Second Carnegie Inquiry into Poverty and Development in Southern Africa

Changing patterns of housing and house construction amongst the rural poor in KwaZulu
by
D G B Slade
Carnegie Conference Paper No. 162

Cape Town 13 - 19 April 1984
CHANGING PATTERNS OF HOUSING AND HOUSE CONSTRUCTION
AMONGST THE RURAL POOR IN KWAZULU. D.G.B. Slade

The structures man builds to provide his basic need for shelter are infinitely variable in their size, shape, design, appearance and use of construction materials. Through time, different culture groups establish their own particular building styles and characteristics: Eskimos build igloos while Bedouins live in tents. Man's means to providing his housing needs depends on a variety of interrelated dynamic factors including cultural traditions, environmental opportunities and constraints and socio-economic realities. No longer do all Eskimos live only in igloos, or all Bedouins in tents! Similarly, the type of housing built by the rural poor in KwaZulu has changed considerably through time and particularly over the last decade, as new demands and stresses have been introduced in their cultural, environmental and socio-economic relationships.

The purpose of this paper is threefold: i) to direct attention to the process of changing housing patterns in Vulindlela, an area of rural KwaZulu near Pietermaritzburg, ii) to establish the causes for change and iii) to establish the implications of the changes, identifying both the positive elements of progressive housing development and the negative elements of undesirable building construction which are cause for concern.

CHANGING HOUSING PATTERNS

The traditional Zulu rural dwelling was a beehive hut based on sticks and grass technology skills (Frescura, 1978). Construction gradually changed through time from grass to wattle and daub and then to sun dried mud blocks while still retaining the rondavel shape. But once diffusion of innovation to use mud blocks was widespread amongst the Zulu, the inevitable next building change was to adopt the rectangular European building shape to match their newly adapted form of construction material. Tradition has not been abandoned though. While a rectangular floor plan is now widely used and desired for the main homestead dwelling, a traditional thatched rondavel is retained for the kitchen, being perhaps significantly, the domain of women.
Changes that have taken place since the early 1970's concerning the interaction of construction processes, building form and utilisation function have emerged as three distinct trends.

i) The rondavel type structure is giving way to a rectangular form which is perceived as advantageous for a variety of reasons:
   - The rectangular form implies modern taste and confers increased status.
   - It is larger, allowing for several rooms and covered verandahs.
   - It is easily extended.
   - It more easily accommodates modern furniture.
   - It is suited to support a corrugated iron roof.
   - It is suited to construction with mud blocks.

ii) The traditional thatched roof is giving way to corrugated iron sheeting because:
   - Thatch grass is no longer locally as readily available or as cheap as in the past.
   - Corrugated iron implies modern taste and confers status.
   - It gives increased security against arson and lightning.
   - It requires less maintenance than thatch.
   - Together with a gutter, it allows the collection of rainwater for domestic use.

iii) The long used wattle and daub construction method is giving way to sun-dried mud blocks because:
   - Blocks are perceived as a modern building medium.
   - They lend themselves to the European rectangular form and process of building to which many aspire.
   - Blocks are cheaper than wattle and daub since they are made from soil obtained free on the site and are made by the women and children in the household.
   - Blocks are not susceptible to ant attack as is the case with the untreated wattle and daub framework.
   - Mud block walls provide adequate thermal insulation, giving an acceptable interior micro climate.

CAUSES FOR CHANGE

Elements of political, social and economic change which are working their way through Zulu culture in general must also find some expression in changing needs, attitudes and values of housing (Slade, 1982).
Population pressure in rural environments has also introduced new elements of competition and stress into the traditional utilisation pattern of natural resources. It is becoming increasingly difficult to satisfy building timber and fuel wood requirements from the dwindling forest and woodlot resources. Similarly, veld burning to promote young grass growth for growing numbers of livestock has reduced local availability of thatch grass. As wood and thatch has to be transported into the area and purchased, alternative materials are sought. In conjunction with the absence of manpower due to men's migrant labour involvements, house building has increasingly become women's work and the men's traditional participation in erecting the wooden framework for wattle and daub structures and doing the roof thatching has changed.

A solution to both natural and human resource limitations was soon found in the soil itself, a free building material available on site and suitable for women and children to work into mud blocks. The blocks are made, dried and stored over a period of time during the dry winter months. When the head of the household returns, a stockpile of ready building blocks awaits his attention. In his urban workplace the migrant worker is exposed to European architectural style influences which may be adapted by him and incorporated in his new homestead. His earnings may be used for the purchase of corrugated iron and roofing poles. Thus the process of innovation and diffusion of ideas, causing change, is promoted.

**IMPLICATIONS OF CHANGE**

Certain changes may be expressed as being beneficial, leading to an improved quality of life, while others may be considered less desireable. Not all change can easily be classified as good or bad, however, for inevitably the objective pros and cons in many situations are fairly balanced. The comparative qualities of corrugated iron and thatch grass for roofing, for example, may be perceived differently by people in different socio-economic and environmental circumstances. Positive practical elements of having an iron roof, are its potential waterproof, fireproof and lasting qualities without regular need of maintenance, its suitability for
rapid erection on rectangular buildings and together with guttering, the potential for domestic water catchment from run-off. Negative elements are its poor sound and thermal insulation quality, its cost and delivery problem, the fact that smoke from a cooking fire cannot filter out as with thatch and that condensation occurs.

An increasing number of serious building problems can be identified as the proportion of new mud block constructed dwellings increases. Many of the problems are not yet perceived as such by home builders in Vulindlela and are accepted as inevitable trials or conditions which little can be done about. The seven main problems may be identified as:

i) Spalling of wall plasters
The majority of mud block built houses show evidence of patches of plaster fall-off, immediately spoiling the appearance of an otherwise neat and often newly plastered or painted dwelling. The problem is always particularly acute towards the foot of the walls and where chicken wire reinforcing of the plaster has not been employed.

ii) Walls out of true
The majority of mud block built houses have walls leaning in a particular direction or with pronounced bows and sags. Guide strings and levels are not generally used and most owner builders lack brick-laying training.

iii) Unstable wall panels
Many houses have very large wall panels which are either dangerously high or have long unbraced lengths without piers or keyed-in crosswalls. Such panels are unstable and prone to collapse, particularly, for example, when subjected to lateral loads from the roof structure during a storm. Several deaths have been caused by collapsing mud block walls in the Vulindlela research area.

iv) Dangerous loading of lintels
Long span lintels appear to be increasing in popularity, particularly on verandahs. The lintels are often flimsy planks that are very heavily loaded with blocks. Creep or ant attack
of the timber could result in a dangerous failure with a high likelihood of injuries. The covered verandah is a good example of a borrowed concept being applied without experience.

v) Poor fixing of roof framework
The roof framework is often inadequately tied to the walls. Quite extensive lateral movement of the wall plates is often permitted. Invariably, too few tie-downs are provided for the wall plates and often no part of the roof frame is actually built into the walls.

vi) Poor trussing of roof framework
The importance of triangulated trusses is not understood and often only a token cross-member is used. Many of the truss joints are not firmly wired together and the truss members become effectively simply supported rafters between the crown-beam and the walls. Incorrect positioning of the cross-member allows considerable movement in the rafters.

vii) Gutters
Where gutters are provided the installer has invariably found it difficult to attach the gutter to the small-section pole rafters. The slope of the gutter channels is also incorrect in most cases and results in the concentration of the roof's run-off at some unexpected point. This poses a threat to the earth walls at that point. In many instances gutters are not fitted at all and the consequent roof run-off is an aggravating cause of plaster and wall erosion.

CONCLUSIONS
An on-going process of adaption and adoption of construction materials, house styles and building processes, forms and functions is well established in rural KwaZulu. However, in Vulindlela, for example, the number of house construction changes taking place which may be determined as undesirable or dangerous seem to outweigh those that are a positive development. The problems are largely the result of a 'cultural borrowing' being applied without the 'borrower' having acquired the necessary experience and technological expertise.
It is apparent that a great need exists for simple training in basic building skills in KwaZulu, especially among the rural poor who have to build their own houses. The life expectancy and safety of the housing which costs the owner builders much in time and effort, if not necessarily financially, could be significantly improved if the principles of building level, square and perpendicular walls were understood, together with reinforced plastering, damp proofing, improved roof construction and guttering. Perhaps these practical skills should receive greater attention at school level.

REFERENCES


These papers constitute the preliminary findings of the Second Carnegie Inquiry into Poverty and Development in Southern Africa, and were prepared for presentation at a Conference at the University of Cape Town from 13-19 April, 1984.

The Second Carnegie Inquiry into Poverty and Development in Southern Africa was launched in April 1982, and is scheduled to run until June 1985.

Quoting (in context) from these preliminary papers with due acknowledgement is of course allowed, but for permission to reprint any material, or for further information about the inquiry, please write to:

SALDRU
School of Economics
Robert Leslie Building
University of Cape Town
Rondebosch 7700