Gamechangers of design

Manit and Sonali Rastogi of Morphogenesis share how they conceptualise and realise green structures of all shapes and sizes

INTERVIEWED BY RASHMI NAICKER

Every architecture and design firm "speaks" a particular design language through its projects. At Morphogenesis, one of the leading practices in the country and valued the world over, this design language is hinged upon climatic specifications and socio-cultural contexts — both are imperative before designing any building, say co-founders Manit and Sonali Rastogi. "Each project is conceived through a research-oriented approach to policy, planning, design, technology, passive and low energy design."

Four aspects are central to the practice's philosophy. Each design is conceived through first principles and through the lens of SOUL — Sustainability, Optimisation, Uniqueness and Livability. The firm's belief in sustainability shapes all its projects, and forms the very basis of design. "Our endeavour is to plan in a manner that reduces consumption of resources and energy, resulting in up to 50% less energy consumption than certified green building benchmarks, through passive design and microclimate creation, proven through post-occupancy evaluation," explain the Rastogis.

In a country like India, the duo also take into account the fact that projects often involve resource optimisation. It is achieved through integrated project delivery and by breaking barriers of established cost benchmarks, while reducing consumption through design innovation. This aspect coupled with the responsiveness of design to client, climate and context — and being "mindful that the project is globally pertinent" — enables them to create projects that are truly unique.

Morphogenesis recognises

Photo: Vibhor Yadav

that processes ultimately are at the service of the end-user. Hence, liveability is at the core of the design process to build genuinely smart environments. The founders elaborate: "We consider mobility, security, outdoor comfort, technology, health and wellbeing, ease of facility management and disaster readiness to create spaces that work well for all users. Architecture, design and urbanism must be in sync with the forces of urbanisation, globalisation and technology." It is this bridge between tradition and modernity, where the work of the practice is positioned, and why the couple place emphasis on 'the Indian perspective in the global context'.

Establishing and running a successful practice is credited to Manit's education in sustainability as well as work with John Frazer ("with whom I studied evolutionary design") as his major influences till date. "Frazer introduced me to nature and the interconnected universe, to evolutionary space and time, and that gave me our vision and purpose. Simos Yannas helped me understand the science of passive design, that forms the basis of all the work we do today," he adds. For Sonali, being Indian and living in an evolving, diverse country with varied craft and styles of working and materials... simply being surrounded by the environment and history has been key in shaping her thought process. "Our education at the Architectural Association (London) exposed us to cutting-edge architecture and discourse on design, furthering our ability to see and absorb. So, it is an institution, not a person that helped me on my way to an almost constant development of sensibility, and not a one-time influence," she explains.

Encouraged by these influences, the duo co-founded Morphogenesis 23 years ago to expand the boundaries of architecture and eco design. Their one goal is to achieve design as well as built excellence. "Our working strengths are complementary, which makes us a solid team," Sonali shares. "On a project level, we brainstorm concepts. Manit works towards defining the passive design strategy, setting out goals and metrics that need to be achieved. I am the details person, carrying that through into the actual design, ensuring efficiency in delivering projects on time and to quality." It's this synergy that keeps the wheels moving at Morphogenesis.

One of their significant approaches is a belief that processes in nature are a continuum, evolving for different paradigms... and so do people and architecture. "To place Indian architecture on a global platform meant that we will always be weaving the wisdom of 5,000 years of India's construction history with current day aspirations, aesthetics and technologies," explain the architects.

Photo: Jatinder Marwaha

Sonali Rastogi.

"We have become architectural activists in an attempt to affect change in our cities."

The practice was set up at a time when India was at the cusp of globalisation and in the midst of a paradigm change in the nascent liberalised economy of the 90s. Both Manit and Sonali saw it as an opportunity for a fundamental shift in design thinking. Their desire was to bring Indian design to the forefront of global discourse since "architecture, design and urbanism as processes needed to be in step with this radical shift". So, they chose architecture to bridge boundaries and through discourse, set the ground for evolution and innovation, and engage with society to make architecture more relevant to the common man.

"We have become architectural activists in an attempt to affect change in our cities," the duo say. Recently, they exhibited 'The Fractal Metropolitan Layer', Morphogenesis' ongoing mission to revive Delhi's historic nullah network. The endeavour embodies the practice's urbanist, environmental, architectural, socio-cultural and artistic dimension. The aim is to create a new metropolitan, sustainable network in the capital. Besides public interventions, their overall work deploys passive strategies by responding to the local climate and ecology. "We have successfully created exemplars that achieve a 30% reduction in freshwater demand, consume 50% less energy than established green rating benchmarks, without incurring additional cost." Morphogenesis is proud to state that in over nine million square metres of built environment, benefitting over 5,60,000 inhabitants, they have recorded savings in 22 billion litres of fresh water, 4.1 billion kW/hr of energy and a reduction in carbon dioxide emissions by 3.3 billion kgs.

ITC Campus, Kolkata.

Given their extensive experience, they are well versed with the challenges faced while designing sustainable commercial and institutional spaces. "These are driven by two completely different sets of parameters. Their scale has gone up in the last two decades. In many ways, it is a new construction typology," they say. It is nonetheless an exciting typology for them to work in; to experiment with heights, high FSIs, high-density, etc, to develop a globally appreciated, viable and robust commercial architecture.

As for institutional, the practice has had a repertoire of projects. However, the notion and perception of an institutional space by the modern Indian student has changed, they point out. "Space is no longer a physical entity. Learning is no longer limited to a particular space. In a world geared by the Internet, learning is digitised and our structures must embrace that. It is exciting to create spaces that not only resonate with today's youth but also imbibe in them a lifelong learning of living in sync with the environment."

Photo: Jatinder Marwaha

Manit Rastogi.

"In a world geared by the Internet, learning is digitised and our structures must embrace that."

Working in the commercial segment, has made them aware of how external factors influence design. From concept to completion, trends change. At times, there are frequent revamps on the briefs and the perception of marketability. "Architects must understand that such changes are an integral part of their brief. The buildings must be robust enough in their design to accommodate any market flux and related usage patterns," say the co-founders. Prescriptive designs, failure to address sustainability and liveability factors throughout the building's lifecycle are some of the mistakes seen in the commercial sector. "Rather than creating 'carpet area', the intent must be to create a 'home away from home'. At Morphogenesis, our attempt is to bridge these gaps."

An architect's role has been not only of a master craftsman, the duo clarify, but also of somebody in charge of the entire collaborative process. Commercial design has the largest number of stakeholders — from banks to clients, from project and facility managers and marketing teams to a plethora of consultants involved at various stages. Morphogenesis also gets experts for facade performances, environmental designers, hospitality and security consultants, disaster management specialist on board as well. An architect designs the building and also responsibly integrates all emerging parameters and evolves the design process to include all necessities. This is where knowledge about global best practices comes into play, they disclose.

To illustrate their approach to design and the philosophy in action, we handpicked a few of Morphogenesis' noteworthy projects:

Surat Diamond Bourse, Surat.

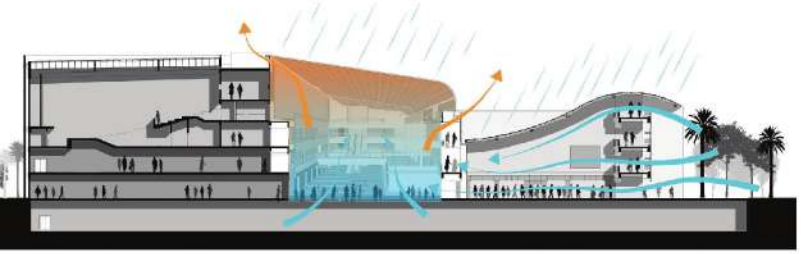
ON THE ROLE OF FACILITY MANAGERS

The Rastogis agree that facility managers and their inputs are crucial to the design process. "They get involved in the nascent stages of a design and bring their experience and knowledge of operations, security and maintenance of the project. Their roles are highly technical, with commercial projects being designed on BIM software. Facility managers are expected to use these models to run the building. Therefore, their inputs are critical in the decision making process to help them run the building efficiently."

ON NAVIGATING TECHNOLOGY AND ITS INTEGRATION

"Technology impacts our work on all fronts. Ranging from shaping projects and producing drawings to construction, all stages of a project use technology. It is not just a means to design but also essential in controlling costs, construction and operations. We have been BIM enabled for years now. The issue is not in the adoption of the technology, rather in the market penetration of the software. A significant part of the construction industry uses unskilled labour, where access and usage of this software is limited. This penetration is limited because of the financial ability of many small and medium builders, who form a large part of and contribute greatly to the construction industry. We see the growth towards high-end software that enable visualisation, modelling, virtual environments, etc. These tools keep evolving with time. Our adoption to newer forms of technology is not the barrier. It is the same as in any other profession, not everyone can afford it."

Casestudy: City Centre, Siliguri



opportunity for this space at no cost.

The Uttorayon Township's success lies in being sustainable in terms of social equity and economic viability. This project set Morphogenesis' direction of creating settlements to be ecologically viable, culturally sympathetic, and visibly capable of sustaining the dynamic processes of life and growth.

Located at the foothills of the Himalayas in Siliguri, West Bengal, City Centre in the Uttorayon is one of the largest commercial developments in eastern India, spread across 11,90,000sqft. Positioned at the interface between the city and the township, it is a much needed, organised commercial district for the city. The City Centre is a sustainable and commercially successful development with an embedded agenda for enhancing the socio-cultural engagement of the inhabitants.

A good example of how built form can work with local climate, the retail complex is designed to keep common corridors and atria naturally ventilated, along the line of the prevailing wind direction. Perforated rain screens are used for large parts of the facade to keep rain out, while allowing ventilation for a pleasant microclimate inside, despite high humidity. In keeping with the traditional Indian schema of high streets and porous spaces, it breaks down into a complex of well-scaled structures and offers maximum interface to users.

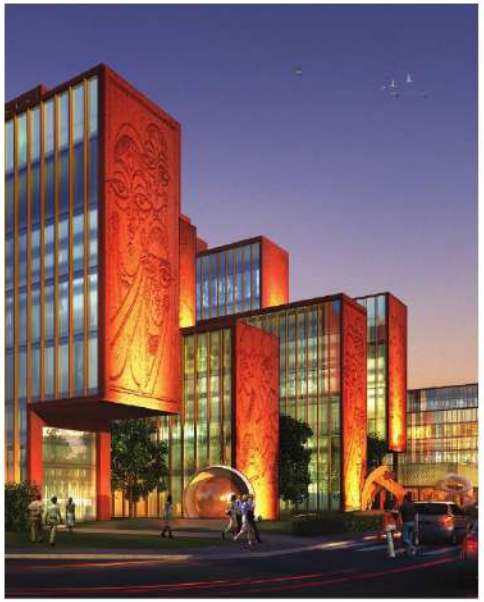
The finishes of the building are simple, creating a backdrop for local art school students to exhibit their work, energising the space by participation, enriching the space with urban art and culturally rooting the development in the artistically rich heritage of this region. Community contribution has led to mutually beneficial

PROJECT INFORMATION

Client: Ambuja Neotia
Built-up Area: 11,86,000 sqft
Site area 10 acres
Consultants:
- **Structure:** SPA Consultants – Sanjeev Parekh
- **HVAC:** Chander Ramchandani Consulting Engineer
- **Plumbing:** RK Solutions – Ratan Sarkar
- **Electrical:** DB Indcon – Dipankar Banerjee
- **Landscape Design:** Integral Design
- **Fire Fighting:** OBS – Pritam Basu
- **Façade:** Morphogensis
- **Photographer:** Andre J Fanthome, Edmund Sumner

Contractors :
- **Civil:** Simplex Projects
- **Structural:** Carrier
- **HVAC:** MEHO
- **Plumbing:** Sreeram Builders
- **BMS :** Elmark Engineers
- **Roofing System:** Kirby Building System India Ltd
- **Façade:** Nitson And Amitsu Private Limited

Casestudy: ITC Campus, Kolkata



Situated in Rajarhat, an upcoming suburb of Kolkata, the ITC Campus is spread across 17 acres and has a mixed land-use brief with IT and commercial offices, hotel, convention centre and residential towers. Being conscious of the region's philosophical bent and cultural pride, Morphogenesis created an identity for the project, wherein buildings became the physical manifestation of the locale's rich artistic and artisanal culture. The thread that weaves the mixed-use commercial development together is the culture of Bengal, as reflected in its literary heritage, music, fine arts, drama and cinema.

The massing of buildings is planned along a central spine, while stacking of the form led to a 15% reduction in usage of steel. The urban frontage of the tall, soaring stone facades on the east and the west have been manifested as vertical canvasses in the form of intricately carved murals, showcasing local art and craft. Exquisite Bengali script and Tagore's writings on the environment are the inspiration for the crafted stone facade of the lower scale convention centre in the foreground.

The urban space is used as a placemaking tool to host and celebrate the Bengali socio-cultural ethos, which is one of discourse, deliberation and communal festivity. Taking inspiration from the pandals (temporary pavilions), public spaces have been scattered along the entire central spine as open-air museums, with sculpture and art installations adding to the sense of 'place'.

For this project, Morphogenesis involved the crafts community and emerging artists from Bengal to bring craft back to the public realm.

PROJECT INFORMATION

Client: ITC Pvt. Ltd.
Status: Under construction
Built-up Area: 30,00,000 sqft
Site area: 17 acres
Climate: Warm-Humid
Consultants:
- **Structure:** Sterling Engineering Consultancy Services
- **MEP:** AECOM
- **HVAC:** AECOM
- **Plumbing:** AECOM
- **Electrical:** AECOM
- **Fire Fighting:** AECOM
- **Green consultant:** AECOM
- **Lighting:** Design Matrix
- **Hospitality:** HPG Consulting
- **Traffic:** Traffic & Transportation Engineering Consultants
- **Quantity surveyor:** IM Cost Management
- **Security:** Mahindra SSG
- **PMC:** ITC (Client)
- **Façade:** Meinhardt Façade Technology
- **Sustainability:** Morphogenesis
- **Landscape Design:** Morphogenesis
- **Interior design:** Morphogenesis
- **Master planning:** Morphogenesis

Contractors :
- **Piling:** Geo Piling Solutions

Casestudy: Maker Maxity, Mumbai

Designed almost two decades ago, Maker Maxity is a sprawling, 20 acre property at the mouth of Bandra Kurla Complex in Mumbai. It is a mixed-use commercial development, comprising five commercial towers. The site was a drive-in theatre that's been defunct since the late 90s. As the first project to come up in this area, Morphogenesis considered it important to make the placemaking exercise almost take precedence over the building exercise. It was envisioned as a large integrated complex to revive public space and create 'a microcosm of a city within-a-city'.

The campus was divided into three phases with the institutional and office hub coming up first. Morphogenesis used these blocks to define the front to establish public presence. Over the last few years, after tremendous success and the validation of its placemaking exercise, phase-2 and phase-3 are now under construction. This commercial success validated the early design decision of not treating each building as a self-contained plot with its own set of services but actually converting the entire project into an urban placemaking exercise with no boundaries.

The landscape played a tremendous role — carefully detailed water curtains and pergolas have almost made cars a non-entity, creating a sense of an entirely pedestrian campus. A large number of public amenities such as cafes, gyms and art galleries on the ground level have also enhanced the environment. This has resulted in increased public engagement and presence throughout the day. Wi-Fi enablement and installation of an outdoor and indoor public art collection across the campus and lobbies has further augmented the placemaking exercise, making Maker Maxity a robust, thriving and learning environment.

Mumbai experiences torrential rains during monsoons, which hampers basic municipal services and severely affects the way of life. So, a strong disaster and flood mitigation strategy was incorporated into the architectural design by Morphogenesis. Combining data from high tide levels, data on the maximum rainfall received and the displacement water from the catch basins of BKC were studied. The result was that the entire datum of the site was designed to be one metre above that level. Exposed storm water drains run along the site with sluice gates (like in a dam), where they exit the site. In case of a flood, those are shut to allow the water to exit the site. The validity of the design innovation was proven soon after completion, when Maker Maxity was the only site in the region that stayed dry during flooding.

PROJECT INFORMATION

Typology: Commercial
Location: Bandra Kurla Complex, Mumbai,
Client: Maker Developments
Built-up Area: 10,76,000sqft
Site area: 20 acres
Climate: Warm-Humid
Consultants:
Structure: Sterling Engineering Consultancy Services
HVAC: Spectrum Consultants Pvt. Ltd.
Plumbing: Spectrum Consultants Pvt. Ltd.
Electrical: Spectrum Consultants Pvt. Ltd.
Landscape: Integral Design and One Degree North
Fire Fighting: Spectrum Consultants Pvt. Ltd.
Photographers: Maker Maxity

Casestudy: Surat Diamond Bourse

Morphogenesis is proud to have won the competition and to be executing the world's largest building. India gives shine to 85% of the rough diamonds sold globally, and Surat being the capital of this trade. With a built-up area of 65 lakh square feet, the Surat Diamond Bourse is set to be the world's single largest commercial office building. It will accommodate over 4,500 offices of diamond traders, aspiring to become the centre of the international diamond trade.

The design brief called for the provision of a single function office to accommodate the local industry. More than 92% of the world's diamond pieces are cut in Surat, contributing to about 80% of India's annual diamond export that amounts to Rs. 70,000 crores. Currently, there is a large population that travels daily between Surat and Mumbai to trade. The upcoming bourse aims to centralise all activities of cutting, polishing and trading in Surat.

For a single building of this scale, movement patterns, nature of the trade and human interaction became key design parameters. The challenge was to enable easy navigation for large volumes of people within trading time. Multiple vertical circulation nodes such as staircases and elevators across each floor have been placed within one-minute walking distances of each other. This would enable over 65,000 people daily to reach their respective offices in under seven minutes from the point of entry into the complex, including high level security checks. Traffic studies, ingress and egress points, and juxtaposition of various functions with different types of people — all played an extensive role in the plan.

The building is planned along a central axis that's aligned with prevalent wind direction. The North-South oriented towers provide glare-free, daylit offices, accommodating functions of trading and selling of diamonds, customs, etc. The central spine is used for interconnection between towers on every level. The building form aims at maximising the potential of self-shading, thereby reducing dependency on other forms of cooling. Forty percent of the total area is controlled by radiant cooling; making it the largest installation of its kind across the globe.

The central axis connecting all the offices is designed as an interactive hub comprising of break-out spaces and green atria. These not only act as the lungs of the building but also address the chance, interaction and transactional nature of business. Outdoor spaces have been designed in the form of nine courtyards to foster social cohesion and community engagement. The use of dense vegetation within these courtyards have psychological advantages, improve air quality and provide thermal comfort as well as socio-cultural event spaces.

This campus aims to integrate the demands of high-density commercial architecture and an efficient climate-responsive design. It will be equipped with state-of-the-art amenities — safe deposit vaults, customs clearance house, world standard convention centre, exhibition centers, training centers, entertainment areas, restaurants and a club. The bourse is located at the large central business district and is to be the incubator of attracting regional development with allied civic amenities. Currently, the diamond industry in Gujarat employs more than seven lakh people, most of whom are based in Surat. Once completed, this bourse is estimated to provide employment opportunities to lakhs of people and generate tourism in the area, boosting the region's economy and pushing Surat to becoming the world's largest diamond trading hub.

PROJECT INFORMATION

Project Name: Surat Diamond Bourse
Typology: Office
Location: Surat, Gujarat
Status: In progress
Client: Surat Diamond Bourse
Built-up Area: 65,00,000 Sq.Ft.
Site area: 35.5 Acres
Climate: Composite
Consultants :
MEP: AECOM
Civil & Structural: JW Consultants LLP
PMC: Masters
Vertical transport: TAK Consulting Pvt. Ltd.
Traffic: TTEC
Cost: Gleeds Hooloomann Consulting (India) Pvt. Ltd.