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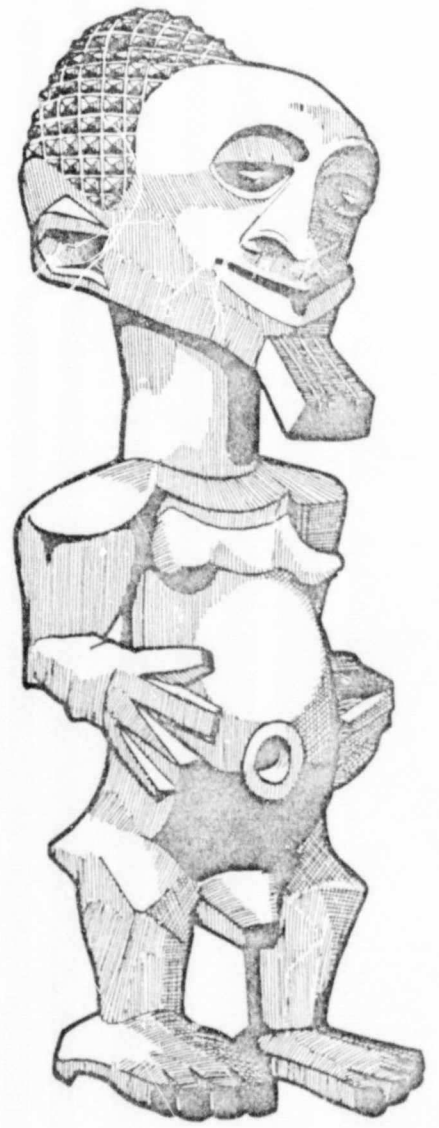
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THE DEVELOPMENT OF RURAL VERNACULAR ARCHITECTURE IN SOUTHERN AFRICA

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FRANCO FRESCURA

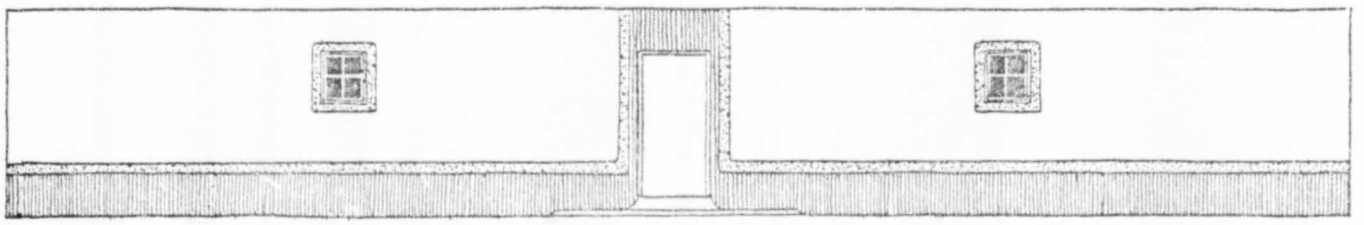
A dissertation submitted to
the Faculty of Architecture,
University of the Witwatersrand, Johannesburg
for the Degree of Master of Architecture,
October 1980



TO LINDIWE

"Would you leave, this land that's green?
Where your home straddles the earth
Leave the winds and the blessings
of the Bushland?"

Jonathan Clegg
Sipho Mchunu
Juluka 1979

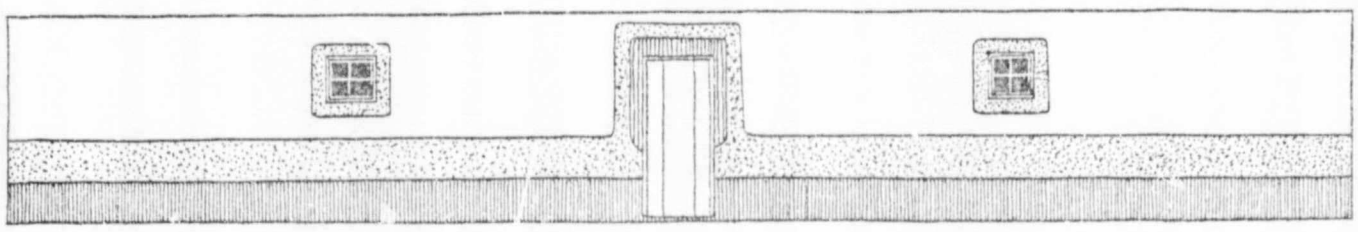


CONTENTS

Abstract		1
Introduction		3
Acknowledgements		6
Chapter 1:	A general look at vernacular architecture	7
Chapter 2:	Parallel technologies	11
Chapter 3:	Development of the house form	15
Chapter 4	A historical development	19
Chapter 5:	Prehistory	22
	The Corbelled Stone hut	
	The bilobial dwelling	
Chapter 6:	The temporary hut	27
Chapter 7:	The beehive hut	33
	The Hottentots	
	The Tswana	
	The Sotho	
	The Nguni beehive dome	
Chapter 8:	The beehive dome on cylinder	45
	The beehive dome on minor cylinder	
	The beehive dome on major cylinder	
	The beehive dome on "pseudo" cylinder	
	The "false" dome on cylinder	
Chapter 9:	The cone on cylinder	53
	Bophuthatswana	
	Ciskei	
	Gazankulu	
	KaNgwane	
	KwaNdebele	
	KwaZulu	
	Lebowa	
	Qwa Qwa	
	Transkei	
	Venda	

Chapter 10: Squares, hexagons and octagons 75
The hexagonal and octagonal house forms
The cone on cube
Chapter 11: The ridged and hipped roof 85
Chapter 12: The gabled roof 89
Chapter 13: Variations on the ridged roof 95
Chapter 14: Some hybrid house forms 99
Chapter 15: The highveld house 101
Chapter 16: The verandah house 109
Chapter 17: Other rural structures 114
The father's house c. "Great Hut"
The wife's house
The cooking area
Granaries
Animal enclosures I. Cattle
Animal enclosures II. Goats, sheep and pigs
Animal enclosures III. Poultry
Public places
Entertainment
Initiation lodges
Stilt houses
Chapter 18: A survey of traditional building methods 123
Structural systems
Building systems
Setting out
The foundations
The walls
Wall plates and eaves finishes
Floors
Roof structures
The thatching
Ridge cappings
Doors and windows
Chapter 19: Rural settlement patterns 143
Community settlement patterns
Prehistoric settlements
The Venda fortified village
The Zulu Royal Kraal
The Zulu homestead
The Ambo village — Namibia
The "Resettlement" plan
Homestead settlement patterns

Bilobial dwellings I. Buffelshoek 471 IQ
Bilobial dwellings II. Further development
The Ndebele bilobial
The Pedi bilobial
The South Sotho homestead
The Zulu kraal
The Thonga household
Some general conclusions
Chapter 20: Social and cultural aspects of rural buildings 163
Approach to the household and etiquette
Ancestral spirits
Protective medicine
Division of space
Division of labour in house construction
Chapter 21: Wall decoration
Techniques of wall decoration
Decorative themes
The highveld wall cupboard
Decoration and house function
Chapter 22: "The Birds are Back" — A review of Southern African squatter settlements in the late 1970's 171
A short history
The places
The communities
Squatter dwellings
Basic services
Economic infrastructure
Social services and facilities
The future: an assessment
Chapter 23: The future 185
Appendix A: The Hottentots 189
List of illustrations 198
Bibliography 204



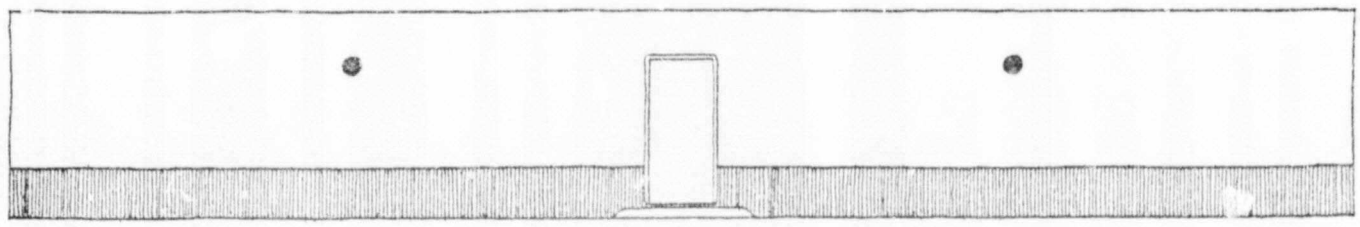
ABSTRACT

The Southern African rural house form has over the years been subjected to a number of pressures of a cultural and technological nature. These have resulted in its evolution through a number of stages usually also involving the introduction of new materials and the development of new building technology. The links in evolution which exist between the one form and the next are discussed.

The special role played by the 'found' and natural material in 'wattle and daub' and traditional thatch construction is stressed as, when in the case of some modern squatter settlements, those building materials cease to be available and substitutes have to be found.

Evolution and change in vernacular architecture have also involved the elements of wall decoration, social and cultural values and the role of the house form within the environment. The various types of rural settlement patterns involving the household unit and the community as a whole are analyzed in both their traditional and modern contexts

The final conclusion arrived at is that although rural vernacular architecture as a whole is a threatened element of our environment, its continued existence may ultimately be guaranteed by the economic necessity of implementing low-technology self-help housing projects.



INTRODUCTION

The rough aesthetics of vernacular architecture have long held a fascination for modern man. The suburban dweller of today has, in the search for rural roots and his lost innocence, borrowed some of the vernacular elements of earlier times and applied them to his dwellings. Unfortunately in many cases, in the process he has also stripped them of their original function and intent and reduced them to decorative patterns and motifs which are but a travesty of their original.

This study does not seek to preach for integrity in the use of materials nor, indeed, to re-establish modern man's lost innocence. This is a record primarily of the house forms and building methods of Southern Africa's black rural peoples and the richness and variety achieved from region to region, from culture to culture and indeed, from person to person. If there is a moral, then it is inherent in the subject matter and the fact that architecture without architects is not only possible but is practiced as an everyday occurrence by ordinary people as part of their ordinary life. The exclusion of the white rural vernacular from this study is deliberate. Although inevitably cultural cross-pollination has occurred between the two groups, the architecture of the latter represents a totally different stage of economic and technological development and therefore should be considered as a separate field of research and study.

The generating force behind rural architecture is the need for cheap durable shelter. This is true for all architecture but in a world where 2 000 new dwellings are required every day in order to house the population growth of the continent of Africa alone this need becomes particularly pertinent. At this level the question of shelter becomes one of resources and how to optimize them. Countries with developing economies are usually unable to afford vast housing budgets. Unfortunately they are also the ones with the most pressing housing problems.

In this light, rural, or to give it a more updated name, "self-help" architecture gains new significance and import. Perhaps one solution to



4 Map of South Africa's major areas of Black rural settlement.

the world's housing shortage lies in the harnessing of the tremendous energy inherent in rural building. Perhaps the answer does not entirely lie in low technology construction, but in a marriage between traditional building methods and an adaptation of modern building materials. This study seeks to bring about an understanding of traditional building systems and the house forms they have generated.

Figure 4.

This study was conducted in the form of field-trips and sought a balance between what are officially regarded as white farm lands and black "homeland" areas. Due to personal problems it was not possible to travel and hence conduct research in the neighbouring states of Swaziland, Lesotho and Botswana. Differentiation was drawn between semi-urban conglomerations such as Silwerkrantz (Bophuthatswana) and Bushbuck-ridge (Gazankulu) which are however essentially rural in character and such suburban areas as Edendale (Pietermaritzburg) and Malukazi (Durban) which come under the control of municipal boards. A special chapter has however been included on the subject of urban squatter settlements.

Recording of architectural examples was conducted by means of site visits. Where deemed necessary paced measurements were taken, but generally only rough plans of settlement layouts were made supported extensively by photographs. Where possible a detailed analysis of the building methods emp[illegible] was made with special attention to the treatment of struct[illegible]e detailing of water-sensitive points. The survey was fort[illegible]s respect in that much of the field work coincided with the rural building season and in many cases actual contructional methods were recorded at first hand. The poor maintenance of some dwellings also yielded valuable clues as to the methods of construction used.

Although the study of rural settlement patterns was never part of the brief, a chapter on the layout of community and homestead has been included in order to set the buildings into their context. This however only aims at providing an outline and does not wish to be definitive.

The substantive part of this publication was submitted as a dissertation to the Faculty of Architecture, University of the Witwatersrand, Johannesburg towards the degree of Master of Architecture, in October 1980.

FRANCO FRESCURA

Johannesburg, October 1980

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I also wish to thank Professor A d'A Guedes whose cheerful supervision of this project carried me through the times when I thought it might never see cold print. Much practical advice and guidance was also forthcoming from Dr Dennis Radford, Michael Taylor, Dr Tim Maggs, Dr David Webster, and Professor Barry Bierman.

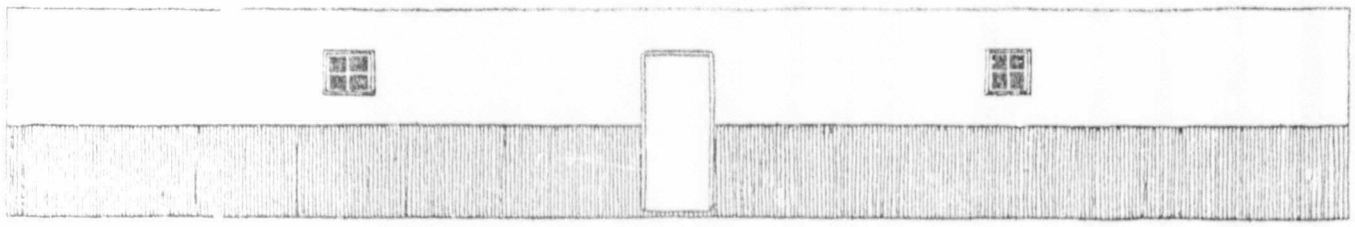
During the course of the research many friends and colleagues contributed help and encouragement which, however small, proved to be invaluable. Dr Harold Annegarn gave much time and an aerial survey of Ndebele rural settlements; Rupert Lorimer MP and Andre Beźuidenhout MPC did their best to extricate me from official red tape; Peter Johnson provided visual material from Namibia which has not been given full justice in this publication; Tim and Lucille Dunne, Clive Emden, Dennis Beckett and John Mattisson proved to be wonderful friends; Etienne du Pisani, Kobus Basson, Kees van der Waal, Chris van Vuuren, Anitra Nettleton, and Marsha Molesworth all helped by providing guidance in the fields of their own work and in many cases also unselfishly shared their own findings with me.

The staff of the Department of Architecture, and of the Gubbins and Architectural libraries at the University of the Witwatersrand are all to be congratulated in the manner in which they have put up with me and my occasionally impossible demands and the way in which they made my research an enjoyable task. The staff of the Cape Archives and the Transvaal Museums Museums Department were also extremely helpful. Credit and thanks for the translation of Kolbe from the original Dutch must go to Mrs Yvonne Garson of the Wits Gubbins Library.

During the course of my field work I had the opportunity of making many new friends and contacts. Mr and Mrs Muller of Morokweng and the staff of the Beuster Mission Station extended wonderful hospitality to me; Messrs Philip Zulu of Fabeni, Rich Avh. Tshivase of the Venda Government, Peter Kerchhoff, E.S. Mokgosi of the Bophuthatswana Government and Ntakana Monare of Silwerkrantz, were all able to provide me with invaluable on-site information and guidance and made it possible for me to gain access to sites which would otherwise have been inaccessible or unknown to me.

Credit must also go to my wife Lesley who has stood by me through the past few years, lending her advice, support and, when needed, typing skills towards the making of this document. My parents and Lesley's both have contributed much encouragement and sound advice in the process of bringing this project to a conclusion.

The typesetting for this book was done by Beulah Cassim and much of the graphic photography by Abe Essack, both of the University of the Witwatersrand Central Graphics Department. Finally full credit much be given to the rural people of Southern Africa whose work this really is. I have been recorder and interpreter but they have been the architects and creators of the environment future generations will be proud to call 'Our Vernacular Architecture'.



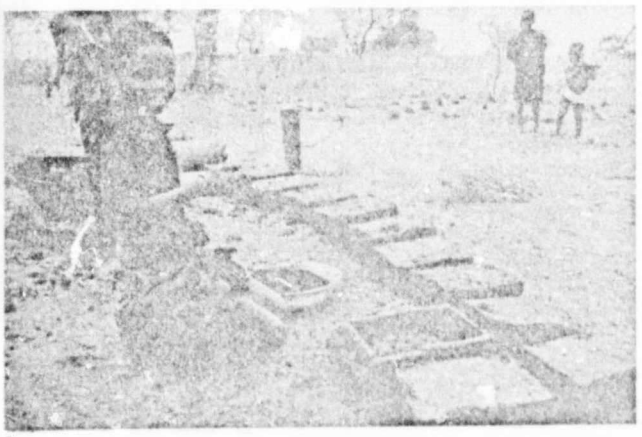
CHAPTER 1: A GENERAL LOOK AT VERNACULAR ARCHITECTURE

One of the truisms of architecture is that the design of any one particular building will be subject to any number of variable factors, any one of which may radically influence the final aesthetic of the design. This has been somewhat negated in recent times since the inception of what we regard today as the "Modern Movement" and our urban preoccupation with high rise construction which, on the one hand, has led to the absurd transplant of Corbe-like structures into Third World surrounds, and on the other has created anonymous, faceless cities indistinguishable from each other and giving rise to McLuhan's remark about "the global village".

When discussing Southern Africa's rural vernacular however we see that the opposite is true. Because of its intensely personal nature, rural architecture has taken the truism to an extent which is almost total. The final house form may ultimately be influenced by any one of the variables associated with culture, local tradition, language, availability of materials, materialism, modern influences, aspirations, finance, social groupings, building methods, site and aspect. If we were to add to this decoration and personal choice, we can see that the number of permutations possible is almost infinite and that for the purposes of study and recording the task well nigh impossible.

Fortunately within this range of variables we are able to discover a series of common denominators, those of house form, structure and construction which, once rationalized, can show if not a development of the house form itself, at the very least a development in the changing use of the house, and the increasing demands that our rural people are making of their own dwelling space. Thus if any major theme were to emerge from this study it must undoubtedly deal with "Change and Adaptation".

This study however does not stop at change and adaptation of the house form but also deals with the materials of its construction. The distinctive character of vernacular architecture can be said to be derived directly from its use of the "found" and "natural" material. Because it uses materials



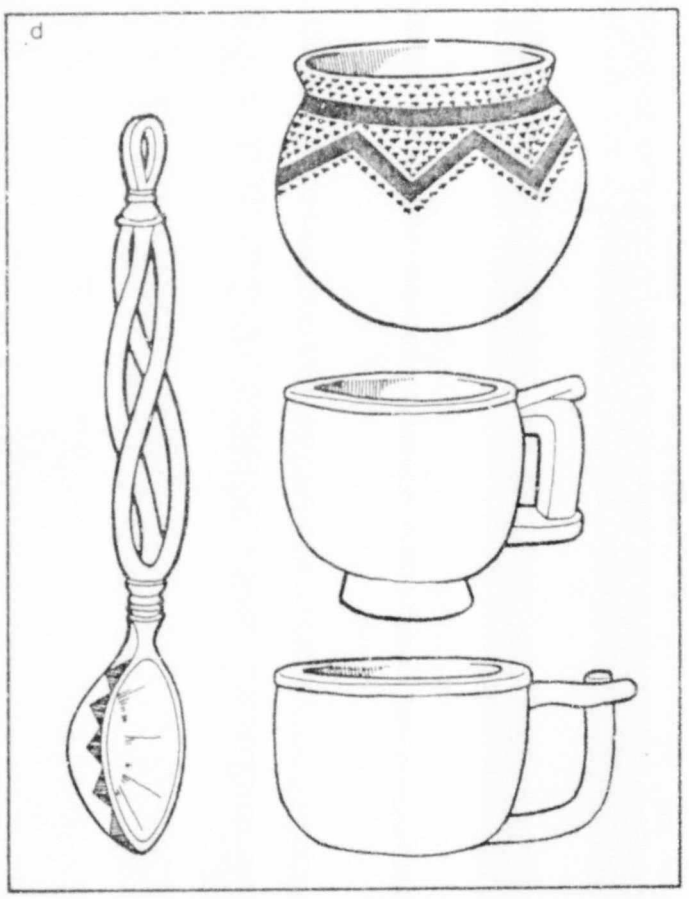
a



b



c



a. Young girl making earth bricks: Xigalo, Gazankulu.
b. Raising the roof-frame onto the drum: Tabankulu, Transkei.
c. Elderly widow preparing thatch bundles: Lady Frere, Transkei.
d. Household utensils: Tswana wooden spoon (left); Sotho-Tswana earthenware pot (top right); wooden milking pails (middle and bottom right). (Walton, *African Village*, 1956).

Figure 8 d.

according to their nature and properties it is a highly functional kind of architecture and because its own performance relies greatly upon that of its constituent elements, its technology, at its own level, is highly developed. This means that the vernacular uses its immediate environment as a ready quarry for the materials necessary for construction: the grass, the sticks, the stones and the soil about it. And when, as was the case with the inhabitants of the squatter settlement at Crossroads, Cape Town, the environs refuse to yield up the materials suitable for construction, then the builder must turn to other sources. In the case of the people of Crossroads they have turned to the consumer society about them and used its cast-offs to create homes from corrugated iron sheets; gardens from empty food cans; welcome mats from milk trays and wall-paper from newspapers and printers' waste.

Thus we derive one of the oft-quoted charms of the vernacular, its ability to blend in with its environs and seem part of it. While this factor may seemingly only be of benefit to a Tourist Board it is the outward manifestation of yet another very important aspect of the rural vernacular: the fact that the rural house is in itself subject to a delicate environmental balance and that rural housing as a whole is part of the larger environmental cycle of birth, life and death. The environmental aspects relating to the house itself will emerge as the study develops but on a general scale we can consider the case for wattle and daub technology, where materials are drawn from the earth, given validity by the builder and once the function and scope for maintenace ceases, the house will be allowed to crumble and return to the ground whence it originated.

Rapoport "House form and culture" 1969.

Perhaps one of the most relevant statemets that can be made about rural or vernacular architecture can only be made in comparison with what Rapoport calls "the grand design tradition". Vernacular architecture is an architecture which is able to be practiced by most if not all members of the

Figures 8 a. b. c.

group. Children are raised in the tradition and when a man wishes to build a home often his whole family and even at times the entire settlement, young and old, will gather to help him. Traditionally each may have his or

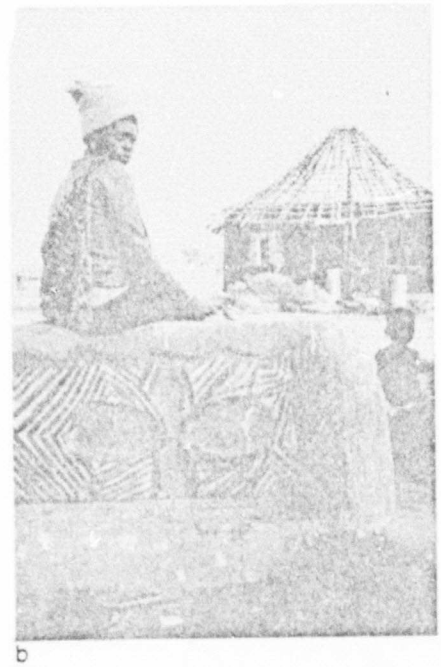
Figures 9 a. b. c.

her role to play in the building and in some societies the construction of a house or hut is often a qualification to be fulfilled as part of a transitional ceremony such as the wedding of a couple or the birth of their first child. Because each individual has an intimate and personal knowledge of the design and constructional process he is able to be actively involved in it even when the society has advanced from being entirely agrarian to a stage where specialised skilled tradesmen are economically able to ply their skills.

This compares sharply with the building practices of a consumer society



a



b



c

a. Woman preparing earth bricks: Engcobo, Transkei.
b. Woman preparing thatch bundles: Xikukwana, Gazankulu.
c. Girl thatching beehive hut: Bergville district.

where no such personal knowledge of the building process is encouraged save on a very general level. In such a society the building of a house is as part of the consumer process as is, say, the purchase of a motor-vehicle or of a kitchen stove, and even those fortunate few wealthy enough to purchase the services of an architect are rarely consulted beyond the professional design stage.

It is perhaps therefore no wonder that architects have an almost love-hate relationship with the vernacular. On the one hand they love to marvel that a building could actually have been erected with absolutely no professional help and elevate vernacular to the status of a folk art and the pinnacle of the personal statement (architecturally speaking, of course!) On the other let anyone suggest that man has been housing himself for aeons without the aid of architect, town planner or quantity surveyor, and suddenly vernacular is downgraded to mud huts, hovels, infested warrens unfit for human habitation.

A general discussion on the subject of the vernacular, its definitions and parameters, could become a volume in itself always providing that there was someone interested enough to write it and bored enough to read it. Perhaps therefore many of the answers that arise from this chapter will be answered later within this volume.



a



b



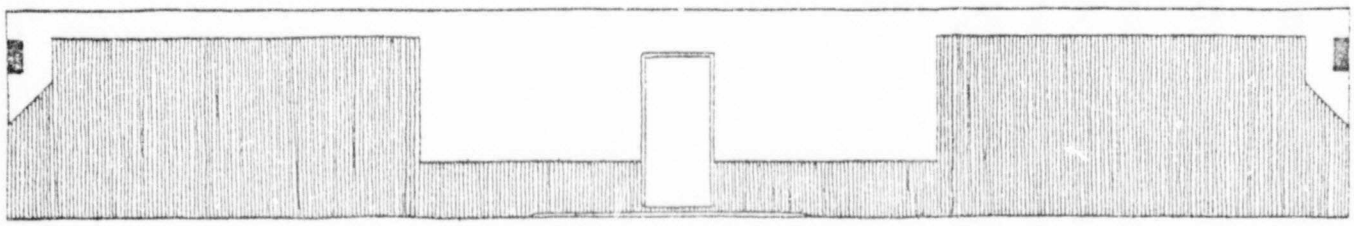
c

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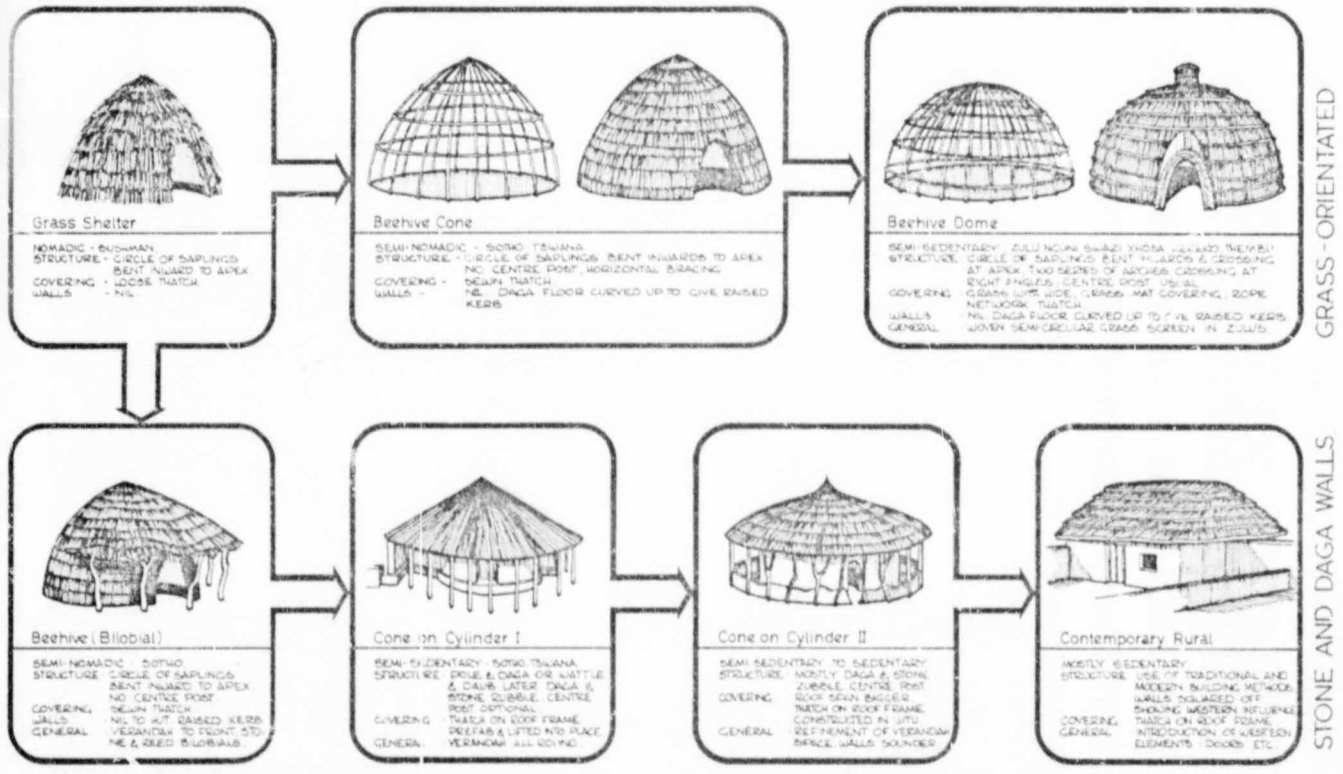
CHAPTER 2: PARALLEL TECHNOLOGIES

In a general sense two major technologies have arisen over the years in the South African rural vernacular. Although both probably have derived from a common nomadic root, the branching off occurred not so much as a result of cultural differences as due to purely locational influences.

Grass-orientated technology seems to have become predominant amongst the Swazi, Zulu and Xhosa groups whose major areas of settlement lie largely along the rain and grass rich coastal lands east of the Drakensberg. It was this combination of rain and grass which encouraged the house builder on the one hand to shy away from easily eroded mud walls whilst on the other to invent a house form which was entirely dependent upon the application of various types of grass plentiful in the region.

Wattle and daub construction on the other hand is found predominantly amongst the Tswana, Venda and Sotho groups who inhabit the much dryer highveld regions where rainfall is less likely to erode exposed walling and where there is less demand for sophisticated methods of waterproofing the roof.

In a general sense both technologies seem to share a commond root in the nomadically-orientated primitive grass and sapling lean-to shelter and its subsequent development, the beehive cone, neither of which is found today as a genre in vernacular architecture. Pictorial records from these early days are sketchy and generally open to interpretation but it would appear that both highveld and lowland residents constructed homes which up to the early 1800's were in the form of a conical dome. The split, if such a word can be used, occurred in or about the years of the Difaqane or the "scattering of the people", in the early 1820's, when as the result of Zulu aggression whole areas were depopulated and laid to waste as entire communities fled before Chaka's impis. Some moved further inland towards the area we known of today as Botswana. Others moved into the mountains of Lesotho where many years later they were to be welded into the Basotho nation under the leadership of Moshoeshoe I. In both cases



the new environment was consicerably harsher than before and, most important in our case, the various grasses necessary for construction were no longer freely available.

This meant that as the source of materials changed so then also did the building methods and thus the house forms of the displaced communities. Judging by the drawings of William Burchell in about 1812, the Tswanas had already bridged the gap between conical dome and cone on cylinder even prior to the period of Difaqane. On the other hand the Sotho adaptation of the conical dome was to survive well into the 1940's when Walton was to research material for his book "African Village".

The Zulus however were to adopt the beehive theme as their own and develop the conical dome into a full hemispherical one which has survived in some areas of KwaZulu right to the present day. This is a house-form which involves a sophisticated technology which Prof. Barry Bierman has compared to that of a Boeing 707 — not as high in degree but certainly in kind.

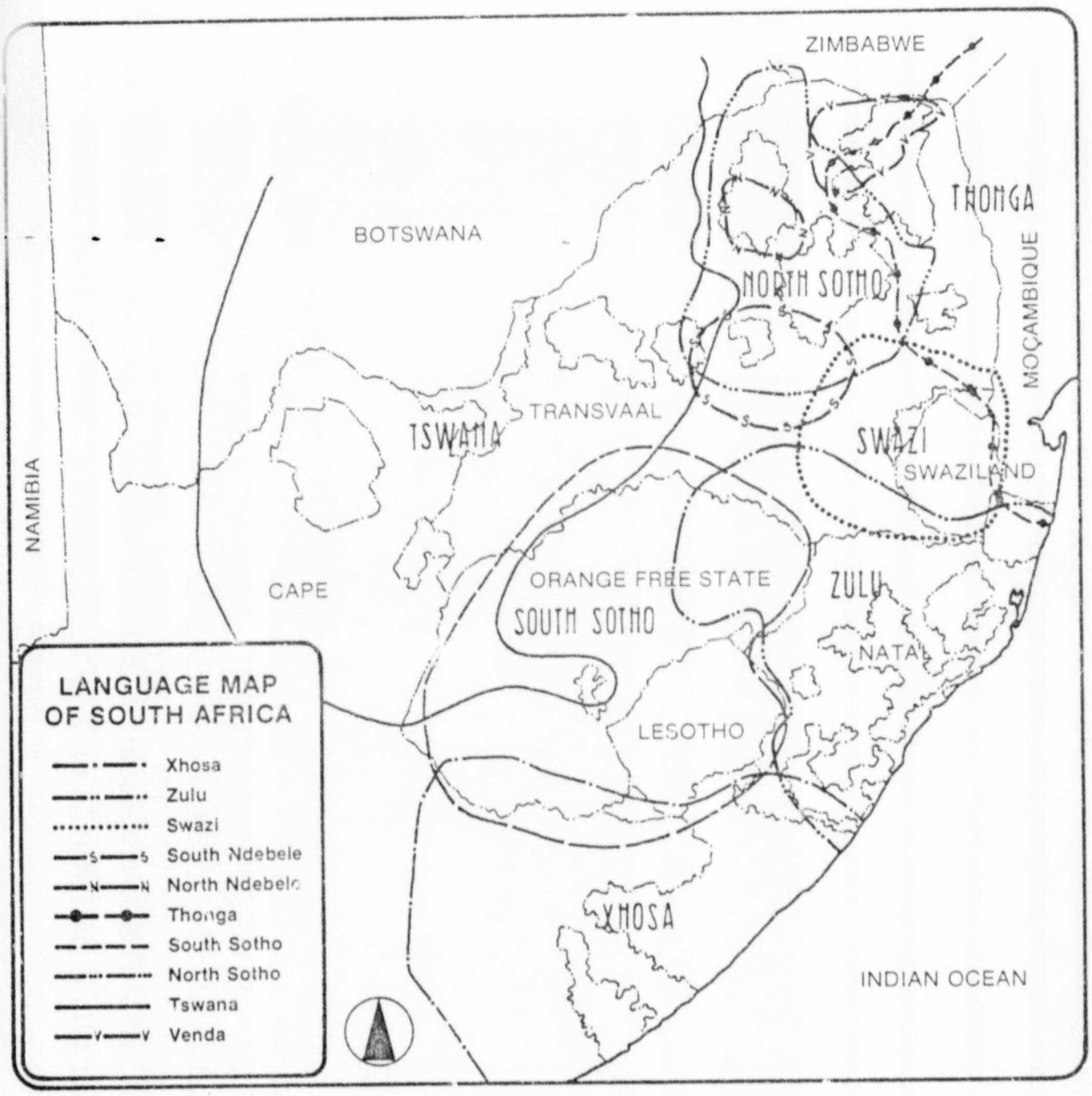
The development of parallel technologies in rural architecture.

Figure 56.

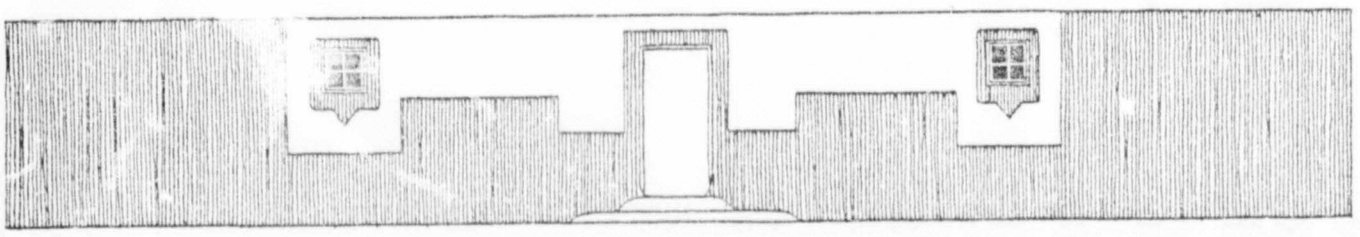
Wattle and daub technology, through the availability of some materials and the lack of others was to develop the wall as a constructional element and refine it to a stage where in some later examples, the wattle disappears entirely and the wall becomes fully load-bearing. Thus the walls not only achieve full structural status in their own right, but also become the early fore-runners of pizé-de-terre construction comparable to some forms of European vernacular architecture. Significantly this form of construction reached full maturity in the drier highveld regions and the interior of Southern Africa.

It is also interesting to note that as a result of greater rural concentrations of population in what were hitherto grass-orientated technological strongholds, the subsequent reduction in the supply of grasses suitable for construction has led to these areas also moving into wattle-and-daub construction. However, although this changeover can be reckoned to be nearly four generations old in some areas, generally speaking, Zulu, Swazi and Xhosa construction, using the new technology, is inferior to that of the Sotho or Tswana. One interesting exception can be found in the nQutu area where in the last century, some Sotho levees who fought with the British in suppressing the Chetshwayo uprising, were rewarded with land grants in the heart of Zululand. Although today this group speaks Zulu, observes Zulu custom and to all intents and purposes is Zulu, the Sotho building vernacular has stuck with them and their houses are consistently superior to those found in their immediate surrounds, through a combination of Sotho wall construction and Zulu thatching.

On the other hand field observations have shown that where ridged or hipped roofs have been developed and used in the Highveld regions, their thatching is consistently weak in such water-sensitive areas as ridges and hips, whereas the Zulu thatcher has no such problems in resolving these details.



Language Map of South Africa — After van Warmelo 1952



A second and more pertinent theme to this study is the gradual evolution of the vernacular house form through its various stages and permutations to its present point of development.

When dealing with the rural vernacular in a more general and purely visual sense, we find that hut and house forms underwent four major traceable stages of development. The house-form in each stage is distinct and different from either those which precede it or those which follow it and is marked by major structural differences which in their turn also usually involve the introduction of new materials and even new building technologies.

Figure 17.
Figure 18 a.

Stage one encompasses the beehive house form including the primitive shelter, the beehive cone, the beehive dome and all subsequent developments which see the dome raised on drums of varying height. This house form is generally associated with grass-orientated technology and although in its later developments a wall visually distinct from a roof becomes identifiable, generally speaking there is no differentiation between the two. To all intents and purposes the wall is part of the roof and the roof similarly merges with the wall, this close identification of the two being largely due to the fact that they share a common structural framework which does not allow for a distinction to emerge.

Figure 18 b.

Stage two includes all variants of the cone-on-cylinder and cone-on-cube house forms including the "verandah" house. This stage is typified by the emergence of the roof and the wall as separate and identifiable structural elements. Deliberate eaves are formed for the first time and windows also find expression at first merely as ventilation flues and subsequently as light-admitting openings, the size increasing with the sophistication of the resident's life-style and the builder's constructional methods.

If we were to consider the house form in terms of structure alone however, we find that in spirit there is little to differentiate this stage from the previous one. The beehive structure is essentially a timber frame which

has been cladded over with thatch. The cone-on-cylinder is largely a timber roof frame which is supported by vertical timber posts set within the wall. Thus both structures are essentially timber framed and it is only the the manner in which the cladding is applied that leads to a differentiation between roof and wall. In the latter example the wall therefore acts as no more than an infill panel and a bracing agent in between the effective roof supports.

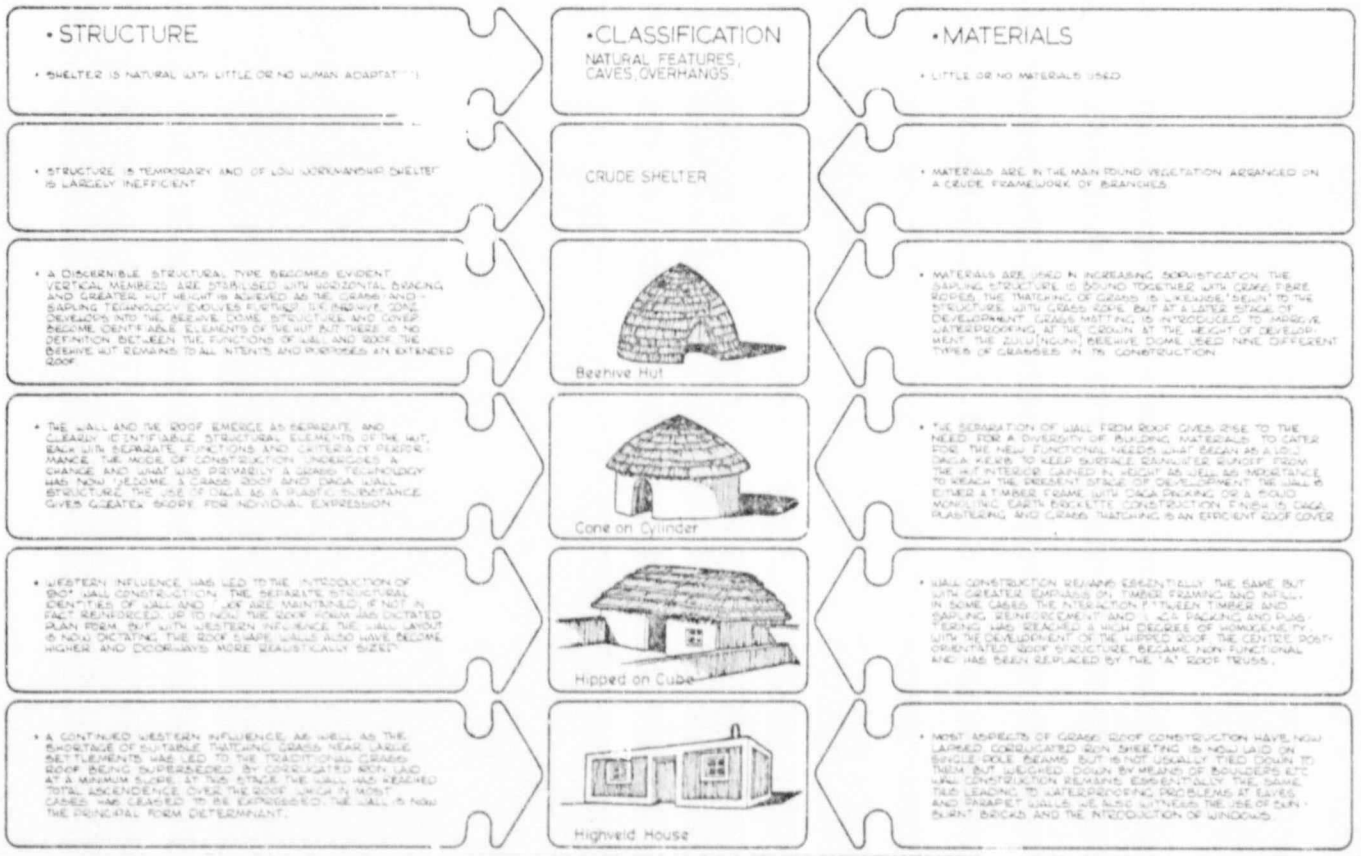
This is not true however of all conically-roofed houses. In such areas as Venda, Ciskei and Bophuthatswana the wall has emerged as a load-bearing structural element of the house, largely because a threatened or real shortage of timber has forced the discontinuation of usage of posts. In such cases additional structural innovations, such as the cross-trussing of the roof frame have become necessary in order to compensate for the increased lateral thrust imposed by the roof on the walls.

Stages one and two are also linked by the fact that up to this point the limitations of a radially-orientated roof framework have dictated both the floor plan shape and its size, the average roof radius being approximately 3,000 m.

In stage three the invention of the triangulated roof truss has liberated the wall plan from the limitations of a radial roof system, and for the first time the house plan is dictating the shape of the roof and not vice versa as was the case hitherto. Generally by this stage walls are fully load bearing, and floor plan development is linear, rooms being set in a row. To this stage also belong gable-ended houses but field research thus far has yielded little to show that the expansion possibilities of this form are being explored to any great extent in our rural vernacular. Generally speaking the rural thatcher has not yet found a solution to the problems of waterproofing of the roof ridge or the hips. Various attemps at solutions have been observed including the forming of ridge pieces in mud, cement or from galvanizing, but mostly these points are left open to the elements. Ingenious ridge-capping methods have however been developed locally in Western Lebowa and in KwaZulu.

Figure 18 c.

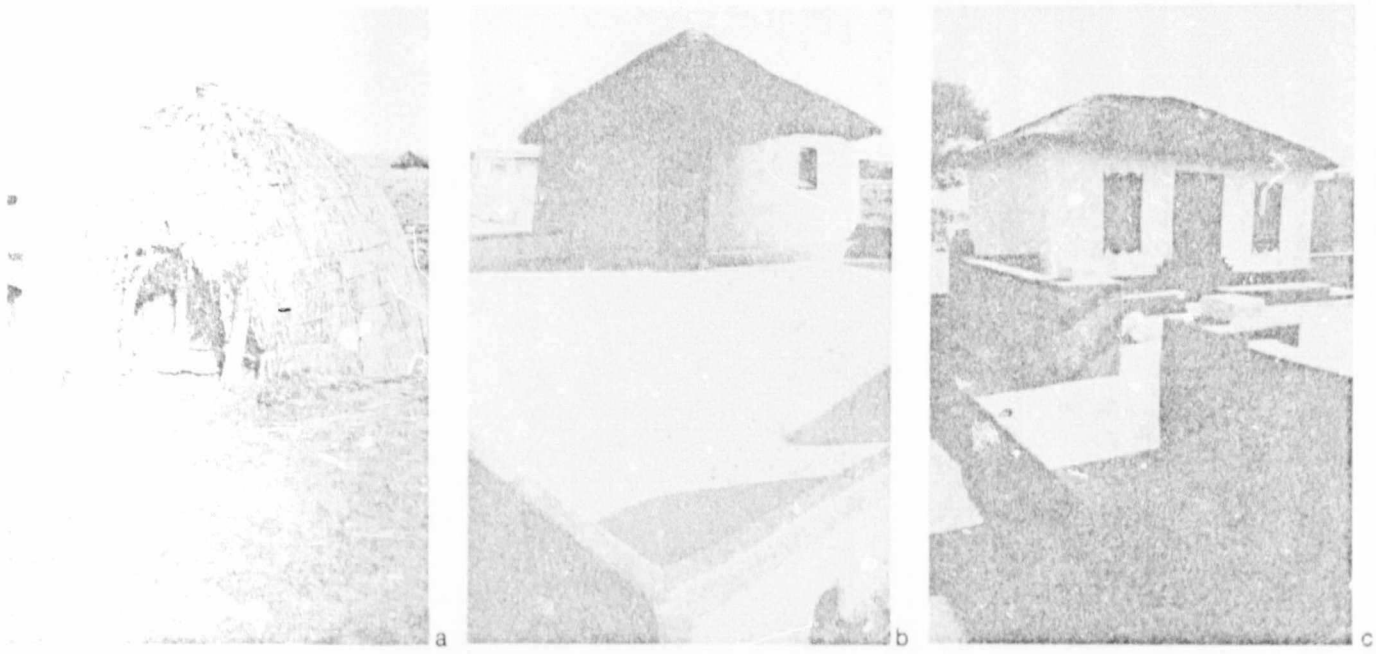
Bearing in mind the progression that has been followed in the previous three stages, expectations dictate that stage four should include such thatched houses as the 'L', the 'U' and the 'H' plan as basic deviations from the ridged roof house form described in stage three. This however is not the case. Whilst it is true that L-plan houses can be found in the rural vernacular and at least one 'U' plan house has been recorded (near Thaba 'Nchu, O.F.S.) these examples are few and far between. The reasons for this seem to be two-fold. Firstly whilst the failure by rural thatchers to



Development of the house form.

master fully the detailing of hips and ridges is not in itself vital (save, of course in torrential rains!) it does mean that they similarly would not be able to cope with the introduction of water-sensitive valleys in a roof technology. Unlike ridges and hips, which are sensitive only to rain water falling directly upon them, valleys serve as water collection and run-off points on a roof and thus are far more susceptible to poor detailing.

Secondly the introduction of modern roofing materials such as IBR and corrugated iron have allowed the house plan to depart from the dictates of a lagging roof technology and develop strictly in response to the demands for living space by the residents. Thus it seems that current technological developments and the increasing affluence of rural dwellers has allowed rural architecture to leap-frog over this stage of its development into the next one.



a. Beehive dwelling: Ndalini, KwaZulu.
b. Cone-on-cylinder: Silwerkrantz, Bophuthatswana.
c. Ridged and hipped roof: Memehlabi, Lebowa.

Stage four therefore sees the development of what we can best describe as "the Highveld house", thus named because of its predominance amongst the rural dwellers of the Transvaal and O.F.S highveld. This house form usually consists of load-bearing walls which carry a lean-to corrugated iron roof falling to the rear of the unit. Eaves are generally only created at the rear and the other three sides are trimmed by means of low parapet walls. The roof thus disappears as a visual element of the house form whilst the walls become dominant. Technological problems usually arise in such areas as the lintels, the waterproofing of parapet walls and the method of holding the roof down.

However for the first time the house plan is now able to grow organically almost at will. The principle of the lean-to roof, if controlled judiciously, can allow the house to expand until either the residents' demands for more space are met or until the house runs out of ground into which to grow.

In general terms therefore it will be seen that the house form has moved from a stage when structure failed to differentiate between roof and wall functions; through various developments which saw increasing emphasis being made upon the structural role of the wall until the final stage when the wall became the dominant visual factor of the building, the roof having become almost totally subject to the demands made by floor plan.

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