



## Utilising Indigenous Knowledge in a Time of Climate Change

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## **ARTICLE SUMMARY**

The Whole Earth Building Foundation was established to create built examples of urban human eco-settlements that are largely self-reliant. The projects are to demonstrate affordable solutions to sustainable settlements that integrate indigenous knowledge with modern earth building technology. The projects will also incorporate the recycling and harvesting of energy and water.

These examples will engage the talents and energies of people to find their own solutions with community control and the stimulation of the local economy, while adapting highly functional organic architecture, materials and methods of the past.

We work collectively to identify the methodologies most suited to those who know the terrain, the 'experts' who are living on the ground. In these models we search for the materials that we need within the site and surrounds, applying Permaculture and Biodynamic principles and techniques and training and creating buildings and systems appropriate to an urban eco-settlement.

Regenerative living systems help to reduce the great consumption of electricity and water. We must ensure that we have structures in place that are very much better suited to climate extremes.

Climate science shows that severe climate will make life exceedingly uncomfortable if capitalism remains the social order, directing energy into profit at the expense of the environment that is needed for food production and all life. This economic system, by its intrinsic nature, is incapable of adopting the kinds of changes necessary to arrest the passage of greenhouse gases into the atmosphere. Ecosocialism has long been directing us towards working on creating caring communities that can develop alternatives to our current socially and ecologically destructive economic system to adapt simultaneously while acting to mitigate climate change.

## **INTRODUCTION**

The most potent weapon in the hands of the oppressor is the mind of the oppressed, says Stephen Bantu Biko. My thesis is that reinvigorating and reinforcing indigenous familiar ways of building and food security nurtures the familiar old feelings of self reliance, self determination, agency, confidence, dignity and self esteem, independence and pride in and love of one's culture.

Through enhancing of the skills of communities, earthen architecture will be elevated to the status that it deserves. Because of its easy availability and ability to engage people in its creative use, earth contributes to alleviating the deficiency in housing. We believe that traditional architecture is the basis on which to develop a new local energy efficient architecture that addresses contemporary needs and expectations and is aesthetically, culturally and socially enriching.

The Whole Earth Building Foundation is an attempted solution to the challenge that has arisen through years of colonisation.

## 1. INDIGENEITY

Post-industrial architectural history reflects the architecture of power. This value system, which is based on high technology, sophisticated energy intensive construction techniques, which are the chief cause of resource depletion, has influenced the design standards and ideals of today's architects and builders and our ideas of what appropriate living environments ought to be like.

We must begin shifting perceptions to understanding that this value system belongs to another era. The emphasis must be on changing the judgement that exists in society on the value of earth building and living off the earth.

We want to focus on earth building in South Africa from the view of its cultural roots and context and argue for this knowledge being revived to build rich human settlements that express people's identities. Callinicos believes that "using indigenous knowledge helps us to define our cultural identity, affirm our diverse cultures and promote new and previously neglected research into our rich oral traditions and building technologies."

Travelling regularly in Mvezo, Qunu and Mqhekezweni in the Eastern Cape while writing the Heritage Management Plan for the sites in which Nelson Rolihlahla Mandela had grown up, the sustainable ecological self reliant way of life that I experienced through the landscape, architecture, archaeology and oral and written history convinced me of its validity. This is a lifestyle that is still practised by a third of the world population and by rural South Africans. (Fig.1).



*Fig. 1. Subsistence farming in Pondoland, Eastern Cape*

The resurgence of research into indigenous building systems is increasing respect and techniques are being revived and studied everywhere as evidenced in papers delivered at conferences and being published, globally. Builders and architects are turning to indigenous vernacular cultures for inspiration and technology for greener buildings.

Indigenous building technology evolved through making optimum use of natural energy, cycles of nature and local materials. The Foundation will aim for the same standard in its human settlement programmes, by building with sophisticated low energy technologies.

Knowledge of indigenous skills was lost through colonialism. It is still being lost; now through urbanisation. Callinicos writes that 'The coming of gold brought the industrial revolution to South Africa. In a short space of time South Africa was transformed from a land economy – in which people lived and worked on the land – to an industrial, capitalist society.' As long as there was enough land, black subsistence farmers could survive. Cecil John Rhodes' Glen Grey Act of 1894 broke up traditional, subsistence life. It was

known that black farmers would not go to the mines as long as they had land. Soon after that the 1913 Land Act allowed just a tenth of the land to be cultivated by the vast majority of the population.

These oldest building methods known to humankind need to be rediscovered and recovered by this rural population, who are now, in increasing numbers, slowly becoming our urban, landless poor.

## 2. THE WHOLE EARTH BUILDING FOUNDATION



Fig. 2. 1980s Poster

The Whole Earth Building Foundation is an advocacy and training programme designed to demonstrate that we can improve the quality of life of those needing affordable housing, schools, crèches, libraries and social spaces and food security by placing agency in the hands of the community and promoting growth within the local green economy. It was founded in 2012 as a Non-Profit Organisation (NPO).

The interest of the Foundation is in capacity building and changing the nature of human settlements. Studying at CRAterre and travelling in Mali were turning points which led to the understanding of how this can be fulfilled.

Housing is one of our foremost human rights and one of the prime elements to restore self reliance and dignity. Our foundation has been created with the objective of providing indigenous, easy to learn, flexible, labour intensive, ecologically sound vocational training, livelihood and entrepreneurial skills that harmonise and pull together sustainable natural building with food security through the people who occupy them.

### LIFE CYCLE EXPENDITURE

An important aspect of our collective work is setting out the economic case for natural building based on local and international experience. We must dispel the myth that natural building is more expensive. A major cultural shift is required for us to focus on the life cycle costs of a building rather than exclusively concentrating on the initial capital outlay and speed of output. We must build capacity for developers, banks and governments to understand this cycle.

### EARTH BUILDING CODES OF PRACTICE IN SOUTH AFRICA

One of the biggest challenges facing natural earth building in South Africa is the lack of recognised codes of practice.

Since loss of knowledge of technically sound building practices occurred through earth building not being allowed by the authorities in urban areas, poorly built earthen homes and schools has led to earth building being considered inferior. Its acknowledgment as a sophisticated energy efficient technology is needed urgently.

Due to our lack of codes, the National Home Builders Regulatory Council (NHBR) does not recognize any non-standard ways of building and will not allow for the registration of a new home built with natural building materials. Therefore banks, which require all new homes to be registered with the NHBR, will not provide finance.

In 2013, after prolonged lobbying by the author, Rowland Keable and others, eight out of

the ten Southern African Development Council (SADC) members voted to adopt Zimbabwe's Standard Code of Practice for Rammed Earth Structures, SADCSTAN/TC1 SC5-001 for their own countries.

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The Foundation is establishing the *Natural Building Alliance* (NBA) of people who believe that earth bears the potential to assist in the transition to a low carbon economy with more affordable and sustainable building innovation. The NBA is fundraising for the employment of dedicated writers of codes to ensure the incorporation of National Codes of Practice for Earth Structures into South Africa's building codes.

### 3. DEMONSTRATION PROJECTS

#### 3.1. Klein Begin Sustainable Settlement Project (figs. 3 and 4)

Grabouw is a small farming town 80km out of Cape Town. In Grabouw lives a community called Klein Begin (*Small Beginning* in Afrikaans). The Klein Begin Trust land was given to the Klein Begin community by the owners of the timber-housing factory, by whom members of the community were employed over many years until it closed in 2006. The idea for the Klein Begin Sustainable Settlement Project began with discussions in 2011 about a dwelling to house extended family members, with energy and water management methods in a training environment. Later it was decided to begin with a library and kitchen as a social space and food garden, involving the whole community in the training. Many people who are unemployed have experience in building and some have seasonal farm work.

We are currently fundraising for the Klein Begin Sustainable Settlement Project, which will serve to advocate for this model with other communities needing sustainability.



Fig. 3. Klein Begin Site



Fig. 4. Proposed Scale

### 3.2. Khayelitsha Social Centre

Khayelitsha (*New Home* in isiXhosa) is an *apartheid* unconsciously planned township with a need for social cohesion in the form of facilities and green spaces for community gathering. The needs that were identified in community meetings were for a library, a bookshop, local food cafés, food gardens and lodging for travellers and access to subsidised music and media courses, recording and art studios.

Because it is located on the sandy soils of the Cape Flats near False Bay in Cape Town, we have designed the Khayelitsha Social Centre for training in sandbag walling, plastering with earth and energy and water saving methodologies. (Fig.5).



Fig. 5



Fig.6. Site

We are seeking 500 to 1500 square metres of land, either to be donated, or for the project to purchase from the City of Cape Town. This land should ideally be situated inside or adjacent to the Site C Taxi Rank and the Nolungile Train Station and the future Integrated Rapid Transit (IRT) bus stop, where there is life on the streets. (Fig. 6).

### 3.3. Mamre Earth Brick Information Centre

This is a perfect example of the use of an indigenous building method and having Masters train in the process.

Mamre is located 60km north of Cape Town in the Sandveld. In the 1700s it was one of the earliest settlements in South Africa, and was established as a model Moravian Mission Town.

The Mamre Revitalisation Project was an initiative of the City of Cape Town to promote the conservation and restoration of Mamre's heritage resources, using living heritage resources, such as Herbert Arendse and Mr Barrie to transfer historical building skills, while constructing a centre.

Andy Horn of Eco Design Architects, a member of the Whole Earth Building Foundation, was appointed to run community consultation and design workshops (Charettes), (Fig. 7), to determine the wants and needs for a small project and to design the natural building process. (Fig. 8).

All wood was harvested locally according to Moonphase Harvesting Principles. (Fig. 9). The thatch was harvested by Mamre's last remaining skilled Thatch Cutter, 76 year old Mr

Barrie, who trained a local team in the craft of thatch cutting. Herbert Arendse introduced a recipe for an extremely water resistant lime plaster using cow dung, sand and clay water, which is now used extensively.



Fig. 7. Public participation



Fig. 8. Mamre Information Centre



Fig.9. Local materials

#### 4. GREEN ECONOMY MODELLING AWARD

The Foundation won the *Green Economy Modelling* tribute from the South African newspaper, the Mail and Guardian's annual *Greening the Future Awards*, which honour Environmental Best Practice in South Africa. This award recognises organisations with innovative strategies that promote economic growth based on low carbon development and natural resource efficiency. These are internal and external models that demonstrate finest practice in the green economy.

#### CONCLUSION

Urbanisation is happening everywhere. In South Africa the change from *apartheid* to democracy created a massive influx of people from the rural areas and from southern Africa to the economic centres in our cities, as is happening worldwide and is one of the main reasons for our being here today.

With emerging climate justice movements and clear sustainable development goals, housing nongovernmental organisations (NGOs) are focused on empowering people, eradicating poverty and protecting human dignity with shared prosperity and decent jobs,

as stated in the Habitat III National Report of 2015. The world has a stand-alone goal for sustainable human settlements.

We need to build capacity for developers, banks and governments to mainstream resource-efficient settlements. South Africa's Institute of Race Relations says that our housing failure could be solved very quickly if people who are struggling to afford shelter were trained to build their own settlements.

Earth building has an important role to play in our transition to a low carbon based economy.

The Whole Earth Building Foundation believes that placing at the highest premium the capacity and ability of people, and attaching value to self-reliance and independence, as Biko advocated and carried out in his projects, will change the face of urban settlement.

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## BIOGRAPHICAL NOTE

Lesley Freedman is the Founder and Executive Director of the Whole Earth Building Foundation. She graduated as an architect at the University of Cape Town. She published the book *Bokaap – Faces and Façades*, describing the restoration process that she had directed in an indigenous earth built area. She worked in regulation of the architectural heritage landscape for twenty-two years, the last ten including earthen heritage management, before establishing her Non-Profit Organisation.