Chapter 47
Towards Regenerative Urban Environments: Urban Interiors for the Sustainable Human Species

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ABSTRACT

This chapter uses air pollution to illustrate how regeneration can be achieved within interior environments. It explores urban growth and reveals the impact that increasing populations and modern lifestyles have on interior spaces, people’s interactions, the natural environment, and human health. Air pollution and Indoor Air Quality (IAQ) are identified as key indicators of urban vitality and quality. Performance driven design and healthy IAQ solutions are highlighted as decisive drivers towards regenerative urban environments. The open flow of personally relevant, objective data is shown to be a strong driver for public awareness and bottom-up, sustainable change. The text illustrates how to create health-giving cities that support human activities while simultaneously providing health benefits to occupants. The aim of this chapter is to provide readers with replicable design strategies and catalyze industry demand for performance driven, regenerative urban interior environments.

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CONTEXT: SUSTAINABILITY AND URBANIZATION

Sustainability

The invention of agriculture, establishment of cities, increased hygiene, and the industrial revolution have contributed to an unprecedented population growth of the human species. Since 1950, population has increased by over 290%; more than 7.3 billion people now inhabit the planet (United Nations, 2015). This exponential growth is unique to the human species. For billions of years, the biosphere and organisms have been working in cyclical processes, through which nature ensures the continuation of seasons, carbon cycles, yearly migrations, water cycles, hibernation, nutrient cycles --- birth, life, death ... and rebirth. As shown in Figure 1, “Life creates conditions conducive to life” (Baumeister, 2014, p.30). Thus, our curves of exponential growth seem strongly at odds with the circumstances, opportunities and limitations of this planet.

Human impact on the planet has long been discussed, from the ‘Garden Cities’ movement, to Le Corbusier’s ‘Plan Voisin’, or Rachel Carson’s seminal book ‘Silent Spring’. Nevertheless, as history has shown, little response or change occurs unless individual people are directly impacted by nature’s degradation. For instance, during the oil crisis of 1973, personal habits were affected by nature’s limits and the environmentalist movement was catalyzed. However once the oil crisis ended, the movement lost momentum, although environmental deterioration never stopped.

Internationally, scientists have been researching thousands of sustainability facets and indicators both large and small. Since about 2009, 11 representative indicators for the health of the planet emerged and their states of criticality have been determined (Steffen, 2015). Only three indicators (Stratospheric Ozone Depletion, Ocean Acidification and Freshwater Use) still remain at healthy levels. Three indica-

Figure 1. A new pine tree growing out of a decomposing tree stump. Nature knows no waste. Every artifact and substance that becomes obsolete immediately turns into food and resources for numerous other organisms. (Authors, 2016).
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