development though many areas do have squatter populations.

Old Dhaka, which lies near the north bank of the river, contains some of the most densely populated residential areas anywhere in the world. A recent Asian Development Bank mission report on urban poverty reduction[1] gives some up-to-date figures on population for the city. The Dhaka City corporation area covers 360 square kilometres and contains a population of about 5 million. Thus, the population density of the city overall is 13,900 people per square kilometre. An estimated 1.1 million people live in slums and squatter settlements and about 3 million could be classified as living below the poverty line. The likely future growth of Dhaka is estimated to take the population to 12 million by 2010.[2]

The average monthly income for urban households in Bangladesh was Tk 4,800 in 1991-92 (UK£ 80), considerably higher than the national average of Tk 3,300 (UK£ 56).[3] The Government/Asian Development Bank report found that about 55 per cent of the urban population live below the poverty line, defined as the income needed to consume 2,100 kilocalories per person per day, and 32 per cent live in hard-core poverty, below 1800 kilocalories per person per day. Although they do not seem to be expressed in money terms in official documents, correspond-

1. Government of Bangladesh and Asian Development Bank (1996), "Draft final report of the urban poverty reduction project".

2. Government of Bangladesh, CWFP and ICCDDR (1995), "The urban MCH-FP initiative: a partnership for urban health and family planning in Bangladesh", Dhaka.

3. In 1994 there were about 60 Taka in a Pound Sterling.

ing annual per capita incomes appear to be about Tk 8,800 (UK£ 145) and Tk 6,200 (UK£ 100), respectively.[4]

According to the 1991 census, there are 1.04 million households in Dhaka, 39 per cent of which own their dwelling, 53 per cent pay rent and the remainder live rent free. Just under 50 per cent of households are reported to have tap water and most of the rest have a tube well supply. Fifty-five per cent of households have a "sanitary"[5] (usually pour-flush) toilet but the rest rely on pit latrines or the open ground. Almost 70 per cent have electricity. Less than half the households in the city are reported to occupy dwellings built of brick or cement-based materials; 34 per cent have bamboo, straw or jute stick walls, 16 per cent have corrugated iron sheet walls and 6 per cent have mud walls. However, 60 per cent of households are protected by corrugated iron roofs and most of the rest have concrete slab roofs. Only 12 per cent rely on straw, bamboo, jute or polythene sheets to keep off the sun and rain.[6]

Among the poor, however, the picture changes radically. Only 45 per cent have access to sanitary toilets and only 25 per cent have electricity, often through illegal connections. About 40 per cent use tube well water supplies, with 10-200 households sharing each well. According to the Asian Development Bank poverty study,[7] 90 per cent of Dhaka's urban poor households have only one main room while 65 per cent have less than 100 square feet (9.3 square metres). Walls and roofs are frequently only plastic sheets or woven split bamboo. Floors are beaten earth. Most poor households pay at least Tk 300 (UK£ 5) per month (30 per cent pay more than Tk 500 (UK£ 8.33)) in rent for this accommodation.

Mirpur is located 16 kilometres from the city centre in the north-east periphery. It began to grow as a satellite town for Dhaka after the partition of India in 1947, with a major expansion during the 1960s and 1970s. The Housing and Settlements Directorate (HSD), which was formed to house partition refugees, developed Mirpur as its largest project.

Despite the plan to accommodate only 150,000, the 1991 population of Mirpur *thana* (district) comprised 120,000 households with a mean of 5.2 members, giving a population of 640,000. The inter-censal population growth rate (1981 to 1991) was 6.8 per cent per annum. The density of population is 11,000 per square kilometre (giving a gross area of only 91 square metres per person). Water supply is better than in Dhaka as a whole with 72 per cent of households having taps at the dwelling and 21 per cent using tube wells. Sixty-eight per cent have a sanitary latrine (pour-flush or WC), 27 per cent have non-sanitary latrines and 5 per cent have no latrine at all. Seventy-six per cent have electricity.[8]

Initially, about half the land was developed as core houses, built as semi-detached units laid out in rows of 15 to 20 with access roads nine metres wide and 1.2 metre service alleys to the rear carrying the utility lines. In addition, about 7,900 plots were made available for private residential development.

The *bastuhara* (*bastu*=home, *hara*=less) scheme, which forms the context of our study, was proposed in 1972 as probably the

4. Government of Bangladesh (1995), "Summary report of household expenditure survey, 1991-92", Bangladesh Bureau of Statistics, Dhaka.

5. While this type of latrine may be "sanitary" in setting its users apart from the wastes they produce, the destination of such wastes may well be less than sanitary in the sense of rendering them harmless to others.

6. Government of Bangladesh (1993), "Bangladesh population census 1991, Zila: Dhaka", Bangladesh Bureau of Statistics, Dhaka.

7. See reference 1.

8. See reference 6.

first mass housing scheme for low-income groups undertaken by the Ministry of Relief and Rehabilitation and later executed through the HSD. The scheme was intended to provide basic shelter for displaced persons, mainly refugees from Pakistan. In 1975, about 175,000 people were evicted from squatter settlements (including many from an old railway line in the city centre which was converted into a major road). There was, therefore, a great need for low-cost accommodation for rehousing these and other displaced persons.[9]

9. Ameen, M.S., (1995), "Qualitative report on Bangladesh for transformation research project", Bangladesh University of Engineering and Technology, Dhaka.

Four thousand three hundred and four semi-detached units were originally planned in five different sections of Mirpur. Each consisted of a single room measuring 5.66 metres by 1.88 metres with a veranda 1.88 metres by 2.64 metres, a total floor area of 22.2 square metres (19.3 square metres excluding the wall thickness) built in a single leaf of brick with a corrugated iron roof. Windows were created by a chequerboard of bricks and spaces. The dwellings are joined in pairs along their long edge, which also forms the roof ridge, and were built in rows with demarcated access ways but with no plot boundaries drawn.[10] They were built but not serviced; latrine blocks were constructed (between every sixth dwelling) and lavatory pans fitted but no water supply was installed nor were the sewers laid. The scheme stood empty for a few years.

10. There were no plots but each dwelling is surrounded on three sides by space that represents a mean of about 66 square metres each.

At an advanced stage in the development, 1,124 units were converted into 662 two-roomed dwellings (of about 44.5 square metres) for low-income government employees. In these dwellings, one of the verandas was converted into a kitchen, boundary walls were erected, and water supply and toilets were also provided.

The allocation procedure for the 3,180 single-roomed units was handled badly and the people for whom they were intended failed to be allocated them. Instead, middlemen (known as *mastans*) stepped in to take over unoccupied units. They fitted padlocks to the doors to control access and let them to individuals against a one-off payment of "hush-money" of Tk 2,500 (UK£ 42) in the late 1970s. Later, would-be occupants had to make initial payments to vacating residents, starting at Tk 5,000 in the late 1970s and early 1980s and rising to Tk 20,000 (UK£ 336) in 1988. These sums appear to represent a putative value whereas the earlier payments to *mastans* were set arbitrarily.

From the early days, residents made illegal connections to the electricity mains, sank tube wells and fitted latrines served by soakpits. After a few years, HSD was faced with a *fait accompli*; there were too many occupants to evict so they were allowed to stay on a rental basis. The municipality then constructed the lanes (known locally as by-lanes) between the house blocks in the herringbone brick paving conventional in Dhaka. The occupants have since taken the lanes' edges to be their front boundaries regardless of any easements for pipes, etc. Recently, when sewers were at last laid, these have had to go under the brick paving and the disturbance has ruined the surface.

The HSD is currently implementing the sale of the *bastuhara* housing to the occupants. A survey has been done to find out

who is the occupier of each house (and each has been photographed, according to the residents) and sub-tenants have to say who the "owner" is. The occupiers will be charged about Tk 134,000 (UK£ 2,230), calculated from a land cost of Tk 63,360 (UK£ 1,056) plus a house cost of about Tk 104,000 (UK£ 1,730) depreciated over 18 years at 2 per cent per year (nil for the first two years).

Several residents told us that Tk 172,000 (UK£ 2,870) was the price but this probably includes interest. The sale entitles the occupant to a 99-year leasehold with limitations on their rights to sell for some years. According to the HSD, people are rushing to buy but the residents we talked to had a slightly more sanguine impression of demand. The money must be paid in five annual instalments (Tk 25,800 or Tk 34,500 (UK£ 430 or UK£ 575) depending on who has the correct estimate of cost) but some residents were told nine payments are due bi-annually. No surveyed household had bought at the time of our study, so all were still tenants.

Those households who have bought possession in the last five years have already paid Tk 150,000 (UK£ 2,500) or more for the possession of a rented house. This was, therefore, seen by them to be the value of a low-rent lease on an extended version of the house which is more than twice as large as the original.

a. The Study of Transformations in Mirpur

In our argument against the proposition that transformers are building slums we will demonstrate that there have been increases in house size, improvements in occupancy rates and space occupancy per person for the main households, new space provided for subsequent households, improvements in service levels and physical conditions, more flexible plan forms, and increases in perceived house values. First, we will examine who are the transformers.

The following information divides transformers into those who have not transformed in the three years prior to the survey in 1994 (established transformers) and those who have (recent transformers). We have a sample of 245 of the former and 169 of the latter. There are only 12 households who can be described as non-transformers. Most are living in transformed houses but they bought the lease and moved in after the work was completed so are, themselves, non-transformers. Only two households are in non-transformed dwellings so they are of little use as comparators.

In reporting our data in the tables and comments thereon, we have used the median, or 50th percentile, as the measure of centrality. Range is shown by the inter-quartile range (IQR), the values of the 25th and 75th percentiles or the bounds of the middle 50 per cent of the population. In the tables, the median is shown in the upper part of the table cell and the IQR in the lower, in parentheses.

b. Household Characteristics of Transformers

House Tenancy and Ownership.

Over 40 per cent of transformers came upon their tenancy by unorthodox means, through *mastans*, and were later regularized by the HSD as renters. However, half of the sample (and all the few non-transformers) have bought possession. In this process, the occupant may not be known to the HSD except as the anonymous payer of the monthly rent in place of a named tenant who is on the records.[11]

11. This must be one of the weakest forms of tenure for which a relatively large sum of money is paid.

The cost of buying possession of houses in Mirpur has been rising in real terms, especially throughout the 1980s. This is probably a reflection of their increased size as well as the general increase in real value as the city becomes more crowded, the supply of housing falls further behind demand, and once peripheral Mirpur appears increasingly conveniently located. Over the past few years, prices of Tk 150,000 (UK£ 2,500) or more have been commonplace but it must be remembered that all that is being purchased is the right to live in a house whilst still paying rent to the HSD; no land or house ownership is involved.

Table 1: Household Size and Composition, Owners (Medians and IQR)

	Established transformers	Recent transformers	Non-transformers
Number of people in the household	6 (5, 8)	7 (5, 9)	5 (5, 6)
Number of adults in the household	4 (2, 5)	4 (3, 5)	3 (2, 5)
Number of children in the household	3 (2, 4)	3 (2, 4)	2 (1, 3)
Dependency ratio (no. of children per adult)	0.73 (0.3, 1.3)	0.78 (0.4, 1.3)	0.50 (0.1, 2.0)
Expected household size in three years	7 (5, 8)	7 (5, 9)	5.5 (5, 8)
Number of guests per annum	5 (1, 20)	12 (4, 20)	7 (3, 23)

Household Size and Composition

Our sampled households tend to be slightly larger than average for Mirpur, with over 75 per cent in each group having five or more people. There are marginally more adults than children (under 16 years old) but the median of three children shows that many households are still in their young family stage and liable to several years of housing stresses, triggers and shocks which may require them to find more space, if at all possible.[12] Many households do have alternative options: they can either evict a tenant and use the vacated room or they can extend again. At present, we cannot tell which option will predominate.

12. Seek, N.H. (1983), "Adjusting housing consumption: improve or move", *Urban Studies* No.20, pages 455-69.

Guests are quite a feature of life in these crowded houses, with one per month at the median for recent transformers, and third quartiles for all transformers of 20 per annum.

Income and Wealth

A priori, we would expect transformers to be in the middle of the income range, both because of their long occupation of government-built housing and because households who demand and supply additional housing space would be expected to be in that range.[13] Also, we would expect those with more expensive extensions to be better off than those with small ones.

13. Woodfield, A. (1989), *Housing and Economic Adjustment*, Taylor and Francis, New York for and on behalf of the UN.

Table 2: Measures of Income and Wealth, Main Households (Medians and IQR)

	Established transformers	Recent transformers
Household income (Tk '000/annum)	63.8 (48.5, 81.1)	58.1 (50.3, 77.9)
Per capita income (Tk '000/annum)	9.66 (7.3, 12.9)	8.91 (6.8, 11.6)

Mean annual income for poor households in Dhaka is Tk 45,240 (just under UK£ 1,000). Table 2 shows that median incomes for our sample are higher than this mean.

In 1993, the threshold used for low-income households in Bangladesh was Tk 3,000 per month (Tk 36,000 per year). Annual incomes for typical workers in 1994 were as follows: a skilled building worker, about Tk 42,000 (UK£ 700); a rickshaw puller, about Tk 36,000 (UK£ 600); and an unskilled labourer, about Tk 18,000 (UK£ 300). Thus, we can see that our sample includes few who survive on income from an unskilled job or who could be considered as low-income. On the other hand, neither are they high-income, as our per capita income data demonstrate.

The median per capita income in our sample corresponds approximately to the median national urban per capita household income for 1991-92.[14] The medians for both established and recent transformers are not far above the national poverty threshold of around Tk 8,800 (UK£ 145) per annum and the first quartiles just exceed the hard core poverty threshold of about Tk 6,200 (UK£ 100) per annum.[15] Thus, by these measures, our households are indeed not well off.

14. See reference 4.

15. See reference 4.

We would expect *a priori* that main households who do not sub-let rooms to other households would tend to be more prosperous than their counterparts who do sub-let, notwithstanding the rental income they may acquire.[16] This is the case for household incomes but per capita incomes show the opposite, no doubt owing to the larger households of the renters who do not sub-let.

16. On the grounds that they would be demonstrating an indifference to rental income.

Spending on Transformation

The total spending on transformations is higher for the established transformers, with a median of Tk 63,000 (UK£ 1,050), than for recent transformers whose median is Tk 46,000 (UK£ 767). The overall median of Tk 56,000 (UK£ 933) is a substan-

tial amount - about one year's income - but the third quartile of Tk 98,400 (UK£ 1,640) shows that some have spent even more prodigiously, especially the established transformers.

The mean spending on transformations per house is Tk 75,040 (UK£ 1,250). If we assume that our sample is representative of all *bastuhara* housing (which it should be), the 4,304 houses[17] have probably had a total of Tk 323 million invested in their transformation. This is equivalent to UK£ 5.4 million at the currency conversion rate but UK£ 22.35 million if we incorporate purchasing power parity; a staggering figure.

17. With the conversion of 1,124 single roomed units into 662 larger dwellings, the number reduces to 3,180, giving an expenditure of Tk 238.5 million. However, we sampled very few of the larger dwellings and the figure in the text is probably more nearly correct.

c. The Effect of Transformations on Housing Conditions

Increases in House Size through Transformations

Transformation activity has doubled the built-up area of *bastuhara* housing. Recent transformers have built 46 square metres in total at the median. Phases tend to be small, numerous and of reasonably consistent scale - each comprising about the area of a single room at the median.

Habitable space is added in two distinct ways. First, the original space consisting of a habitable room and a transitional area (veranda) is rearranged to make up mainly habitable area. Secondly, new habitable area is constructed within the extensions to add 11 and 18 square metres at the medians for established and recent transformers, respectively.

All the original rooms are 14 square metres in area but the new rooms are smaller and much more varied. They are chiefly grouped in the six to 10 square metres range and we shall see below how this leads to quite respectable occupancy rates (people per room) but very little habitable area per person. The median rooms per house is now four for established and five for recent transformers; an increase of four- and five-fold. The space around the dwellings is often almost completely built-up, leaving only a narrow courtyard which is sometimes partly or wholly covered with transparent corrugated plastic sheeting. Some householders have even built over the roadside drain to gain maximum extra space. Where significant space is available, for example where the regular grid of the layout leaves space where main roads are not straight or parallel, shops have been developed.

Space Occupied by Main Households[18]

Although the houses have increased in size by over 100 per cent at the median, neither does the main household occupy all the area nor has all the new space simply been let to other households for a rental income. The space occupied by main households has increased by 25 and 34 per cent for established and recent transformers, respectively; simultaneously, the habitable space used by them has increased by 44 and 73 per cent, respectively.

The main households tend to occupy most or all of the original dwelling and only a small proportion of extensions. Recent transformers are, however, more likely to occupy extensions, with a median of 5.5 square metres being used. In addition, a

18. In this analysis, where there are non-habitable spaces (toilets, kitchens) in shared use, these are not allocated to the main household.

variety of occupied space is being produced out of uniformity. Of all households having 22 square metres (14 habitable square metres), there is now a range at the 25th and 75th percentiles (the IQR) of over 20 square metres for all space and for habitable space occupied just by the main households.

In urban Bangladesh, the mean internal floor space per person is five square metres but this drops to between 1.4 and 1.9 square metres in some of the more densely populated areas such as Islambag (the old part of Dhaka). Our main households have around four square metres per person at the median but a habitable area per person of only three square metres for established transformers and 3.5 for recent transformers. Thus, they are midway between the urban mean and the most densely populated areas.

Table 3: Measures of Occupancy, Main Households

Medians (and IQRs)	Established transformers	Recent transformers
Rooms occupied by household	3.5 (2, 6)	3.0 (2, 6)
Habitable rooms occupied by household	2.5 (1, 4)	3.0 (2, 4)
Space occupied (square metres)	27.8 (14, 39)	30.0 (16, 38)
Habitable space occupied (square metres)	20.3 (5, 30)	24.4 (14, 33)
Occupancy rate (persons per habitable room)	2.33 (1.6, 3.6)	2.50 (1.7, 3.5)
House occupancy rate (persons per habitable room)	2.40 (1.9, 3.0)	2.50 (2.0, 3.2)

The data in Table 3 illuminate the issue of density and occupancy raised in the preliminary work on transformations in which we posited that "...transformations increase the local population and generate higher population densities but tend to reduce occupancy rates."[19]

Main households occupy two to three habitable rooms and a little over 20 square metres habitable space at the medians. Occupancy rates are high, as we would expect in a low-income area in a city with a gross housing shortage. Third quartiles of more than three, combined with the small size of rooms, demonstrate severe crowding for at least some households. The higher occupancy rates for recent transformers contrast with their greater habitable space per person and may demonstrate that they have slightly larger rooms than established transformers.

In Table 4, the changes in space are brought together for comparison. There is now about twice as much housing space as was originally built. It is evident that the transformers have gained considerable space in a very constricted area but their

19. Tipple, A.G. (1991), "Self-help transformations of low-cost housing: an introductory study", Urban International Press, Newcastle upon Tyne for the Overseas Development Administration, London, page 77.

Table 4: Comparison of Increases in Rooms, Space, etc. (Expressed as Indexes; Original Median Equals 100)

	Established transformers	Recent transformers
Total space per house	177	208
Habitable space	241	272
Number of habitable rooms	400	500
Area occupied by main household	125	134
Habitable area occupied by main household	144	173
Habitable rooms occupied by main household	250	300

gains have been even more significant in terms of habitable space, particularly through converting the verandas. The increase in habitable rooms is particularly spectacular but must be seen in context; rooms in transformed houses are considerably smaller than the original ones. However, the improved privacy which is possible with several small rooms rather than one large one must be an important factor for transformers in this Islamic country, especially if rooms are to be rented out. The inner courtyard, narrow though it is, provides the separate access to rooms required for privacy. This demonstrates that, among the urban poor, several small rooms are preferable to one or two large ones; transformation provides more rooms as well as more space.

Main households have made more modest gains than all in the house as a whole. There is, however, sure evidence of improved housing conditions for the main household. While it might have been thought that they had merely sub-divided the original structure to gain more habitable rooms but left the new space for renting, in fact they have more space and more habitable space for themselves as well as space for renting out.

Increases in Space Occupied by All Residents

We have attempted to establish how much better or worse conditions would have been if no transformations had occurred. We have no data on who lived in the houses before transformation and we have so few non-transformers that we cannot use them as proxy. However, we can estimate original space occupied per person in the houses in two different ways. The first (original house, main household only) assumes that the original house was occupied only by the current main household as the nearest approximation to the original occupants of the house. This assumes that extra people are attracted to the house only in proportion to its increasing size. The second (original house, current occupants) assumes that the original house, of known size, was occupied by all the current occupants. This measure

has the advantage that it shows how much improvement has been made through the extensions but has the disadvantage that it assumes that all the current occupants are likely to have come to the house regardless of space available.[20] These two measures are compared with the current housing space enjoyed or endured by the current occupants. Table 5 demonstrates the effects of transformation according to these measures.

We can see from Table 5 that established transformers' households have 3.88 square metres per person at the median. This represents only a marginal (5 per cent) increase over the space per person (3.71 square metres) achieved if the main household is taken to represent the original occupants (original house, main household only). However, the increase in rooms per person measured through this proxy is more significant, from 0.17 to 0.57 square metres (235 per cent). This shows the importance of dividing the original structure into smaller rooms. The increase evident when using current occupants as a proxy for the original occupants (original house, current occupants) is more marked, at 74 per cent in space terms and 470 per cent in terms of rooms per person (or an even more staggering 587 per cent for recent transformers).

20. The latter is not much of a problem where a single household occupies the transformed house but it is unrealistic in houses with additional rented rooms. However, it does give some impression of the crowding which might have been dispersed throughout the rest of the housing stock had not extra space been generated through transformation.

Table 5: Changes in Space per Person

	Established transformers	Recent transformers
Current housing space per person (square metres)	3.88 (2.95, 5.38)	3.69 (3.02, 4.90)
Original housing space per person (original house, main household only) (square metres)	3.71 (2.78, 4.46)	3.18 (2.48, 4.46)
Original housing space per person (original house, current occupants) (square metres)	2.23 (1.59, 3.18)	1.86 (1.37, 2.48)
Current rooms per person	0.57 (0.46, 0.80)	0.55 (0.43, 0.72)
Original rooms per person (original house, main household only)	0.17 (0.13, 0.20)	0.14 (0.11, 0.20)
Original rooms per person (original house, current occupants)	0.10 (0.07, 0.14)	0.08 (0.06, 0.11)

Changes in habitable space per person have been greater than in total space. The current circumstances have improved habitable space per person over "original house, main household only" by 38 and 60 per cent for established and recent transformers, respectively. Rooms per person have improved by 141 and 186 per cent. "Original house, current occupants", however, shows even greater improvements in habitable space per person; 130 and 174 per cent in space per person for established and recent transformers, respectively, and 310 and 400 per cent in rooms per person. Thus, transformation has improved habitable space provision per person by between 38 and 174 per cent and rooms provision per person by between 141 and 400 per cent - considerable achievements.

Space Occupied by Subsequent Households

Few main households admitted to having rent-paying tenants, most claiming that the extra households were relatives. However, there were obviously many tenant households and we have data on those admitted to. They undoubtedly occupy smaller areas than the main households; almost all have only one room and a mere nine square metres habitable area per household at the median. Even at the third quartile, only 13 to 15 square metres are available per household. Even though they occupy so much less space than main households, tenants do not appear to suffer much worse occupancy rates (a mean occupancy rate of three persons per room).

The tenant households admitted to by our sample occupy one-third of the house at the median. The amount of space each tenant household occupies is inversely related to the number of households in the house, halving from about one-quarter (at the median) when there is only one tenant household to only about 13 per cent in the few where there are four tenant households. It follows, therefore, that the percentage of space occupied by the main household reduces as more tenants are housed - down to 44 per cent when there are four tenant households.

Services Available

There is a tendency for services to be quite high priorities for transformers. Most houses add them in the first two phases and may add more in subsequent phases. We cannot separate toilets and washrooms at this stage but it is clear that the tendency to replace use of public toilet and bathing facilities with private ones early on in the process of transformation, as found elsewhere in the sub-continent,[21] is repeated here.

According to official statistics, only 5 per cent of households in Mirpur have no toilet facilities.[22] From a virtual absence of toilets in *bastuhara* houses, now almost 90 per cent of houses have at least one. Although sewer lines have recently been laid down the lanes between house blocks, often with catastrophic effects on the brick paving, many households continue to use pour-flush latrines soaking into pits which, in such small plots and with a high water table, may not be a sustainable solution in the long term. Most of our sample now have a tap in the house. Thus, transformations have improved the servicing level of *bastuhara* housing from a zero baseline to at least that in Mirpur.

Physical Conditions

The original buildings are of "semi-pucca" construction, not qualifying for the "pucca" category because the roof is not a concrete slab. All are built of burnt bricks with corrugated metal sheet roofs. Most of the extensions are of materials similar to the original houses and most conform to semi-pucca construction although some brick walls are only 7.5 centimetres thick (with the bricks laid on their sides). Bamboo mats for very cheap extensions are available from local weavers at Tk 50 (UK£ 0.8) per square metre. However, bamboo matting is used as walling material in only 18 per cent of transformed houses, usually in

21. Benjamin, S.J. (1985), "India: formal v. informal", *The Architectural Review* No.1062, pages 32-36; also Dasgupta, A.S. (1990), "Negotiating for growth and change: a study of user initiated transformation of formal housing, *Open House International* Vol.15, No.4, pages 34-40.

22. See reference 6.

combination with other materials. Bamboo mats do not stand up well under the gusty winds which accompany the monsoon, let alone the cyclones which occasionally wreak havoc in Bangladesh. They also pose a fire risk which, in areas where bamboo is very common, causes disasters several times a year. As they are reasonably rare in the transformations, the impact from fire is likely to be quite localized, although serious for those involved. The use of organic materials leads local officials to label these extensions as *kutcha* or temporary and, although we would not encourage their continued use, we recognize that they form a solution which the poorer households welcome.

The original structures are in indifferent condition after 20 years, with a large minority having cracks in the walls (41 per cent) or leaking roofs (47 per cent). Roofing type follows that of the originals, with the almost universal use of corrugated metal sheets; originals are prone to leaking as they oxidize. The original unglazed windows are not emulated by most transformers, instead, they tend to fit glazed windows both in the original structures and the new ones. The extensions are, thus, in similar but slightly better condition than the original structures. However, in contrast to the massive increase in services available to residents, mainly through their own efforts, the data on physical conditions provide only the most marginal evidence that transformation has upgraded the houses but no evidence for worsening of conditions.

Plan Forms

Almost universally, occupants define a "plot" by building a wall around it with a door for access to the private space thus created. This is usually only an open corridor running from front to rear which leads to the original building and any new rooms which usually open directly off it. Washing and cooking areas may be part of this corridor/courtyard or may be within rooms. The door to the road forms a distinct threshold where public space is succeeded by semi-private space. As we will see below, the open corridor/courtyard tends to take up about one-third of the plot area. Some of this corridor may be covered with clear corrugated sheet roofing to keep out the rain but allow some light in. There are a remarkable number of trees in these small open spaces, some of which have been incorporated into the rooms with makeshift flashing around ragged roof openings.

It is now almost universal for all rooms to open off the open space or narrow corridor. Where rooms lead off each other, the inner one usually has some alternative access to the corridor. In only a few cases has access to the original room remained via the veranda space, which is almost always subsumed in a larger new room.

The new plan form offers greater privacy and more flexible use of rooms as well as a greater habitable area. However, on the negative side, there is a reduction in both ventilation and daylight in the extended houses.

Densities

The Mirpur area was not originally divided into plots but resi-

dents seem to have assigned plot boundaries to the houses. In a seemingly uniform area, quite marked variations can be found. Nevertheless, median plot sizes of almost 60 square metres in a narrow rectangle represent quite constricted conditions for extensions.

The initial plot ratio of 0.4 at the median has been increased to 0.7, which is only a little over the maximum allowable in pucca areas in Dhaka where one-third of the plot is to be left free of buildings. Plot ratio and floor space index are identical because there were no second storeys in our sample and only the occasional one has appeared more recently in *bastuhara* houses as a whole. This is likely to change when the current sales programme is carried out as households are likely to feel it worth their while to demolish original structures and build two or three storeys on the plots.

Value and Cost

Slums would be expected, *a priori*, to have low or lowering property values. We asked the main household in the house what their perception was of its value and rebuilding cost. In addition, they were asked to estimate what they would be willing to pay to rent similar accommodation if they lost their current house. The results are shown in Table 6.

Table 6: Value of the House

Medians (and IQRs)	Established transformers	Recent transformers
Value of house (Tk '000s)	150 (100, 200)	150 (100, 200)
Value of house per room (Tk '000s)	22.2 (16.7, 30.0)	21.5 (16.7, 29.2)
Value of house per habitable room (Tk '000s)	30 (24.0, 44.7)	30 (23.2, 40.0)
Value of house per square metre (Tk '000s)	3.46 (2.4, 4.6)	3.18 (2.5, 4.2)

There is no doubt that values in Mirpur are not high, but then no low-income area could boast high house values, by its very nature. There is a general consensus among occupants of the value of Mirpur transformed houses, at Tk 150,000 (UK£ 2,500) at the median and Tk 30,000 (UK£ 500) per habitable room. Values per square metre are slightly higher for established transformers (Tk 3,500, UK£ 58) than recent transformers (Tk 3,200, UK£ 53). All the values are quite varied (IQRs are more than half median values) even though the medians are similar across transformer sub-samples.

Rebuilding costs shown in Table 7 are generally slightly lower than values, indicating either that some attention is being paid to the price of the land or that housing is worth more than its building costs. If land cost is an issue, house occupants are

Table 7: Rebuilding Cost of the House

Medians (and IQRs)	Established transformers	Recent transformers
Rebuilding cost (Tk '000s)	120 (100, 200)	100 (100, 200)
Rebuilding cost per room (Tk '000s)	20 (13.5, 28.5)	16.7 (12.5, 25.0)
Rebuilding cost per habitable room (Tk '000s)	30 (20, 40)	24 (17, 33)
Rebuilding cost per square metre (Tk '000s)	3.01 (2.17, 4.14)	2.47 (1.89, 3.56)

slightly underestimating its value at Tk 40-50,000 (UK£ 670-830) as the HSD assesses average plots of 12.5 metres by 4.9 metres (about 60 square metres) at Tk 63,360 (UK£ 1,056).

It is surprising that recent transformers have lower cost estimates than established transformers as they would be expected to be up to date on costs. Furthermore, newer building appears to be of as good quality as, or better than, older transformations. Theirs, however, are probably the more accurate estimates at Tk 2,500 (UK£ 42) per square metre with quartiles at Tk 1,900 (UK£ 32) and Tk 3,600 (UK£ 60) per square metre. Thus, value is roughly one-third more than building cost.

We can give two costs per square metre for new building in Dhaka using Public Works Department (PWD) data for 1993. The first, for standard low-cost (pucca) construction suitable for several storey buildings, is Tk 8,420 (UK£ 140). This represents construction with a 25 millimetre brick wall, reinforced concrete slab roof, plaster and paint finish, plumbing and electrics. Our sample undercuts this first estimate by over Tk 5,000 per square metre at the median, so three square metres are supplied for the "official" cost of one. A second standard (semi-pucca) with thinner walls, no concrete slab roof, no finish and no strength of foundation necessary for several storeys, is estimated by the PWD at only Tk 4,100 (UK£ 680) per square metre but our sample undercuts this as well; recent transformers (who should know the cost of construction) reckoned on Tk 1,600 less per square metre.

The much reduced costs quoted by our sample are more likely to be a reflection of the savings made by using the informal sector for construction work than a reflection of poor construction, as we have little visual, photographic or anecdotal evidence of the latter. Most householders use single tradesmen rather than contractors. These are likely to be operating outside the formal system of registration and control, and with smaller overheads and narrower profit margins than the formal sector represented by the PWD.

The coincidence of our survey with the decision to sell the leases on the houses gave us another measure of value against which to judge our transformers efforts, namely, the current

official price of the land and original 22 square metres structure. As mentioned above, the structure is valued at Tk 104,000 less depreciation (which takes it to Tk 71,000 - UK£ 1,170) or Tk 3,200 per square metre. As we can see, most of our sample value their house more highly than that, after all most are much larger, but the value per square metre is similar. Replacement costs estimate an equivalent amount to rebuild the whole of the transformed structure, not just the original dwelling.

It could be said that PWD prices reflect the cost of alternative housing for this group, if it existed. A median Mirpur resident, with a 46 square metre house and who needed to sell up and move, would look for somewhere for Tk 150,000 (UK£ 2,500). For this amount, he/she could obtain a similar plot (for, say, Tk 63,000) with less than 20 square metres of semi-pucca house and some services; in other words, a core house. In the Chittagong sites and services scheme, where land is much cheaper than in Dhaka, a 60 square metre serviced plot is priced at Tk 47,000.[23] For the balance of the Tk 150,000, the householder could erect only 25 square metres of semi-pucca rooms. Thus, even if we assume that smaller-scale formal sector contractors can make efficiency gains over a government department, the transformed *bastuhara* houses represent excellent value both as housing and as investments for their occupants in comparison with newly built alternatives.

23. Rahman, M. (1995), "Integrated urban infrastructure development: Bangladesh experience in low-cost housing projects", Housing and Settlement Directorate, Dhaka. This is for non-commercial locations.

There is a degree of agreement about rent values of transformed houses with medians of Tk 1,500 (UK£ 25) per household, Tk 500 (UK£ 83) per room and about Tk 55 (almost UK£ 1) per square metre per month. The value of a habitable room in terms of monthly rents gives an indication of how long it would take a developer to pay off the investment and, thus, assess whether it is attractive. At the medians, these rooms in Mirpur would take less than six years to pay off, not counting interest. This makes them a very good investment and, all things being equal, we can be confident that transformations will continue as long as land is available.

The value and rebuilding costs of the portion of the house occupied by each household show even more clearly how inexpensive the transformed accommodation is. They assume that only the portion of the extended house which is actually occupied by a household acts as a cost to its exchequer. Main households occupy about Tk 90,000 (UK£ 1,500) worth of housing at the median while their tenants make do with one-third of that. Rebuilding costs are marginally lower, at only about Tk 80,000 (UK£ 1,333). It is evident, therefore, that transformers can provide accommodation for a tenant household for between Tk20,000 and Tk 30,000 (UK£ 333-500). Again, it is useful to compare what a household could achieve in the Chittagong sites and services scheme with Tk 90,000. Here, the cheapest alternative providing the most accommodation would be a 30 square metres plot at Tk 14,000[24] which could be developed with 18.5 square metres built floor space for Tk 76,000 at the project prices. This would represent a cut of at least ten square metres in floor space at the median and a plot only half as large as the current one.

24. See reference 23.

The housing in our case study is very good value for the occupier and further investment appears to be buoyant. Cheap housing is a positive feature of slums but is generally of poor and declining quality. As our sample appears to be both cheap and of good quality (together representing good value), it exhibits one of the positive characteristics of a slum (low cost) but escapes a negative one (poor quality). The buoyant investment is not characteristic of slums, where decay and neglect are usually more evident; on the other hand, it is a feature of upgrading.

Ability to Use the House for Economic Activity

A few houses have rooms specifically devoted to commercial uses (11 per cent of the sample). Where they exist, they tend to take up the area of at least a single room, and a large minority take up space equivalent in area to the original dwelling.

In a study of informal sector activities in houses elsewhere in the sub-continent, Lall[25] found a considerably higher percentage of the house (38 per cent) being taken up by the workplace. However, there are likely to be many more commercial, manufacturing and service industry uses which are not registered in our study because they do not take place in separate areas and we were not concerned with picking up space used partly for commercial use and partly for living (usually at different times of day). There are 298 people reported as working in houses in our sample of 386 houses. Spaces dedicated to commercial use tend to be rooms facing a street at the side of an end house. Shops tend to be small (two to three metres wide and roughly the same deep) and typically sell a range of food and household goods, or specialized goods such as clothing or electrical appliances. There are also barber shops, tailors and stationers/ photocopiers. Three houses have specialized space for manufacturing, two of them make shoes.

There does not, however, appear to be a conversion of rooms from residential to commercial uses on a scale which might suggest that the area is being abandoned as living accommodation. Rather, occupants appear to be taking advantage of a buoyant economic environment and are providing services and work for neighbours. In addition, although not in our sample, the use of space for photocopying shops does not suggest a marginalized population trapped in poverty.

25. Lall, V.D. (1994), *Informal sector in Alwar: Status, Development and Action Plan*, Society for Development Studies, New Delhi.

III. CONCLUSIONS AND POLICY RECOMMENDATIONS

WE WOULD ARGUE that the above analysis shows little evidence that user initiated extension activity is "building slums" where none previously existed. On the other hand, there are grounds for accepting that some upgrading is taking place, as a once poorly serviced area of basic shelters is becoming more like the rest of Mirpur. From being a non-conforming area, one built on a design alien to the rest of the city, *bastuhara* housing is now much more like the rest of the city. Indeed, it now takes

a practised eye to differentiate between which were *bastuhara* areas and which were others. There is evidence that housing conditions before the transformations were far from ideal and we are not arguing that current conditions do not fall short of what would be most desirable. But extension activity does not appear to be making local housing conditions worse, rather, it is improving them instead.

Improvements are evident in the amount of space available per household and per person, even though occupancy rates are still high. There are more services (water, sanitation, electricity) than previously although some are of poor quality, may be illegally connected, and are unlikely to be sustainable without some intervention from government or servicing agencies. The new house designs also give more privacy and flexibility in the use of rooms. The evidence for improvements in physical conditions is rather inconclusive but there is no evidence of any worsening, which one would expect should there be a process of slum creation.

There appears to be a general increase in house value following transformation activity, which would not be expected from any activity which worsens housing conditions. However, cost per room and per square metre have been reduced making it good value both for the investor and the user. Thus, the rise in value is not simply a function of chronic shortage such as might occur even if local conditions were worsening. Furthermore, the increasing use of rooms for commercial and other economic activities improves the income-earning potential of residents, and suggests their integration into the wider life of the city.

The overwhelming impression from transformation activity is one of low to middle-income households increasing the amount of housing available in the already built-up area. They are investing large sums of money in an area which has been, for very cogent reasons of expense, poorly maintained by the authorities. In so-doing, not only are houses doubling in size but they are also providing accommodation for many extra households. In times when governments are being encouraged to increase the rate of housing supply and to involve all actors in the housing process,[26] the process we have described appears to have many advantages.

We suggest that governments should adopt an essentially permissive attitude towards transformers, with minor controls to improve the use of space and minimize interference with neighbours, especially with respect to ventilation and daylight. On the other hand, governments have much to lose through heavy-handed, unhelpful policies which freeze out potential extensions through introducing bureaucratic delays and interference.

There is an evident trend towards two-storey extensions, which began to appear in 1995 after our survey and which are becoming more common. Because of the limited space around the original house, rational two-storey development requires the demolition of the original structure. Conditions are being imposed in ownership transfer documents that redevelopments involving the demolition of the original *bastuhara* house must then use high standards of construction (pucca standards) and low plot

26. UNCHS (Habitat), (1990), *The Global Strategy for Shelter to the Year 2000*, Nairobi.

ratios. We would suggest that the requirement to build in pucca standards be removed and the current status of the area, as one in which semi-pucca standards can be used (and no planning permission required), should continue.

There is obvious potential for outsiders to come in after the first transfer of ownership from the HSD to the occupants, and to buy up the land for redevelopment as flats for higher-income groups. Such flats are already common close by. The current imposition of pucca standards on redevelopment will favour developers who buy up several plots and replace the low-income housing with higher-income flats. This would displace poorer households to peripheral land rather than allow them to continue occupying relatively well located sites, and would encourage the proliferation of slum conditions elsewhere.

In an effort to assist the current occupants to make the best of their area, it is more important to forsake detailed development control from above and encourage local solutions; to ensure that neighbours are satisfied with the level of development rather than to maintain some notion of ordered development close to the heart of a few policy makers. It must be remembered that regulations need not be fully upheld for them to inhibit development. There are costs to circumventing regulations; the timid will be put off and may not add the housing they would in the absence of regulations or they may sell to higher-income households who can fulfil the regulations. For the less timid, bribes add up against the price of construction but any regulation avoided in this way has no positive effect on the environment. There is thus a need for a balance between control which inhibits and control which enables.

Although the scale of activity shows that transformers can afford extensions, finance is overwhelmingly the most difficult problem they face in their incremental improvements. Those who depend on cash to invest often need to adopt phasing as the most effective way forward. It would greatly increase the efficiency of incremental housing supply if finance were available to low-income households through the formal finance system in amounts tailored to fund an extension. With market repayment rates, such loans would impose no unreasonable demands upon the public purse.

The most important change is, however, one of official attitudes. As long as these remain negative, little improvement can be achieved in the process and effect of all this low-income housing investment. If user initiated transformations can be officially recognized as upgrading activities rather than as “building slums”, positive policies could follow and the process could be more efficient for all concerned.