

Kalindi College
Interdisciplinary Research Project
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Progress Report

History of Indian Monuments and Scientific Architecture



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Introduction

India, one of the oldest civilizations on the planet, with the most diverse cultural history and inhabited by multiple races, religions, and languages is a goldmine for the study of architectural evolution throughout history. Each transition or inclusion of new culture has created an impact on Indian architecture and art. One can easily see the different architectural styles reflecting in the monuments all over the country. This unique development of assimilating a wide variety of cultures enables us to learn how such a diverse society has evolved. This project is an attempt of displaying the diversity with which Indian architecture has been blessed. We will study most iconic yet totally independent and different architectural masterpieces having their own style of architecture. These styles have developed according to the geological conditions, cultural inclinations as well as technological advancements in their own era. Historical Monuments can be classified according to architecture styles, religious entities, period of construction etc. By period we mean the monuments constructed can be differentiated as per their time e.g. Indus valley period, Magadha Empire, Gupta Empire etc. in Ancient India, Mughal period during Medieval India and monuments of Modern India. Styles of architecture also play a vital role in classification of Historical Places of India. For example the monuments built during Mughal era are classical examples of Turkish-Persian architecture, while the monuments of South India give the glimpses of Dravidian Architecture.

Objective:

1. To study historical monuments and their architecture.
2. To provide a greater depth of knowledge and ideas about India's ancient architecture.
3. Analysis through the geometrical, symmetrical and physical point of view.
4. Effects of Sound and Light in various monuments.

Rationale of the Project:

Vaastu Shastra, the ancient Indian canons of architecture and town planning, employs symmetrical drawings called mandalas. Complex calculations are used to arrive at the dimensions of a building and its components. The designs are intended to integrate architecture with nature, the relative functions of various parts of the structure, and ancient beliefs utilizing geometric patterns (yantra), symmetry and directional alignments. The mathematics of fractals has been used to show that the reason why existing monuments have universal appeal and are visually satisfying is because they provide the viewer with a sense of scale at different viewing distances. For example, in the tall gopuram gatehouses of Hindu temples such as the Virupaksha Temple at Hampi built in the seventh century, and others such as the Kandariya Mahadev Temple at Khajuraho, the parts and the whole have the same character, with fractal dimension in the range 1.7 to 1.8. The cluster of smaller towers (*shikhara*) about the tallest, central, tower which represents the holy Mount Kailash, abode of Lord Shiva, depicts the endless repetition of universes in Hindu cosmology. The religious studies reveal that the pattern of towers grouped among smaller towers, themselves grouped among still smaller towers, that: The ideal form gracefully artifice suggests the infinite rising levels of existence and consciousness, expanding sizes rising toward transcendence above, and at the same time housing the sacred deep within.

Methodology:

In the ancient architectural community, India is particularly distinctive due to the field of Vaastu Shastra, which literally translates to “the science of dwelling”. Temples and historical monuments rival both ancient and contemporary architecture in their unified use of mathematics and design principles that reflect the rich sociocultural and religious heritage of the era. The Taj Mahal, built by a grieving king in tribute to his deceased wife, evidences this in both the outward symmetry that tourists often marvel over, as well as the geometrical calculations that enabled it to stand upright even during earthquakes.

Simultaneously, Islamic architecture has both metaphorically and quite literally carved out a space for itself in the history of Indian structures. Many designs associated with mosques reflect the belief that “the square and the circle are the simplest, most perfect and stable geometric forms found in nature. These symbolize the perfection of ‘God and His Universe’.” These principles are exemplified in monuments such as Charminar (meaning four pillars) in Hyderabad, or the Tomb of Salim Chishti near Agra, which are renowned for their architectural prowess.

Through their exploration of the coalescence of design and mathematics, ancient Indian architects were able to construct monuments, Hindu temples, and Muslim mosques, whose legacies have transcended national borders, and perhaps even time. The rich cultural narrative and diverse heritage of ancient Indians is perpetuated in every pillar, carving and gateway, immutable in a world that is caught up in constant motion.

Our project is based on archival research and other documentary, literary works and theoretical investigation on ancient treatise and modern research works on the temple architecture of India. The archival research will help to bring out the basic concept of Hinduism and how it influenced the design of Hindu temple architecture. A study of the plan of the monuments and various other elements along with the form and sizes in which they evolved over centuries of monument development form the basis for understanding the structural basis for adopting certain traditional construction techniques for the construction of these monuments.

This project will also present the construction technology of the Hindu temple the processes involved during its construction, the human skills required and methods utilized by architects and their team. Together these aspects we will bring out the art, science and philosophy behind the construction of the monuments. The dimensional study with respect to the simple index analysis in the project will be an attempt to look into the safety assessment of the monument structure. Our Study is based on the drawings and information available in the books, journals and websites.

At present we are compiling data collected by student Investigators. We believe we will achieve our objectives within allotted time only.