Homes in the future may be hyper-connected pods that transform our habitat, communities and politics

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The Utopian Village, designed in 2018 by first-year students in the School of Architecture and Planning at Wits, was inspired by a decolonised design curriculum that contextualises the Global South and informs teaching design through an African lens. The Utopian Village responds to local South African culture, context, human migration, new emerging social organisation, and the demands of global environmental change and sustainability. These are the dwellings of the future. Credit: Wits University

At home here in Africa, the population is exploding just as housing is shrinking and tech is advancing. Our homes in the future may be hyper-connected pods that transform our habitat, communities and politics as well as the way we live.

On trash collection day, a waste-picker parks her self-drive trolley and gathers recyclable garbage. Inside the nearby house, electricity supplied by the micro grid fires up a dishwasher, while overhead a drone competes for airspace amongst the hadedas—Joburg's ubiquitous, vocal bird—as it scans the 'hood for security threats.

This could be a typical higher income Joburg suburb in the future, when lumbering state service providers like Eskom have bitten the dust and local power producers, waste collectors, and water suppliers have replaced them.

It is also a world where that phrase, the "Internet of Things," has become a reality, thanks to lightning fast cyber connectivity embedded in physical devices, everyday appliances, and perhaps even in human beings.

Professor Barry Dwolatzky of the Joburg Centre for Software Engineering at Wits believes this is a future that Joburgers might experience in decades to come.

More people, smaller spaces

The Africa we will inhabit in future is going to be far different from today. This continent will experience a dramatic population explosion, expected to double by 2050. Of that, 60% of Africans will call cities their home.

Johannesburg by 2040, according to a report released by the

Johannesburg Roads Agency, is predicted to increase to between six and eight million people—over double its size today.

This rapid urbanisation is likely to leave its mark on the homes of our descendants. This will also be a world where large sections of the population, like today, will most likely be living in informal settlements.

In this age of densification, homes are likely to be downsized and even shared.

"If you look at it, we are a young country and if you look at the trends of young people, they change jobs quite frequently, they often live far from where they work, and it is expensive to travel," says Dr. Gerald Chungu of the Wits School of Architecture and Planning. "This means that they are going to be more willing to live in smaller spaces or to share spaces. This is already a common trend and from reading this we can see the direction towards smaller housing."

Transporting these workers to their jobs—even in the future, believes Chungu—could be that bane of the present day transport system: the mini bus taxi. Though, by then, they might be better policed.

Advancing inclusivity

In this future, it might still be state policy to provide housing for the poor. This policy might borrow on what is already being worked on now.

"Instead of the idea of delivering tiny RDP [Reconstruction and Development Programme] houses, we have seen a shift in housing policy in the last two decades towards settlement upgrading," explains Professor Anne Fitchett, Acting Dean of the Faculty of Engineering and the Built Environment at Wits.

"It is speaking of a more inclusive approach. It is not just about putting a roof over someone's head but creating a broader living environment, with access to jobs, access to schools and hospitals."

Tech pad address

Finding enough space for its residents will be a challenge for the future Joburg, but technology is likely to be the saviour.

"In terms of smart cities, the use of digital technology to help to manage everything that happens in the city will become widespread and very profoundly different. And I am sure that the construction of dwellings will be built around the capabilities of these digital technologies," says Dwolatzky, who caught a glimpse of future housing possibilities when he visited the Massachusetts Institute of Technology (MIT) media laboratory in the US.

Rodwin Malinga, 21, and Erik Prinz, 22, are fourth-year students at Wits completing Bachelor of Arts in Digital Art degrees, majoring in Game Design. Malinga and Prinz created this cover of Curios.ty, the Ekhaya issue, using Minecraft, a "sandbox" game. This refers to a video game system with defined

rules that the players can interact with but with which they have complete freedom. There are no goals that are necessary to progress in the game and players are free to create, modify or destroy their environment. Malinga describes himself as an artist proficient in a plethora of different media forms – "I enjoy creating art out of anything and everything I can find ... games such as Minecraft are an excellent way of letting players get involved in the creation of art," he says. Prinz is passionate about playing and making games and creating memorable work. He says, "I've always created games and narrative experiences for my friends ... I'd construct some of these experiences with Minecraft. Thus I have quite a bit of experience with the game." Credit: Wits University

"There is a South African architect there who is working on a project where he is designing a pod-like house. It is a very efficient use of space, with every embedded technology. It is almost like you live in a pod, but you don't feel like you are living in a pod. So I have seen one future, but whether it is going to be our future, I don't know."

What is likely to influence this future are the differing needs of the Global North and Global South, believe Dwolatzky and Chungu. While Africa is set to experience a population explosion, Europe is going through the initial stages of a population collapse.

"In Africa, the biggest challenge might be the use of energy, where houses are designed to better use energy, dealing with things like waste and recycling. If we are not careful, cities will become choked in waste," says Dwolatzky.

Decentralised micro tech services

The state might not provide these services in future, as it does today.

"We are going to move away from the big grids on to the smaller micro

grids—the current thinking is that you build a huge power station, which then powers millions of consumers," he explains.

In future, however, these are services that could be provided at a micro-level, for example, a couple of houses linked to a solar energy source or a recycler dealing with a street's rubbish.

The home of the future is also likely to supplement its own power through super-efficient solar panels on roofs, and even in walls.

It is likely that not just the wealthy will take advantage of tech.

Fitchett says that experiments involving solar paint are underway. This paint will absorb sunlight and convert it into electricity. Recycled waste could also find another use in the future.

"At the moment there is also a lot of work going into the development of different types of concrete. There is one where they are using recycled polystyrene as an additive into cement, which makes it a very good insulator," says Fitchett.

But this move to decentralise might even have an influence on the politics of these communities. This has already happened in the US.

Micro democracies in our 'hoods

"Once you break things down into small parcels you start to think in a more decentralised way, rather than at a national level," says Dwolatzky. "In the US, local communities are becoming more and more the centre of local democracy and people are losing interest in national politics, because local gives them everything they need. And it is encouraged by micro grids, water recycling and producing things locally."

Already just over the horizon is new communication technology set to change the way we live.

This is 5th Generation cellular mobile communications, which will be faster than anything we have today, and should be implemented in the next few years.

"There is a pro and a con," says Dwolatzky. "The pro is that you can draw much more data and make better decisions about things like the use of energy in the home. The disadvantage is that it opens the way for a lot more surveillance."

Besides ultra-fast cyber connectivity, other technologies have already made their appearance and are set to leave their mark on the future. One of these is 3-D printing.

"These new modes of manufacturing lead to the possibility of mass producing stuff that could be tailor-made for every single person's needs," says Dwolatzky.

Although the future may be a scary place, technology in our homes and on our streets will most likely save the day. And yes, your bot will be there to hold your hand.

Provided by Wits University