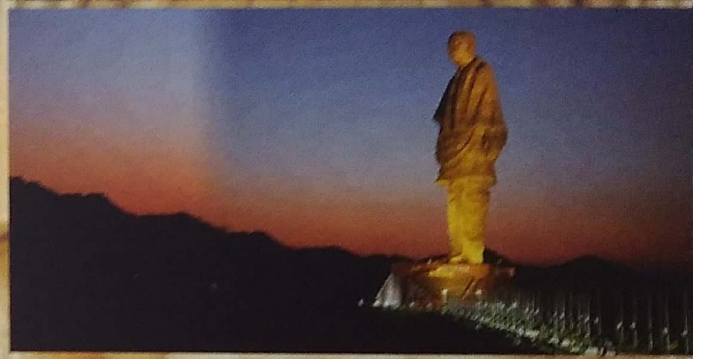
YOJANA

DECEMBER 2022 A DEVELOPMENT MONTHLY ₹ 22



ARCHITECTURE

SPECIAL

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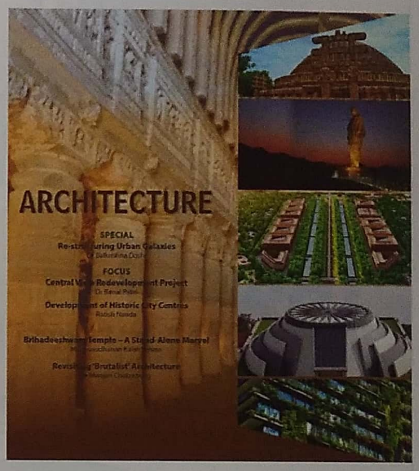
Monumental Marvels

"...But a few understand that building is a great symbol we live in our minds, and existence is the attempt to bring that life into physical reality, to state it in gesture and form. For the man who understands this, a house he owns is a statement of his life."

— Ayn Rand, The Fountainhead



Architecture defines a space. It is the body and soul that forms the identity of a building, locality, town, city, or nation. Places are often associated with the surrounding monuments, iconic buildings, landscapes, places of worship, and even the bylanes. For any enthusiast, merely taking a bus ride or a stroll in the old and new parts of a city can be a diverse experience. From older minimalist designs to lavish glass-tinted buildings, from *chowkhats* and *jharokhas* to façades, from high-rises to small houses with grand courtyards, and from heritage or art deco to planned townships, there is so much to see and explore. And, if the places are an amalgamation of old and new, consider cities like Varanasi or Delhi, then it is a double delight. Each unique style, building materials used, patterns, and overall vibes reflect the unique stories of the era they would have been built in. They also tell us a lot about the needs, and aesthetic and design senses of the people who would have owned or built them.

The same goes for a country. Its iconic buildings or structures are the ones that make a mark on the travellers who come from far and wide. They are mostly used as representational images of the country on the internet and in publications. Such is the monumental importance of architecture.

Through this issue of Yojana, we have tried to understand the vision and perspectives behind the iconic works done in the field of architecture and where they stand today. Eminent professionals have shared their valuable viewpoints and insights into making of these architectural marvels from brick and mortar. They have also dwelled upon how urban spaces are shaping up in modern times and what challenges of development lie ahead of us in the light of sustainability, rising population, and changing demographics and lifestyles. Also, how people around can be engaged and made a part of these processes and stories through active participation and community building.

India is at the cusp of transformation on various fronts. This includes redefining the identity that the nation has been associated with through its colonial past. The same is envisioned in the recent redevelopment projects including at the Central Vista in the capital city of New Delhi. There have been multiple iconic developments in this regard coinciding with the Azadi Ka Amrit Mahotsav that instill pride among the people including the Pradhanmantri Sangrahalaya, Kartavya Path, and Statue of Unity.

We are hopeful that this issue of Yojana will encourage its readers to venture out with an appreciative eye for detail, explore these marvels of architecture and design that are around us and discover the stories behind them. ❑

SPECIAL ARTICLE

Re-structuring Urban Galaxies

Dr Balkrishna Doshi

When we see the map of India, we realise a unique characteristic – there is a hierarchical network of dots of varied sizes with names of large metropolises, cities, and towns. They appear like 'urban galaxies' – with naturally developed scales between entities, interconnected and located within easy reach. Further exploration suggests that these networks have their unique lifestyles, unique pattern of habitat based on local resources, climate, and available characteristics of land. The connections and the spread of the developments appear like a 'biological' growth, with adaptation, mutation and replication after a certain growth tipping point that are essential for sustenance and preservation. These multi-nodal conglomerates expand infinitely absorbing smaller entities on the way and obliterating their strengths.

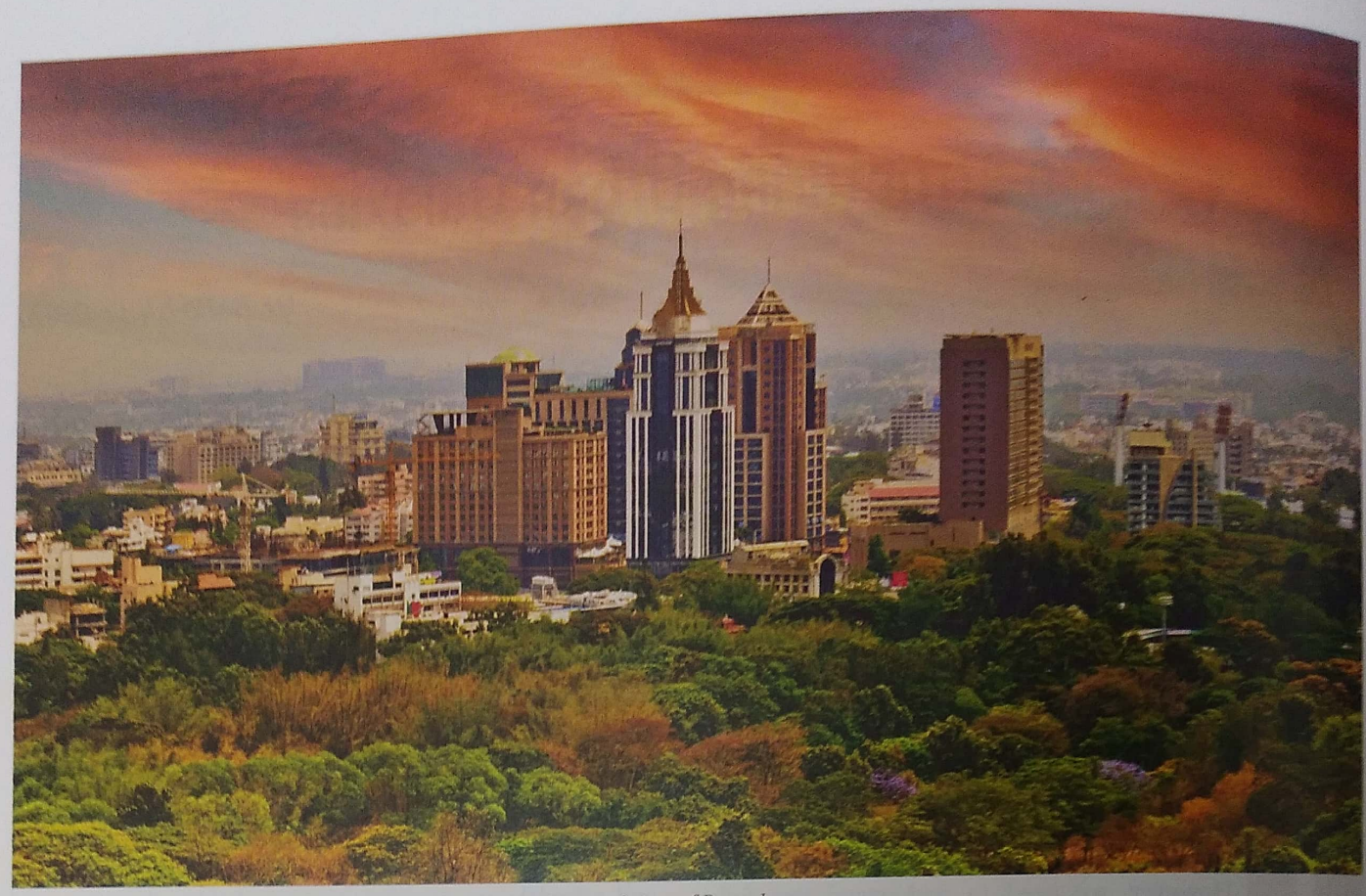
There is a great talk nowadays about sustainable development in Indian cities and towns. However, we need to understand this fully and see how these goals can trigger other developments without harming the region or the lifestyle. For me, sustainability ensures long-lasting development without becoming unduly centralised– similar to a biological order, therefore, we should consider a way that replicates and triggers the creation of another similar or mutated unit. For example, an elephant or a human being, or even an ant, after maturity, does not grow beyond its 'ultimate' size– if it does, it automatically gets destroyed, succumbing to external pressures by internal failure. I am reminded of the large dinosaurs of the Jurassic Age.

Likewise, we need to review our present mega-cities and metropolises. By improving their infrastructure, we will surely improve their functioning, but we may not upgrade the quality of life. Besides, due to our development focus of concentrating around one place/city, all the institutions and employment opportunities, we are denuding the smaller towns in the region of their small-scale crafts and industries, and encouraging migration and overburdening the mega-cities– which will eventually get crushed under their own burden of management, complexity, and affordability. Expansion means larger distances, and more time and energy to commute for living, working, or cultivating the mind and the spirit.

Expanding mega-cities today can only afford to sell branded and mass-produced goods to greater numbers, which needs larger centralised production centres, industrial complexes, the greater network of transport facilities, large

Wide panoramic view of Mumbai city

The author is the first Indian architect who was awarded the Pritzker Prize, along with the Padma Bhushan, the Padma Shri, and other international accolades. In a long and illustrious career spanning over seven decades, Dr Doshi has completed more than 100 projects, many of which are iconic public institutions that include IIM Bangalore, IIM Udaipur, the National Institute of Fashion Technology, New Delhi, the Tagore Memorial Hall in Ahmedabad, the IFFCO Township of Kalol, and Amdavad di Gufa. Email: vsf@sangath.org



Aerial view of Bengaluru

multi-storeyed complexes on prime lands, relying on larger banking systems with higher interest rates, finally resulting in our colossal agglomerations like Delhi, Mumbai, Kolkata, Bengaluru that are struggling with their size and yet think that they have to rely on it, and depend overly on exhaustible resources– oil, water, land, human energies that keep getting expensive while the quality of life keeps dropping. Needless to say, as against 'small is beautiful' we are then talking of 'bigger is better', and only looking towards the West who have traversed this path, for their approval and funding.

When we see the map of India, we realise a unique characteristic – there is a hierarchical network of dots of varied sizes with names of large metropolises, cities, and towns. They appear like 'urban galaxies' – with naturally developed scales between entities, interconnected and located within easy reach. There are necessarily empty tracts between entities, and then we see shorter movements linked by locally-developed transport systems, with many pedestrians, bicycles, animal carts, and few accessible points to heavy motorised traffic. I would call it organically developed interdependent habitats.

Further exploration suggests that these networks had their unique lifestyles, and unique patterns of habitat based on local resources, climate, and availability characteristics of the land. Sharing these common renewable resources, (and here I must include human energies), and sustaining within its available means, each place has its unique quiet lifestyle, development of agriculture, different crafts, and cultural values. This lent a close-knit character and easy communication. The use of time and energy and family life was linked to the 24-hour cycle and the seasons. Smaller towns developed organically and over time extended their homes, created shops, schools, and public places to become smaller towns, and act as nerve centres.

On studying closely, there are further important lessons for our planning today. Planning is not merely physical growth, but also spiritual and cultural growth, all hinged on the availability of resources. Visiting several towns and cities in different parts of India, one notices the unique and regionally-connected lifestyle and virtuous skills of the local population. They could only do this by decentralisation and by allowing self-discovery for the human energy to find particular avenues of exploration within the regional context of resources and values. Such amalgamation also expressed unity amidst diversity as if to weave the region holistically. The connections and the spread of the

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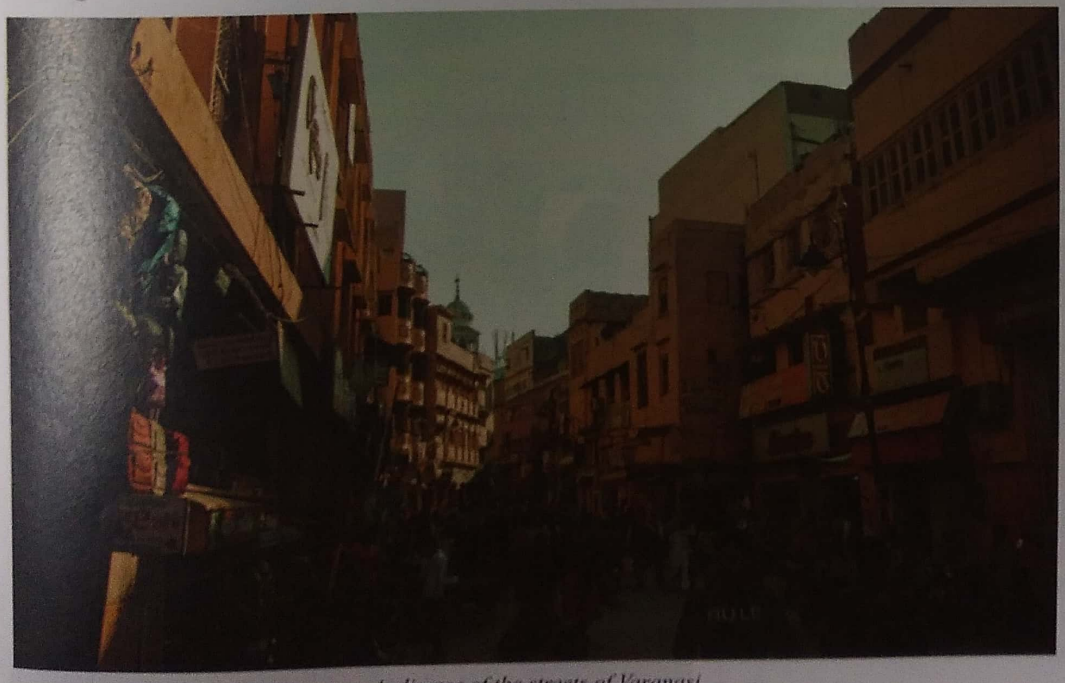
developments appear like a 'biological' growth, with adaptation, mutation, and replication after a certain growth tipping point that is essential for sustenance and preservation. We must look at multi-nodal conglomerates, and not the single-large banyan trees that can expand infinitely, absorbing smaller entities on the way and obliterating their strengths.

There was always respect for the natural network of important water bodies with a water supply and irrigation systems, and the forests and animal life. Non-motorised transport encouraged greener, quieter, and less polluted habitats. If one notices further, there was always a hierarchy for open spaces at every level where people would interact. Everyday, each member of the community would spend a good part of their time in these areas (at their levels), and every once in a while, together on larger scales to celebrate festive occasions. Second, studies reveal that each area had specific culturally-oriented rules which defined their needs and regulated the consumption of resources for that purpose. Similarly, daily, weekly, monthly and seasonal markets suggest a very different notion of 'economies of scale', both for production and consumption. One never exceeds the other and they are always in balance. Our present understanding of the term 'economies of scale' is in fact excessively profit-driven and completely inverses such a relationship, with different implications on demand-supply, gestation, pricing, storage, and logistics.

High-angle view of old Delhi skyline

'Appropriateness' therefore, has been a virtue that has guided scales and life-fulfilling characteristics of each habitat in India. This is the secret of their survival over centuries, in spite of floods and famine. If I can sum it up: it is a transformation of scarce resources into multiple alternative uses expressing a deliberate attempt to design relatively small, capital-saving, environment-friendly techniques of using all the resources including human energy. Also, this could not have been possible without an equally appropriate funding strategy and here we find the traditional way of joint share-holding with responsibility. We can find examples of this in our most successful cooperative movements, for e.g., in the milk sector like Amul in Gujarat, in the farming sector in different developments in Punjab. Co-operative partnerships like what developed between the owners and Majoor Mahajans, in the initial growth of the textile mill city of Ahmedabad, can revitalise employment income and generate wealth for the citizens. This is a true stake of the citizens, not centralisation through a transfer of responsibility to few leaders or managers, but shared responsibility.



A glimpse of the streets of Varanasi

We need to 'miniaturise' our cities, make them more compact. One of the ways is to think of them as 'walkable cities.' It is possible to conceive all aspects of one's life from living to working to most basic education and recreation within a half-hour walk. Public transport can

then play a crucial role here, but the original planning also needs to have been conceived holistically. Instead, if we like the galaxies, consider the smaller towns of around one lakh population (there would be around 1000 of them all over India, between 50,000 and 2 lakh population) as growth centres and develop them as magnets, other villages and smaller habitations will have the chance to learn, earn and develop without sacrificing their time and energy in communication and travel – preferring to stay nearby our parental region means enrichment in a community for family and individual life. If guilds are formed in every small town, they, in turn, will become magnets, saving large infrastructural costs and leading to open quiet and walkable towns where every citizen will have pride in sharing the richness. In addition, there can be a natural movement of cultural groups, cooperative craft shows and their exhibits, and small science exhibitions that will give the locals a chance to learn and improve their environment and lifestyle. Similar to traditional towns and villages, we will once again be proud to invent and re-create local regional ethos expressed in their habitat and lifestyles.

Gandhiji's charkha was an ingenious single solution involving every family member in their different free times, but also being socially productive and culturally relevant. The internet in our times can similarly play that role. A single connection shared by the family can use our individual free time and convert it to independent productive use while also connecting us globally and helping us grow as persons. This can be global and local and at the same time, learning and growing all the time while being self-reliant, and spending energy to travel only when most imperative. Smaller renewable energy solutions can easily cater to such smaller needs.

Economist EF Schumacher reminds us that along with producing goods and services, we must develop our gifts and skills, and collaborate with and serve others, to liberate us from our inborn egocentricity. With this, there also has to be a cognisance of the 'flows' of nature, and that man is only a part of these larger flows. There has to be sharing with the other life forms and in the same way amongst humans. Micro-financing and sharing a frugal multi-functional attitude to life and lifestyles has sustained the countryside and hinterland over centuries. There has to be a deliberate desire to develop relatively small, simple, capital saving and environmentally non-violent (friendly) clusters. Should we not revisit how our ancestors created their own independent world and created the wealth in town planning and architecture, products that we boast of as our heritage? Can we confidently say that our future generations will feel the same with our mega-cities? Should we not instead of only visiting museums and old cities,'be' a part of and create a new avant-garde urbanism – a 'new heritage'? ❑

Central Vista Redevelopment Project

Dr Bimal Patel

Central Vista is a national icon for India. Located at the heart of New Delhi, the three km stretch between Rashtrapati Bhavan and India Gate is the administrative centre of the country's Union Government, the venue for India's national events, a precious civic garden, and a popular destination for the residents of Delhi and tourists. This piece reflects on the vision and the experiences on the ground while working on this architectural Project of national importance.

As a part of our history as a nation, Central Vista was designed by the British architects Edwin Lutyens and Herbert Baker as the seat for the British Raj and adopted by independent India as our own on 15 August 1947. Central Vista is a symbol of our victory over British imperialism. The Indian Constitution was written here, we adopted the imperial Council House as the Parliament of India, Viceroy's House was adopted as Rashtrapati Bhavan, India Gate became a national monument, the lawns flanking the processional axis became public gardens, and the North and South Blocks that symbolised the might of colonial rule over India at the time of their construction became the offices of the Indian government. The contemporary vibrance of Central Vista and the historic significance that it holds make it a humbling and exciting project for me as an architect. I would like to take this opportunity to talk about our work, the challenges that we face, and

The author is currently working on the Central Vista Redevelopment Project and is the President & Acting Director, CEPT University, Ahmedabad. As an architect, urban designer, urban planner, and academic for over 30 years, he has crisscrossed disciplinary, professional, and institutional boundaries to explore how architecture, urban design, and urban planning can enrich the lives of people in Indian cities. Email: president@cept.ac.in

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the strategies that we employ to tackle them in the design process.

Working in a Brownfield Site

Like most public spaces in Indian cities, Central Vista is a brownfield site. Our site is a living and working system with active administration and public spaces. This brings its own special challenges. A brownfield site has a diverse range of requirements. Kartavya Path, for example, is as much a historical place, as it is a civic garden and the venue for national events. Therefore, while its history was to be preserved, it also needed quality public facilities and technological infrastructure to keep functioning efficiently. Managing this broad spectrum of requirements is a big design challenge. For example, public amenity blocks at Kartavya Path were constructed underground and between trees so as not to interfere with Central Vista's aesthetics and save the trees. Similarly, the historic light poles along the central road were to be restored while also providing technological facilities for national events. So, we retrofitted them with new technological features– maintaining the heritage aesthetics of the poles while also providing the required technology. Additionally, sites like Central Vista must keep functioning while the construction is taking place. The North and South Blocks, for example, house the most important government ministries and will be converted into National Museums. To do this without disrupting government work, we have phased the project strategically. The Common Central Secretariat (CCS) buildings will be completed first, then the ministries will move out of the North and South Blocks and into the CCS buildings. Then, the North and South Blocks will be upgraded with museum-appropriate infrastructure and then, finally, the artifacts will be transferred to the Blocks.

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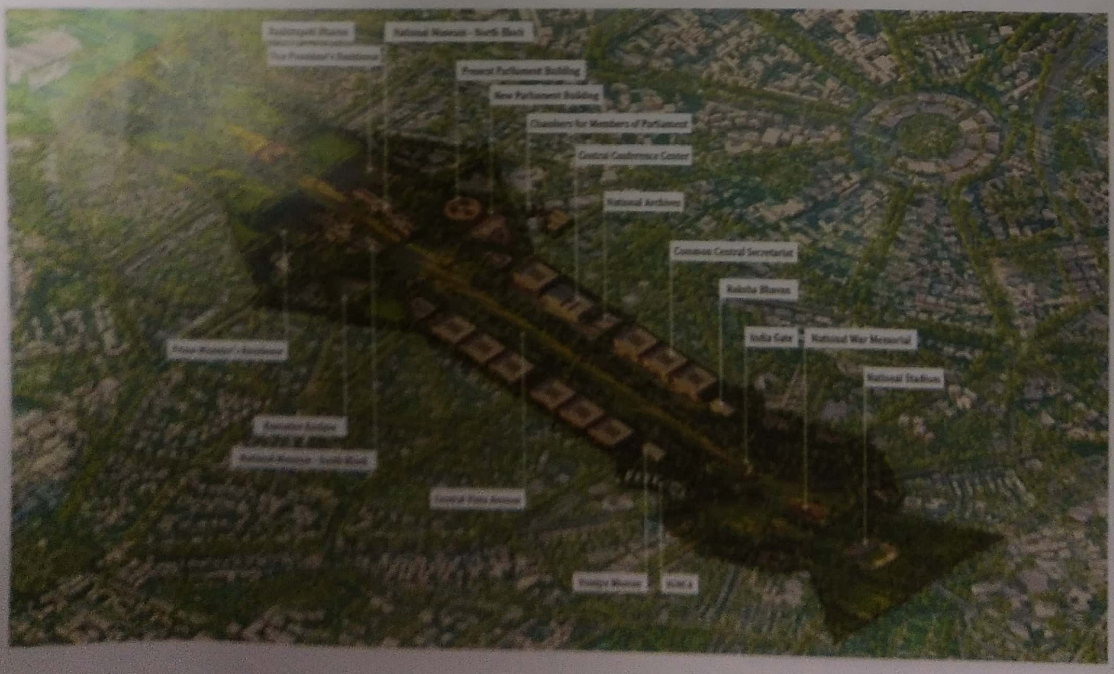
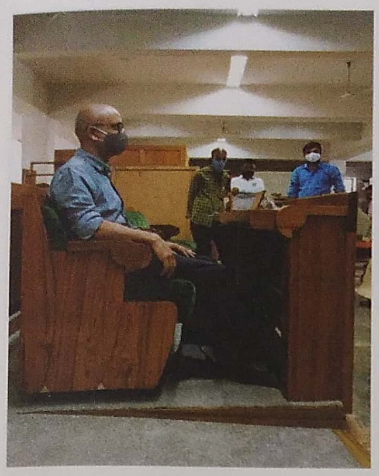
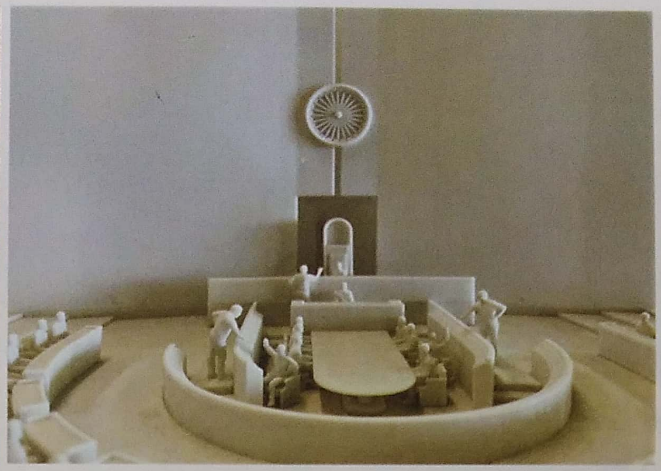
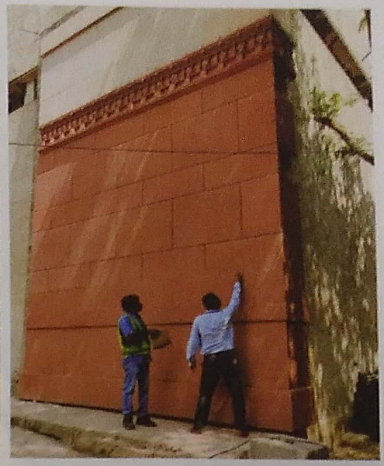
Stakeholders' Feedback

Central Vista is a space that accommodates a very wide range of activities and therefore, engages a variety of stakeholders. While designing, the end-user must always be at the centre of an architect's process. This belief can be practised only through proactive stakeholder engagement. While designing the Kartavya Path, for example, we designed services for the national events that are hosted there. The armed forces, Doordarshan, Ministry of Culture, etc., have central roles to play in these events. Our office stayed in constant touch with these stakeholders, and we designed the integrated underground services and conduits with their inputs. We also invited the President's bodyguards to ride horses on the sample stretch of Kartavya Path to check the performance of the flooring. Based on this exercise, we tweaked the design of the section. At Kartavya Path, we also learned from the feedback that we received after the avenue was inaugurated. We realised that our signages needed more text as some people found them difficult to decipher in the current– graphic heavy– format. We are working on resolving this issue as well. Similarly, in some parts of the lawns we noticed that there is more footfall than we had anticipated and consequently, the grass is getting damaged. More pathways will be added in these areas. At the MP's offices that have been designed as a part of the Legislative Enclave, we created 1:1 scale mock-ups of the office spaces. These spaces and the furniture were then tested by the end users and our team took meticulous notes of their feedback. For the chambers of the New Parliament Building, while talking to the people who work there, we came to know that the well in the centre of the hall– the space between the Speaker and the Members where the Secretary General of the House and their team of stenographers sit– blocks the line of sight of the members across the aisle. The well is a busy space, with stenographers being replaced every 30 minutes and documents being constantly circulated. We were mindful of this problem while designing the new Parliament



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building and we used 3D printing technology to create many options while developing and analysing the section. Sinking the well down was deemed the most feasible solution and the same was incorporated into the design.

Engaging Experts

A project of the scale and complexity of Central Vista can be successful only if a large team of professionals works on it in proficient cooperation. Along with this, expert knowledge is also important for such a project. While it is quite routine for architects to work with other experts such as structural engineers and the like, for Central Vista, however, expert knowledge in a variety of disciplines becomes very crucial. Therefore, we are working with more than sixty consultants and advisors on the project. For example, the scale of the project and the vast public space implied that we work with a signage and way-finding consultant. We also have an archives expert to work on the National Archives and other buildings that need such services. In order to design efficient parking, we are working with a parking expert. For the lawns and their flora, we are working with a horticulture expert and a tree surveyor along with landscape designers. We also have a stonework advisor to make sure that we do justice to the details and the cladding. Working with such a diverse array of disciplinary and technical experts, our role, as architects of the project, is to bring their expert knowledge and incorporate it into our design.

Engaging the People

Central Vista is a project of national importance. It is a public project being undertaken by the Government. It is, therefore, imperative that a project of this nature generates a spirited debate. I believe that as architects, we have a responsibility to explain our public projects to the people, just like we explain our projects to our clients. With this intention, soon after the project was awarded to us, I travelled extensively– giving presentations to fellow architects, academics, landscape designers, engineers, etc., and seeking their opinions. I also interacted with the press and gave talks at conclaves and conventions to understand what the people are saying about the project and what their queries and concerns are. While we were constantly talking to the press and to the people– responding to queries and putting information out– we were also confident that once the people see the project for themselves and use the facilities that we designed, most of their queries will be resolved. In the week following the inauguration of Kartavya Path, that is exactly what we saw happening. When people saw what we had achieved at the avenue, the fears of encroachment of public space and destruction of lawns disappeared. Kartavya Path's success and the people's positive reception of the space is the proof that if we give people the right information and facts, and if we explain our projects with reason and respect, people can be brought together behind large-scale public projects.

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Working with Timelines

Design is an iterative process and as architects, we always wish for more time to design. Sometimes, however, as in the case of Central Vista, the timeline of the project is a part of the challenge of design and coordination. A team of dedicated professionals and strategies of design management have made it possible for us to work at an astronomical pace. One of the strategies that we adopted was to stack various stages of the design process and compress the overall timeline. In an architect's office, every design begins with a concept stage. This is followed by presentation drawings, schematic drawings, all the way up to the drawings that are finally issued for construction. But while working on Central Vista Project, we worked

on multiple stages simultaneously– similar to how the Covid-19 vaccine was produced in record time by stacking various phases of trials together. This required a great deal of coordination and design management. A project such as the Central Vista also requires clearances from various governmental agencies– more than any other projects do. However, protocols require for clearance applications to be submitted to these agencies in a sequential manner. One cannot submit applications to multiple agencies simultaneously. To keep pace with the work, we submit the application to an agency, and we continue to work on the design further in our office as we await clearance. Once all the necessary clearances are received, we issue drawings for construction on the site. Using these and many more such management strategies, and with a team of motivated and competent professionals, we have been able to work at a very rapid pace.

Conclusion

A project such as the Central Vista comes with enormous challenges for an architect. They require the architect to step out of their comfort zone and encounter problems head-on. A problem-solving approach to design where we articulate problems clearly and design with the objective of solving them creates feasible and sustainable design interventions. Through specialised knowledge, a healthy and proactive engagement with the people and stakeholders, and a team of competent professionals, large-scale urbanism and architecture projects can be successfully implemented. I hope that the Central Vista Project will go down in history as a good example of this practice.

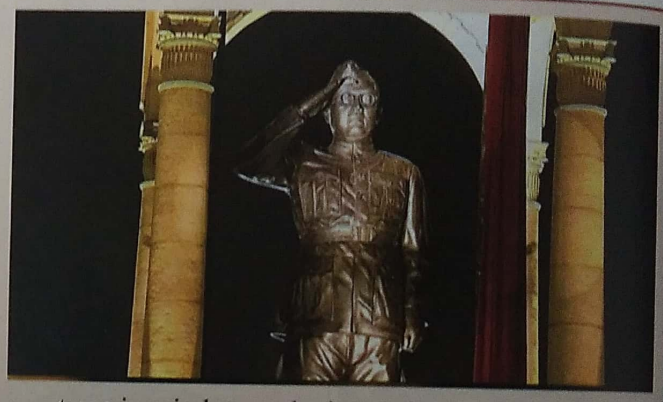
Visit www.centralvista.gov.in for an active dashboard on the Project. ❑

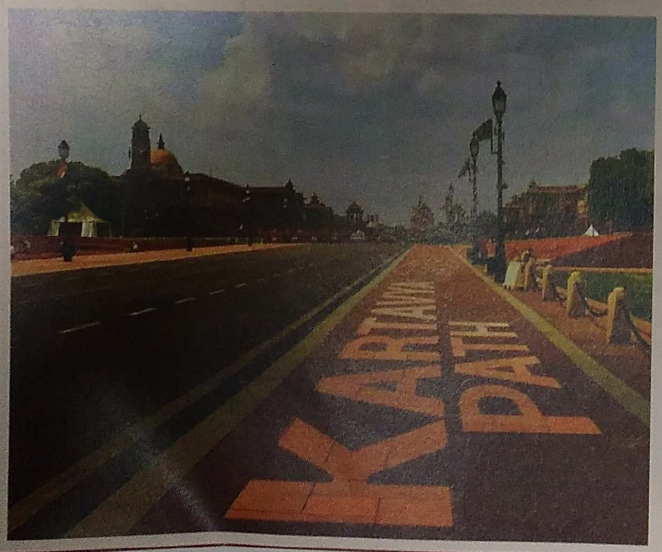
Kartavya Path

'Kartavya Path' symbolises a shift from the erstwhile Rajpath being an icon of power to being an example of public ownership and empowerment.

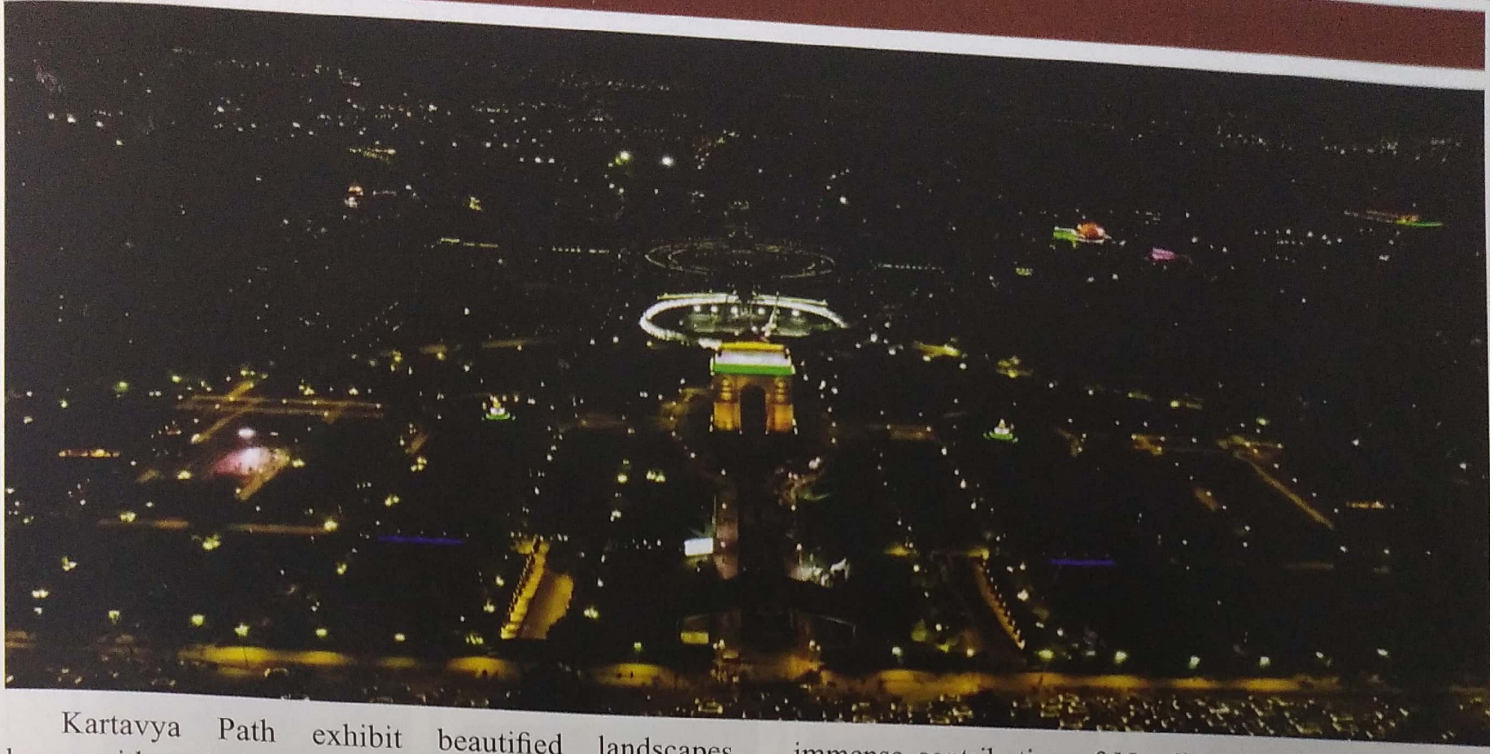
Over the years, Rajpath and adjoining areas of Central Vista Avenue had been witnessing pressure of increasing traffic of visitors, putting stress on its infrastructure. It lacked basic amenities like public toilets, drinking water, street furniture, and adequate parking space. Further, there was inadequate signage, poor maintenance of water features, and haphazard parking. Also, a need was felt to organise the Republic Day parade and other National events less disruptively with minimal restrictions on public movement. The redevelopment has been done bearing these concerns in mind while ensuring the integrity and continuity of architectural character.

- The work of Kartavya Path started in March, 2021 and its first phase was completed in time for the Republic Day Parade
- The sanctioned cost of the project is Rs 608 crore and expenditure in Phase I is Rs 522 crore
- The total length of granite walkways is 16.5 km.
- 300 CCTV cameras, 422 sitting stone benches, a number of twin stone dustbins in place
- Nearly 165 km underground conduit for services and with a 10 km long underground storm water drains
- Central pathway has been completely refurbished, strengthened and the landscape restored
- More pedestrian friendly and easier for the traffic to navigate through
- A total of four pedestrian underpasses 8 m wide each– two each at Janpath and C-Hexagon junctions– have been provided keeping pedestrian safety in mind
- Eight underground public amenity blocks and six vending plazas have been designed, keeping existing trees in mind, to make it comfortable for civic users and tourists



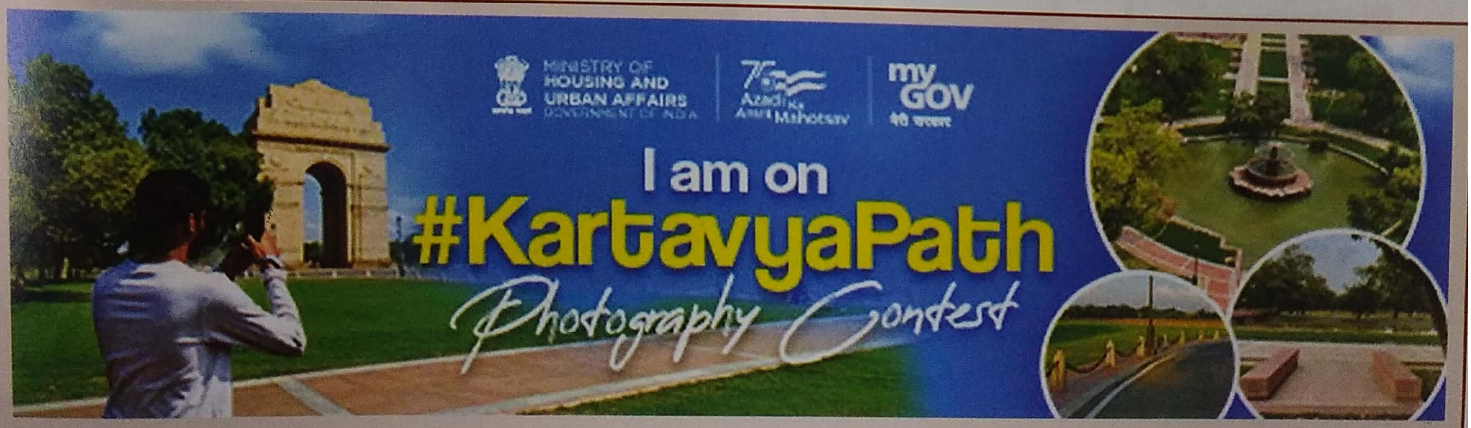


- Parking has been designed to accommodate upto 580 cars and 35 buses in Phase I
- The footpath on edges which used to be of Bajri/Murram earlier, have been replaced by granite walkways
- The previously inaccessible areas beyond the canal have been made accessible through the introduction of walkways and sixteen permanent bridges
- Lawns have been refurbished and most of the original Jamun trees have been retained and more trees have been added through a planned strategy of plantation
- The total area of grass lawns redeveloped is around 90 acres
- In accordance with the architectural character of the avenue, historic chain links and 79 light poles along the Path have been preserved and restored and 58 new poles have been added
- Painted concrete bollards have been replaced with sandstone bollards to achieve coherence with the landscape
- Canals have been refurbished to stop seepage
- Additionally, 60 aerators and 28 filtration tanks have been added to ensure that the canals have clean water.



Kartavya Path exhibit beautified landscapes, lawns with walkways, added green spaces, refurbished canals, new amenity blocks, improved signages, and vending kiosks. Further, new pedestrian underpasses, improved parking spaces, new exhibition panels, and upgraded night lighting are some other features that will enhance the public experience. It also includes several sustainability features like solid waste management, stormwater management, recycling of used water, rainwater harvesting, water conservation, and energy-efficient lighting systems, among others.

The statue of Netaji Subhas Chandra Bose is installed in the same. The granite statue is a fitting tribute to the immense contribution of Netaji to our freedom struggle and would be a symbol of the country's indebtedness to him. Crafted by Arun Yogiraj, who was the main sculptor, the 28-feet tall statue has been carved from a monolithic granite stone and weighs 65 MT. The grand statue of Netaji has been carved from a monolithic block of granite weighing 280 MT. After 26,000 man-hours of intense artistic endeavor, the granite monolith was chiseled to produce a statue weighing 65 MT. The statue is completely hand-sculpted using traditional techniques and modern tools. A 100 feet long truck with 140 wheels was specially designed for this monolithic granite stone to travel the 1665 km from Khammam in Telangana to New Delhi.



The Ministry of Housing and Urban Affairs has launched the **'I am on Kartavya Path'** photography contest. Click mesmerizing photos of Kartavya Path and stand a chance to win exciting prizes!

Participants can also share photographs on Kartavya Path using #KartavyaPath tagging @MyGovIndia on any social media platforms like Instagram, Facebook, Twitter, Koo, etc. *Start clicking!*

Rewards

1. Two best photographs are awarded weekly with a prize of Rs. 5000 each.
2. A 'Kartavya Path Photo' is to be selected every month. A prize of Rs.10,000 will be awarded to the winner.

The last date of submission is **31 January 2023.**

Source: PIB and MyGov

Development of Historic City Centres

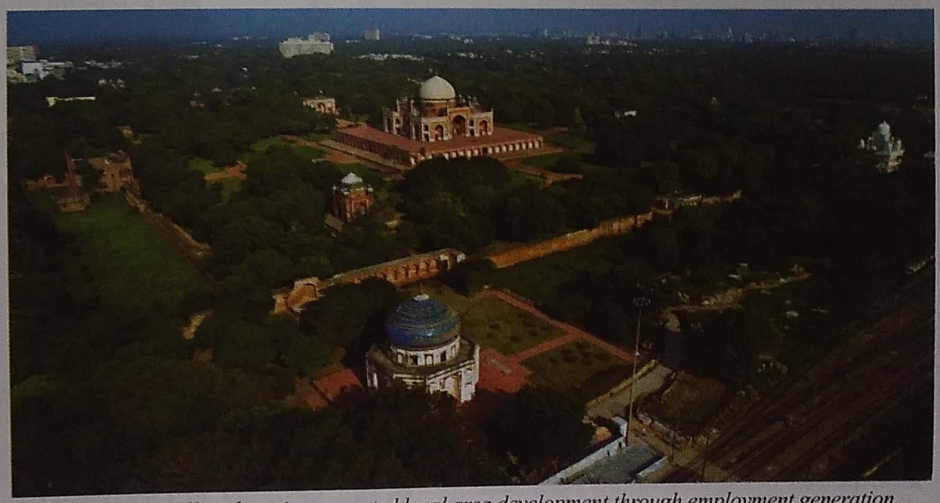
Ratish Nanda

India's monuments are irreplaceable and significant asset for the nation and its people with associated emotional, religious, economical, historic, architectural, and archaeological values amongst others. Their conservation efforts require craftsmen using traditional materials, tools, and building techniques and can also become a significant employer. Unlike the West, we in India are fortunate that our craft traditions have survived to the present times, and it is recommended an emphasis on a craft-based approach to conservation as well as modern public buildings.

India boasts of several millennia of built heritage and living culture represented in the traditional architectural crafts. In the 21st century, it may now be time to reflect on a truly Indian approach to conservation, one that allows leveraging our historical assets to improve socio-economic conditions of residents of our historic cities.

The residents of our numerous historic city centres can benefit from greater integration of preservation and conservation efforts with public policies and schemes for development measures. To demonstrate such an approach, the Aga Khan Trust for Culture in partnership with the Archaeological Survey of India, Central Public Works Department and the Municipal Corporation of Delhi have undertaken a 15-year urban renewal project at the Humayun's Tomb–Nizamuddin area in Delhi. Here, conservation efforts have incorporated local area development through employment generation, boosting local crafts and arts, building of infrastructure, environmental conservation, and landscaping.

The Archaeological Survey of India is taking several steps to ensure long term, sustainable preservation of our nation's heritage in a manner that is based on increased awareness amongst the public of the significance of our heritage and increased involvement of civil society in the preservation effort. Over the last two decades there has been increased awareness of the value of the urban setting of our sites in ensuring that the historic character is retained. This led to guidelines issued in 1992 and the formation of the National Monument Authority, mandated to create guidelines for new buildings in the setting of each one of nation's protected monuments. However, rather than be prohibitive, the guidelines should stress on improvement measures and incentives that enable improving of the historic urban environment as well improvement of the quality of life for local residents.



Conservation efforts have incorporated local area development through employment generation, boosting local crafts and arts, building of infrastructure, environmental conservation, and landscaping.

The author is Conservation Architect & CEO, Aga Khan Trust for Culture. Email: ratish.nanda@akdn.org

The 90-acre Sunder Nursery Park attracted over 700,000 visitors in 2021. With six UNESCO World heritage structures, 30 acres of wilderness zone, and facilities like amphitheater, children play zones situated here, the park is one of the top tourist attractions of Delhi.

In 1997, on the occasion of the 50th anniversary of India's independence, the garden restoration of Humayun's Tomb– a designated World Heritage Site was initiated. After the project was completed in 2003, within a few months, after the restoration of the Mughal Garden and flowing water, it led to a 1000% increase in visitor numbers to Humayun's Tomb. Following the success of the garden restoration, the Aga Khan Trust for Culture (AKTC) was asked, by the Government of India, to undertake further work in India and it was agreed that AKTC would build up on the garden restoration to undertake a large urban renewal project that would include conservation of several monuments coupled with major initiatives in socio-economic development focused on the residential communities of the adjoining Hazrat Nizamuddin Basti as well as landscaping over 200 acres of a designated district park with a focus on ecological restoration.

Building archaeology of the Humayun's Tomb World Heritage Site, a precursor to the more famed Taj Mahal, revealed that the building had suffered over a century of inappropriate conservation work. A million kilos of concrete was required to be removed from the roof– laid here in the 20th century to prevent rainwater ingress; over 200,000 square feet of cement plaster was similarly required to be removed and replaced with traditional lime plaster. Original doors had been removed for firewood in the 20th century and the remnant tilework on the interiors removed and replaced with plain plaster.

The Archaeological Survey of India is taking several steps to ensure long term, sustainable preservation of our nation's heritage in a manner that is based on increased awareness amongst the public of the significance of our heritage and increased involvement of civil society in the preservation effort.

Similar treatment was meted out to many of India's monuments where well-meaning past repairs were carried out using inappropriate modern materials not only compromised the original design intention but also set in a process of accelerated decay. At Humayun's Tomb, the Conservation Plan prepared and agreed at the onset with the Archaeological Survey of India, established the intent of the AKTC conservation initiative to remove inappropriate past repairs and replace these with authentic repairs using traditional materials used with traditional building techniques by master craftsmen.

It is well established that using traditional building materials– stone, earth, bamboo, timber, brick– our forefathers built splendid structures, from modest residences in wonderful cities to grand palaces, monasteries, temples, tombs, stupas, amongst others. For anyone who bothers to compare buildings built only a few decades ago to what is mushrooming in Indian cities today, it is not easy to understand how our design and craft capabilities were lost within a few years of materials such as cement, steel, and glass becoming easily available. In the shift from the traditional to the *'cheap'* modern, we have lost architectural craft skills that had the capability of creating millions of man-days of employment while ensuring that our cities had both a unique identity as well as a higher quality of life.

Conservation effort requires craftsmen using traditional materials, tools and building techniques and can also become a significant employer.

Unlike the West, we in India are fortunate that our craft traditions have survived to the present times, and it is recommended an emphasis on a craft-based approach to conservation as well as modern public buildings. With stone carvers, plasterers, masons, carpenters, bricklayers, who take great pride in replicating the work of their forefathers, being at the forefront of building conservation the design intention of the original builders will be respected and the understanding of significance and interest in our built heritage amongst visitors will be retained. The craftsmen should also once again become stakeholders in the preservation effort and continue to impart traditional skills to their future generations who are moving to other trades in large numbers.

India's national monuments are irreplaceable and significant asset for the nation and its people with associated emotional, religious, economical, historic, architectural and archaeological values amongst others. These assets are however under threat from the pressures of urbanisation. To achieve conservation and development objectives, different agencies of the government need to partner with academic institutes/civil society and local communities. It has already been demonstrated that any resources invested in such an endeavour leads to multiple returns as well as fulfilling multiple government objectives.

Several of our monuments stand amidst dense urban inhabitation in our many historic cities. Also, often the communities residing around monuments in these dense urban centres are poor and often deprived of even the most basic urban infrastructure. The success of the Nizamuddin Urban Renewal has demonstrated a model approach for community-based conservation. Not only have several protected monuments in the dense Hazrat Nizamuddin Basti undergone conservation but the conservation effort has been coupled with providing education, health services, vocational training to create economic opportunities for local youth and women, sanitation, urban improvements including landscaping neighbourhood parks and street improvements, revival of a 700-year living culture centred around Sufism and Qawwali, creating performance spaces, amongst other aspects. It is hoped that the community of Hazrat Nizamuddin Basti will now play a pivotal role in the preservation of the built heritage that stands amidst their neighbourhood and that conservation/ culture can be used a tool for development in several other similar historic urban areas of India.

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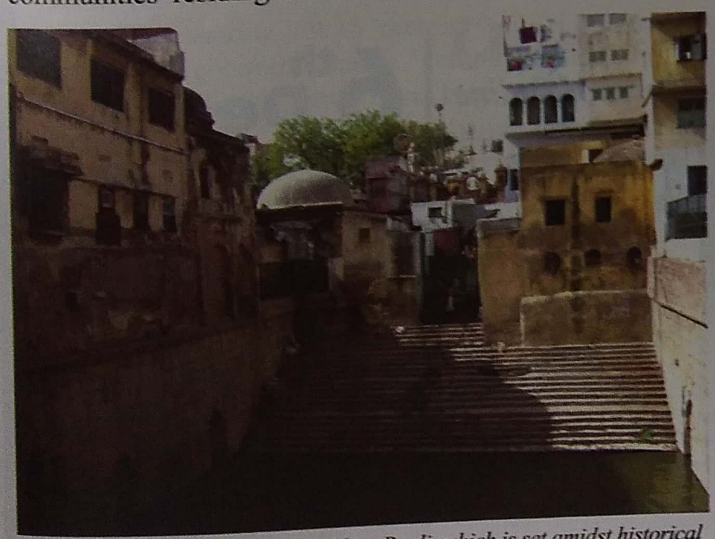
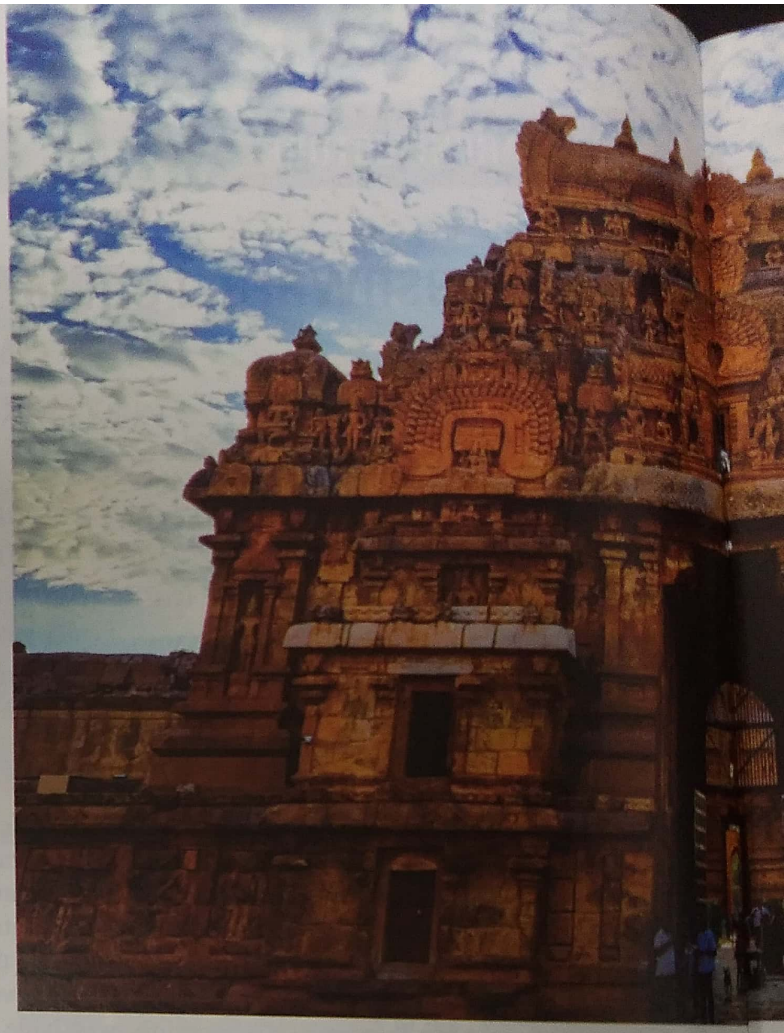
For the Nizamuddin model for 'Conservation led Development' to be replicated requires significant public-private partnership with NGO's, Resident Welfare Associations, grant making organisations, corporate sectors, Municipal Councils/Corporations to come together with a long-term vision. The initiative has global lessons but has been possible with a multi-disciplinary team creating customised, contextual and local solutions all aimed at improving the quality of life for inhabitants with heritage assets restored and well taken care of.

At many of popular sites, the need for Museums/ Interpretation Centres either located within existing buildings or in new sensitively designed structures, is now strongly felt. In order to enhance visitor experience and attract younger generation of visitors to major sites or ensembles of monuments state-of-art displays using new media are planned. Examples from across the world demonstrate that significant modern architecture can revitalise the economy and generate major visitor interest in heritage sites. At present the Aga Khan Trust for Culture is engaged in building museums at both the Humayun's Tomb as well as the Qutub Shahi Tombs at Golconda, Hyderabad; the Ministry of Tourism, Government of India has provided funds for both these projects.

Conservation and development should go hand-in-hand, but conservation interest must remain paramount if any such development is to be sustainable in perpetuity. ❑



View of the 14th-century Nizamudding Baoli, which is set amidst historical monuments all around. A major urban conservation programme was undertaken here, after its collapse in July 2008 where apart from the conservation of this structure and over 10 monuments in the complex, Basti youth were trained to conduct heritage walks in the area.



On the southwest corner is the shrine of *Ganesha,* built during the times of *Sarabhoji II*. The shrine built during the times of *Rajaraja,* mentioned in the inscription as *Parivara-Alayattu Pillaiyar* was vandalised and hence the *Maratta* king built a new structure for him. This shrine is visually balanced by the shrine of *Subrahmanya* on the northwest corner built during the 17th century CE. This is an extremely ornate sculptural gallery that houses *Murugan* or *Subhramanya* along with his consorts *Valli* and *Devasena*. The columns, the pilasters, and the *kudus* running around the lintel speak about the fine craftsmanship of the *Nayaka* artisan. The door guardians of this shrine, sculpted out of a very shining granite stone, and the stone tub installed to collect ablution water are noteworthy for their workmanship. The pillared hall in front of this shrine has portrait paintings of the royal members of the *Maratta* kings.

To the north of the sanctum sanctorum is a neatly finished *Chola* period shrine dedicated to *Chandikeshwara.* With a front hall, an *ardha mandapa* and a detailed *vimana*, this is one of the well-designed shrines for *Chandikeshwarar,* officially the chief accountant of a *Siva* temple. Interestingly, the donations made to the temple and the endowments created for various activities in the temple have been documented as long-running detailed inscriptions by the king himself. The first inscription starts on the wall opposite this shrine.

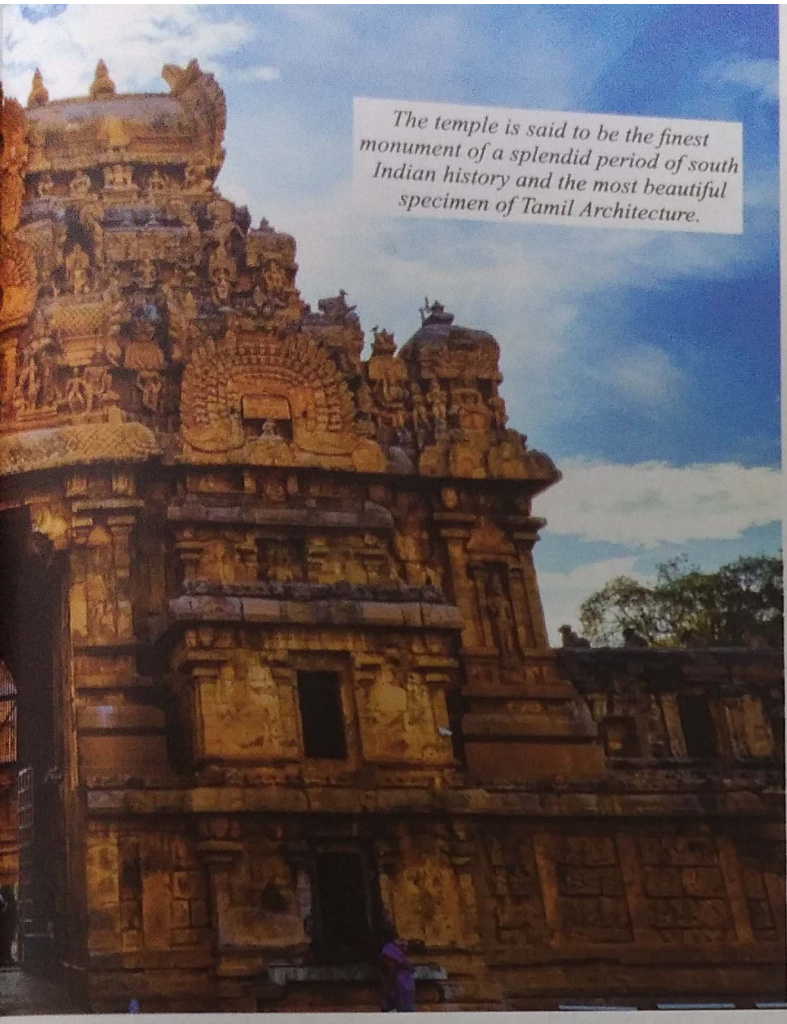
The shrine of *Devi Parvathi* is situated on the northern side of the main campus. Revered by the devotees as *Brihannayaki, Periya Nayaki*or *Ulagam Muzhudhudaiyal*, the shrine for the Goddess as the consort of *Brihadeeshwara* was built during the 13th century by the *Pandya* kings. A single-tiered *vimana* on a low raised plinth and sill was later extended with a front *mandapa*. The ceiling and the walls of this shrine have paintings done during the *Maratta* period.

Sri Vimanam

K A Nilakanta Sastri observes, "the temple is the finest monument of a splendid period of south Indian history and the most beautiful specimen of Tamil Architecture at its best, remarkable for its stupendous proportions and for the simplicity of its design." This is understood when the visitor stands humbly in front of the *Sri Vimana* and thinks for a moment about the power of *bhakthi*. The number of mountains that *Rajaraja* has turned in to achieve this great feat puts us through a stumbling emotional tunnel.

An equally interesting feature of the temple is the huge monolithic Nandi, the sacred bull, in front of the main shrine. The pavilion on which the Nandi sits is by itself a later-period addition.

The vimana stands on a square base measuring 29 metres. The proportioning of the successive tiers of the vimana is the reason behind the visually appealing appearance of the structure. The 13-storeyed, 66 metres tall pyramidal vimana is corrugated with appropriate motifs, design features, and sculptures of various deities. The pinnacle is a spherical dome-like shikhara, on which sits the 12-feet tall gold-plated *kalasam*. There is a common belief that the spherical stone on top is a monolith weighing 88 tons, carried on top by a ramp built from a distance. However, the fact stays that it is not a single stone but



The temple is said to be the finest monument of a splendid period of south Indian history and the most beautiful specimen of Tamil Architecture.

fragments arranged and plastered to achieve the special volume. Epigraphic evidence says that *Rajaraja I* had presented gold covered finial to be fixed on the *vimanam* on the two hundred and seventy-fifth day of his twenty-fifth regnal year, ie., 1009-10 CE.

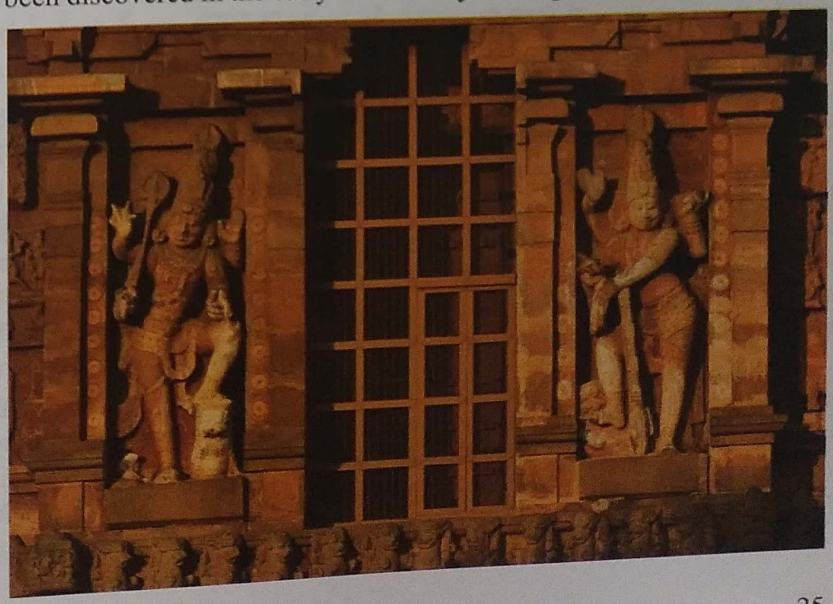
According to the *agamas*, the *vimanam* on top of the sanctum sanctorum is supposed to represent *sookhmalinga*. It is in fact, a religious icon that needs invocatory rituals during the installation. It is considered a sacred mountain and hence *Rajaraja* describes this vimana as the *Dakshina Meru,* the revered *meru* mountain of the south. Hence, the topography of *Kailasa* has been recreated as a stone bas-relief on the eastern façade, decorated with the daily scene at *Kailasa,* representing the divine family of *Siva* with *Devi, Ganesha, Muruga, Nandi*, the *rishis,* and other celestials.

Engineering Wonder

The 2-storeyed sanctum sanctorum along with the *vimana* on top of it is truly a wonder. Apart from basic questions like the source of materials, who they were transported, the type of foundation, and the fineness of the binding materials, the very source of inspiration to build an edifice of this stature is still an unresolved mystery. The structural load sharing has been brilliantly planned in a very crisp fashion. The slope of the pyramid has been achieved by pushing the successive layers by a few inches inside, thereby getting a very gentle slope. On top of this pyramid, the *shikhara* acts as the counterweight to hold them all in place. From the sanctum sanctorum, when we see up, the hollow *vimanam* rises in all its glory with a photogenic view of the indented slope

Sanctum Sanctorum

The sanctum sanctorum of *Brihadeeshwara* is a vast square chamber with sides measuring 7.9 metres. There are two beams placed on the eastern and western walls and four diagonal beams fixed in the corners. The gigantic *Sivalingam* should have been installed prior to the construction of the sanctum sanctorum. The sanctum is a double-walled structure with a space of around 2 metres wide running around the chamber. The eastern side has the grand entry to the main shrine. There are two small doors that open into this narrow circumambulatory path called the *sandharaarai.* Three deities, one each facing the south, west, and north have been installed in this corridor. Apart from these deities, invaluable fresco paintings done during the times of *Rajaraja* have been discovered in the early 20th century. This space is repeated again in the first story of the *vimanam.* There, bas-relief slabs depicting the *bharathanatyakaranas* or poses as performed by Siva have been installed around the circumference. This series is incomplete, depicting only 81 of the 108 poses described in traditional dance manuals.



Measured about 1.6-metre diametre, the *lingabanam* is positioned in a circular pedestal measuring 5.25 metres in diametre. The second story above the lingam is empty with the hollow space growing up to the entire height of the *vimanam.* This cavity has been consciously created to depict the *aroopa* or the formless form of Siva. This is also envisioned as the *parakasa,* or the ether space where Siva performs *anandhathandava.*

The temple is a grand galore that depicts the seasoned sense of aesthetics and planning that the land and its people had acquired a millennium back.

Architectural Grandeur

The sanctum sanctorum is approached by a series of mandapams from the eastern side. The *mukha mandapam* is a later-time addition and it now serves as the portico for visitors. It is followed by a grand *maha mandapam*, a beautifully executed cloistered hall with rows of tall columns. The walk across this hall is a humbling experience in itself. Next, we enter the *ardha mandapa*, a relatively smaller space with tall columns again. The access to the first floor happens from this *mandapam*. The *antarala* is accessed from a fleet of stairs on the north and south sides. This is where devotees stand to offer their worship in front of *Sri Rajarjeshwaram Udaiya Paramaswami*, as the deity was called by *Rajaraja* himself.

Nandhi Pavilion

An equally interesting feature of the temple is the huge monolithic *Nandi*, the sacred bull, in front of the main shrine. The pavilion on which the *Nandi* sits is by itself a later-period addition. The monolithic *nandi* from the *Nayaka* period was brought in to replace the *old nandi* installed by *Rajaraja*. The *mandapam* was also constructed by them and the ceiling of this *mandapam* was painted with frescos carrying European influences. This case of the changed *nandi,* is a lesser-known fact for many people who visit the shrine. Well, what happened to the *Chola nandi*? Thankfully, he was placed in the south side *thirumaligaipathi,* or the cloistered hall running around the compound wall. We can still stop to take a close-up look at him near the modern shrine built for *Varahi* inside the temple.

Arts and Aesthetics

The temple is a grand galore that depicts the seasoned sense of aesthetics and planning that the land and its people had acquired a millennium back. The outwall of the sanctum sanctorum houses various deities, as prescribed in the *agamas*. The niches on the wall are placed in a frequency and ornamented with *makaratorana. Ganesha, Brahma, Vishnu, Lakshmi, Saraswathi,* and *Durga* are some of the deities housed in their respective directions. A series of different forms of *Siva* are installed in the niches and the forms are those that have been mentioned in the *agamas* and sung about in the sacred *thevaram* texts. The forms of Siva include *Nataraja, Lingodhbawa, Gangadhara, Ardhanareeshwara, Kala Samhara, Harihara,* to name a few.

This arrangement continues to the first floor also and the niches there house *Siva* as *Tripurantaka* and *Vidhyeshwaras*. Each of the deities enshrined in the niche has their attendants and devotees also represented on either side of the niche.

Rajarajeshwaram, as the temple was called by *Rajaraja* was treated as a lifetime mission of a single man that was realised by the combined hard work of several lakhs. The dream to commission a mammoth offering to the almighty, without compromising on traditions has been achieved a millennium back and the concept of temples serving as the central fulcrum of society has been tested and established. The number of different engineering challenges that *Rajaraja* has taken up in the construction of this temple seems deliberate, trying to prove a point. The laying of shallow trench foundations and aiming at a scale that was never tried before shows the depth to which detailed studies have been done by structural experts.

Filling the structure with earth and covering it as it was being built is the theory that seems convincing for this scale and size, else mobility to the top-most portions would have been practically impossible by scaffolding support. So, as the layers were built, they were also filled and covered with earth, thereby forming a ramp that could help the resources reach successive levels. As the project was completed, the soil was excavated to reveal the grand structure in its full glory. It is certainly an emblem of pride to us. ❑

Image Courtesy: Vijay Bhat

Revisiting 'Brutalist' Architecture

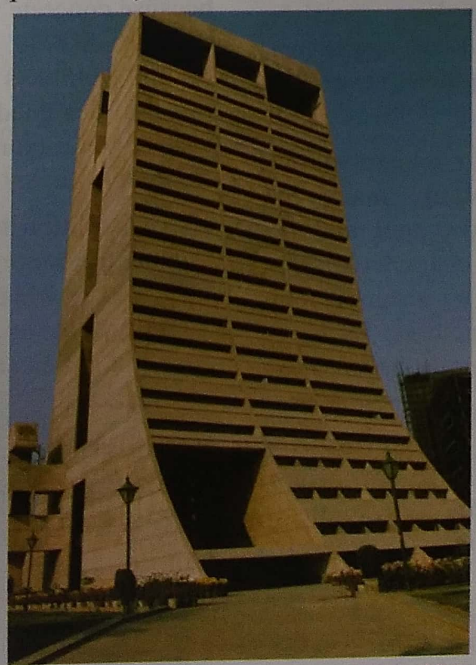
Dr Manjari Chakraborty

Brutalist Architecture was a child of a line of thought that, as per its own interpretation, wished to strip buildings of their unnecessary intricacies, embellishments, superfluous decorations, cover-ups with the employment of multifarious concealing materials and finishes that hide the core structure and basic character of it. This is accepted as a specific offshoot of modern architecture. The word Brutalism doesn't really come from its harsh aesthetics, but actually from the very material it is made up of, i.e., the predominant use of reinforced and plain concrete. Béton brut is basically a French term that means "gross cement" or "raw concrete" and this term is occasionally used to describe the characteristic looks identifiable as Brutalist Architecture.

In contrast with classical Architecture and its romantic continuity, some bold and contrasting modernistic trends gradually emerged and ramified into certain sub-trends, of which Brutalist Architecture is a prominent player. This modern trend germinated not only because of the fresh philosophy propelled by an escape velocity from the stale continuum, nor singularly by any sheer novel artistic urge, neither as a mere reflection of the remarkable social changes, but also due to and supported by some new materials and new construction techniques. Social changes instigated the new style and technical innovations made it possible.

Identification

Trying to grasp in a rather simple manner, Brutalist Architecture can be identified by some specific markers. Brutalist Architecture was a child of a line of thought that, as per its own interpretation, wished to strip buildings of their unnecessary intricacies, embellishments, superfluous decorations, cover-ups with the employment of multifarious concealing materials and finishes that hide the core structure and basic character of it. Started around 1950, this bold new movement proclaimed and practised Architecture as muscular, simple, undecorated, almost intimidating in its stark and imposing presence. Brutalist architecture is a trend that appeared in Britain, while the society was going through the post-war reconstruction process. Brutalist buildings are marked by a sort of minimalist yet voluminous construction that deliberately displays the bare building materials and structural elements over deceptive manipulations of decorative design. Some reputed journals called Brutalism as technical-musician architecture, menacing and stark. Brutalist buildings were and still are perceived as difficult to maintain and demolish. In general, Brutalism in Architecture is accepted as a specific offshoot of modern architecture. The word Brutalism doesn't really come from its harsh aesthetics, but actually from the very material it is made up of, i.e., the predominant use of reinforced and plain concrete. Béton brut is basically a French term that means "gross cement" or "raw concrete" and this term is occasionally used to describe the characteristic looks



This architecture deliberately displays bare building materials & structural elements and is marked by minimalistic yet voluminous construction

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A church in Vienna, Austria

identifiable as Brutalist Architecture. The Swedish phrase Nybrutalism was also used to describe this trait. The actual term "New Brutalism" was first coined by British architects Alison and Peter Smithson who had designed some landmark pieces of Brutalist Architecture.

To identify Brutalist Architecture in a rather conclusive way, we may look for certain basic materials and abstract characteristics in buildings including simplicity, a feeling of volume, use of minimum materials, no efforts towards superfluous decoration, softening, intricacy or embellishment, a forceful presence to the tune of being even shocking at times, a tough and stark look from outside and inside, a sculptural quality, and finally an honest exhibition of materials used and structural system adopted. We may also look for bare, bold, unromantic, non-intricate, non-ornate simplicity, harshness, dominance of straight lines, bare materials, angular massing, lumpy nature, straight-cut, aggressive, massive, no-fuss, and imposing sculpturesque quality achieved by sheer simple volumes.

A very important point here is to remember that without such branding and brandishing, many old structures, especially the houses of the poor and the middle class in the past, had several characteristics of Brutal Architecture acquired naturally by virtue of their use of minimal materials and bare structures. By being minimalist, those buildings were naturally brutal, even by the yardstick of the later meaning of the term.

British Architecture critic Reynar Banham in the year 1955 had discussed Brutalist Architecture, highlighting its characteristics, genesis and impacts, thus helping the term and the trend to be popular for about two decades since then. The article is available on the internet and is a piece composed by anon-Architect intellectual critic of Architecture viewing the issue from an emphatic combination of artistic, social and intellectual angles. Banham called brutalist Architecture "raw art." We might also try to understand the issue from Architectural angle including social, cultural, economic and contemporary concerns like population explosion and environment.

Interpretation

Architecture is not only a profession that blindly serves the apparent needs of the society and economy. It is a vocation too and often surpasses its professional domain to arrive at its vocational impulses to change and lead and guide the very needs and tastes of the society. The architects who led the Brutalist movement desired architecture to be shorn of all unessential embellishments and stand unbudgingly in its monolithic confidence and honest stature in a bare-all and dare-all stance in front of the world. They wanted their buildings to radiate a confidence of durability and dependability amid the social instability of that time, the buildings were supposed to be icons of strength, like infallible lighthouses amid the storm of socio-politico-economic upheavals. The World War devastated the cities, thus pulverising ancient architecture and making way and scope for new concepts, new technology and new designs of buildings. In a sense, it was as much of an opportunity as a compulsion to re-populate the cities with a new set of buildings that could symbolise the spirit of a phoenix (or rebirth) and assure the society of tough permanence and secure shelter for starting all human activities afresh. Concrete as a material at that nick of time offered huge freedom for architects, because concrete is tough, honest, mouldable, sculptable, durable and bold. At the same time, it needs no protection. So, the architects professing brutalism took advantage of this and designed their buildings with a kind of frugal, spartan yet monumental nature with minimum frills and minimum variety of materials.

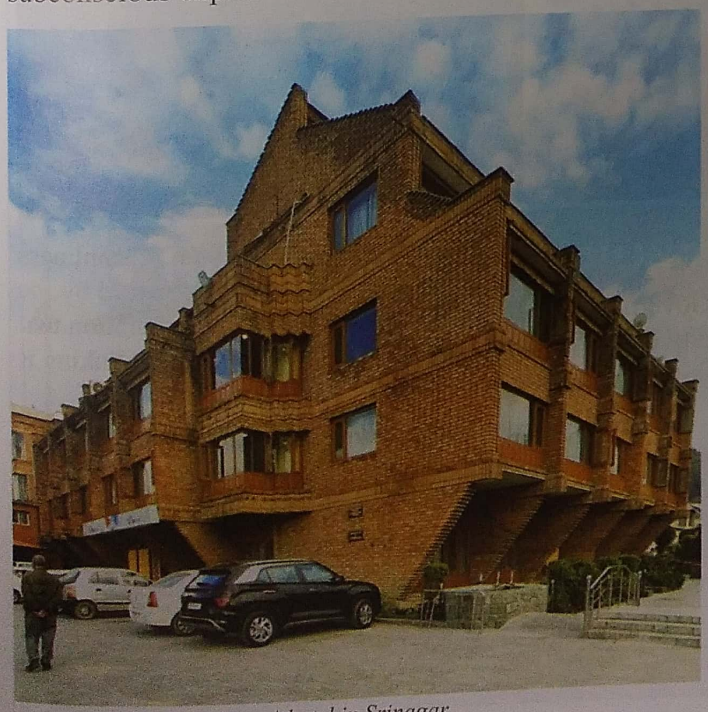
In addition to the known sources of nomenclature, if we furthermore wish to interpret the term brutalism by thinking whether it originated from the word 'brut', we may look up the meanings from the dictionary and find that it means 'savagely violent, ferocious, harsh, hard-hearted, heartless, inhuman, monstrous and even abominable.' One of the softer meanings indicates 'direct and without attempting to disguise unpleasantness.' The one perhaps positive use of the word demonstrates as 'brutal honesty.' We may see that all these synonyms and usage cited in the lexicon and other origins of the nomenclature, are all somehow or other attributable to Brutalist Architecture, depending on the point of view of the observer or critic.

An important point here is to remember that structures, especially the houses of the poor and the middle class in the past, had several characteristics of Brutal Architecture acquired naturally by virtue of their use of minimal materials and bare structures.

Critical Appreciation

While going for a critical appreciation of any form of art, particularly for pieces of public and habitable art like architecture, it has to be remembered that buildings are observed, experienced, judged, accepted or rejected by not only the established intellectual critics but all sections of the society including the tasteful elite, indifferent middle class and the uninitiated mass on the periphery. So, it might just be better to try to obtain the overall reaction of society to buildings, considering both the notable individual views and the mass opinion. Also, the critical assessment of Brutalist buildings is approached both from subjective and objective angles.

Critics who look at Brutalist Architecture from the angle of art and culture tend to interpret it as having a distinct identity and style, being sculptural and predominantly of a monochromatic or mini-chromatic palette. Rather strangely yet with some inherent socio-cultural connection, the public art of Russia before and after the revolution had shown similar traits of harsh and bold and monumental creations to denote a sense of strength in simple but decisive form. Some art critics, on the contrary, find Brutalist Architecture too harsh to the degree of arrogant, even intimidating and too drab to the degree of unimaginative. Philosophically, they were sometimes called heroic but also labelled as too bold to be over-dominating. Some social scientists and observers called brutalism in architecture a subconscious expression of the expanding heartlessness and indifference and intimidation in human nature and society as a whole, intertwined with a desire to acquire identity, individuality and power.



A hotel in Srinagar

The durability of the brutalist buildings poses another situation regarding the interior provisions. The buildings are durable and tough to demolish but as they withstand time, the new times demand new level of comfort and ambience inside such buildings.

Architectural critics were also of divided opinion. Some hailed brutalist buildings as epitome of beauty in simplicity and some others found an undesirable lack of warmth and friendliness in them. Some called it pure; some others called it too bare and uninteresting. From outside, these buildings have a solid massing in general and a sculpturesque quality but some detractors say these buildings are hostile from within, the interiors come down heavily on the mind of the users. While hailed for their less complicated form and a smaller number of materials used, the buildings are often blamed to be cold, uninviting and not cosy. Psychologically, these buildings, from outside, may radiate strength, durability and confidence but from inside they are often dull to the degree of depressing. The architecture of Le Corbusier and techno-artistic works of Pier Luigi Nervi show a lot of brutalist character before and after the initiation and christening of labelled brutalism.

As because brutalist buildings used less material or less variety of material and was shorn of so-called superfluity, it found a quantitative avenue into the domain of mass housing in post-war and post-revolution periods under the aegis of the socialist and welfare states.

The durability of the brutalist buildings poses another situation regarding the interior provisions. The buildings are durable and tough to demolish but as they withstand time, the new times demand new level of comfort and ambience inside such buildings. The contemporary interior provisions including furniture, furnishing, space conditioning, fittings, fixtures, gadgets, facilities, services, i.e., the entire issue of contemporary retrofitting becomes a matter of moral and aesthetic policymaking and implementational challenge. It is an issue in all old buildings but it is tougher in case of the brutal.

Revisiting Brutalism

In Architecture, we find that society has changed a lot, momentous changes have taken place in the individual and collective human mindset. With the advent of cutting-edge technologies, relative though lopsided economic prosperity and increased awareness, the demand for comfort and status has risen manifold. Now with the advent of many materials, architects have to satisfy clients with a great assemblage of interior finishing, fittings, furnishings, gadgets, fixtures, contraptions, drapery, furniture, illumination, conditioning etc., as integral with Architecture. The new extravagant society sought

exuberance and rejected brutalism in architecture as drab, cold and repulsive, non-luxurious, non-cosy too. Overkill of boldness made it intimidating. Brutalism was branded as not cosy enough and instigating indifference, even aggression. The brutal buildings were also called drab and hostile to the promotion of warmth and imagination. This created a diverse set of forces working for and against the reincarnation of Brutalist Architecture. The sense and essence of it is evolving and maybe it requires a novel name for the new age.

Brutalism in Architecture could flourish as an unhindered experiment in its heyday due to the power of the new materials and methods of construction. The environmental factor and the sustainability concern was absent. The conscience of the experimenting architect was clean on those counts. Today, on one hand the option of materials and finishes are too many, yet the advent of environmental concern has thrown a fierce force of control in front of free, reckless and concern-less designs. Irresponsible imagination and consumerist designs, though rampant still, are no longer lauded. While the search for identity and distinction in Architecture is still on, the bruised society is overly seeking repose in cosy buildings. While all styles of Architecture are subject to these new considerations, Brutalist Architecture faced this resistance and challenges more than the other styles and dwindled to an unceremonious waning. Though some buildings still display some signs of being brutalist, as a whole, the concerted movement of brutalism in architecture has halted.

Today, the scope and need for the revival or reincarnation of Brutalist Architecture might emerge in the form of a desire for sustainable architecture with a whole new spirit of simplicity marked by wastelessness. Now it may come back as "Honestism" or "Frugalism." Today's challenge is to redefine Brutal Architecture as "No-frills Architecture", plain yet interesting, bold yet friendly, tough yet welcoming, artistic yet unembellished, functional yet frugal, with an unwavering target of making it sustainable. The new task and new choice of direction for brutal Architecture is to mould itself qualitatively and quantitatively without sacrificing its functional, aesthetic, social and cultural excellence. The new horizon of brutality can be the discovery of a new definition of aesthetics, using the economy of simplicity to fund mass provision, absorbing all lessons from the past.

Let contemporary brutalism emerge as candid architecture. As Brutalism was a branch of modern architecture, let this new Brutalism be a vanguard of sustainable, futuristic architecture. ❑

Mann ki Baat

Kabaad se Jugaad

Meerut Municipal Corporation has beautified the intersections and parks of the city with the 'Kabaad Se Jugaad' initiative undertaken by their team. Prime Minister Narendra Modi appreciated this initiative in his 'Mann ki Baat' programme, which boosted the enthusiasm of the entire team of the Municipal Corporation. When single-use plastic was banned by the Government, it was thought that whatever scrap or junk is lying in sanitation store should be connected with the city beautification work, and that is how the 'Kabaad se Jugaad' programme was started. Old tyres, drums, and plastic scrap lying in the store were used to make various shaped installations installed in the squares of the city. The Meerut Municipal Corporation was selected for the 'Indian Cleanliness League' award under the Swachhata Survey Award by the Government of India. It is planned by the Corporation that city beautification work will be taken further by linking it with public participation.

(Excerpts from Mann ki Baat booklet brought out every month by Publications Division, Ministry of Information & Broadcasting) ❑

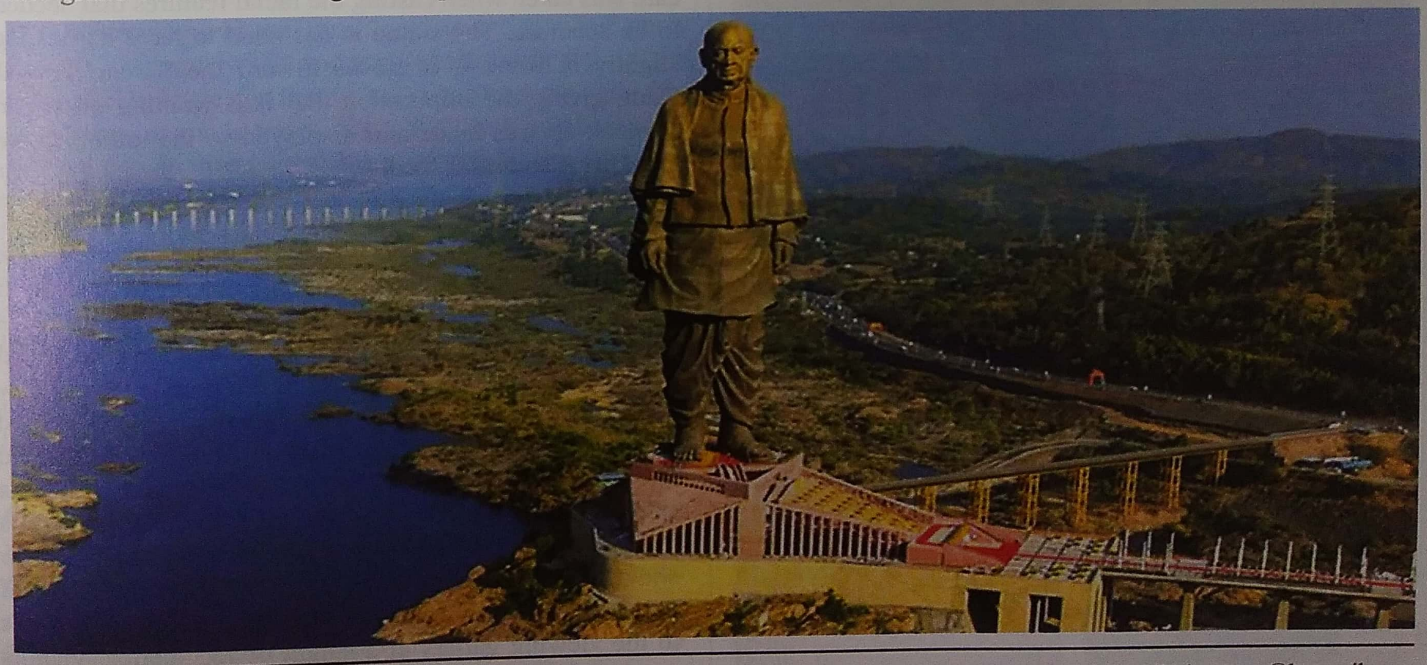
Scan the QR code to watch a special report on the 'Kabaad se Jugaad' programme.

Statue of Unity

Prof Dr P S N Rao
Prof Dr Anil Dewan

The Statue of Unity is a testimonial to the life of Sardar Patel, a role model of unity and statesmanship. The tallest statue in the world enjoys a splendidly scenic location facing the Sardar Sarovar Dam, 3.2 kilometres away. This colossal statue stands on the isle of Sadhu-Bet in River Narmada, at Ekta Nagar, District Rajpipla in the Indian State of Gujarat, with the majestic Vindhyachal and Satpuda Mountain Ranges in the backdrop. The statue is fast becoming one of the country's top tourist attractions. Aimed to inspire generations, the Statue showcases Sardar Vallabhbhai Patel's vision of unity, patriotism, inclusive growth, and good governance.

A tributary endeavour to the Iron Man of India, the Statue of Unity is an iconic 182-metre-tall statue situated on the isle of Sadhu-Bet. Located between the Mountain Ranges of Vindhyachal and Satpuda, this monument has many other attractive tourist spots in its proximity such as the Valley of Flowers, the Shoolpaneshwar Sanctuary and sacred temple, the Sardar Sarovar Dam and its water dykes, the scenic Zarwani Falls and majestic palaces of Rajpipla. The grand monument along with a picturesque backdrop makes it an ideal destination for eco-tourism. The bronze statue of Sardar Vallabhbhai Patel, the first deputy prime minister of India took four years to build and eight years to design. The monument, created by Indian sculptor Ram V. Sutar, stands almost 50-storey tall and rests on a base with three tiers, setting a world record for height. The geometrically designed base is situated on its own riverine island and is linked to the main land mass by a bridge for vehicles and pedestrians. A visitor's centre, hotel, and exhibition hall are all located inside, and the top of each is



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capped by a memorial garden.

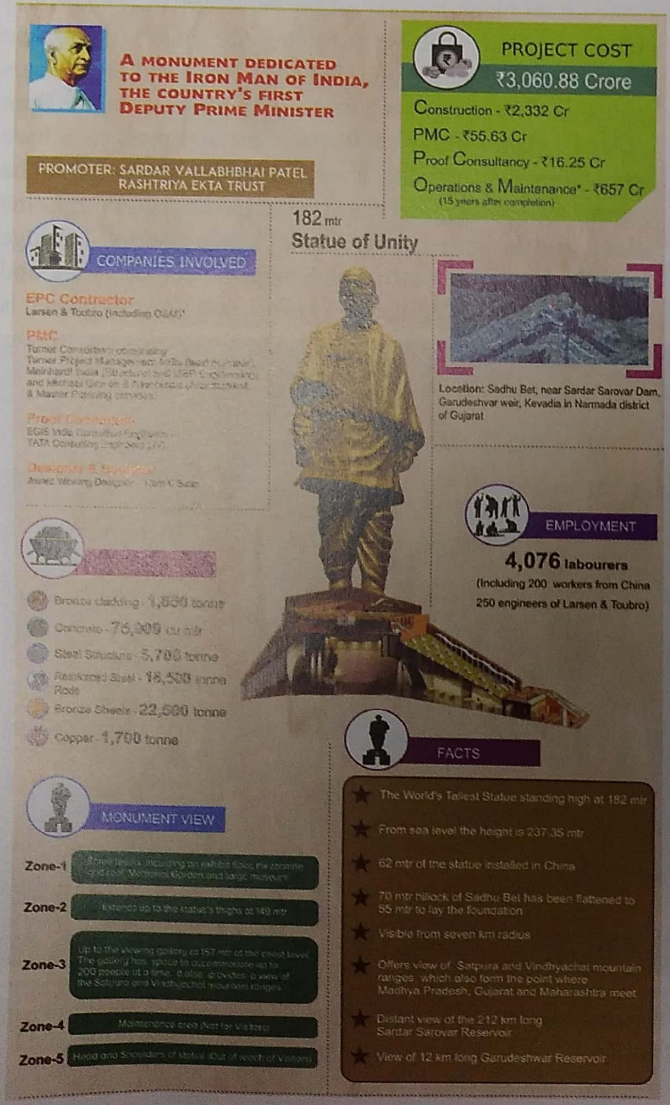
The statue of Sardar Vallabhbhai Patel that is twice the height of the Statue of Liberty— seems appropriate at this time for a variety of reasons, not the least of which is that India is seeing a similar rate of economic expansion as the US saw during those times. The Lincoln memorials were erected to serve as a constant reminder of the man who united a once bitterly-divided nation. It is important to keep in mind that they were created by individuals who were concerned about living in a society where everyone spoke the same language and practised the same religion, two of the strongest factors that have the potential to unite or divide nations. As Soviet leader Nikolai Bulganin pointed out, India's language and religious diversity prevented the merger of more than 500 princely states. Almost solely because of Vallabhbhai Patel, no royal heads were toppled during the union of princely states with British India to form the current nation-state.

Engineers had to take earthquake and flood risk into account as well as wind speed. The statue will have to contend with the tunnel effect of winds flowing down the river because it was created on an island in the middle of the Narmada.

The Statue of Unity (SoU) will endure as a reminder of Sardar Patel's outstanding contribution and encouragement to upcoming generations. The SoU will be the highest statue in the world at 182 metres from the road entry and 208.5 metres from the river entry, surpassing China's 153-metre-tall Spring Temple Buddha and standing nearly twice as tall as the Statue of Liberty in New York. To give you an idea of its size, consider that the statue is 100 times bigger than a person who is around 5' 5" tall.

During the planning and construction stage, strong problems were presented by natural elements including wind and earthquakes. The statue is exposed to the tunnel effect of winds sweeping down the river because it is located directly in the centre of the Narmada River. Studies of wind patterns over the years found that, in the worst-case scenario, wind speeds of 39 m per second (approximately equivalent to 130 km/hr) may buffet the statue. Up to 50 m/s (almost 180 km/hr) of wind speed may be withstood by the statue thanks to engineering. The challenge isn't only the wind blowing against the monument; the structural design needs to take into account the succession effect it creates at the back of the statue. Another interesting challenge was the base which had to be the thinnest owing to the attire. The walking position also created a 6.4-metre space between the two feet, which needed to be evaluated for wind resistance. The statue's appearance presented another obstacle. Since Patel's face was a crucial component, extra care was taken when casting the facial features that needed to be accurate. The statue is designed to have its left leg slightly in front as it moves toward the Sardar Sarovar Dam, giving the impression that it is walking on water. A mock-up was made and displayed so that others could examine it and offer feedback.

The statue is situated in a rural area with mountains, which made it extremely difficult to bring materials. The hill and the mainland were connected by a makeshift Bailey's bridge. The statue's base is also higher than the Narmada dam nearby maximum flood level ever recorded over a 100-year span. To determine the river level and flow under various circumstances, an expert consultant carried out a thorough hydrological analysis. The statue is divided into five zones in total. The first zone extends up to its shin and has three levels, including a floor for exhibits, a mezzanine, and a roof. There will be a memorial garden and a sizable museum there. Zone 2 reaches the thighs of the statue at a height of 149 metres, and Zone 3 ascends to the viewing gallery at a height of 153 metres. Visitors would be unable to access Zones 4 and 5, with Zone 4 making up the maintenance area and Zone 5 the head and shoulders.



The methodology followed for structural design as a two-layered portion of the statue is contained within the 8 mm bronze coating. Two reinforced cement concrete towers that are 127 metres tall can be found in the deepest stratum. These towers are chest-high in height. The second layer is made up of the steel frame that lies in between the towers and the cladding. There were other engineering difficulties as well. One is that the Statue of Unity lacks a larger base like the Statue of Liberty or Christ the Redeemer.

For a structure to be sturdy, the base needs to be wider. The statue is thicker at the top and thinner at the bottom. This problem was solved by maintaining a 16:19 slenderness ratio between the statue's breadth and height, which is substantially higher than the 8:14 ratio guideline used in high-rise building design. Two, the statue's base is around 25 metres high, which is the height of an eight-story building. Two enormous elevators located in this area of the building can quickly transport over 25 people to a 135-metre-high gallery.

Engineers had to take earthquake and flood risk into account as well as wind speed. The statue will have to contend with the tunnel effect of winds flowing down the river because it was created on an island in the middle of the Narmada. The statue's walking position caused a 6.4-metre space to appear between its two feet. The statue's covering was designed with overlapping panels to address these problems and enable vertical and horizontal movement while still resisting earthquake and wind effects. There have been two 250-ton mass dampers utilised, which are installed in buildings to lessen the amplitude of vibrations.

The statue is hence capable of enduring wind gusts of over 220 km/h while enduring earthquakes 6.5 on the Richter Scale or greater. Fourth, the statue's setting amid far-off, Mountains made travel difficult of tools and materials challenging. To make it simpler to get to the island, a temporary Bailey bridge was built for the monsoon, when the river has more water, and a rock bridge was made over shallow water. The statue's construction required the use of around 210,000 cubic metres of cement concrete, 18,500 tonnes of reinforced steel, 6,500 tonnes of structural steel, 1,700 tonnes of bronze, and roughly 1,850 tonnes of bronze cladding, made up of 565 macro and 6,000 micro panels. The two bridges were used to move the majority of this cargo.

Funding of the statue's creator is a model of Public-Private Partnership, with nearly all of the funds raised by the Gujarat state government. Public also provided money for sector initiatives within the Corporation's Plan for social responsibility. The Statue of Unity is a true feat of engineering. It honours the engineering prowess of India. ❑

(Other contributing authors are Dr Khushal Matai and Dr Amit Kumar Jaglan, both Assistant Professors, School of Planning and Architecture, New Delhi)

Earthquake-Resistant Construction

India on account of its unique geophysical setting is highly prone to earthquakes of varying intensities. The country has faced several devastating earthquakes in the past resulting in a large number of deaths and severe property damage. During the last century, five earthquakes measuring M8 or more struck different parts of the country. In recent years damaging earthquakes had been experienced in different parts of the country.

Seismic Zoning

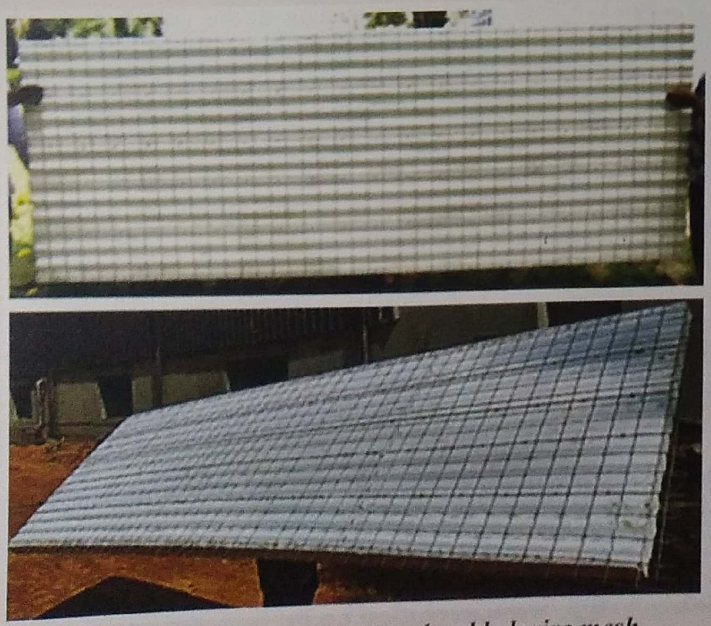
The country has been classified into different zones indicating the intensity of damage or frequency of earthquake occurrences. These zoning maps indicate broadly the seismic coefficient that could generally be adopted for the design of buildings in different parts of the country. These maps are based on subjective estimates of intensity from available information on earthquake occurrence, geology, and tectonics of the country. The Indian seismic zoning is a continuous process that keeps undergoing changes as more and more data on the occurrence of earthquakes becomes available.

Considering the recorded history of earthquakes in the country, seismologists have classified 59% of the land mass of India as prone to earthquakes of different magnitudes– 11% in very high-risk Zone V, 18% in high-risk Zone IV, and 30% in moderate-risk Zone III. Guwahati and Srinagar are located in Seismic Zone V, while the national capital of Delhi is in Zone IV, and the mega cities of Mumbai, Kolkata, and Chennai are in Zone III. 38 cities with a population of half a million and above each and a combined population of a million are located in these three regions.

Multi-storeys constructed with thermocol could be the future earthquake-resistant buildings

Thermocol could be the material of the future for the construction of earthquake-resistant buildings, with thermal insulation, and could also save energy required to develop construction materials. Researchers at IIT Roorkee have found that thermocol or Expanded Polystyrene (EPS) is used as a composite material in the core of reinforced concrete sandwich, could resist earthquake forces on up to four-storey buildings. The researchers tested a full-scale building and a number of wall elements constructed with thermocol sandwiched between two layers of concrete at the National Seismic Test Facility (NSTF) of the Department of Earthquake Engineering, IIT Roorkee, developed under the Fund for Improvement of S&T Infrastructure (FIST) programme of Department of Science & Technology (DST), Government of India.

Besides resisting earthquakes, the use of an expanded polystyrene core in the concrete walls of a building can result in thermal comfort. The core provides the necessary insulation against the heat transfer between



Factory-made EPS core panel and welded wire mesh reinforcement

Building skeleton made of factory-made EPS core panels

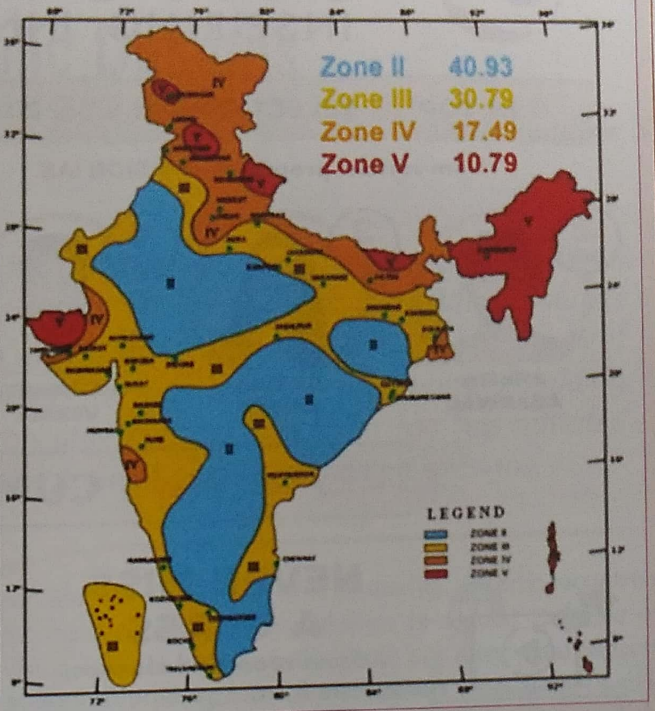
the building's interior and exterior environment. This can help in keeping the building interiors cool in hot environments and warm during cold conditions. India suffers a large variation of temperature in different parts of the country and during different seasons of the year. Therefore, thermal comfort is a crucial consideration along with structural safety.

The technology also has the potential of saving construction materials and energy, with an overall reduction in the carbon footprint of buildings. It replaces a large portion of concrete volume from the walls and floor/roof. This replacement of concrete with the extremely lightweight EPS not only reduces mass, thereby decreasing the earthquake force acting on a building but also diminishes the burden on the natural resources and energy required to produce the cement concrete.

Seismic Zone Map of India: -2002

About 59 percent of the land area of India is liable to seismic hazard damage

Zone	Intensity
Zone V	Very High Risk Zone Area liable to shaking Intensity IX (and above)
Zone IV	High Risk Zone Intensity VIII
Zone III	Moderate Risk Zone Intensity VII
Zone II	Low Risk Zone VI (and lower)



Seismic zonation and intensity map of India

Retrofitting non-earthquake-resistant buildings

Researchers have found a solution for retrofitting old non-earthquake-resistant buildings with a technology that can prevent major damage to such buildings from earthquakes without compromising their strength. The technology called semi-confined unreinforced brick masonry (SC-URBM) can resolve the problem of the spread of settlements in earthquake-prone areas with constructions that have been built without following earthquake-preventive building codes. This technology for strengthening existing URBM buildings is not only architecturally aesthetic but can also be implemented easily by locally-available manpower. ❑

Source: NIDM, PIB

Spraying and pouring of concrete over the EPS core skeleton and finished building model

Universal Public Designs

Dr Jithendran S

In a heterogeneous society, the goal of every state is to provide equal access to its citizens. When it comes to physical-public domain design, infrastructure for persons with disabilities assumes another dimension of architecture. It has certain implications from the special-need quotient of demography, and disability as an asocial construct. The international community is building competencies for delivering quality governance on universal designs. India too has initiated Sugamya Bharat Abhiyan as a credible step towards sustainable goals in universal designs.

Diversity is everywhere, be it in culture, language, climate, topography, gender and abilities of people; inclusion stands for giving freedom for access for all and building commonalities. When it comes to residential space, the requirements of people vary as per their taste, economic means, and functional requirements. But, most of the times housing solutions are standardised for common users and not for special needs. There is a standard approach for building residential space which traditionally does not focus people with special needs. But when it comes to physical public domain design it assumes another dimension of architecture. It has certain implications for the vision of a country on development, accountability in the use of state's budgeted funds, and the special need quotient of demography. When administrators consider people with all kind of abilities and their accessibility issues while building public utilities and spaces, it can be coined as universal design. Universal or inclusive design provides for a holistic approach in designing public spaces and utilities.

The UN Convention on the Rights of Persons with Disabilities (UNCRPD) inspires and focuses on universal design. It highlights the sovereign government's responsibility to make improvements since accessibility is a right. Member States are responsible for systematically removing obstacles and creating inclusive solutions for everyone, irrespective of their functional capacity, characteristics and preferences (Maria, 2018). When we look at those countries with high living standards and quality of life, universal design certainly forms a modality for indexing in terms of life quality. Nordic countries for instance and universal design is a good example of vision for inclusive growth. There are three vital aspects of inclusive designs in any situation. One is the social responsibility or commitment of the entity that evolves strategies for inclusion. Secondly, the reward to such organisations which initiate such changes, and finally, the sustainability of such initiatives.

Challenges

A major challenge in implementing such changes is on emphasising the value of such indicatives at the policy level and at the execution level. Inclusive design is about

- Accessible well-lit corridor
- Tactile flooring for visually impaired
- Double height handrail for support
- Wide corridor, obstruction free path for wheelchair movement

An accessible corridor developed in Maulana Azad Medical College, Delhi for Persons with Visual Impairment.

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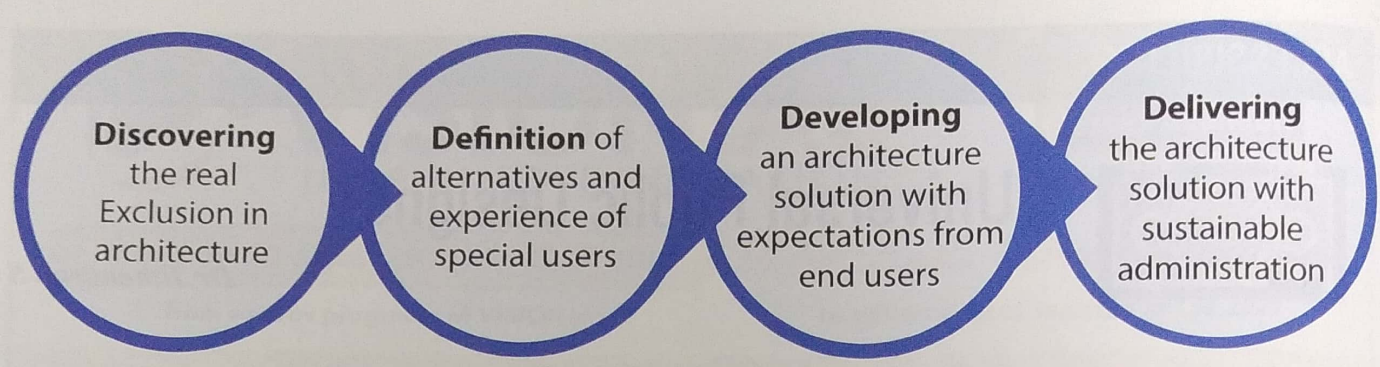

Basis of Universal Designs

placing people at the heart of the designing process, it is about creating buildings and spaces, streets, public parks, gardens,etc., that are really comfortable and easy for all of us to use. Another challenge in providing for inclusive architecture is that the people who are working at various capacities in construction are, no doubt, experts in their fields but they lack knowledge about the whole structure, and issues of accessibility fail to bring those minute changes at their ends for universal designs. Sugamya Bharat has been formulated by considering all possible lacunae. The country with such diverse structure demands a systemic approach to tackle the existing challenges.

Approaches and Principles

In 1997, a team of architects and designers from North California State University created a set of principles for a universal design. To understand the suitability of piece of architecture as universally designed, these principles can be used as a test for suitability.

1. A piece of architecture should provide an *equitable use* for every person irrespective of their differential ability.
2. A piece of architecture should possess a quality of *flexibility in use.*
3. A piece of architecture must have the quality— *Simple and intuitive use.*
4. A piece of architecture should have *perceptible information* and its layout.
5. A piece of architecture should possess the quality of *tolerating for errors.* If people commit mistakes due to their disability.
6. A piece of architecture should possess the quality of usage or access should demand *low physical effort.*
7. A piece of architecture should possess adequate *size and space for use.*

Implications

While looking at a strategic approach for engaging a universal design for system problems, a time-phased systematic approach is suggested.

In all the domains of public work, an integrated approach by incorporating the end users' feedback can deliver quality of governance to people with differential abilities. Most importantly, reward for such initiatives of universal designs should be given to build public consciousness.

Sugamya Bharat Abhiyan

On 3 December 2015 i.e., World Disability Day, the Govt. of India launched Accessible India Campaign as a country-wide campaign for achieving universal accessibility for Persons with Disabilities. It has three important components including the build environment, transportation sector, and the ICT ecosystem.

Built Environment Accessibility

An accessible physical environment benefits everyone, not just persons with disabilities. Measures are taken to eliminate obstacles and barriers to indoor and outdoor facilities including schools, medical facilities, and workplaces. Further, these would include all public spaces such as roads, footpaths, parks and gardens, etc.

Disabled-friendly parking in Pune, Maharashtra

Architecture for Health and Well-Being

Dr Raja Singh

'We shape our buildings, and afterwards, our buildings shape us.' – Winston Churchill

We have started to spend an extraordinary time indoors, which is in contrast to the earlier times when our lives were in constant sync with nature. Our routines were aligned to the rising of the Sun and our circadian rhythms were matched to the Sun's. In our current lifestyles, we are fast dependent on the building amenities and utilities that power us on a day-to-day basis. This includes artificial lighting and artificial means of ventilating space. The indoor-based lifestyle that we have chosen for ourselves, if not possible to be reversed, should most definitely be optimised so that it must take care of our health and well-being. Contrary to our general perception linked only to its relation with diseases, the World Health Organization gives a more wholesome definition of health which is 'a state of complete physical, mental and social well-being and not merely the absence of disease and infirmity.' This definition breaks the bounds in which the erstwhile global thought was headed to, i.e., having a concentration on simply eradicating the disease. But in reality, the wide spectrum of health encompasses preventive, promotive, curative, rehabilitative and palliative care. India has taken steps in this direction under the Ayushman Bharat where we are now opening Health and Wellness Centres. This shifts the Indian healthcare approach from selective, curative healthcare to the one which includes concepts of well-being embedded into it.

Let us see some historical perspectives. All India Sanitary Conference that was held in Lucknow in 1914 laid the foundation of the current paradigm of building and city planning, by including the concepts of health and well-being. The concept of having an appropriate light place in the streets was introduced and the width of the abutting streets was made in accordance to the light. This would ensure adequate sunlight supply to the interior spaces of the buildings. This forms the basis of all urban bylaws and city plans made later in India. Sunlight, along with natural

Open gyms are inculcating a habit of working-out midst the nature

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India's G20 Presidency: Significance & Opportunities

"India's G20 Presidency will be inclusive, ambitious, decisive, and action-oriented...Over the next year, we will strive to ensure that the G20 acts as a global prime mover to envision new ideas and accelerate collective action...Together, we will make the G20, a catalyst for global change."

– PM Narendra Modi's remarks at the Closing Session of the G20 Summit in Bali on 16 November 2022

The Group of Twenty (G20) is the premier forum for international economic cooperation. It plays an important role in shaping and strengthening global architecture and governance on all major international economic issues. The G20 members represent around 85% of the global GDP, over 75% of the global trade, and about two-thirds of the world population.

India's Presidency

India is holding the Presidency of the G20 from 1 December 2022 to 30 November 2023 which offers a unique opportunity to contribute to the global agenda on pressing issues of international importance. India maintains close relations with developed countries on the one hand, and at the same time understands and expresses the views of developing countries very well. Guided by the Prime Minister's vision, India's foreign policy has been evolving to undertake leadership roles on the global stage.

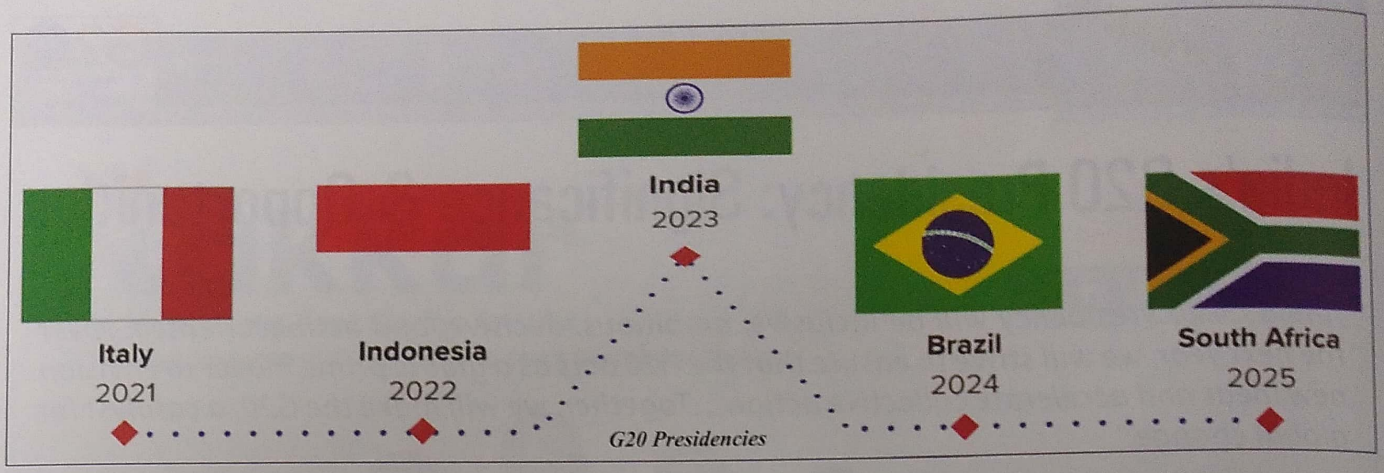
The G20 President sets the agenda for the year, identifies the themes and focus areas, conducts discussions, and delivers the outcome documents. India will identify, highlight, develop and strengthen international support for priorities of vital importance in diverse social and economic sectors, ranging from energy, agriculture, trade, digital economy, health, and environment to employment, tourism, anti-corruption, and women's empowerment, including in focus areas that impact the most vulnerable and disadvantaged.

The G20 mantra is - One Earth, One Family, One Future. It is these thoughts and values of India that pave the way for the welfare of the world. India's Presidency will not only be a memorable one for the country, but the future will also assess it as a momentous occasion in the history of the world.

New Delhi Summit

The 18th G20 Heads of State and Government Summit will take place on 9-10 September 2023 in New Delhi. The Summit will be a culmination of all the G20 processes and meetings held throughout the year among ministers, senior officials, and civil societies. A G20 Leaders' Declaration will be adopted at the conclusion of the New Delhi Summit, stating Leaders' commitment towards the priorities discussed and agreed upon during the respective ministerial and working group meetings.

The President of Indonesia, Joko Widodo symbolically handed over the G20 Presidency to PM Narendra Modi at G20 Summit, in Bali, Indonesia on 16 November 2022.



Genesis of G20

The G20 was founded in 1999 after the Asian financial crisis as a forum for Finance Ministers and Central Bank Governors to discuss global economic and financial issues. It was upgraded to the level of Heads of State/Government in the wake of the global economic and financial crisis of 2007, and, in 2009, was designated the "premier forum for international economic cooperation".

The G20 initially focused largely on broad macroeconomic issues, but it has since expanded its agenda to inter-alia including trade, climate change, sustainable development, health, agriculture, energy, environment, climate change, and anti-corruption.

G20 Members

The Group of Twenty (G20) comprises 19 countries (Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Türkiye, United Kingdom and the United States) and the European Union.

In addition to the regular International Organizations (IOs) (UN, IMF, WB, WHO, WTO, ILO, FSB, and OECD) and Chairs of Regional Organizations (AU, AUDA-NEPAD, and ASEAN), India, as G20 Presidency, will be inviting ISA, CDRI and ADB as Guest IOs.

Working of G20

1. The G20 Presidency steers the G20 agenda for one year and hosts the Summit. The G20 consists of two parallel tracks: the Finance Track and the Sherpa Track. Finance Ministers and Central Bank Governors lead the Finance Track while Sherpas lead the Sherpa Track.
2. Within the two tracks, there are thematically oriented working groups in which representatives from the relevant ministries of the members as well as from invited/guest countries and various international organizations participate. The Sherpas oversee negotiations over the course of the year, discussing agenda items for the Summit and coordinating the substantive work of the G20.
3. There are Engagement Groups that bring together civil societies, parliamentarians, think tanks, women, youth, labour, businesses, and researchers of the G20 countries.
4. The Group does not have a permanent secretariat. The Presidency is supported by the Troika – previous, current, and incoming Presidencies. During India's Presidency, the troika comprises Indonesia, India, and Brazil, respectively.

Logo and Theme

The G20 logo draws inspiration from the vibrant colours of India's national flag – saffron, white and green, and blue. It juxtaposes planet Earth with the lotus, India's national flower that reflects growth amid challenges. The Earth reflects India's pro-planet approach to life, one in perfect harmony with nature.

The theme of India's G20 Presidency -"Vasudhaiva Kutumbakam" or "One Earth One Family One Future" is drawn from the ancient Sanskrit text of the Maha Upanishad. Essentially, the theme affirms the value of all life – human, animal, plant, and microorganisms – and their interconnectedness on the planet Earth and in the wider universe.

The theme also spotlights LiFE (Lifestyle for Environment), with its associated, environmentally sustainable, and responsible choices, both at the level of individual lifestyles as well as national development.

The logo and the theme together convey a powerful message of India's G20 Presidency, which is of striving for just and equitable growth for all in the world. ❑

Source: PIB Research Unit

Interpreting Geometries— Flooring of Rashtrapati Bhavan

Authors' Team: Chandigarh College of Architecture, Chandigarh
Language: English, **Price:** 2870/-

This book unveils historic flooring patterns of the Rashtrapati Bhavan, the residence of the first citizen of the country, wherein authors have mapped, documented, and thereafter decoded intricate flooring compositions of the Rashtrapati Bhavan, New Delhi. The idea of this publication stems from the inherent importance and value of the complex. An initial reconnaissance survey of the Rashtrapati Bhavan revealed exquisite patterns of flooring with unique geometric layouts and compositions. These flooring patterns, which are both floral and abstract, run through the different areas of the complex and yet bind together the spaces viz. loggias, porticos, entrance halls, staircases, grand halls, ceremonial halls, and attendant spaces. The use of various materials such as red and buff sandstone, marble, Indian patent stone, wood, and terrazzo presents a visual aesthetic that enhances the spatial quality, sequentially, and the flow of spaces from one area into another. It is a unique example where a building of such colossal and palatial nature and proportions in India has deployed the art of geometry in flooring and this has further enhanced the exuberance, grandness, and historic value of the residence of the country's first citizen. Thus, it became imperative for the authors to document this unique repository of flooring patterns designed by Sir Edwin Lutyens for the abode of the Viceroy of India in 1912 (a project that lasted until 1929).

The volume deals with the important halls of the central area of the H-shaped building. The introductory chapter describes the design philosophy and inception of the Rashtrapati Bhavan on Raisina Hill and the inspiration that led to the creation of such unique flooring designs in the H-shaped building. The following two chapters are dedicated to the documentation and decoding of the flooring patterns where each chapter is a repository of patterns on two floors, that is, the Upper Basement Floor and the Main Floor. These chapters contain multiple architectural floor plan drawings, flooring pattern drawings, and interpretation sketches to understand the design of flooring in various steps. The authors have done decoding of the patterns on the basis of available archival drawings of flooring created by Edwin Lutyens during the commencement of the project, based upon an understanding of the system of proportions and principles of design (symmetry, rhythm, balance, order, hierarchy, etc.).

The volume examines around 22 spaces, out of which a step-by-step graphical explanation of how to understand the design inspiration and geometry of 31 patterns is carried out. Each of these chapters commences with a key plan of the entire floor showing the location of each decoded pattern. The decoding of every pattern starts with an explanation of the spatial setting of the area showing the floor plan by way of two-dimensional drawings. Further, steps lead to the explanation of each flooring pattern with respect to the structural grids, enclosures defined placement of openings, and visual and spatial axes to understand the overall evolution of the flooring pattern. In the last step, one can find the complete documented flooring with its colour scheme and stone cuts. After the decoding steps, a tracing/gateway sheet is attached with each pattern to highlight detailed stone cuts documented by the authors on the site. ❑

Note: *The motifs used in this issue of Yojana are taken from this book.*