Dark Ecology. The current rush of many cities to develop blue-green plans dealing with future threats of climate change is a testament to the obsession of searching for ‘true’ answers within a problem-solving framework. The experience in practice illustrated in this article highlights the urgent need for a new design method capable of engaging the systemic nature of urban landscapes and their architecture. Architects and planners often rely on a ‘sanitised’ and therefore highly aestheticised vision of the world’s ecosystems, exemplified by the very notion of blue-green planning and its focus on regreening cities. This notion may be one of the most enduring aspects we have inherited from modernity. And if bacteriological control was at the origin of its sanitation efforts, modern architecture and urban design turned it into a style; in other words, modernity did embed sanitation into an aesthetic value system. The contemporary paradigms of green cities and smart cities are the direct consequence of the evolution of that value system. However, urban systems today are non-linear and composed of billions of interlocking feedback loops forming what the authors call the Urbansphere. Waste production, pollution emission, contamination, decay and dissolution are some of the most intense processes within the Urbansphere and a critical part of its contemporary metabolism. These processes often constitute the dark side of urban ecology, a side that is often invisible to the human eye, one that is confined to restricted zones of our cities or exported to poorer regions of the world. Most significantly, it is erased from the consciousness of most urban dwellers, at least in the developed world.

Designing the Urban Microbiome

It is timely in the Anthropocene, and even more so in the age of a global pandemic, to search for a non-anthropocentric mode of reasoning, and consequently also of designing. The Photosynthetica Consortium, established in 2018 and including London-based design innovation practice ecoLogicStudio, the Urban Morphogenesis Lab (Bartlett School of Architecture, University College London (UCL)) and the Synthetic Landscape Lab (University of Innsbruck, Austria), has therefore been pursuing architecture as a research-based practice. This Consortium has been exploring the interdependence of human and biological intelligence in design, by working directly with non-human living organisms.

© Credit


Microbiological landscapes

Reassessing the dark side of urban ecology implies bringing into focus a new aesthetic of nature and, as a consequence, of the urban landscape. This new aesthetic of nature projects the design practice into the realm of micro-organisms such as virus, bacteria and fungi. These creatures induce fear because their tactics often elude our comprehension; however, their collective behaviours endowed them with exceptional properties. For example they are capable of turning what we consider waste and pollution into nutrients and raw material.

From this perspective, ecoLogicStudio’s biodigital architectures promote a new urban aesthetic centred on a novel appreciation for the microscale of bacteria... as photosynthetic machines but also as vectors of disease. This symbiotic relationship has been exploited in a recent project unveiled in Tokyo in November 2019, at the Mori Art Museum. Suspended at the 53rd floor of the Mori Tower and with the backdrop of Tokyo’s urban sprawl, the sculpture materialises its urban dimension as a new prototype of living architecture, the PhotoSynthetica Tower. Explored through a series of associated speculative images, the project unfolds the architectural implications of H.O.R.T.U.S. as the embodiment of Tokyo’s evolution into a future powerhouse of biodigital culture.

Conclusion

Photosynthetica hopes to actualise significant economic, social, environmental and health benefits once it can be scaled up. The project embodies the multigenerational long-term benefits of adopting a carbon-absorbing technology now, as a means to combat carbon sequestration than any other nature-based green technology. The pandemic that is currently engulfing the world is a direct manifestation of the disbalance within the Urbansphere. While chronic exposure to air pollution affects our lungs and weakens our immune system, unsustainable food supply chains and practices are now and will continue to vector more and more pathogens within our bodies. This scenario calls for a broader systemic approach to urban development as well as for long-termism in any design approach. Our design practice seeks to enable both. Cyanobacteria from this perspective emerge from the urban microbiome to become a powerful design medium.

ecologicstudio.co.uk