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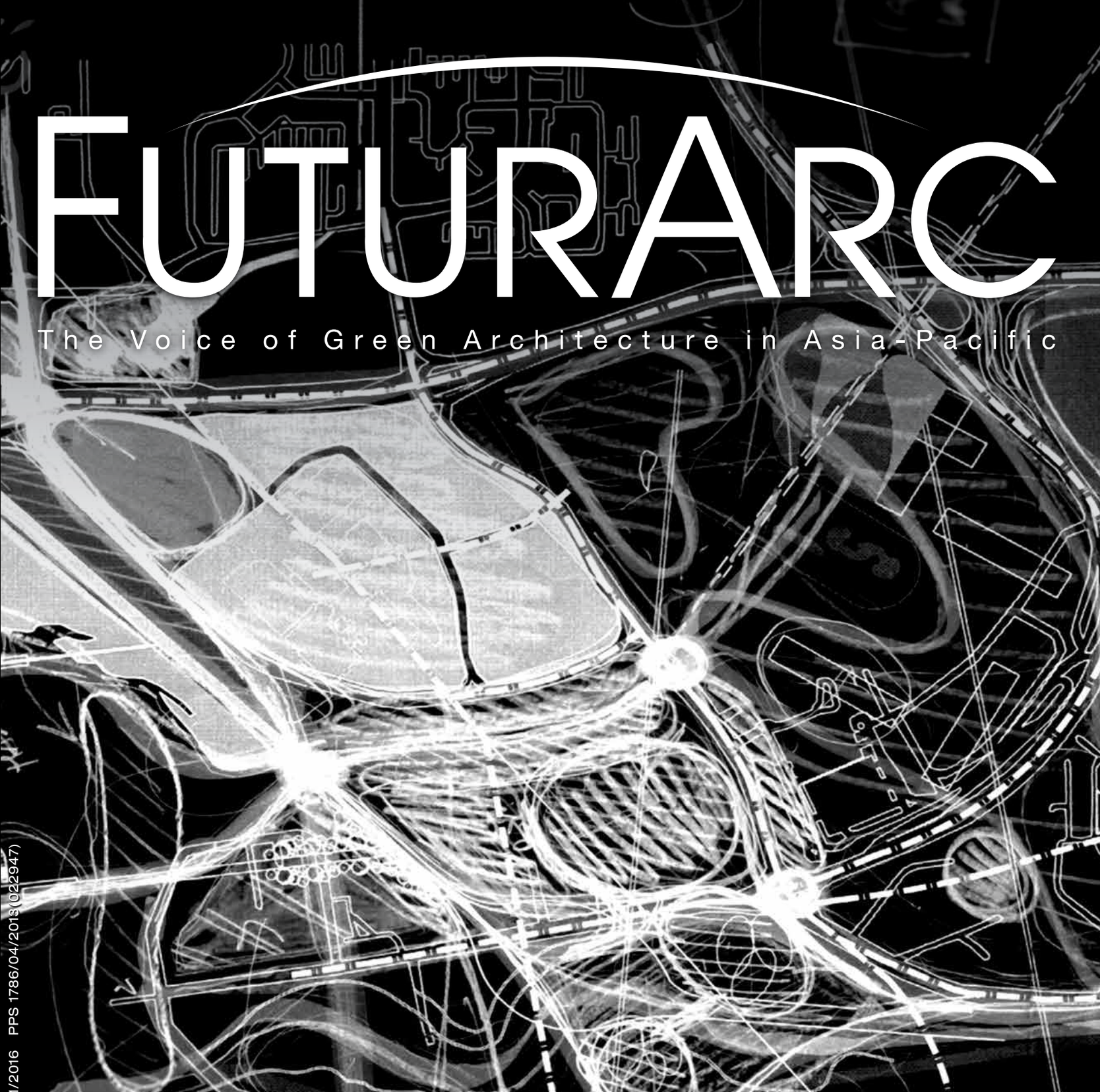

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Architecture of Learning

Inside: **Net-Zero Energy Building at the School of Design and Environment** – *Singapore* | **Crafting Pedagogy, Outside the Classroom** – *A Look at Experiential Learning* | **Mike Guerrero** – *Principal, Asian Architects; Chairman, Green Architecture Advocacy Philippines* | **Works of Morphogenesis, Hijjas Kasturi, Hoang Thuc Hao**

With projects from **Australia, Cambodia, China, Denmark, India, Indonesia, Kyrgyz Republic, Malaysia, Singapore** and **Vietnam**

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INSTITUTE FOR INTEGRATED LEARNING IN MANAGEMENT CAMPUS

Contextually responding to its harsh local microclimate, the project was conceived to fortify itself from the external environment and create a relevant oasis-like internal environment. This resulted in the inward-looking morphology, with a high thermal mass on the outer faces that blocks out the hot winds predominant in the region.

This building provides student accommodation and support facilities within an existing educational campus. Students are housed predominantly in an apartment format where units are placed along the external periphery for maximum daylight, opening to an internal central corridor system. The project is designed to have a low wall-to-window ratio; furthermore to thermally buffering each unit and reducing solar gain from the façade of the building, toilet shafts are moved to the exterior faces of each unit. Deep recessed windows provide shade and help in controlling optimum daylighting.

Spatial planning was done in order to engage the students, generating various interactive conglomerate spaces, each having its own identity within the overall community yet satisfying institutional/residential requirements. The campus is designed in a multi-building format with a street pattern on a grid to generate the built volumes. Courtyards are introduced and cores are identified by carving out voids at different levels to create a multitude of open spaces in the form of terrace gardens and courtyards of diverse scales and configurations for multilevel interactions, creating a miniature urbanscape. The buildings are oriented in a manner such that they open inwards while presenting a largely solid façade to the outside.

Each residential block is planned on a traditionally inspired community living format of a chawl (a large residential building of typically four to five storeys with many separate tenements that share a common balcony; a usual tenement in a chawl consists of one all-purpose room that functions both as a living and sleeping space, and a kitchen that also serves as a dining room). The courtyards and terraces encourage interaction among neighbours and the visual connection with the street creates a vibrant community atmosphere.

1 A brick façade blocks out hot winds and create a cooler interior

2 Street canyons provide shading without obstructing natural ventilation and daylight
3 & 4 Concept diagrams

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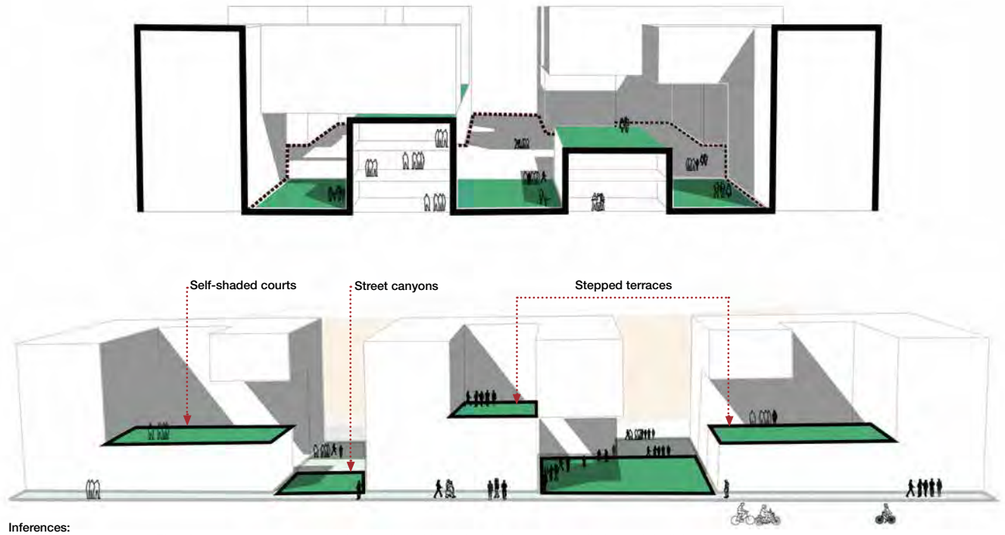
Microclimate: morphology



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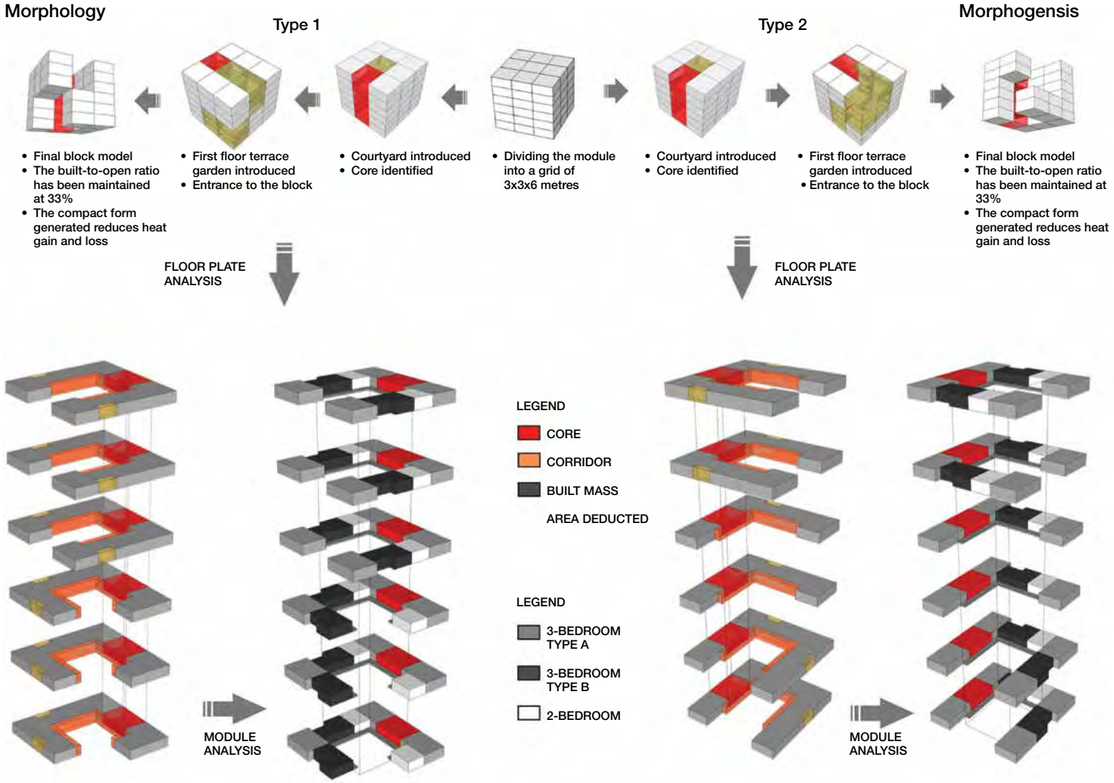
Inferences:
- Passive street canyons: The 12-metre street canyon provides shading without obstucting natural ventilation and daylight
- Urban streetscape: Created by visually connecting spaces at different levels
- All the above level terrace garden to open onto the street to generate the urban streetscape

Morphology



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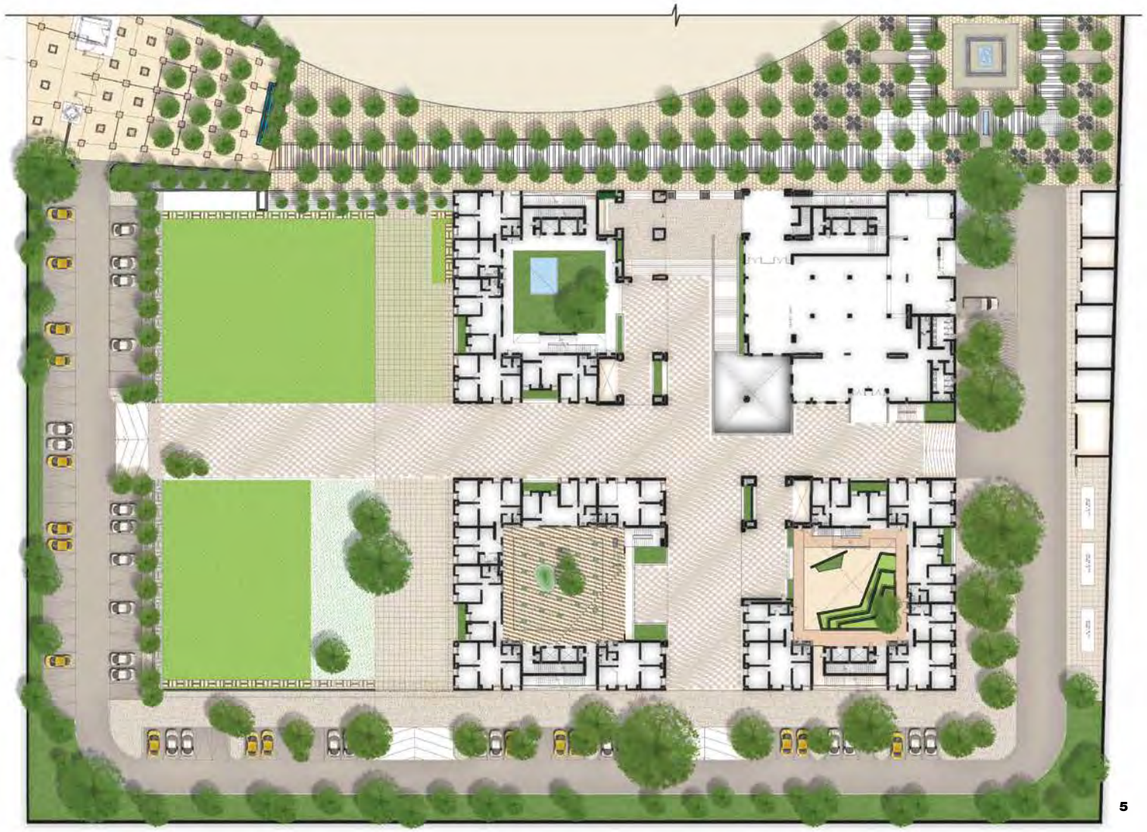

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Education in India takes a typically socialist approach and must be made available to all, and hence needs to be affordable. The architects took this opportunity to address affordability in this project through resource optimisation strategies and passive design to reduce both the capital and operational costs.

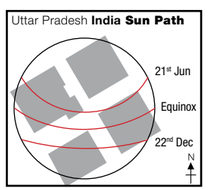
In terms of materiality, bricks are commonly used in the construction of educational institutes and other buildings in the region and thus, they were the material of choice for the project. Using bricks as the primary façade material was also an exercise in resource optimisation by serving the dual purpose of creating a high performance and low maintenance façade that weathers well in this harsh climate. The façades were designed as the interface between the interior conditioned space and the outside environment, and act as insulators and light filters to control and modulate inside conditions. The use of brick *jaalis* and other simple finishes helps to maintain a simplistic material palette.

The project uses passive strategies such as courtyard planning and earth banks to create a microclimate. These subterranean landscape areas are articulated with water features and seating spaces to enhance student use. The design addresses frugality, adaptability and resourcefulness by also ensuring that all materials are sourced from within 500 kilometres of the site.

A decentralised solar water heating system is used to fulfil 100 percent of the hot water requirement. Solar panels are placed on each terrace top, facing the south side to receive maximum sunlight. A sewage treatment plant in the basement is used to treat waste water and reuse water for flushing, gardening and water bodies. The rainwater harvesting system uses an rainwater pipe detention tank to collect and treat water from the terraces and recirculate within the system. The system also collects water on the ground to discharge into the municipal storm water drain.

The entire project is net-zero enabled and when future budgetary allowances permit, the campus may go off the city grid for all its power requirements.

PROJECT DATA
Project Name
Institute for Integrated Learning in Management Campus
Location
Greater Noida, Uttar Pradesh, India
Completion Date
Early 2014
Site Area
8 acres
Gross Floor Area
175,000 square feet
Building Height
26 metres
Client/Owner
Institute for Integrated Learning in Management
Architecture Firm
Morphogenesis
Principal Architect
Sonali Rastogi
Main Contractor
Ahluwalia Contracts
Mechanical & Electrical Engineer
Apostle Design Studio
Civil & Structural Engineer
BMSF Design Consultants
Images/Photos
Jatinder Marwaha; Morphogenesis



5 Site plan **6** Section with temperature variations
7 The varied porosity of the *jaali* façade **8** The façades act as insulators and light filters

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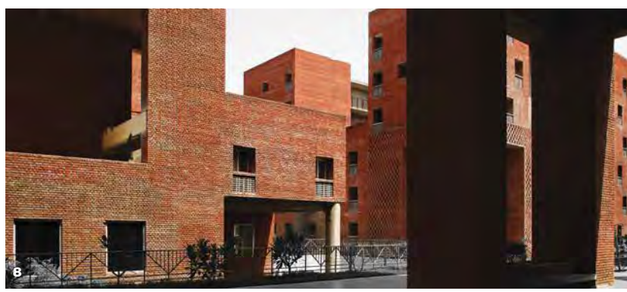

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