



Anthropology and the study of earthen architecture in South Africa

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The contribution of anthropology to the study of shelter in Africa has been found wanting. Social Anthropology in Africa and South Africa in particular has been guilty of this neglect, while scholars from the *Volkekunde* paradigm have been documenting house, settlement and material culture since the early 1900s. This neglect by anthropology as a discipline could be remedied. The anthropologist as a fieldworker is ideally positioned to study local knowledge and its manifestations and transfer in the earth building world. Among others the resultant research could contribute to our understanding of how poor people use earthen building knowledge to adapt in changing environments such as informal settlements.

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Humans reveal a profound relation to past locations of residence through the faculty of memory. Humans also exhibit vivid memories of the natural resources – of earth and plant matter – which were utilised to build dwellings and shelter in past locations. The knowledge systems of how they build in the present time have a strong and often persistent referral point to past practices, even if the present abode is devoid of much of those earlier resources. The tangible built environment can only be fully comprehensible in considering the intangible domains of the human-built shelter. Thus, socio- cultural institutions such as ritual and kinship manifest within and can only be understood within the spatial framework of built structures.

With reference to the above context, the issues indicated below will be discussed in this article. One needs to understand what comprises earth-built structures and earthen architecture. Studies on earthen architecture in Africa and South Africa have emanated from a wide range of disciplines and will be analysed. Although these studies have become an interdisciplinary endeavour it is necessary to evaluate the specific role of anthropology in this research. Following on the critique of anthropology and its role in the study of earthen architecture the question remains whether anthropology still has the capacity to study earthen architecture. Among a number of possible fields of contribution it will be argued that anthropology has relevance within the domain of local or indigenous knowledge and its application to contemporary housing needs.

1. Shaping earth for shelter: place, space, shelter and dwelling

“The essence of place lies in the quality of being somewhere specific, knowing that you are ‘here’ rather than ‘there’”
(Rapoport 1975:38).

A place has to be transformed into acceptable space before humans consider it liveable, meaningful, and integrated into the landscape.² According to Augé, a place is a space where everyone knows where to belong and which consists of relationships and rules of residency which have been established over generations. In contrast, this acquired sense of stability changes when people go to other places – what he termed non-places that cause displacement (Augé 1996:82).

2 Current discourses on place, space and landscape have grown significantly and have drawn into the fold not only anthropology but philosophy, architecture and the building sciences, sociology and history. The relation to memory and event has also been under discussion. Compare Bourdieu, Casey, Connerton, Cubitt, Franklin, Halbwachs, Jimenez, Moore, Tilley, et al. in Van Vuuren (2008).

Jimenez (2003:139) views place as a conventional geographical phenomenon that can be physically demarcated. In contrast, space constitutes a field of relations. Space can be seen as places that are activated and populated. One such populated place is the human shelter. Shelters feature as fixed or temporary, complex or rudimentary, centralised or detached abodes.

There is an array of terminologies that describe the shelters in which humans live. One such term – ‘dwelling’ – is considered by Paul Oliver as “both process and artefact” and he says that “all houses are dwellings but not all dwellings are houses”. Dwelling implies an abode, “to live in, or at, or on, or about a place” (1987:8). It is both ‘structure’ and ‘place’ with its focus as ‘residence’. A house is an “animate body based in the chthonic (rooted) part” (Rostas 1996:19) of the ecological relations of a community with the environment. It reflects the cosmos and serves as a mnemonic device charged with meaning and symbol (Rostas 1996:19, Jones 1996:22).

Dwelling’s protective concept is encompassed in shelter. The artefacts of humankind do not outlive their dwellings and may change ownership and also acquire a ‘social life’ (Appadurai 1986). But as Oliver argued, houses outlive lineages (1987:10) and dynasties for that matter, and are remodelled and restored, destroyed and rebuilt. A dwelling in any society is the largest monument that a single person and family is bound to construct in his/her lifetime. The life history of humans is contained in the dwelling, which Oliver describes as the “theatre of our lives, where the major dramas (or rituals for that matter) of birth and death, of procreation and recreation, of being in labour are played out and in which a succession of scenes of daily lives is perpetually enacted” (1987:15).

It follows logically that humans have a relation often in the umbilical sense not only with the dwelling as shelter and its socially conceived spaces, but also with the material make-up of its building material in the sensual capacity. A house has a ‘feeling’ and it discharges pleasant odours (or unpleasant for outsiders), the walls have a sensory capacity and the roof might signify safety and an aesthetic sensation (e.g. a thatched roof), while the floor allows for ‘smooth’ movement. These sensual experiences which subsist in memory might have long- or short-term implications for humans.

Owning a house in most societies means everything. In Ghana in Tallensi society all possessions and livestock are contained within the walls of the house. To ‘have a house’ will elicit a blessing from a Tallensi diviner, but conversely there is a curse for ‘not having a house’ (Denyer 1978:16). Ndebele men in South Africa subject themselves to the ordeals of the male circumcision ritual with the principal aim in mind: to marry, to build a first house (an ‘*iqhathane*’) and to establish a family. Without a house the principal ideal remains unfulfilled. Through ‘house’

(‘*indlu*’) plans for a future homestead (‘*umuzi*’) (house, courtyard walls, cattle kraal, granaries, and secondary buildings) and for offspring are envisioned and conceived. Only then is he entitled to be ‘*umnomuzi*’ or ‘owner of a homestead’ (Van Vuuren 1983). Through the house both the tangible and the intangible domains of shelter materialise.

2. Shelter of earth

Earth building has been with us for 10 millennia and is thus a surviving witness to the history and culture of humanity, particularly in regions where familiar landscapes have been richly endowed with earth structures, argue Houben and Guillaud (2005:4). We owe our knowledge of how earth was used and developed over centuries to archaeology. Archaeology suggests that both global and regional approaches are necessary, and that it is necessary to draw on history, anthropology and ethnology (Houben & Guillaud 2005:8). The archaeological record shows that the Hierakonopolis building in Egypt (dated 2686 BC [4696 BP]) can be heralded as the oldest freestanding mud brick structure in the world. The ancient Egyptians developed brick vaulting around 1200BC, as is evident at Luxor (Houben & Guillaud 2005:8).

Architecture in North Africa was influenced by Mediterranean civilisations which introduced sun-baked bricks and rammed earth. East Africa was influenced by Indian and Melanesian migrants who brought daub and direct shaping to that part of the continent. The Nubians introduced sun-baked earth to Kenya between AD300 and 800. Islamic architecture (from AD1000) was a major influence in North and West Africa, as is evident in the mosques of San, Djenne and Mopti. Once the technique of sun-baked earth had been mastered it diffused to the West African kingdoms of Songhay (AD1300 – 1500), in Ghana (AD700 – 1000), the Malinken of Mali (AD1200) and the Hausa states (AD900 – 1800) (Houben & Guillaud 2005:9).

Globally, earth remains the most frequently used building material in low income construction (Houben & Guillaud 2005: ix). Earth has almost no limitation in terms of its potential once its defects are addressed. Surprisingly, many traditional methods comply with highly standardised modern practices, as Houben and Guillaud (2005: xii) contend that (the) “‘scientific’ knowhow combines with traditional *savoir-faire*”. Thirty percent of the world’s population live in homes built from unbaked earth. Roughly 20% of those live in urban and semi-urban areas. Avrami (2008:93) estimated that 80% of the world’s population live in houses which can be termed ‘vernacular’. Fifty percent of these houses are built from unbaked earth. In Peru, for instance, 60% of people live in houses built of rammed earth or ‘*pise le terre*’. Seventy-two percent of India’s population reside

in earthen houses (Houben & Guillaud 2005:6). Of the 469 'ethnic' communities in India the majority still build their private houses with earth, bamboo splits, cow dung and husk according to Joshi (2008: 44). Folkers (2010:223) estimated that by 2005 at least half of all African houses were mud constructions.

We can identify eight basic EBT³ processes, namely adobe or sun-baked earth brick; rammed earth or '*pise le terre*' or compacted formwork: clay-straw, which is soil dispersed in water to form a greasy compound and added to straw, wattle and daub (or earth and wicker) in which the wooden structure is woven with lattice to which clay is added; direct shaping, where only the hands of the artisan is used to shape the product; compressed earth blocks; cob, which is the stacking of earth balls (Houben & Guillaud 2005:4); and, sculpting the landscape or dug-out technology (2005:166). These eight processes can be further divided into what Houben and Guillaud have termed the 'wheel' of earthen construction.

→→→ SOIL/ EARTH →→→	1	DIG →	DUGOUT
	2	COVER →	EARTH SHELTERED SPACE
	3	FILL →	FILL-IN
	4	CUT →	SOD
			COMPACT
	5	COMPACT →	PRESSED BLOCKS
			TAMPED BLOCKS
			RAMMED EARTH ('PISE LE TERRE')
	6	SHAPE →	DIRECT SHAPING
	7	STACK →	STACKED EARTH
	8	MOULD →	MACHINE-MOULDED
			HAND-MOULDED ADOBE
HAND-SHAPED ADOBE			
9	EXTRUDE →	EXTRUDED EARTH	
10	POUR →	POURED EARTH	
11	FORM →	COB ON POSTS	
		STRAW CLAY	
12	APPLY →	DAUBED EARTH	

Figure 1: The EBT process. Adapted from Houben and Guillaud (2005:5)

3 EBT = Earth Building Technology, an abbreviation now widely used.

Mud and plant matter are synonymous and complementary in earthen construction. Fibres such as grass, the chaff of domesticated grains, bark, leaves, etc. are mixed into mud mixtures for various purposes. Fibre has the capacity to distribute tension caused by shrinkage upon drying, it accelerates drying by using the fibres as conduits, it lightens the material and fibres increase tensile strength. The fibres of Africa come from barley, straw, rye, wheat, chaff, rice, hay, hemp, elephant grass, etc. Added animal products are excrement or animal dung, blood, fur and the hair of horses, cattle and camels. Lime from shells, animal glues and termite hills add to the elasticity of compacted earth (Houben & Guillaud 2005:82, 83).

In the mid-18th Century in rural and peasant Europe vernacular forms of architecture still dominated in the shape of thatched roofs, stone walls, cob, mud and wattle, timber frame houses, turfs, slates, etc. The heritage of EBT and its continued use especially in the northern hemisphere countries is the focus of a seminal contribution by Correia, Carlos and Rocha (2014). They offer a comprehensive range of case studies on earthen construction in the fields of construction techniques, territory and environmental adaptation, energy efficiency, natural hazards and risk mitigation, etc.

By the mid-1700s Africa had already been 'discovered' but was still sparsely documented in terms of European scientific inquiry. Although we know now that earth building has been in Africa for centuries the first Europeans painted a varied picture of the African dwelling. A few individual Europeans reported on their encounters and discoveries of African society and its built culture. Oliver (1987:9-12) argued that much of our databases on dwellings including vernacular architecture emanated from the contributions of self-taught amateurs as a result of these first encounters between the late 1600s and early 1800s. One of them was Dapper, who stated in 1686, after travelling to Benin, that the houses and villages were in line with those of the Dutch as far as cleanliness was concerned. In 1733 Moore went as far as building an entire factory in Gambia using indigenous architectural resources. In 1785 the Swedish naturalist Andrew Sparrmann recorded that 'Hottentot' houses were neat and inartificial in their construction. In 1789 the freed Nigerian slave Oluadah Equiano reported as follows on the villages of the Ika district in Nigeria: the earth building process is essentially a communal endeavour and that each home owner is his own architect (as cited by Oliver 1971: 10).

As far as Southern Africa is concerned Oliver listed and cited a number of contributions from this period on Khoekhoen and San settlements by Kolbe (1727) and Chapman (1863). In 1806 John Barrow wrote his 'Dwelling in Booshwana' and found the houses to be as good as the *Roman casae*. In 1881 Holub described the process of moving a house in Serowe. The descriptions by Campbell (1813, 1820) and

Dundas, who visited Dithakong (1801), and Campbell at Kaditshwene (1822) were helpful in understanding early Tswana settlement, as were the earlier drawings by Liechtenstein (1805) and Burchell (1811). The drawings of the missionary Casalis (1833) on the Sotho dwellings were a significant contribution (Oliver 1971:10-12).

Others, such as adventurers, were less complementary. Rene Caillié visited Timbuktu in 1830 and found a city consisting of 'nothing but a mass of ill-looking houses built of earth' (Oliver 1971:8-9). Similarly, Clapperton commented in 1857 that Kano was grievously disappointing. But in 1857 the geographer Dr Barth left detailed descriptions and measurements of the same city as well as the cities of Katsena and Timbuktu. Sir Richard Burton's findings on African building were arrogantly biased in the worst sense: "Circularity (he argued) was a result of barbarians' deficiency in inventiveness" (Oliver 1971:9). The irony of these early travelogues was that they still contained more detail on African architectural forms than their colonial administrator successors were to deliver in the 1800s and early 1900s (Oliver 1971:11).

3. The sciences and African building

It is a daunting task to list all the contributions on African EBT by architecture and the building sciences. A few stand out, however, namely those of Prussin (1969, 1982, 1992), Oliver (1971, 1987), Denyer (1978) and Folkers (2010). Some contributions were area specific or regional in focus and will be discussed further on.

Oliver's work was seminal from a historical and chronological perspective. His historical perspective on African settlement together with the identification of regional trends was a pioneering enterprise. The French scholar Labelle Prussin remains a leading figure. In her study of architecture in Northern Ghana (1969) she studied six communities, documenting the cultural history, agricultural activity, settlement morphology, building technology, surface decoration and internal compound organisation of each. Her description of the environmental demands of the northern region in terms of climate, vegetation, geology and hydrology forms the background to understanding regional responses to choices made in terms of EBT. Her publication on African nomadic architecture is exceptional (Prussin 1995).

Denyer, an architect, compiled an analysis (1978) on the architecture of more than 1 500 tribes or groups. She admitted that early contributions did generalise and were often 'patchy' despite emerging from general anthropological work or even anecdotes. The river basins of Africa – the Niger, Nile, Zambezi, Volta and Lake Chad – are more of a style determinant than broad climatic zones (Denyer 1978:3). The fact that the originators (architects) of African buildings

cannot be remembered does not make their products less valid as architecture. Architects realise that the psychological needs of vernacular buildings are more profound than those of suburban houses (Denyer 1978:4).

Earth building in Africa is a cooperative and gender-specific venture: men work wood (and grass, reeds) and women work mud (and decorations). The silt content in most African soils is low, which means that they consist of varying mixtures of sand and clay (Denyer 1978:92). Almost all forming, sculpting and shaping is possible with mud: vaults, domes, shells, flat roofs, two-storey buildings. With good and regular maintenance practices these structures might outlive their builders. Mud surfaces are smoothed with mixtures such as dung and locust bean pods in order to alleviate maintenance (Denyer1978:93). Mud roofs appear mostly in East Africa, West Africa and the Sudan. Denyer's typology of roofs is invaluable (pp102-103). It is the first comparative typology which enables us to identify general trends in design on the continent. Consider for instance, the striking similarity between the grass dome house of the Sidamo of Tanzania (Denyer 1978:109) and the local '*mohlongoafatse*' of the Sotho.

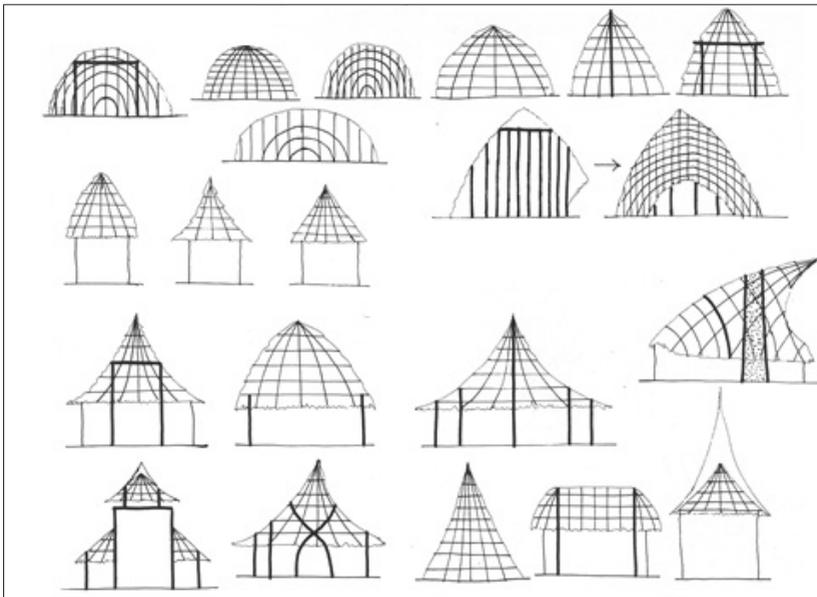


Figure 2: Susan Denyer's thatched roof typology in Africa (1998:102-103)

Wall and floor surface decoration in Africa is not a luxury but an expression of identity, pride and solidarity. The main colours are black, white red and ochre. Relief mud decoration is found among the Fulani, Asante, Nyakyusa, etc. Pebbles, pieces of broken pottery and pieces of mica are used as decoration among the Ibo of Nigeria (Denyer 1978:119). The pebble decoration of the (Ba)Sotho of South Africa and Lesotho relies on a similar technique (Walton 1956, Kaltenbrun 1979). Denyer also compiled a typology of 32 ground or floor plans for African houses. In addition she distinguishes distinct form styles such as the Sudanese, impluvial, hill and beehive styles (1978:159-168).

Scientists in the building and design disciplines are 'getting their hands dirty' as they conduct experiments and tests with earthen materials mostly in off-site laboratories although some are done *in situ*. During the Terra 2008 gathering in Mali it was clear that the disciplines of engineering, geology, architecture and other disciplines have established a body of knowledge on the natural(ist) behaviour of earth during construction. This research emanated not only from African-based projects but also from global ones: in the Americas, the Middle East and the East. I will briefly discuss a few of these projects.

Tests conducted on cob, rammed earth and mud blocks concluded that unfired clay materials exhibit significantly reduced embodied energy, thermal mass, and produced a very good regulation of humidity (Walker, Heath & Lawrence 2008:73). Bathi, Rovero & Toniato (2008: 74) used a three-point bending test for earth walls as opposed to the mono-axial compression test. They used a sclerometer and penetrometer and concluded that earth walls produce better results than fired brick walls. Research on the use of natural stabilisers in sun-dried blocks in Nigeria showed that organic stabilisers such as rice-husk and cow dung increase strength (Nwankwor 2008:69).

The CRATerre Institute in Grenoble, France has conducted outstanding research in earthen architecture, EBT, design, materials, climatological qualities of earthen structures, etc. The scholarship that emanated from the CRATerre initiative has been significant (Folkers 2010:224). In one of their case studies (2008) they conducted separate microbiological tests on certain species of termites which build very durable and rainproof structures using "stable clay which contains biopolymer nanocomposites" (Fontaine 2008:5). Indigenous communities around the world use termite soil as stabiliser additives. In Brazil building engineers analysed oil and vegetal resins from termite saliva. Studies were conducted on how native Brazilians used rammed earth adobe and wattle and daub in earth mixtures which contain termite saliva, animal blood, eggs, horse hair, and vegetable fibres. Such mixtures were tested and found to be

resistant to wet and damp weather conditions. They also showed good structural performance under load-bearing conditions (Pereira 2008:68).

As far as South and Southern African initiatives are concerned it is possible to divide these inputs into the three disciplines which have taken an interest in the earthen architecture, namely: art history and the visual arts with a focus on mural art and its relation to material culture; architecture and the building sciences, which focused on design, style, space, materials and climatological behaviour; and scholars in African languages and anthropology. The following inventory, which is by no means complete, was compiled:

Art history and fine arts	Architecture and building sciences	Anthropology
Esterhuysen 1987	Bierman 1977	Coetzee 1978
Kaltenbrun 1979	Claude 1999	Davison 1984, 1991
Matthews 1971	Frescura 1981, 1985	Dippenaar 1984
Schneider 1985	Hardie 1983	De Jager 1964
Vogel 1985	Jessop 1989	Du Toit 1968
Weiss 1963	Klokke 1978	Herbst 1985
	Knuffel 1973	McDonald 1940
	Larssons 1984	Shaw & Van Warmelo 1974
	Meiring 1955	Stoffberg 1967
	Miller 1991	Terblanche 1994
	Rich 1995	Van der Wateren 1974
	Rix 1999	Van der Waal 1977
	Walton 1956, 1975	Van Schalkwyk 1985
	Zami & Lee 2008	Van Vuuren 1984
		<u>African languages</u>
		Van Warmelo 1930
		Nyembezi & Nxumalo 1975
		Ziervogel 1957

Figure 3: Inventory of research on earthen architecture in South and Southern Africa

The majority of the above research outputs consist of dissertations and theses that devoted attention to the study of ‘Bantu’ or African architecture. Among these studies, some focused on a larger regional or ethnic group (e.g. the Tswana) or community, while others focused on single communities (e.g. the Molepo of Limpopo Province) (Van Schalkwyk 1985). There are also a number of studies that focused on the techno-scientific domain of EBT (e.g. Rix 1999). Contributions from art history

often carried a popular media tag, particularly around the 1950s, when Ndebele mural art and architecture of the Msiza village outside Pretoria were fashionable.⁴ Some of the solid contributions that emerged from architectural studies in this village were those of Meiring (1955), Rich (1995) and Frescura (1981, 1985).

A number of influential contributions on South and Southern African typologies, classification and origins of building styles were those of De Jager (1964), Walton (1956, 1975), Frescura (1981, 1985) and the Larssons (1984). The contribution by Frescura (1981) was one of those that emphasised the value of the pictorial record in postulating chronological sequences (evolution) in house form. Frescura developed the first complete typology using variables such as chronology (1985:96), forms of existence (pp 94-95) (foragers, pastoralists, immigrant influences), and architectural taxonomy (p 98). To date Frescura's work remains the single most important contribution towards understanding regional and European influences in indigenous African architecture.

The rural study of the Zulu grass dome by Knuffel (1973) included detailed work on measurements and indigenous nomenclature; this exceptional contribution is unsurpassed to date. The area study of the Larssons (1984) in Botswana on the Tswana house, among others showed how regional differentiation should be accounted for. The value of the linguistic contributions, for instance, lie in the use of African language as a vernacular to describe "how to build a Swazi hut" (Ziervogel 1957).

The contribution of anthropology in particular necessitates a separate discussion for reason of ideological and theoretical developments.

4. Earthen architecture and Anthropology: Africa and Southern Africa

Lewis Henry Morgan (1965) pioneered the anthropological interest in architecture with his publication *Houses and house life of the American Aborigines*. The French structuralist Claude Lévi-Strauss (1973), who carried out research among the Bororo of South America, was one of a handful of 20th Century anthropologists who studied the house and its linkage to the spatial configurations and aspects of social life. In Africa the French anthropologist Marcel Griaule's seminal work in 1954 on 'deep' symbolism and cosmological principles which determine the entire built landscape of the Dogon of Mali remains influential and has recently become a topic for re-appraisal and critique (Scranton 2007: 24-25). Dogon belief, according to Griaule, is embedded in the ritually aligned granary that served as the foundation of the entire cosmology.

4 A list of these publications appear in Bakker & Van Vuuren (2006).

Architects have always been more interested in anthropology than the other way around. While the anthropologist's interest in built space might be relational and contextual the architect is interested in spaces framed by constructions (Rostas 1996:19). Trevor Marchand of the School for Oriental and African Studies (SOAS) at the University of London, remarked: "Very little anthropology has been dedicated to the study of earthen architecture, either as a built form or process of construction." He also noted that the contributions by architects and art historians were of a "categorising nature or symbolic and stylistic analysis" (Marchand 2010: Personal communication).

Paul Oliver is an outright critic not only of anthropology's absence in the study of architecture in Africa but also of the British tradition of social anthropology. The mindset and focus of social anthropology in Africa and South Africa was not on the tangible and material products of the societies which they studied, but rather, as Oliver (1971:13) stated with reference to Radcliffe Brown and Evans Pritchard, on "internal principles, structural systems, kinship and lineage, clan and blood brotherhood" and "divine kinship". Not only are shelter and house absent, but embedded in the tradition of the 20th Century functionalists was the deliberate avoidance of material culture – the artefact and dwelling – in general.

This avoidance manifested as a reactionary stance against diffusionism, evolutionism (and romanticism) in anthropology. It resulted in a complete break with studies of both the tangible built environment and the technological environment of humankind (Pfaffenberger 1992:494). In the process museum-based anthropology was also sidelined. Material culture studies were deemed an embarrassment and something conducted by amateurish fieldworkers. Bronislaw Malinowski, the founder of functionalism, considered material culture as field of study to be "scientifically sterile". The rejection of the object – and one could pair this with the rejection of shelter and house – also emerged as a new quest for empiricism and professionalism on behalf of these functionalists and other critics (Pfaffenberger 1992:491). The absence of any studies in material anthropology, least of all earthen architecture from the social anthropology tradition in Southern Africa, is conspicuous, and adds to the critique by Oliver and others.

The founders of the British tradition deemed the study of house and artefact unscientific when weighed against serious fieldwork – participant observation – where studies in kinship, social relationships and social structures began to dominate. The result was that in the Southern African context we received the grand monographs in social anthropology from Richards (1939) on work and hunger, Turner (1967) on ritual and symbolism, Colson (1971) who pioneered studies in the anthropology of dislocation, and in South Africa, Krige (1939), Hunter (1936), Schapera (1953), Hilda Kuper (1947), Gluckman (1958), to mention a few.

In addition to the opposition to the Austro-German diffusionism it is necessary to emphasise the duality in ideology, history and methodology in the scholarly development of anthropology in South Africa. At the mostly Afrikaans-medium universities the heritage of *Volkekunde* prevailed, which stemmed from the German (*Völkerkunde*) tradition. At the English-medium universities the move to Social Anthropology since the early 1900s was built on the British Functionalist tradition. In the *Volkekunde* tradition the unit of study consisted predominantly of the categories of 'ethnos' and 'tribe' while 'tradition' and 'culture' were perceived as more or less stable entities. In the liberal social anthropology the focus was on social systems in flux and constantly changing, while critical thinking on the political economy was at the core of the discourse.

Although the critique was mostly against the latter ideology's purported support of apartheid, research which emanated from *Volkekundiges* and which had a material culture ring to it was also ignored as Oliver mentioned above. Social anthropology for a long time remained critical of any 'applied' notion that could be attached to anthropology. This stance emanated from its opposition to *volkekundiges*, who rendered their services to the promotion of apartheid and its government structures.

The research outputs of *volkekundige* (anthropology) consisted either of settlement architecture encompassing socio-cultural aspects or studies in material culture that included architecture. With reference to Figure 3 (in section 3), the majority of these contributions on the study of indigenous architecture emerged for anthropologists in the *Volkekunde* tradition of the middle and late 1900s. Davison, Shaw, Van der Waal and Van Schalkwyk were museum anthropologists at the time of their publications. Only Shaw was trained as a social anthropologist; the remainder of the studies emerged from the *Volkekunde* school. A significant number of area and community specific studies in traditional architecture emerged. Some of these studies incorporated architecture as part of a wider study of the material culture of a specific community. These studies were produced by both academic and museum anthropologists.⁵

5 The list is as follows: McDonald (1940) on Kwena (Tswana) material culture, Kuper (1940) and Ziervogel (1957) on the Swazi house. Stoffberg (1967) on the material culture of the Ntwane, Du Toit (1968) on Phalaborwa material culture, including EBT, Shaw and Van Warmelo (1974) on Cape Nguni material culture, Van der Waal (1977) on Venda settlement, Van der Wateren (1974) on Tswana material culture, Coetzee (1978) on the material culture of the ImiDushane of the Eastern Cape Xhosa, Van Vuuren (1983) on the Ndebele settlement pattern, Davison (1984) on Lovedu material culture, Hardie (1985) on Botswana/ Tswana, Herbst (1985) on the material culture and EBT of the Swazi, Van Schalkwyk (1985) on Molepo material culture, Terblanche (1994) on the material culture of the Tsonga, and Esterhuysen (1987) on Basotho material culture. Contributions on Khoisan and frontier-pioneer architecture are not included in this list.

Volkekunde was criticised for its 'frozen' ethnographic view and its emphasis on the fixed description of the built environment; it ignored the socio-economic and political dynamics that were at the centre of the social anthropological investigation. However, it was better positioned to provide a survey of past and existing practices of earthen building. To some extent this was due to its close interface with material culture and the collection of material culture by and large and for the purpose of preservation and conservation. From a critical perspective, few of the contributions that emanated from the '*Volkekunde*' paradigm paid attention to the interaction between the built tangible space and the intangible usage of space. The technical database in most of these writings is nevertheless invaluable since it serves as a referral point for earlier practices which might be of value in the heritage industry.

Social anthropology endeavoured to keep in touch with social and political change in British colonial Africa as well as locally. The anthropological study of labour migration from the tribal and rural landscape to the urban fold focused on the impact and dissolution of the social fabric of migrating black people and not on the impact which resettlement had on the built environment, the new dwelling and its artefacts, of the sourcing of material, or the impact of an alien landscape on the former. There were the exceptions. In 1927 (1913) Henri Junod provided us with a detailed account of Tsonga architecture including layout (pp 310-318), the ritual and physical transplant of a village (pp 318-328), and the building of a hut (pp104-111) (see Oliver 1971:13). Hilda Kuper's ethnographic work on the Swazi also resulted in a publication dedicated to Swazi architecture in 1946. Adam Kuper (1978) analysed the symbolic dimensions which are inherent in the understanding of place and space in and around the homestead. He reflects on the dichotomies and binary structures of left/right, east/west, dead/living shed light on the cosmology of space.

Nonetheless, the house was too easily taken for granted and consequently ignored (Carsten & Hugh-Jones 1996:65). Yet, the house represents an extension of the body, an extra skin or an extra layer of clothes. The body reads the house as a mnemonic tool as it moves through 'ordered space'. Habit and habitation causes the mind to build schemes of culture (Carsten & Hugh-Jones 1996:64). But just as our discipline did not investigate the body, it did not study the house either. "Architecture has been curiously neglected by academic anthropology," argued Humphrey (1988:16-18). Instead, architects and art historians have emerged as the founders of theory on anthropological architecture. Internal academic divisions and specialisations are also to blame (Coleman & Collins 1996:14, Carsten & Hugh-Jones 1996:64).

The lack of interest from scholars in social anthropology continued into the 1970s and 1980s with the wave of New Marxism which prevailed at the time. Even though relocation of settlement was studied, the focus was on the life histories of relocatees, the social impact on households and the political economy but not the artefact house. However, the same critique can be expressed against the *Volkekunde* school of this period, where political and judicial organisation and the documentation of customary law of tribes have accounted for a large proportion of postgraduate studies since the late 1960s.

There are two events which force us to consider the crucial and indispensable role of the house as a phenomenon. Firstly, the loss of 'house' as a result of damage, war, fire, family rows, job losses, relocation (e.g. forced resettlement) and secondly, the moment when the field-working anthropologist enters the 'other' culture and "stands nervously in front of alien spatial conventions" (Carsten & Hugh-Jones 1996:24). Elizabeth Colson (1971), the doyenne of human displacement studies in Africa, was probably the only anthropologist who had an opportunity to experience the trauma of dwelling and village displacement since she was in the field before (prior to 1960) and after the flooding of the Kariba gorge between Zambia and Zimbabwe. Her comparative insights were therefore indispensable. Despite this advantage we still did not get a picture of how residents viewed the rebuilding period in terms of alien-ness of locale, unfamiliarity of new earth and plant matter, symbolic and ritual links to past building materials, etc.

In South Africa a few anthropologists studied the type of human displacement that resulted from agricultural betterment schemes of the previous government. The Department of Anthropology at Rhodes made a notable contribution through the work of Chris De Wet and Patrick McAllister. Unlike Colson their diachronic perspective came as a result of access to the well-documented Keiskammahoek Rural Survey (KRS) (1948-1950), which served as a 'useful baseline' (De Wet 1993:323) through which to measure the impact of dislocation of home and village in small-scale communities such as Chatha (1962 onwards) and Shixini (1983) in the Eastern Cape. De Wet's fieldwork was carried out between 1978 and 1984 in Chatha. His data on the pre-resettlement landscape was based on descriptions by Monica Wilson (in the KRS⁶ report) in 1952. As in the other mainstream ethnographies of the time the description is devoid of detail on typologies of buildings (e.g. granaries, houses or huts), spatial arrangement of structures, usage of materials (e.g. earth, thatch, corrugated, stone, iron) or structural typology (e.g. grass dome, cone on cylinder, square/rectangular) (De Wet 1993:326).

In his exegesis of the post-resettlement vicinity of Chatha De Wet devotes his attention to economic changes, demographic changes, and agricultural, political, ceremonial, and social stratification (1993: 333-344). As far as the physical setting is concerned, he describes the new grid settlement pattern, the size of residential sites, and concludes that the land has become frozen in terms of land use and natural expansion (p331). The domain of the built environment and the impact that relocation would have had (e.g. access to earthen resources and distance from plant material) is absent in this discussion. It is regrettable that De Wet and McAllister lost sight of the peculiarities of the loss of material goods and house in the process of unravelling the effects of resettlement. To be fair to De Wet and others who studied betterment, they only arrived during the post-resettlement period.

However, Derick Fay (2011:310-319), an American anthropologist, studied the effect of architectural change in the former Transkei Bantustan where agricultural betterment caused the displacement of people. Acknowledging the contribution of the Rhodes-based anthropologists he argued that change in architecture and EBT does not consist of a single linear interpretation, but that the same factors which played a role in the past, such as migration, political economy and wage labour, contribute to our understanding of how post-1994 rural people source and select building material. To some extent a return to indigenous EBT emerges in the form of the sourcing of organic material. However, in this apparent re-traditionalisation drive people opt for a blended selection of EBT and modern material based on income in the household.

With the help of an archaeologist and oral documentation it might still have been possible to document dwelling and its EBT components within the KwaZulu-Natal physical environment. Much of the author's own knowledge on the early built environment of the rural Ndebele (mostly dislocated as labour tenants) has been the product of site visits, the introduction of ethno-archaeological processes and oral data (Van Vuuren 1983, 1993, 2008). My own experience with relocatees (such as evicted labour tenants) is that they exhibit great resourcefulness and skill when faced with the trauma of displacement. Life crisis decisions have to be made on what to take along: movable versus immovable assets including the house: poles, grass, corrugated sheeting.

5. The way forward for anthropology in South Africa: is it too late?

The study of indigenous architecture is challenged by the rapid change in both rural and urban settlement patterns, a depletion of the available natural resources that formed the basis of indigenous technology and the disappearance of knowledgeable artisans (D'Aragon 2008, Fay 2011).

The question arises: is the study of an earthen architecture still relevant? Does it not belong to the ethnographic past? One part of the answer is that if the majority of rural and semi-urban people in the world still build with mud, anthropology has a relevant contribution to make. Firstly, anthropology possesses unique research tools to assist the hard sciences in documenting and understanding the 'house'. Secondly, if anthropology purports to understand socio-cultural phenomena 'in and around' the house such as kinship, household economics, gender and even provide answers to solve social crises or pathologies such as family violence, disease, lack of water, xenophobia, displacement (natural disasters), etc., it can most certainly study the physical and material dimension of the dwelling which provides shelter and comfort or discomfort.

The fieldwork tradition of anthropology paired with participant observation is what other disciplines admire. This capacity implies that a direct engagement with EBT processes becomes normal such as the handling of mud and dung, calculating and measuring the physical dimensions of a dwelling and asking the necessary 'why', 'how' and 'when' questions (Marchand 2008). The ethnographic enterprise can make a major scientific contribution to the accumulated 'hard' science knowledge systems on earth. We understand the intangible domain of the house – its ritual and symbolic domains and enactments, the role of gender. Anthropologists have a sense of oral processes and repositories, we compile genealogies, and we access memories and write life histories. Why can we not write the social life of a house? Anthropologists need to engage with archaeology and in particular ethno-archaeology, in order to understand the built past. Since its founding days anthropology has studied socio-cultural change and even predicted outcomes. Why is the dwelling ignored? It has become necessary for anthropology to engage even more with indigenous or local knowledge. How does anthropology respond to research on local or indigenous knowledge? We boast of our ability to engage and meet other disciplines such as architecture on the interdisciplinary level. It is necessary to account for what is needed to improve this ability.

6. Earth building as fieldwork: engaging local knowledge and finding a contemporary destiny

Fieldwork and the flexibility that goes with it occupy the moral high ground in anthropology. In a study of the built environment they are on equal terms with their counterparts in the sciences when they activate sensory skills: touching and smelling mud, thatch and wood. But anthropologists may also relate and interpret *how* people touch mud and soil and how they *feel* about it, and they can distinguish between the tangible and the intangible domains of the built heritage.

It will be argued that through fieldwork the anthropologist is able to document the entire production of local knowledge and transfer of skills in the built environment. Secondly, such a knowledge system and its transfer tend to be constantly challenged by economic, political and environmental developments. This often occurs when there is migration from the rural to the urban. Anthropologists have always studied these changes. During migration – voluntary or involuntary – people also devise ways of recycling building material. In the third instance anthropologists also learn how earth building people devise technologies to preserve and conserve earthen structures in harsh climatological conditions (compare Fay 2011, Folkers 2010, Zami & Lee 2008, D'Aragon 2008, Rix 1999).

Anthropologists are well-equipped to work with the bearers of local knowledge, particularly in view of their long-term participatory presence in the research community (Krige 2007:36-38). The human body is foregrounded during the process of participant observation and therefore “produces representations that are more consonant with local knowledge as well as increasing its potential use-value” (Krige 2007:42). The moving body around the house serves as a pivotal reference point and the anthropologist who follows the locals through corridors, open and closed spaces, intangible hemispheres of left and right, male and female, find it easier to understand local interpretations of the link between tangible and intangible architecture. Lévi-Strauss recounted how when he was among the Bororo of Brazil he “spent days going from house to house” marking out imaginary demarcations that are distinguished according to hierarchical grades and principles (1973:221, Kuper 1980). These spatial conventions are alive when documenting the oral history of settlement, migration and forced dislocation (Van Vuuren 1993, 2008, cf. Carsten & Hugh Jones 1996:24 earlier in section 4). The body in the house also serves as a tool for measuring the diameter, height, and width of the house (Van Vuuren 1985). As Westerners we have become accustomed to the mathematification of all domestic space.

Human senses are crucial in understanding local knowledge. Through immersion in the preparation of earth mixtures, the sensual awareness is created of texture, humidity and olfactory elements to provide the standards for readiness before a floor or wall is smeared with the mud mixture. Marchand (2008:23-28), in his work on the earthen masons in Djenne, accompanied the masons to soil deposits and recorded the histories of these deposits. He participated in preparing mud mixtures, shaped bricks and followed the local quality control processes which were supervised by the master masons. Participation is the primary half of fieldwork; making notes and taking photographs comprises the other half. The author benefited from a similar experience when, during the construction process at the Ndebele museum

(1978–1980) in Middelburg, Mpumalanga, he was taught how to plan, space and measure homestead layout, learnt how to cut and bend saplings, how to tie knots, rammed earth into wooden boxes and crossed the ‘gender line’ and smeared floors (*ukukguphula*). There was also an opportunity to experiment with soil samples in order to maximise durability against the elements.

Through fieldwork one also engages with the local architect, designer and skilled expert as well as with ordinary construction workers. Yet, in Africa the boundaries between these categories are blurred: as Junod rightly remarked, “every man is his own architect” (1927:104). Levin as cited by Oliver (1971:143) commented on the nature of the local or indigenous architect: “His orientation is towards the balance of model, materials and user, the latter usually himself. In a closed, traditional society he acts unselfconsciously regarding design within the cultural system of which he is part.” This fundamental contrast between the individualist Western architect and her/his counterpart in Africa and elsewhere where earthen architecture dominates, forces us to account for the relations between architect builder, her/his material and the norms of the community where the architectural structure arises.

Marchand refers to a “fragile relationship between local knowledge and vernacular mud architecture” (2008:23). The masons with whom he worked in Djenne, Mali, constantly “negotiated boundaries of tradition” and they responded to the changing needs. In working with the master masons and the way they transfer local knowledge as well as experimenting with classroom transferral, Marchand found that the latter apprenticeship does not work. Skilled knowledge needs to be transferred between generations, with “tradition as process”, and “on-site learning that engenders cultural knowledge and social responsibility as well as technical proficiency” (2008:24–25). Odiauwu argued that Hausa architecture in West Africa consists of and exists because of guilds of builders that serve as welfare bodies for traditional builders (2008: 120–123).

The inter-generational transfer of local knowledge in the indigenous building world encompasses two processes; the off-site oral transfer of knowledge and the on-site training in the specific practice. Perry (2012:120,123) illustrated how in a small urban community the process of knowledge transfer was activated and what role the ‘building memory’ played in the process.

The following case is an example which the author encountered during the construction of the Ndebele museum in Middelburg (1978–1980).

John Thubana Mnguni was a master thatcher at the royal village of Mabhoko and was assigned to work on the project. He worked alongside three elderly men from whom he took

instructions on a demanding reconstruction project where he had to follow their oral instructions on the building of the Ndebele grass dome house. The knowledge base for the construction of this specific house type depended almost entirely on oral tradition. John excelled, he made his own drawings, figured out difficult and complex processes of tying, weaving and knotting and bending saplings. Later he duplicated his newly acquired skills at a number of museum sites. But what he will be remembered for most was that he transferred these skills to his son Godfrey, who can now build the replicas of all the types of Ndebele houses which existed since pre-colonial times.



Figure 4: Construction of the first grass dome house under the supervision of Mof Mota, aged 85, in 1979. Photograph by the author



Figure 5: John Thubana Mnguni weaving the '*isiqongolo*', the crown of the grass dome house. Photograph by the author.

It was earlier argued that the notion of the lost house (Carsten & Hugh-Jones 1996:24, also see section 4) in terms of its built components as well as domestic material did not feature in studies on forced dislocation by anthropologists in Southern Africa. And yet, clear distinctions exist between movable and immovable property, including the built house. Some material is considered reusable and recyclable even upon arrival at a new building site where reusable material might be at the disposal of the house owner (compare Cristini et al. 2014:383-389). The following case study of a Ndebele labour tenant provides an example.

Mr Green Skosana built his first house on a farm near Stoffberg in 1920. In his lifetime he moved three times between farms⁷ in the region and on each built site he recycled the same roof poles

7 The history and aftermath of the period of indenture (1883-1888) and the precarious life as labour tenants on Ndebele rural farms in the former Transvaal is not discussed further. Suffice it to say that conflict with landowners caused many Ndebele rural families to resettle on farms in a single area or district from 1888 until recently. A settlement pattern and lifestyle of impermanency was thus created.

(*'amakapa'* and *'amabalelo'*) and thatch from a previous house. In 1972 he finally moved to KwaNdebele, Tshaluza and brought with him, from the 1920 house, the original roof poles as well as thatch of the previous house. All his houses were more or less exact replicas. The wood he used since 1920 was poplar, which, according to the builders, is not prone to wood-boring insects. When I interviewed Mr Skosana the wood had been in use for 58 years (Van Vuuren 1983:156).

Even hut debris or chunks of ruins were recycled in areas where good quality stone or suitable mud deposits were scarce (Van Vuuren 1983:107). The advantage of those recycled pieces which are right-sized and shaped to fit the new walls is that they possess the quality and standard of sun-dried bricks. This process of recycling greatly reduces the extent of the plastering task (*'ukusinda'*).

Another manifestation of migration involves economic forces (Fay 201: 316- 319, Folkers 2010: 217). Rural people who become informal settlers on the urban fringe bring with them EBT skills that serve firstly as a mode of survival and secondly as a shield to comfort them against the unknown. D'Aragon (2008: i) refers to such unplanned settlements or squatter houses as neo-vernacular (after Rapoport), since the construction materials are sourced from the surrounding environment. She studied informal settlements around the East London metropolitan area and concluded that earthen materials still play a major role. Women are the principal designers of the floor plan. Inclined surfaces are cut away and rammed on the lower part for levelling and stone barriers are erected that allow for water drainage (D'Aragon 2008: 214, 222,227). Floors inside the house as well as the front entrance to the house consist of rammed earth and smeared dung. In other houses floors are levelled with a mixture of sand and cement (2008:228). Some residents in Duncan Village still build wattle and daub walls, which they cover later with pallet panels and crate plate sheets (2008: 250) obtained at the Mercedes Benz motor factory. In such cases these materials determine the shape of the dwelling (2008:225). Earthen walls are still considered a favourite fire protection and even 'old Xhosa' fastening techniques are used (D'Aragon 2008:278, Zami & Lee 2008:44)). D'Aragon contended that the Xhosa 'cultural core' of the material culture inventory is persistent and inspirational (2008:3). These informal settlements represent a form of resistance just as Ndebele architecture did via its mural identity (D'Aragon 2008:37).

The 1979 houses in the Kwaggafontein (Emagezini) settlement in KwaNdebele, Mpumalanga, which was populated by former Bophuthatswana Bantustan evictees, consisted of corrugated iron shacks. In most of the shack dwellings the owners reintroduced the front courtyard flat surface and low walls (*'iinrhodlo'*) using EBT (Van Vuuren 1983). Gradually sheeted walls were replaced by earthen

walls and since 2000 with cement and sun-dried brick as well as fired bricks. The persistence of courtyard walling should apparently be viewed in terms of its intangible value where socio-cultural institutions such as ritual are enacted.

In the field of maintenance and conservation of earth-based structures there is a gap in our understanding of local practices in South Africa. In the aforementioned research databases (Figure 3) there is little mention of any local or indigenous measures that are taken to protect earthen structures against climatological, natural and supernatural adversaries. Tsonga house builders in the Limpopo Province, for instance, prepare hut poles and roof trusses against attacks from insects by burning off excess bark and smoke-treating the poles simultaneously (Küsel: Personal communication, December 1974). For the maintenance of built structures the Ndebele use ash ('*umlotha*'), preferably of the *Euphorbia Ingens* or any *Aloe* species, which they scatter around exposed hut poles and reeds in the courtyard. If this is done regularly, the danger of wood borers is minimised (Van Vuuren 1983:154).

The challenge remains then how this knowledge which the anthropologist elicits through participatory research might become beneficial for modern housing needs and the increasing need for shelter. One senses that the sciences (architecture, building science, town planning) on the one hand and anthropologists on the other are still not fully interacting in interdisciplinary teams to make full use of the local knowledge base. Few local anthropologists have come forward in this regard.

7. Conclusion

Prussin (1969: 116) stated the following: "Emotional attachment to one's place of origin is a major characteristic of Northern Ghana cosmology. Such attachment apparently derives from the concept of the Earth as a controlling agency in life. The source of fertility, of prosperity, of survival is embodied in the Earth." The crux of Prussin's remark is encapsulated in the term 'survival'. We are closer to earth than we realise and some of us are more dependent for shelter for our own survival on mud stone and plant matter (Folkers 2010:223). It remains the only means and the end for many people on this continent, and this *status quo* will probably remain with us for the foreseeable future.

Despite anthropology's neglect in commitment to the study of earthen architecture in particular in South Africa, one senses great opportunities for the discipline to take more care of 'earthly' matters when studying social phenomena in future. Anthropologists do possess the skills to work closely with other disciplines such as architecture (compare Cohen 2004:16-22). Getting 'dirty hands' handling mud and dung excited the author and others who worked with mud houses.

Anthropologists who are committed to EBT studies might find themselves in demand when sister disciplines as well as the hard sciences endeavour to unravel the complicated composition of informal settlements and their symbolic and cosmological foundations in African cities. Many of the current international research initiatives which emanate from sciences such as architecture, engineering and building science are based in Africa. In some of these projects we find anthropologists working as heritage practitioners. There are opportunities for anthropologists to involve themselves in heritage anthropology, focusing not only on museum collections but on building practices as well.

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