



## Chapter 17

# Bridging the Gap: Accessible Sustainable Design for South African Impoverished Communities

*Ditshegofatso Maoto* 

*Faculty of Art, Design and Architecture (FADA)  
University of Johannesburg   
Johannesburg South Africa*

### Introduction

There is a deep need to create sustainable, conscious and reliable design solutions given our current environmental state so that the planet can be preserved for future generations. The role of designers is crucial, as they shape the current visual landscape, as good designs are what makes our daily life better. Over the past few years, the designer's role has become more important, especially within the context of sustainability and environmentalism, to become more conscious of design.

Theories such as speculative critical design and the Anthropocene have aided in creating a new way of thinking in regard to design; however, there still appears to be a gap. South Africa is a country stricken by many socio-economic issues, such as poverty, unemployment, inequality and a lack of education. The ideologies that influence sustainable designs are far more theoretical and unattainable. This article will expand on how designers can create accessible sustainable designs for low-income communities in South Africa.

## **Eco-Friendly Design in South Africa**

Eco-friendly design is an approach as well as a principle; it involves the integration of environmental protection criteria over the lifespan of a product or service (You Matter, 2019). A philosophy of designing the built environment is the use of physical objects and services that improve the comfort, health and longevity of people who interact with these designs (You Matter, 2019). Eco-friendly design in the context of South Africa is one of the most carbon-intensive economies in the world because it relies on carbon-intensive transport systems and fossil fuels. The inclusion of eco-friendly sustainable design grew out of necessity, as the gap between the wealthy and the poor exposed how crippling the current state of the environment is. South African communities at large should invest in more eco-friendly designs to support impoverished communities that are more accessible and relevant. Design serves to educate, shape and enhance everyday life through an awareness of sustainable solutions while promoting the South African design scene (Culturetrip, 2013).

## **Speculative Critical Design**

Speculative design is a form of design that prompts the user to change the way they think about the world in which they live. The role of Speculative and Critical design is to reconfigure what the present society believes in and what we think is to be true, moral and ethical (Johannessen et al 2019:1624). Through questioning the status quo, discourse is created. Does a specific critical design belong to a world plagued by poor infrastructure, unemployment and poor health care? I question whether this theory belongs only to an idealised world. When approaching possible solutions to some of these problems, the avenues presented are endless; thus, the idea of social dreaming is birthed (Johannessen et al, 2019:1627). Social dreaming is about engaging with the imagined world to create critical ideas concerning society. This theory prompts out-of-the-box thinking, and what we need in South Africa is an out-of-box affordable solution.

## Understanding the Gap

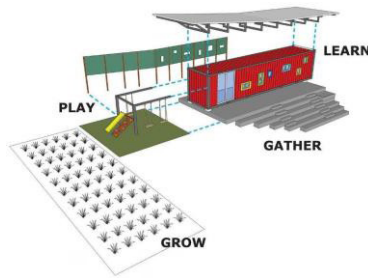
When talking about the gap between theory and practice, it feels like discussing two different worlds that should ideally work together but often do not. The gap is between what sustainability is compared to practicality in the daily lives of impoverished communities in South Africa. The problem might be that most designers do not understand the depth of the socio-economic problems in South Africa. Speculative design needs to address the local context rather than relying on borrowed ideas from more dominant cultures. Currently, speculative design in South Africa often operates in isolation from other disciplines in terms of the social sciences, environmental studies and technology, and bridging these disciplines would lead to more impactful and innovative solutions for impoverished communities in South Africa.

## Case Studies

I will be discussing two case studies that effectively communicate first about sustainable design within impoverished communities and second about speculative design in collaboration with the needs of lower-income communities.

### Tsai Design Studio - Eco-Friendly Example

It is a South African design studio based in Cape Town with young and dynamic architecture and interior and furniture designers. The studio is a multidisciplinary practice with a diverse portfolio of urban projects that each carries our hallmark of creativity, innovation and experimentation. Located in the picturesque Durbanville wine valley, Vissershok Primary School is a rural school attended by children of farm workers and underprivileged families living in nearby Du Noon Township. An old shipping container was refurbished to accommodate an independent classroom for 25 Grade R learners aged between 5 and 6 (Tsai Design Studio, 2013).



**Figure 3:** Plan of Building, “Vissershok Container Classroom”, 2013. Digital Photograph (Tsai Design Studio).

The design features appeared to reduce heat by creating a large roof that shelters the container from direct sunlight. Cross-ventilation is achieved through a series of colourful windows located on each side of the container. Built with limited means and budgets, the design makes the best use of available space by incorporating various elements for children to learn, gather, play and grow. The second example is not a local South African company but rather the Malawi Bamboo Bicycle Factory in Africa, which is an example of a speculative design. I have looked at this example because many children have to travel long distances to school and do not have the funds to access transport.



**Figure 4:** Bamboo Architecture in the Malawi Building Interior, “Bamboo bicycle factory”, 2016. Created in mid journey (A4AC architects).

A4AC Architects, a Johannesburg-based company, took a transformative trip to experience rural Malawi, where they found themselves immersed in a community where bicycles were not just a means of transportation but also a vital part of daily life. Bicycles

in Malawi are not only costly but also heavy, of subpar quality, and ill-suited for the local terrain (A4AC Architects, 2016). While not a new concept, bamboo bicycles have proven valuable for sustainability and performance. By integrating traditional craftsmanship with modern engineering, bicycle frames are manufactured locally using bamboo while still incorporating metal components for mechanical parts and wheels.

## Design Synthesis



**Figure 5:** Plastic Architecture in South African Townships, “Recycled Plastic Factory”, 2024. Created in Bing AI

These two case studies inspired me to propose an idea that fits the landscape of impoverished communities. It is a design synthesis of creating accessible transportation for impoverished communities, inspired by A4AC Architects, yet uses an accessible material such as plastic inspired by the Tsai Design Studio. Although different in approach, both case studies have the same objective of empowering impoverished communities through sustainable design. Vissershok’s design addressed a primary need within the community for better infrastructure to educate children in the community. A4AC’s hypothetical design cleverly took a speculative design approach to create a solution to the transportation need in Malawi. Both of these designs use sustainable and eco-friendly materials, whether

reusing and repurposing current structures such as containers or using natural, biodegradable materials such as bamboo.

## Conclusion

As a graphic designer, my aim is to bring awareness of these projects, as designers attempt to bridge the gap between the project itself and having the community as an active participant. By using eco-friendly materials and indigenous construction methods, indigenous methods become familiar to the community so that they are able to be a part of the construction. Having members of the community help build these structures will create a sense of pride, decreasing the likelihood of theft, as pride will produce a need to protect these initiatives.

The recycled plastic factory is merely an example of a possibility that awaits impoverished communities in South Africa. By ideating unique and innovative designs such as mobile clinics, digital libraries and container classrooms in townships and underdeveloped communities, creates a paradigm shift, local empowerment, planet rejuvenation and environmental sustainability in South Africa. These aesthetically pleasing designs inspire the community environment, which is mostly engulfed in pollution, waste and debilitating infrastructures. This multidisciplinary approach will foster creative thinking and generate equilibrium between the innovation of speculative design and the sustainability of incorporating eco-friendly design.

## References

- Architects, A4AC, (2016). "A4AC Architects: Commercial, Industrial, Residential." Available at [www.a4ac.co.za/a4ac-architects-johannesburg-commercial-industrial](http://www.a4ac.co.za/a4ac-architects-johannesburg-commercial-industrial). [Accessed 15 September 2024].
- Culturetrip, (2013). "Social Sustainability South Africa's Top Ten..." Available at: [theculturetrip.com/africa/south-africa/articles/top-ten-south-african-designers](http://theculturetrip.com/africa/south-africa/articles/top-ten-south-african-designers). [Accessed 9 September 2024].

## Chapter 17

- Johannessen, L., Keitsche, M. and Pettersen, ID. (2019) "Speculative and Critical Design- Features, Methods, and Practices", *Proceedings of the 22nd International Conference on Engineering Design (ICED19)*, Delft, The Netherlands, 5-8 August 2019.
- Studio, Tsai Design, (2014). "Vissershok Classroom." Available at: [www.tsaidesignstudio.com/architecture/vissershok-classroom](http://www.tsaidesignstudio.com/architecture/vissershok-classroom). [Accessed 7 September 2024].
- You, Matter, (2019). "Eco Design: Definition, Examples, Principles." Available at: <https://youmatter.world/en/definitions/definition-eco-design-examples-definition/> [Accessed 8 September 2024].