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INDIAN ARCHITECT & BUILDER

EXPLORE

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Algorithms in Nature

Graduated from the School of Planning and Architecture, New Delhi and the Architectural Association, London with Honours and Distinction in Energy and Environmental Studies. He is the Founder Partner of Morphogenesis with Sonali Rastogi.

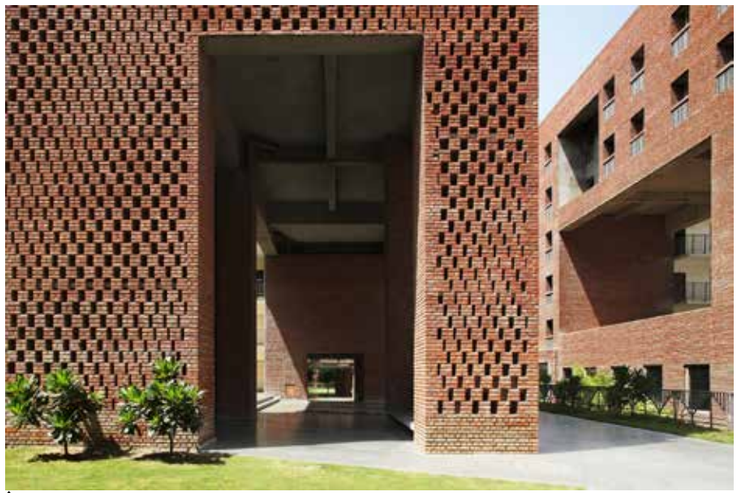
Manit is a founder member of The GRIHA Council, India's own Green rating system. As a member of the Technical Advisory Committee of GRIHA Resource Persons Group on Environment and Ecology - Lt. Governor's Secretariat, New Delhi, Manit works with urban policy makers to spearhead initiatives with an emphasis on environmental sensibility and social welfare.

Day 1, Lecture 2: *Synopsis: Dhwani Shanghvi*
Images: *courtesy ArchPhoto India & Morphogenesis*

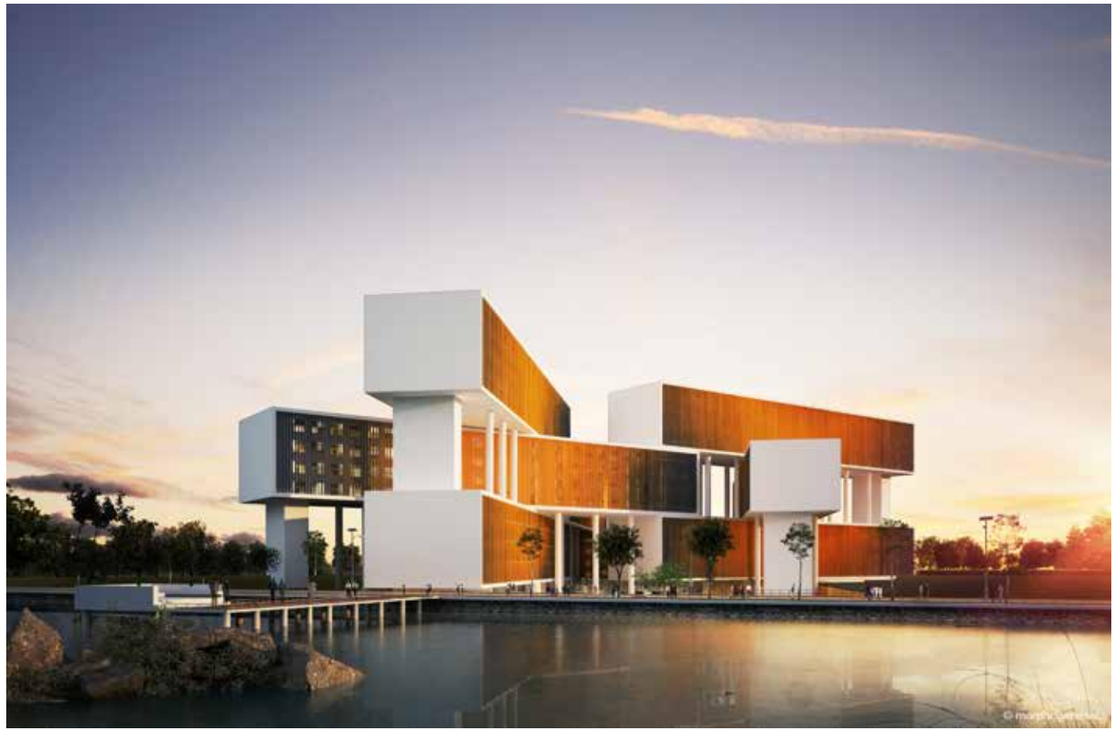
The 21st century has seen the rise of new and innovative design trends in the field of architecture. Some of the emerging developments are a reaction to the new technologies that are a ubiquitous part of a modern lifestyle. With a proliferate dependence on computer algorithms, resulting in a range of possible formal outcomes, the job of the architect is primarily selection of these non-standard forms of architecture. The role of the architect thus comes into question.

Throwing light on these processes of iterative, indexical and scripted architecture, Manit Rastogi of Morphogenesis traces the journey of the studio in the past two decades, as one of the foremost practices in the country to adapt to digital technologies in the development of design.

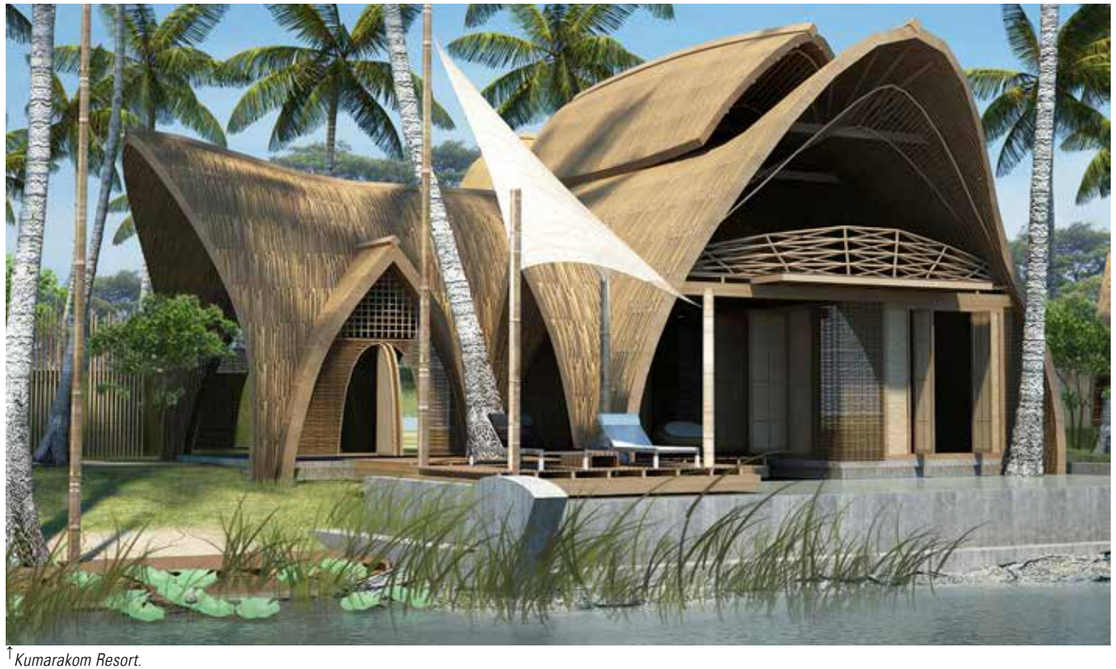
↑*The British School.*



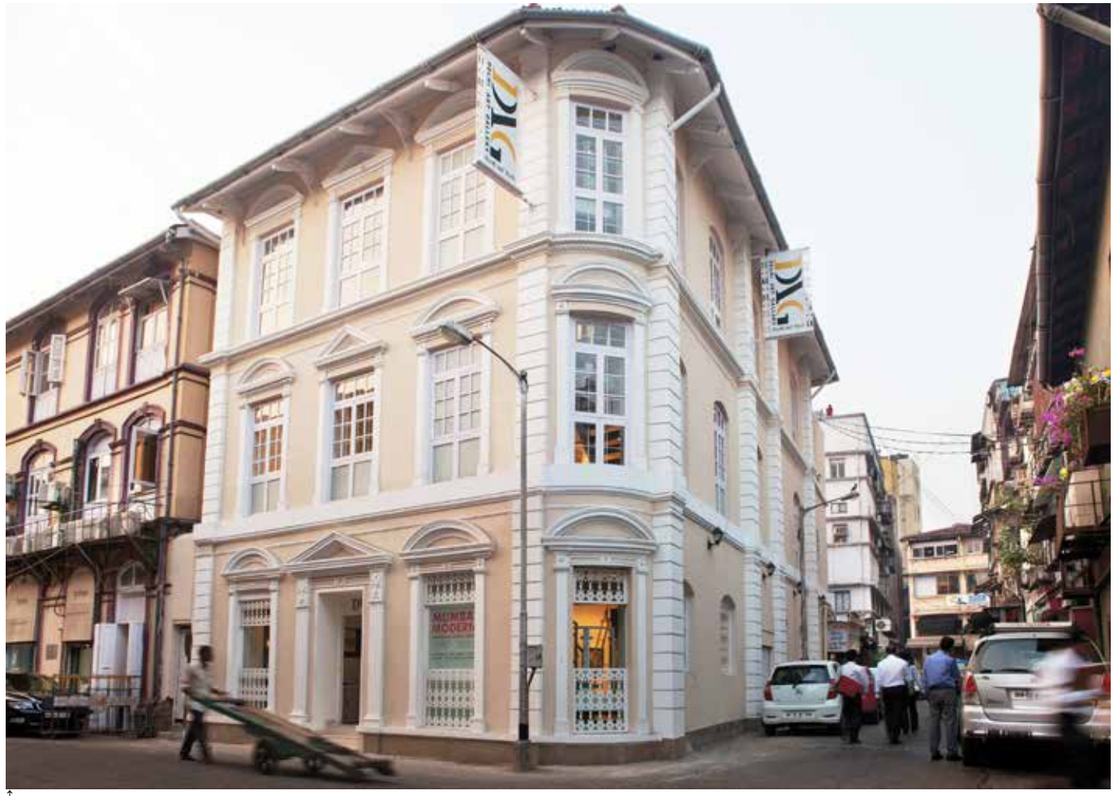
↑*IILM Campus.*



↑*Infosys Campus, Mihan.*



↑ *Kumarakom Resort.*



↑ *Delhi Art Gallery, Mumbai.*

↑ *GYS Vision.*

> *"Technology is great, but it's never going to replace the person. We will however be able to build and design systems and interiors and cities that are more attuned to the biometric theory."*

Nature, which is composed of close looped systems, is efficacious because of its ability to re-cycle everything, thus preventing wastage. Conversely, the open systems and non-cyclical processes result in the city as a by-product of this one-way system of consumption.

The morph, or the formalisation of spaces is a three dimensional manifestation of the processes in nature, superseding the corporeal forms in nature. While both natural and man-made systems are influenced by the theories of Darwinism and Neo-Darwinism, the former is evidently a consequence of natural selection, while the latter is a result of artificial selection and choices.

The role of the architect is thus to decipher the means of close looping artificial systems where the origin and generation of form, structure and organisations is developed in a sensitive and ecological manner. As a means to exemplify this, Rastogi engages with the basic principle, derived from the fact that the sun is the primary source of energy, and expresses means to create sun shading vertical devices by developing simulations from the astronomical clock that is the sun. The aim is always to optimise the form manually, so as to use minimum materials. With the multiple possibilities extracted from the algorithms, the question lies in identifying where the form sits, within the intersection of two 3-dimensional cones; i.e the cone of inclusion and the cone of exclusion. Within this wide spectrum of possibilities, the form can be optimised with the aid of generic algorithms, which makes it possible to arrive at a form which deals with conflicting as well as ill-defined criteria of form generation. The patterns thus developed are, more often than not, a reflection of the behaviours in nature. Through various examples, it is easy to visualise the impact of the environment on the morphed form and vice versa, where the translation takes place through transformation, and not motion.

Delving further into this digital world of algorithms and computer generated simulations, theoretical explorations are made, which evidently showcase co-operation and collaboration across multi-economies and multi-ecologies, which he calls Collaborative Evolution.

In conclusion, he acknowledges the significance of the person over technology and recognises that while technological advancements are a means to an end, they are not the end. He therefore propagates embracing technology towards optimal ends. ■