

# The Coexistence of Western and African Influences in Southern African Architecture: The ‘Underdeveloped’ and ‘Developed’ Technologies in the Age of Globalization

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**Abstract**—Varied materials and technologies add a lot to the cultural landscape of Southern Africa. The coexistence of Western and African influences are evident and reflect different characteristics and dynamics: their economical, political, social and cultural dispensations as well as their patterns of collection, production, and consumption. The ‘developed’ and ‘underdeveloped’ technologies can often be seen. Specific environmentally friendly interventions in various socio-cultural and cross-cultural backgrounds can be observed. Where the regional culture and resources are taken into account, the resultant architecture is more relevant and can make a positive contribution to global development and sustainable growth. I have observed a lot of comprehensive application of regional and global resources, which are innovative and economically sound.

**Index Terms**—cultural landscape, materials, technology, sustainable development, regionalism, globalization

## I. INTRODUCTION

South Africa has a tradition of more than three centuries whereby the non-indigenous buildings were transmogrified with distinct uses of materials and technologies. Mostly, the Dutch, French and German descendants evolved a sensuous architectural identity complementary to the environment – the Cape Dutch style (Fig. 1). The most distinctive feature is the central gable, which is different to European gables. Rather than being positioned at the end of the house it is set right in the middle of the façade over the front door. The arrival of the British settlers coincided with the period of industrialization, introducing manufactured materials and prefabrication [1]. Corrugated iron and cast-iron became additions to the thatched roof structures [2]. The demand for instant settlements, after discovering diamonds and gold, led to the introduction of timber-frame structures clad in corrugated iron (Fig. 2). The Western influences created the architectural language and transformation of identities.



Figure 1. The Cape Dutch building with a thatched roof structure and central gable decorated by Malay craftsmen.



Figure 2. Corrugated iron and cast-iron represent the period of industrialization - manufactured materials and prefabrication



Figure 3. Rondavels - round or oval in shape - made of local materials like: stones, poles and thatch/grass.

Malay slaves and Indian laborers contributed to the development of Cape Dutch architecture, adding Islamic and Hindu based elements.

Rondavels, as seen in Fig. 3, are typical of indigenous African architecture - usually round or oval in shape and traditionally made with materials that are locally sourced and in raw form, like: stones, poles and thatch/grass. They provide a sustained level of cooling and warming. The correct response to a specific climate, shapes the identity of the built environment.

Relatively recent Ndebele architecture merits special mention (Fig. 4). Despite being more than a thousand miles away, the Cape Dutch imagery inspired the Ndebele to transform structural motifs to enhance their smallholdings – specifically vibrant murals and a combination of strong geometry and industrial iconography. [3]



Figure 4. Attractive identity of Ndebele architecture.

## II. REGIONALISM AND ENVIRONMENTAL DESIGN

Both rooted and universal cultures exist. Sustaining any kind of authentic regionalism depends on our capacity to generate vital models of regional architecture and ideas while appropriating global influences at the level of culture and civilization [4]. Regionalism is the combined interaction of climate, culture, technology and craft, plus myth. The reconciliation of a rich, formal and cultural preoccupation with the wealth of technical local knowledge and material is the application of creativity brought to rooted architecture [5]. Regional architecture is represented by material selection and building technology.

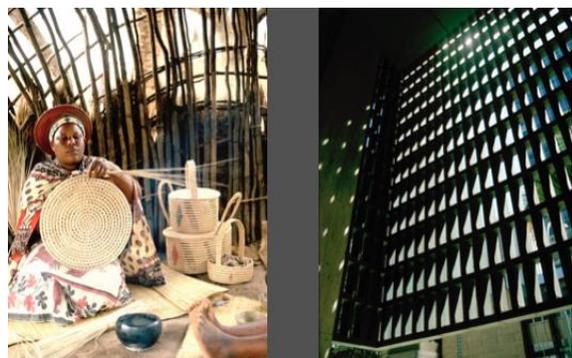


Figure 5. The production of woven baskets under a traditional structure (left) and a contemporary structure inspired by them (right).

It is regional because it has not yet emerged at any other time or place. The roofing material of rondavels (Fig. 5) is always thatch, since it is easy to make a neat conical roof from it. Structurally, no internal struts are required. Wooden poles run radially out from the apex of

the roof to the top of the wall or columns (Fig. 6). They are fully supported by the circular purlins. It is possible to build a large rondavel without internal bracing for the roof as it does not sag in the middle (because sagging only puts the purlins near the middle of the principals under compression) and does not splay at the bottom (because splaying only puts the purlins near the bottom of the principals under tension). Traditional rondavels range in size depending on the availability of building and construction materials.



Figure 6. Conical forms of the roof structure are cleverly placed insuring stability.

This traditional regional technology can be seen as ‘underdeveloped’ but has been used in many contemporary buildings, the walls of which have been constructed of materials and skills governed by ‘developed’ technologies [6]. Concrete blocks have been used to build the oval or rectangular forms. The gum poles come from nearby ‘underdeveloped’ neighborhoods and are applied in a specific way following the sectional, natural distribution of materials. The wider sides of the poles are positioned on the outside while the narrower towards the center. This way of bringing them together has insured no offcuts whatsoever (Fig. 7).



Figure 7. Roof of the gate to Mapungubwe National Heritage Park, RSA, made of carefully selected gum poles insuring no waste.

Design should be viewed as the expression of different cultures where reliance could evolve, pooling different skills and knowledge. It is important to understand the environment and its materials in order to create architecture that has roots in its cultural landscape. Progress should insure continuity and vital creativity.

## III. CULTURAL LANDSCAPE AND ECO-TOURISM

The slogans of sustainable development, significantly supported by Western programs, expose the new role of local identity and promote the protection of cultural

landscape. They are beneficial for the development of economy and tourism searching for pro-ecological technologies and are mostly based on the application of traditional materials (Fig. 8).

A person assessing the impact of built intervention must regard small details and large-scale constructions – specifically alien to an open landscape – emphasizing modern design and reflecting technical progress of the community [7].



Figure 8. The indigenous methods of applying mortar, which may consist of sand and nearby soil reflecting the regional color palette.

Regional governments – both in terms of theoretical speculations and concrete actions - have not only changed the attitude towards regional planning, tourism and architecture but also their social, economic, cultural and technical context. The necessity for environment friendly design, participation of the community, changes of lifestyle and escape from global influences to look for truly local social configurations, new spatial arrangements and alternative technologies, including the innovative return to traditional materials (Fig. 9-Fig. 12).

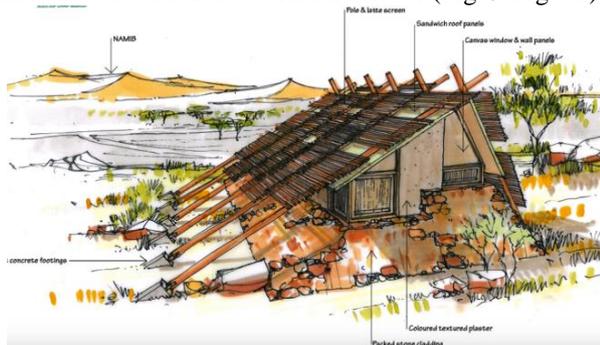


Figure 9. Quiver camp, Sossusvlei, Namibia (by Crafford and Crafford), innovative exploration of local materials.



Figure 10. Quiver camp, Sossusvlei, Namibia.

The intention has been to identify and illustrate tourism opportunities in Southern Africa. Marketing for several eco-tourism products has been successful. Lodges and resorts in some of Africa’s most breathtaking conservation areas require serious considerations insuring

protection of the heritage and cultural landscape. It is necessary to take great care to adjust designs to the local conditions through the use of appropriate materials and technology for the climatic conditions and skill available. The initial aim to develop eco-sensitive designs for eco-tourism leads to the creation of a new kind of architecture: an architecture that is firmly based on the human experience of any specific environment; architecture that is as much an art as it is a craft; architecture that places ecology as its highest priority. It has been built on design that fits in with nature, instead of forcing nature to step aside. The site-specific designs enhance the natural attractions and context of any piece of land. It requires more site visits and involvement in many choices but underwrite the rules for the right material selection and innovative technology that create job opportunities for local communities

The way in which materials are applied should be fully integrated into the functioning existing natural order and the values associated with it. If the impetus is to turn what is there into something else and transform it into a ‘noble’ version, this has to be done without alienating the local communities, remaining downright connected to local resource, while also becoming a distinguishing part of the new materials and technologies adding the edge. Light structure serving as protective shelters may still be built of local gum poles but the new high-tech textile can be added insuring extraordinary weather protection – serving as a superior tent (Fig. 11-Fig. 12).



Figure 11. Concept proposal (by Crafford & Crafford) for tent camps built of local gum poles and sophisticated high-tech textiles.



Figure 12. Bitterpan, the wilderness camp in Kgalagadi Park, RSA built of gum poles and new high tech tent canvas

The beauty of traditional thatched roofing has a very strong regional feeling. Recently, industrial tiles and sheets have dominated the built environment so strongly that we can hardly imagine something new or innovative.

What is new and innovative however, is the roof cladding consisting of ‘tiles’ made by quartering recycled oil drums that exemplify the spirit of truly unique installation – flourishing of the ‘underdeveloped’ technologies (Fig. 13-Fig. 14). And this is where the idea of recycling comes, specifically up-cycling and down-cycling. Up-cycling is the process by which waste materials are used to provide new, high quality products. Down-cycling (or downstream recycling) is the recycling of a material into a material downgraded or lesser quality. It is then cheaper or weaker than the original product.



Figure 13. Roof made by quartering oil drums, Twyfelfontein, Namibia.



Figure 14. Screens made of oil drums, Twyfelfontein, Namibia.

There are an incredible number of examples using recycled bottles and tires as building materials (Fig. 15). Solid waste management and construction sites may be related. Applications of stacking scrap tires (filled with soil) on top of one another and packed with ‘cob’ (soil, water and manure) are then plastered to finish the wall.



Figure 15. Bottles and tires as building materials.

The international and regional developments affect the Southern African built environment. Over the next several years the world economy is expected to grow at a

modest pace. In these circumstances businesses need to think wisely about what they produce, for which markets and using what potentials. As a small open economy, the Southern African region can develop niche tourism invention capturing a small share of global demand. Locals can compete and have a big global impact/product. Specific traditional and innovative technologies would make an important contribution in the global niche market of the built environments. It is inconceivable that the economy will evolve in a more labor-intensive manner. Promoting job creating growth means tackling the tense labor relations in an honest and open manner [8].

#### IV. RISE OF AFRICAN SPIRIT IN GLOBAL CONTEXT

Due to increasing westernization and value shifts, Southern African traditional crafts such as basketry, pottery and beadwork are dying traditions. While the traditional forms of crafts may be vanishing, the same techniques have since been applied to new materials, creating artifacts more suited to the changing needs of Southern African people and the changing tastes of a global contemporary marketplace [9]. The manufactured artifacts however, largely remain as functional or decorative (Fig. 16-Fig. 21). Craft centers have played an important role in the formation of this transitional stylishness and a significant role in skills development as well as job creation encouraged by considerable government investment.



Figure 16. Northern Cape Legislature echoes traditional towers, crafted in brick, ceramics, glass, metal by locals, Kimberley, RSA.



Figure 17. Northern Cape Legislature echoes traditional towers, crafted in brick and mosaic by locals, Kimberley, RSA.

Commissioned public buildings in post-apartheid South Africa illustrate a synergy between architecture and regional craft. Tasked with the design of buildings representative of a democratic South Africa, architects look to the nearby communities, acknowledging and incorporating regional craft products and skills into their

design [10]. The training provided by craft centers (in new skills such as mosaics, color exploration, beadwork and embroidery) has found a variety of powerful applications and influenced strongly the design principles and cultural landscape (Fig. 16-Fig. 21). At these centers individuals can share experiences and find emotional support and asylum within communities. Regional communities can adapt more developed technologies and create a distinctive regional statement reflecting the legacy of different lifestyles, skills and cultures.



Figure 18. Northern Cape Legislature crafted in brick and mosaic applications (left) celebrating heroes of the nation, Kimberley, RSA.



Figure 19. Northern Cape Legislature echoes traditional towers, crafted in brick, glass, ceramic and metal products, Kimberley, RSA.

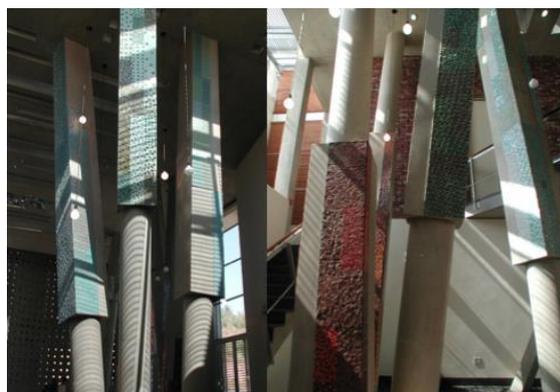


Figure 20. Handmade and rejected or broken tiles covering concrete column surfaces, Constitutional Court, Johannesburg, RSA.

Community centers encourage and maintain social, economic and environmentally sustainable development. They are the key players not only in creating symbolic landmarks, but also in many cases as meeting places for particular development leaders and bases for community organization. If the traditional, completely integrated system is more powerful than the imported corporate one, which has little chance of success in such a place, we have to incorporate what is already there. The strategy should not seek to impose a foreign and pre-established system – whether it is material selection or execution of

technology. The way in which materials are applied should be fully integrated with the functioning existing order and the values associated with it. If the global impetus turns what is there into something else and transform it into a greater and finer version, this has to be done without alienating the local community, remaining completely connected, fully part of the functioning organism, but also a distinguishing part of it [11].

The ‘developed’ technologies are a canvas for the use of powerful ‘underdeveloped’ technology, which has been applied thoughtfully and handled vigorously.

Participants of training workshops explore design tasks in sophisticated ways and upgrade their essential skills to confidently engage with more serious tasks. The colorful Southern African diversity and the vibrancy of its architecture illustrate its cross-cultural force. Architectural space is unique when it has its own energy because of its conception, its development and its looks. Their details show the innovation, creativity and the regional vibe. Their character expands over from the contributions of various individuals and society. Spaces and buildings document the cultural value composed by different elements from changing flavors. Layer upon layer and experience upon experience has been accumulated, and they in turn influence the future.

The theme for the biggest government building, the Constitutional Court, South Africa commissioned after the first free election, was *Justice under a Tree*. The main public space has been composed as a forest of columns with 18 slanting columns stretching up towards the ceiling (Fig. 20). Actual indigenous South African trees have served as a point of departure for the design. Parts of these trees, such as seedpods, thorn shapes and leaf shapes influence the models that were produced in the ceramics and bits of tile. The patterned parts are mostly seedpod and thorn shapes while the upper parts are mostly leaf and pod shapes. Small ceramic pieces were cut out, pressed or molded in clay, fired and glazed. Various glazes were experimented with and colors decided on (Fig. 21).



Figure 21. Time consuming mosaics - handmade and broken ceramic tiles installation executed with community involvement.

Many pilot ceramic projects have been intended to upgrade facilities as well as unskilled participants from previously disadvantaged backgrounds. They have been trained as part of the project and empowered so that they could gain from their involvement and learn how to turn their art and design skills into viable careers from which they could make a living afterwards [12].

Globalization has not replaced social structures. In itself it is neither good nor bad. Its consequences are largely the results of human decisions, which can be debated and changed. The generic imposition of an

impersonal globalization should be replaced by a considered respect for local communities. Nowadays more and more Southern Africans live in cities but the environment they inhabit is very different from what we think of as a traditional western townscapes. It is worth exploring the role of culture, identity and expression in African architecture, by looking at the complex interplay between climate, context and technology as well as social and environmental processes. The discussion is no longer whether there is an environmental crisis, but rather how can we now integrate fragmented, contradictory and competing interests and values.

There is a conflict between regionally appropriate environmental building processes and an increasingly global technical and economic culture (Fig. 22-23). In order to improve the environmental performance of architecture, it is necessary to create a vaster awareness of environmental issues.



Figure 22. Conical roof made of rough gum poles.



Figure 23. Concrete ribs led by structural requirements of the building and finishing brick curved surfaces installed on the ground.



Figure 24. Brick surfaces installed as final finish – combination of regional materials and global thinking.

The fabric of architecture is not an art of imposing, but of discerning potentials and bringing them into play. Rather than being constrained, it involves expanded

creativity, helping the new to be born and healing what does not work. Many people acknowledge the limits of the human intellect and stress the importance of instinct and intuition. Guided by instinct and intuition rather than by intellect alone, architectural design requires a harmony between head and hand, experience and memory. Instead of the unthinking application of global tendencies, the individual application should grow naturally from the design task, well rooted in the region and its resources.

It is the best if design emerges as an attempt to hybridize established patterns with elements from material selection, regional, cultural and heritage contexts and incorporate these in the building design [13].

The selection of materials and finishes can be led by structural requirements of a building – like with the structure of a dome (Fig. 23-Fig. 25). The dome, which emerges from a suggestive form of a simple woven basket, may be carried through into the design theme.



Figure 25. Powerful forms executed as a combination of new and traditional technologies, Mpumalanga Provincial Legislature, RSA.

It can be the architect's choice to use a restricted palette of materials. The truth and honesty in architecture is a valid feature. Clean with no extras – keeping everything just as it is. Because it is clean it does not mean that there is no room for handmade features and topographies.



Figure 26. Creative/innovative use of broken and rejected bricks suits the Southern African need for labor-intensive work.

Masonry is the most persistent of all building materials, as exemplified by the oldest and most revered architecture from many places around the world. The exceptional structural integrity and durability of masonry walls are derived from the inherent properties of the materials, and the robustness and built-in redundancies of these congregations. Modern masonry walls have evolved

to apply these historical benefits to meet the challenges of today's building designs. Masonry walls provide high-performance enclosures, which fulfill maintenance, control and finish functions. Laying brick is time consuming (Fig. 23-Fig. 26) but under the Southern African context where labor-intensive work is not a choice – it is what is needed to provide job opportunities for a large number of low skilled workers and the Southern African economy. The context is one of high unemployment and a very large number of low skills allowing labor-intensive building technologies to grow here.

## V. CONCLUSION

I have presented in this paper only a few ways of exploring the coexistence of the Western and African influences in Southern African architecture however they illustrate a comprehensive application of regional and global resources. Their specific dynamic creates a cultural landscape for different types of construction sites. Southern African spaces and places remind and teach us about the potential of creative and innovative application of materials and technologies representing the 'developed' and 'underdeveloped'. The most profoundly rich and dense synthesis of ideas and concerns form what is timeless in architecture.

The mix of simplicity and sophistication of expression, as may be found in the convergence of the Western and African worlds. The right understanding of the characteristics of materials and innovative technologies play a crucial role in it.

Sharply varying interpretations placed on exchanging information and technologies may lead to the designing of environmentally-'progressive' architecture between cultures. The 'developed' and 'undeveloped' can cooperate creatively. Cross-cultural transfer is possible, but can be problematic when we do not know why and how to tackle it. The selected sample of architectural interventions illustrates, however, that such transfer is worth pursuing. It can help us to integrate better and happier humans and enrich societies culturally. Global buildings, regionally grounded, yet based on international design standards, are present in Southern Africa and in many places around the world.

The input of information, knowledge and technology should not be imposed but shared creatively and in an innovative way. It can stimulate the economic growth of regions. When regional resources and culture are taken into account the resultant architecture is more relevant and can make a positive contribution to global and sustainable development.

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