A R DIGITECH
International Journal Of Engineering, Education And Technology (ARDIJEET)
www.ardigitech.in ISSN 2320-883X,VOLUME 11 ISSUE 02 02/4/2023

Challenges in Maintaining Certain Rajasthan Architecture Structures

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Abstract: Safeguarding Matured Designs The motivation behind this multidisciplinary exertion is to teach present day protection engineers about past data on building materials, techniques, and guidelines so they might integrate it into their training. Underlying security is fundamental in any protection project, regardless of how large or little. Taking everything into account, no settled techniques have considered the meaning of primary wellbeing. India is home to a striking assortment of old structures, yet the nation's endeavors to comprehend and safeguard these curios are impeded by a deficient stockpile of gifted laborers. Critically, for a profoundly disapproved of culture, the way to keeping up with its set of experiences is to research where the past building framework came from, how the soul was associated with the structure interaction, and how the way of thinking of fleetingness saw material belongings. Some might contend that this approach goes against laid out protection best practices.

Keywords: heritage architectural Buildings,natural hazards, ageing, weathering

Introduction

Various a-list social and building tourist spots might be tracked down across the Indian subcontinent. While the Archeological Study of India (ASI) is presently depended with the insurance of in excess of 3,650 public landmarks, out of India's broad stock of memorable destinations, something like 25 have been perceived as UNESCO World Legacy Locales. While legislative paleontology divisions and strict gifts direct thousands, a huge number of other notable designs are unprotected because of an absence of financing. The Indian Public Trust for Craftsmanship and Social Notable (INTACH) is one of a few non-legislative associations (NGOs) that brings issues to light about the situation of these jeopardized milestones and assists with getting their insurance. Albeit conventional structure techniques and materials are as yet utilized for memorable structure rebuilding efforts, they are only here and there utilized for new forms. The improvement of new legacy protection tenets —, for example, the Venice Sanction (1964) and the ICOMOS Contract (2003) — through hundreds of years of conversation among key partners in Europe and somewhere else will undeniably prompt a more bound together worldwide person for legacy preservation. Since we ought to all recognize that, more than as representatives of particular governments, we are stewards of humanity's common cultural heritage, it is essential that we have such widely acknowledged baseline norms. In what ways does conservation work? Which is more important: the structure itself, the materials used to construct it, and the history of the civilization whose choices in these areas, or the essence of the location that the design sought to embody? This is a basic inquiry, particularly in the Indian setting, but it might be broadened to include all of Eastern or Asia. Your response to the question may provide further details on the item you should be saving. By expanding on the issues and exploring possible paradigms for a more comprehensive approach, this research aims to take the temperature of the Indian cultural conservation landscape.

Jaipur: Urban Structure and Court Culture

Sawai Jai Singh II of the Kachwaha dynasty began Jaipur's history as the capital of the kingdom of Dhundhar when he relocated the capital from Amber, five miles south, to Jaipur. Since the 11th century, Amber has been the capital of the Kachwahas. Man Singh started building the hilltop fort, and Jai Singh I extended it, making it a classic pre-Mughal Rajput defensive fortress. As the city grew and its streets became more crowded, royal processions became more challenging. Only during the particular downfall of the Mughal Empire and the pervasive distrust of the imperial court among Rajput kings was the city's audacious construction possible. During Aurangzeb's reign, the Rajput problem exacerbated the mistrust between the Mughals and the Kacchwahas. After Jai Singh II sided with Bahadur Shah's enemy in the second succession fight (1707–08), the Mughal ruler transferred possession of Amber to Jai Singh's brother Vijay Singh as a form of retribution. He did not reclaim his realm and rule again until 1710. He was feted with the revival and performance of the AshvamedhaYagna ritual, which had been reserved for the Chakravartin or Universal King in the past. It is said that Jai Singh II began to develop the idea of a new capital city for his domain about this time, as a demonstration of his economic and political resurrection to the Mughal emperor and his nearby Rajput peers. The new city of Jaipur, situated on a wide plain and having been a site of pilgrimage and refuge for Vaishnavite ascetics3 since the 16th century, was surrounded by hills to the west and east, respectively, the hill of Galtaji and the hill of Amber and Nahargarh. Located on sandy eastern terrain and swampy northeastern terrain, the area was inhabited by the Jai Niwas, lake Tal Katora, and other settlements whose inhabitants had to be purchased4. by constructing a royal hunting lodge in 1713, Jai Singh converted it into a Vaishnava shrine in 1715 by transferring GovindDev'smurti from Amber. This region was traversed by the old Amber-Sanganer Road and the Mughal Ajmer-Agra Road. The former ran the length of the city from north to south, while the latter, being Mughal territory and so off-limits to the rest of the population, constituted the southern boundary of the city's defensive walls. The cornerstone was ceremoniously laid on November 29, 1727. A water distribution system was first built along the banks of the Jhotwarariver. Building of the city's walls, gates, main streets, wards (chowkris), palace and markets began in 1734, the year after Muhammad Shah acknowledged the city as Dhundhar's capital. The Jai Niwas stood in the city's core; the maharaja had asked for its inclusion in the plans. The city's streets formed a square grid with this property at its heart, with each street precisely aligned with the cardinal directions.

The Haveli as a Courtyard-House: A Social and Architectural Study

Household life in Mughal India revolved on the unified family. The house was more than just a house; it was the clan's actual and symbolic home. This was the domain of men, where they lived from birth to death, from marriage to employment to burial, and where they held the royal authority in their own private courts. A place where women might live their whole lives safe from violence, it was a sanctuary. Unmarried women and widows shared housing with male relatives spanning three generations, including the owner, his father, sons, and brothers, as well as their wives. The palace's servants, including slaves, concubines, and eunuchs, as well as their descendants, made up the rest of the family.

Remedial treatments are often necessary for historic structures due to material deterioration and structural distress brought on by natural and man-made disasters, as well as the ageing and weathering of materials. During an era when

building codes were not defined, they were built utilising materials and procedures that contemporary engineers and architects are not educated to identify or use. These structures may seem timeless because of their extended longevity. Time, on the other hand, is a continual weakening process that undermines the stability of such buildings. Earthquakes, floods, and hurricanes are more likely to do them serious damage. That being said, a natural calamity might end up destroying a great deal of historic structures. This vulnerability is maintained despite the fact that human-caused pollution and vandalism are present. One such example is the remarkable durability of old structures in the aftermath of the 2001 Bhuj earthquake. The Kutch region has been continuously inhabited since the Indus Valley civilization and is home to more than 15,000 ancient structures and 250 historic districts. According to Gupta et al. (2001), the earthquake completely or partly damaged almost 10,000 historic structures. Even though the area has been hit several times by earthquakes such as the 1819 Allah Bund Earthquake and the 1956 Anjaar Earthquake, no one has yet addressed the seismic safety of older institutions. It is often recognised that areas with a high seismic risk tend to use more delicate structural systems, such as arches and domes. Preserving and ensuring the ongoing use of these historic structures requires proactive steps. The majority of Sikkimese Buddhist temples are built using the notoriously unstable random rubble masonry [Menon and Murty, 2012]. The urgent need for prompt measures to protect the delicate stock of Buddhist temples was highlighted by the 2011 moderate Sikkim earthquake. Repair and seismic reinforcing standards for historic structures are critically required for their continued safety in the future [Mathews and Menon, 2008]. It is unsettling to see India's 25 World Heritage Monuments superimposed on the country's seismic zoning map. The most current version of the National Conservation Policy now specifies that all conservation projects including monuments must include disaster management strategies (ASI, 2014). Prompt action is required to provide effective post-disaster management, adequate planning, and a correct scientific assessment of current dangers, followed by retrofit mitigation strategies where relevant.

Figure1: Shahjahanabad Map 1850s (Krafft and Ehlers, 2003)

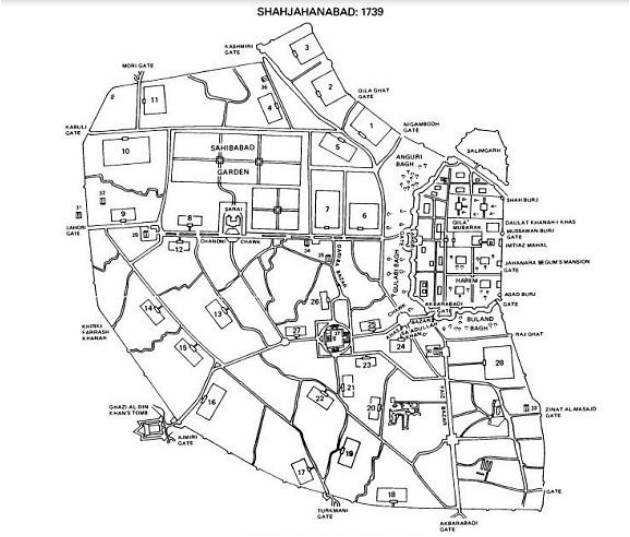

Figure 2.: Historical Havelis in Shahjahanabad (S.P. Blake, 1993)

Challenges and the Need for New Paradigms

An effort to steer cultural heritage conservation in India in the right direction has resulted in the raising of many significant concerns. Preserving our nation's cultural heritage for the benefit of future generations is a major national concern that requires a comprehensive strategy. Can we just bring the Western approach to preserving history to India without determining what really needs to be protected? According to ASI (2014), the new National Conservation Policy has many similarities with the international charters. The original drafters of the international charters showed great foresight in laying up inclusive and interpretive-friendly broad notions. Applying it to living heritage or monuments might be challenging. Realistically, we may need to set clear standards for the restoration and maintenance of living monuments. To imply that the East and the West use distinct conservation strategies, they need not be location-specific. We are completely out of luck unless we completely revamp conservation training, policies, and the market system. As mentioned before, modern textbooks for civil engineering and architecture cover the subject with little coverage of historical construction practices and materials. Traditional Indian knowledge is under-discussed in classrooms mostly because there is a lack of mainstream research on these subjects. Instead of being formally taught via courses that reflect the present educational structure, knowledge of traditional construction processes is passed down from one generation to the next. If any such institutions do exist, they are very uncommon. Plus, students miss out on learning about state-of-the-art engineering practices because of it. Addressing the severe shortage of experts in historic preservation and establishing cross-linkages between modern Indian schools and universities are both crucial. Significant hurdles include locating the scattered existing information in crucial conservation subareas in India, creating networks, and expanding current programmes. One of the main obstacles would be the widespread lack of knowledge about Sanskrit, an ancient language. For example, contemporary construction professionals rely on Sanskrit (and other ancient languages like Sangam Tamil) treatises on a wide range of arts and sciences for their understanding. We doubt that the people who translated these materials are professional engineers or architects. Reading between the lines could provide new details, but it calls for mastery of the original language. Changing the way the country's current mainstream education is taught is necessary for reviving its ancient wisdom, but this must not be done from a patriotism standpoint. To make the material applicable in the classroom, one must have spent years studying the traditional arts and sciences. Extensive multidisciplinary scientific study of cultural objects in India is the only way to achieve socially meaningful heritage conservation, which in turn will open up new research and commercial opportunities in India's cutting-edge fields of material science, structural rehabilitation, and diagnostics. Educational and economic considerations will play a significant role in determining the fate of cultural objects. In January 2013, the Ministry of Human Resource Development of the Government of India (GoI) organised a national workshop in New Delhi on multidisciplinary initiatives: technology and culture interaction. This was one such endeavour. In July 2013, IIT Madras established the National Centre for Safety of Historic Structures (NCSHS), a programme that focuses on the structural aspects of historic structures.

Conclusion

During the nineteenth century, the social and economic systems that supported the havelis were certain to be disrupted. After 1803, the haveli

began to compete with kothis and bungalows built by European immigrants. They began to radicalise the divisions between the public and private spheres in the design of the mansions of the rich and moved towards more practical space allocations. The proliferation of multi-function spaces is correlated with the improvement of temperature control systems. Last but not least, this undertaking has shown the relevance of restoring a historic haveli in the contemporary social and cultural milieu. In light of this, we hope that historians, researchers, and others would reconsider the haveli and its preservation in light of the current findings, thereby reestablishing the haveli's rightful position in India's cultural heritage.

References

[1] A., Menon, C.V.R. Murty, Seismic damage and strengthening of Buddhist monasteries in Sikkim, India, International Journal of 3R's: Repair, Restoration and Renewal of Built Environment, 4(2), 543-549, 2013.

[2] Archaeological Survey of India: ASI, National Policy for Conservation of the Ancient Monuments, Archaeological Sites and Remains, ASI, New Delhi, 2014.

[3] Bureau of Indian Standards, IS 1893-1, Criteria for earthquake resistant design of structures – Part 1: General provisions and buildings. Bureau of Indian Standards: New Delhi, 2002.

[4] D. Gupta, E. Miranda, C.V.R. Murty, Heritage Structures, Chapter in Bhuj India Earthquake of January 26, 2001 Reconnaissance Report, Supplement A to Earthquake Spectra, 18, Earthquake Engineering Research Institute (USA), 225-255, 2003.

[5] G. Venkataramana Reddy, Alayam: The Hindu Temple – An epitome of Hindu culture, Sri Ramakrishna Math Printing Press, Chennai, 2010

[6] Indian National Trust for Art and Cultural Heritage: INTACH, Charter for the Conservation of Unprotected Architectural Heritage and Sites in India, New Delhi, 2004.

[7] International Council for Monuments and Sites (ICOMOS), International Charter for the Conservation and Restoration of Monuments and Sites (adopted by ICOMOS in 1965), The Second International Congress of Architects and Technicians of Historic Monuments, Venice, 1964.

[8] International Council for Monuments and Sites (ICOMOS), ICOMOS Charter - Principles for the analysis, conservation and structural restoration of architectural heritage, Paris, 2003.

[9] J. Marshall, Conservation Manual, Superintendent, Government Printing, Calcutta, 1923.

[10] L. Binda, S. Lagomarsino, L. Gambarotta, C. Modena, A multi-level approach to damage assessment and seismic improvement of masonry buildings in Italy, Seismic Damage to Masonry Buildings, A. Bernardini (Ed.), Balkema, Rotterdam, 179-194, 1999.

[11] M.S. Mathews, A. Menon, Retrofit of Historical and Heritage Structures, Chapter in Handbook on Seismic Retrofit of Buildings, Chakrabarti, A., Menon, D., and Sengupta, A.K., (Eds.), Alpha Science International Limited, Oxford, UK, 7.1-7.26, 2008.

[12] Sri Aurobindo, The Renaissance in India, Sri Aurobindo Ashram Press, Pondicherry, India, 1920.

[13] V. GanapatiSthapati, Building Architecture of Sthapatya Veda, 2nd Edition, Dakshinaa Publishing House, Chennai, 2005.

[14] Dharamveer, Samsher, Singh DB, Singh AK,Kumar N. Solar Distiller Unit Loaded with Nanofluid-A Short Review. 2019;241-247. Lecture Notes in Mechanical Engineering, Advances in Interdisciplinary Engineering Springer Singapore. https://doi.org/10.1007/978-981-13-6577-5_24.

[15] Dharamveer, Samsher. Comparative analyses energy matrices and enviro-economics for active and passive solar still. materialstoday:proceedings. 2020.https://doi.org/10.1016/j.matpr.2020.10.001.

[16] Dharamveer, SamsherKumar A. Analytical study of N^{th} identical photovoltaic thermal (PVT) compound parabolic concentrator (CPC) active double slope solar distiller with helical coiled heat exchanger using CuO Nanoparticles. Desalination and water treatment.2021;233:30-51.https://doi.org/10.5004/dwt.2021.27526

[17] Dharamveer,Samsher, Kumar A. Performance analysis of N-identical PVT-CPC collectors an active single slope solar distiller with a helically coiled heat exchanger using CuO nanoparticles. Water supply. 2021.https://doi.org/10.2166/ws.2021.348