Architecture regenerates and transforms societies and their habitats

One day a fire broke out in the bush. Once they were a safe distance away, all the animals watched with devastation as their homes were consumed by flames. Except for the hummingbird. The little bird picked up drops of water in its beak and tried to put out the flames. It kept going to and fro. The other animals were perplexed, and ridiculed the bird. Obviously, these small drops of water would never put out the fire. The hummingbird replied: "Yes, but I'm doing the best I can."

This is a story about never giving up, but it is also a story of the mindshift that is vital if humans want to leave behind a better world for future generations. It is the responsibility of each and every person on this planet to do what they can. For Prof Chrisna du Plessis, newly appointed Head of the Department of Architecture in the School for the Built Environment, this goes beyond putting out the fires created by our current lifestyles and socio-technological pathways, as sustainability aims to do.

She explains: "The underlying premise of my current work is that, in order to ensure a future within which coming generations of all species can thrive, we need more than sustainability – we need to adapt to the changes already in place and create an environment that allows us to be resilient; and we need to regenerate and transform our societies and their habitats, bringing new life and creating new ways of being in the world."

These are the challenges explored by TRUST (Think Tank on Resilient Urban Systems in Transition), an informal research group headed by Prof Du Plessis and Prof Karina Landman of the Department of Town and Regional Planning. They form part of an international network of architects, planners, designers and academics who are developing an understanding of the built environment that sees our towns and cities as socio-ecological systems in which humans and their technological and social artefacts are part of the community of life we call nature.

They share a commitment to healing the broken relationship between humans and the living systems of which they are part, and to participating in creating a "state of evolutionary health". This needs a number of shifts in how we think about the form and processes of the built environment and how these align with the lessons we can learn from nature on how resilient and thriving living systems function.

The first major shift in thinking is a transition from focusing on the building or infrastructure as a technological object towards seeing it as part of a larger system.

The second is that the things we do in the built environment should contribute to the functioning of this larger system in a way that keeps it healthy and grows its potential to adapt to change and regenerate itself.

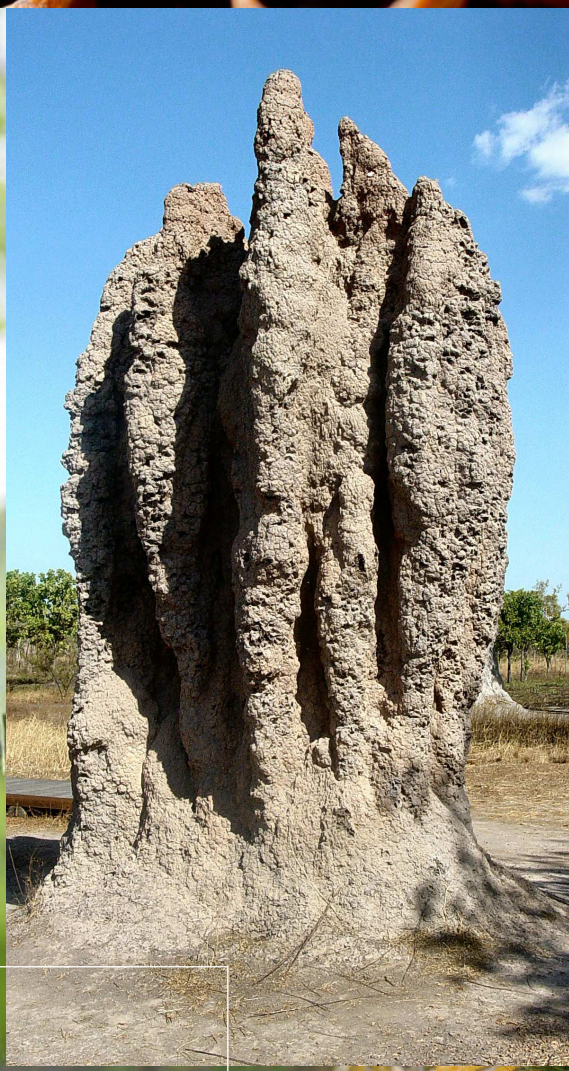
The third shift is to understand that the development of such regenerative urban systems is based on collaboration, not only between professional and scientific disciplines, but also with the communities who are part of the living systems with which we work.

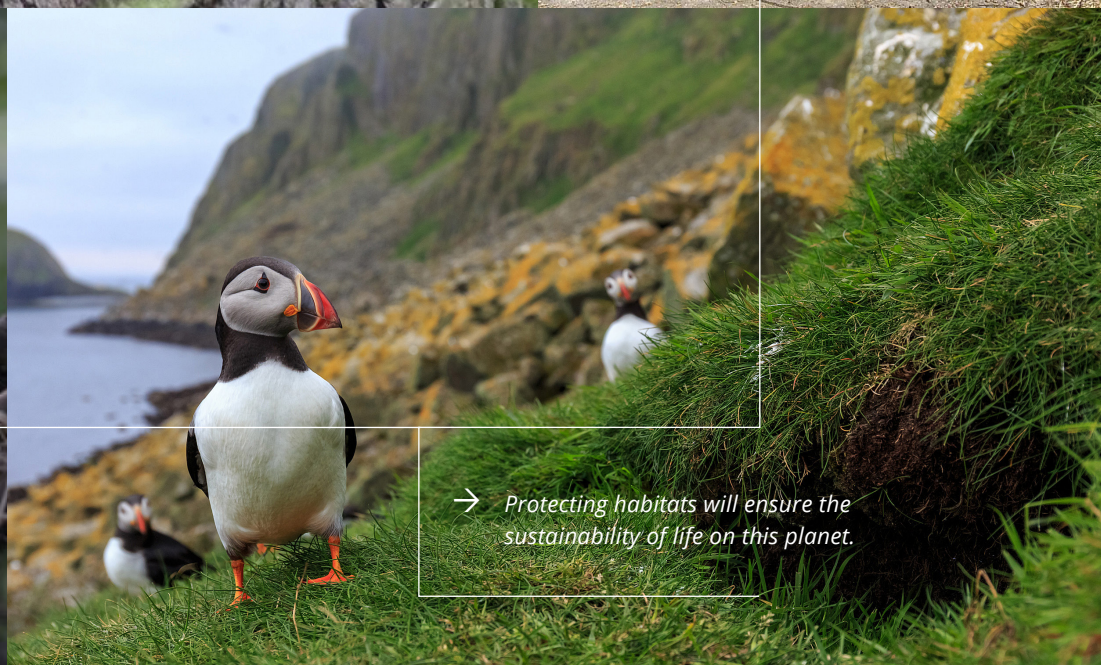
The question is: How does this work in practice? What is the contribution of Prof Du Plessis and, ultimately, the University of Pretoria?

Philosophy turned into practice

Prof Du Plessis works to accomplish this in three ways. The first is by exploring the translation of resilience theory into the urban system and the practical implications this has for urban form and function. She has been working on this with Prof Landman, Prof Serge Salat of the Urban Morphology and Complexity Institute in Paris, and a number of postgraduate students. The first results from this work clearly show that it is possible to translate concepts taken from ecological resilience theory, such as functional response diversity and connectivity, to the urban context, and furthermore, that these characteristics influence social resilience. They plan to take this further by exploring the relationship between social and spatial resilience; in other words, how our urban form and the spatial distribution of functions such as shelter, retail and transport help or hinder social resilience.

The second branch of her work is to develop and define the theory of regenerative design and





→ *Protecting habitats will ensure the sustainability of life on this planet.*

development. The book *Designing for hope* (co-authored with Dr Dominique Hes of the University of Melbourne) and the documentary *The regenerates* (also produced in collaboration with Dr Hes) present the first formal exposition of this emerging field internationally. This work illustrates and refines these theoretical constructs by exploring case studies of regenerative practices in planning, design (of buildings, landscapes or urban contexts) and professional practice. One of the main findings of the research for *Designing for hope* was the importance that the various practitioners interviewed placed on deep personal transformation as a condition for the behaviour change that will result in meaningful planetary transformation.

Exploring the ways in which such transformation can be encouraged forms the third aspect of her work. This is where her research links most closely to her teaching practice.

Teaching

Through the third-year module Prof Du Plessis teaches in Sustainable Construction, she endeavours to stimulate this personal development in her students. Apart from teaching basic sustainability literacy and practices aimed at developing practical, creative and reflective problem-solving and evaluation skills, students in the Sustainable Construction module are taken on a journey of self-discovery, as the self is the place where any change starts. Students are guided through a set of experiential exercises to help them understand their own contribution to the problem, and develop scenarios for alternate futures, experiencing the interrelatedness of the world, and exploring ways in which they can bring about change within their own sphere of influence.

This is exactly where the story of the hummingbird becomes so relevant. When confronted with the problems of environmental degradation, climate change and social inequality, students express sentiments of discouragement: "The problems we face are so big. How can I possibly make any difference?"

The hummingbird's message is that everyone's contribution is significant. The course makes students aware of three independent principles: working with what is in one's sphere of influence, that small changes can have big results (the butterfly effect), and the fact that the world in which we live is created by the actions of people.

Working with what is in one's sphere of influence means trying to change things over which one has a direct influence. The premise of this is that the ripples of one's actions will inspire others to follow suit. The butterfly effect proposes that one small action has the potential to create the momentum necessary to affect the behaviour of the larger system. The third principle, which is also the foundational principle of the ecological world view, states that "the world in which we live is constantly being created not by governments or large organisations, but by the individual actions of people and other organisms (agents) and their responses to the actions of other agents and changes in their environment".

It is important to send future architects, construction managers, quantity surveyors and property developers into the world with not only the right skills, but also a positive frame of mind, as well as a holistic perspective on how they can contribute to creating a better world. That is the ripple effect Prof Du Plessis wants to put in motion through her teaching and research.

The ripple effect

As Tshwane is the capital city of South Africa (and the city in which the University is located), it presents an ideal research opportunity for finding solutions to challenges that face the city, society and our world.

Prof Du Plessis, together with Prof Landman and other members of TRUST, collaborates with academics from various faculties on the Capital Cities (Space, Justice and Belonging) institutional research theme to introduce some of this thinking to the city.

This research field reaches into aspects of every discipline on the planet, as man and man-made objects are part of living systems. This is a complex and comprehensive concept to get one's head around, but once one does, one realises the immense potential it has for actually changing the world. Perhaps this is ***the*** answer.

But what happened to the hummingbird? The Great Being took pity on it and sent a rainstorm to put out the fire.

Who knows what cities can look like if everyone does what he or she can?

TRUST has been established through a National Research Foundation (NRF) grant under the Global Change Society and Sustainability Programme. Its inter- and transdisciplinary research has a particular focus on Tshwane and uses the combined skills of planning, evaluation, design thinking and ecological engineering in an iterative systems approach to accomplish the following:

- Develop an understanding of the social, technical, spatial and biophysical factors that would determine resilience in the various levels of the city.
- Develop appropriate solutions (processes and methodologies) for the planning, design, construction and management of a resilient and regenerative built environment.
- Build national capacity in generating knowledge on, and applying it to the new research area of resilience and the regeneration of human settlements through increased postgraduate research outputs, and continued professional education.

An excellent take on this concept is the documentary *The regenerates*, which synthesises the views of major influencers. It is available at https://vimeo.com/120837455. It will give you a whole new perspective on life.