CHAPTER
3

REINVENTING OUR CITIES AS CONSTRUCTED ECOSYSTEMS

BY
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ILLUSTRATIONS BY:

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Addressing the environmental crisis, and seeking to save and regenerate our planet for humanity and wildlife, are the most compelling issues facing architects, designers, planners, engineers and everyone whose work impinges on the natural environment, writes Ken Yeang.

ABOUT THE AUTHOR

Ken Yeang is a Malaysian architect who describes himself as ‘ecologist first, architect second’. He is a world authority on green design.

We need to envision a different type of world and built environment than what currently exists, an ‘ecotopia’—where human society and all of its systems are in symbiotic harmony with nature—and then make it happen. This may not mean a total redesign or reinvention of our existing built environment, technological systems and society, but it is clear that fundamental changes are urgently needed. We have to go further to create a built environment and society that are not deleterious to nature, but contribute positively to it and are regenerative. Our approach needs to be ‘ecocentric’, adopting the science of ecology as the guiding principle for everything regarding the planet. The first aspect required to envision our future is anthropocentric. Addressing the problems concerning the current environmental crisis do not start with technological systems, but with us, the human beings that create these systems. What we need to rethink and change are complex societal social-economic-political-institutional systems and our customs and cultures so that all of these act benignly with nature. This will require a sea-change and epochal re-envisioning of our societal mindsets, perceptions and ideologies. Designing and taking appropriate ecological action requires a switch in humanity’s mindset, from a relationship of exploitation to one of benign stewardship. Humanity needs to change its role, and also the role of its built environment and technological systems, so that its ideology and mindset towards nature moves from regarding it as an endless source of resources to be exploited, to partnership.

It might be argued that the purpose of design is to make people happy and to enhance their wellbeing. But, while this is a desirable outcome, it must not cause irreversible damage to nature, its ecosystems and its biogeochemical cycles. We need to rethink and change crucial aspects of our existing social-economic-political-institutional systems to give critical consideration to the natural environment. The second factor that we need to envision and change concerns the things that we make, our built environment, humanity’s technological and engineering infrastructure that comprises the physical constructs that we design and manufacture. This includes all of humanity’s artefacts, structures and technologies, both the ‘unenclosed’ urban utilities and the ‘enclosed’ internal utilities being the mechanical/electrical/IT servicing systems within the built environment. The current

approach is almost entirely technocentric, without consideration of the impact on nature, its systems, and on its extensive use of limited non-renewable natural resources such as fossil fuel energy and other key resources like water. Our existing technological systems impact not just the ecosystems and land upon which they take place, but also because their solid, liquid and gaseous emissions contaminate their environments. The legacy is pollution, and these emissions persist well into the future.

The next crucial aspect we need to address is closing the water cycle to reuse, recycle and conserve water, working in unison with the planet's hydrological systems and its ground water, waterways and seas. Potable water is a limited resource and society's waste of water will deplete its availability. Without water most living systems and organisms cannot survive. But not just water, we need to close the materials cycle. Humanity need to take stock of the devastations that it has already inflicted upon nature, its ecosystems and its biogeochemical cycles, and must urgently seek to help it regenerate and heal. We need to ensure that all of humanity's acts do not have a negative irreversible impact on nature, but are ecologically positive. It is crucial that all of humanity's activities, built systems and technological systems are carried out in an ecocentric way guided by the planet's ecology. We can regard all of these factors as infrastructures: humanity's social-economic-political-institutional systems, its built environment and technological systems, its hydrological systems and nature and its systems. The practical means for achieving a harmonious and symbiotic future for the planet is therefore to focus on benign impacts, to biointegrate these four sets of infrastructures into a physical and systemic whole, where the built environment becomes remade human-made ecosystems, a 'constructed ecosystem'. Creating this requires the biointegration of the natural world with the built environment, including all components of nature from biogeochemical cycles to flora and fauna, and all of the built components of human society from managed water systems and artefacts to societal systems. In essence, the constructed ecosystem must become an integral partner with nature where it emulates, replicates and augments naturally-occurring ecosystems.

Envisioning humanity's resilient future requires effecting a world which is the balanced, seamless and ecologically-informed blend of these constituents, a biointegrated composite 'constructed ecosystem'. This is the challenge that confronts humanity today.

“THE CONSTRUCTED ECOSYSTEM MUST BECOME AN INTEGRAL PARTNER WITH NATURE”