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as a Principle of Design

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DECODING A HINDU TEMPLE: Toronto's Bochasanwasi Akshar Purushottam Swaminarayan Sanstha (BAPS) Shri Swaminarayan Mandir and the *Mandala* as a Principle of Design

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Like Hindu religion, Hindu temples represent more than a stone edifice and silhouettes of the iconic *sikhara*, which literally means “mountain peak” and is usually translated as “spire.” For the most part, this religion and its celebratory structures are barely understood in the Western World. Hindus are generally around thirteen percent of the world’s population and Hinduism is the third largest religion after Islam and Christianity. Hindus derive their name from the Indus valley, known to many as *Sind*, *Sindu* (as in *Sapta Sindu*, the land of seven rivers), or Hindu; that is, Indus names were given by outsiders to people living beyond the Indus valley in the Indian subcontinent. The British occupation changed the lingo from Indus to India.¹ Hence, Hinduism is a relatively new term, but the religion it coins is one of the oldest surviving practiced religions in the world—around three thousand years.² It is a way of life that is embodied within the various religious practices that constitute the daily life of the people. It also presents an array of deities that are prayed to in varied degrees of importance based on the activities of the community to which a devotee belongs. Even with these variations, Hindus respect and support the religious practices of each other and are very open to participation in ceremonies associated with deities not being prayed to within their household but generally within the community.

A deeper study of Hindu practices gives us a better appreciation of how religion may have been celebrated in other long-lost religions, like the Hellenes of antiquity. According to the Hindu philosophy of



FIG. 1. FRONT FAÇADE OF BAPS TEMPLE IN TORONTO. | COPYRIGHT HELD BY BAPS SWAMINARAYAN SANSTHA ([WWW.BAPS.ORG], [INFO@BAPS.ORG]); UNKNOWN PHOTOGRAPHER, CC BY-SA 3.0 [HTTPS://CREATIVECOMMONS.ORG/LICENSES/BY-SA/3.0], VIA WIKIMEDIA COMMONS.

religion, there is one omnipresent source of life. Known as *Brahman*, or “the absolute,” it is the infinite, magnificent, perpetual, and unchanging divine source of all matter, energy, space, time, life, and everything beyond. Ancient religious texts like the *Bhagavad-Gita* and *Upanishads* represent the existence of the absolute *Brahman* and various tiers of creation below it, though these tiers do not exist in idol worship in the Hindu religion. Idol veneration is seen in the form of the Trimurti (Trinity) and the thousands of regional and local manifestations of these and other Vedic and Puranic gods and goddesses. Through Hinduism’s amalgamation over thousands of years, these deities are positioned on three separate layers of earth (*prithvi*), the intermediate skies (*antariksha*), and the heavens (*dyaus*) above. According to Hindu mythology, these various Hindu gods and goddesses became over time earthly manifestations of the Trimurti: Brahma, Vishnu, and Shiva. Therefore, praying to any of these deities is like praying to the eternal God. The roots of today’s Hindu religion lie in these principles born from age-old practice. As for sacred texts, Hinduism derives its origins from the long-entrenched knowledge of the Vedic traditions or *Vedas*—the most ancient scriptures that contain the way of life preserved in oral and then written traditions developed primarily from the Iron Age. Originally written in Sanskrit, the Vedic scripts were used for various religious manifestations with deeply rooted societal norms. Even today, these texts help people lead their daily lives, prescribing everything from festive culture to guidelines for diet and dress. Highly ritualized, the everyday life of a Hindu is not separated from religion but is, rather, routinely associated with the various deities and their earthly abodes.

In Canada, most Hindus immigrate from the regions of Gujarat or Punjab in India

and find solace for their religious activities, including festivities and prayers, when they are able to congregate and relive their traditions in common places of celebration. Moving from a country where they are in the majority to a minority with less than half a million people with the same religious background can be arduous, as the dominant surrounding culture may not relate to their social norms as easily as in their country of origin.³ Further, the next generation of these families grow up in an entrenched sense of being part of the Western cultural traditions but are limited in knowing the culture of their parents due to less informed interactions within the society. Though Canada originates with British and French colonizers, who set up the first colonial towns and cities in the country, there was for a long time an adverse environment for the growth of the unknown habits and cultural traditions of people of colour. This ethos has changed significantly in recent years with the inclusion of general knowledge of diverse cultures in early education and the acceptance of their contributions to the public political life of the wider community. These changes have encouraged Hindu communities that now congregate in temples rather than simply in their homes, and are able to finance and construct places of worship that reflect the values, complexity, and profundity of Indian culture’s adaptations in Canada. This essay engages in a deeper dive into the design of architectural edifices of the Hindu religion, in this case, the design of the Bochasanwasi Akshar Purushottam Swaminarayan Sanstha (BAPS) Shri Swaminarayan Mandir (Temple) in Toronto (fig. 1).⁴ I selected this building out of all the temples constructed in Canada because it truly exemplifies a contemporary response to traditional forms of design represented in the Vedic and later scriptural tradition. At the same time, the essay explores recent scholarly

engagement with Hindu temple design, specifically the role of the ancient figure of the *mandala* as a principle governing the techniques by which the temple has been built.⁵

THE BAPS SHRI SWAMINARAYAN MANDIR

Located on the northwest outskirts of Toronto, the BAPS temple is located on a large piece of land in Claireville, near the Claireville reservoir. There are four other temples in close proximity to this edifice, but none represents the quality of construction and the grandeur of the BAPS project.

The BAPS Shri Swaminarayan Mandir community takes great pride in the manner in which they build their temple complexes around the world. I first came across their temple design process and procedures in 2008, during the research for my book, *Rediscovering the Hindu Temple*, and I followed up this discovery with visits to many of their actual building sites.⁶ While the temple priests speak about using Vedic techniques to build their temple form and design, I wanted to study and understand it firsthand. This essay presents the approach and methodology used in building these temples, revealing the codex in use throughout centuries based on the case study of the BAPS temple in Toronto. It concentrates on reasoning embedded in the figure of the *mandala* and the principles used to construct the overall complex architecture of the stone temple which has been designed and built following age-old principles and new design ideas.

Methodology of Design Approach

Many cultures throughout the world associate the placement of their sacred monuments with planets in the sky in relation to the site in question. The planets and

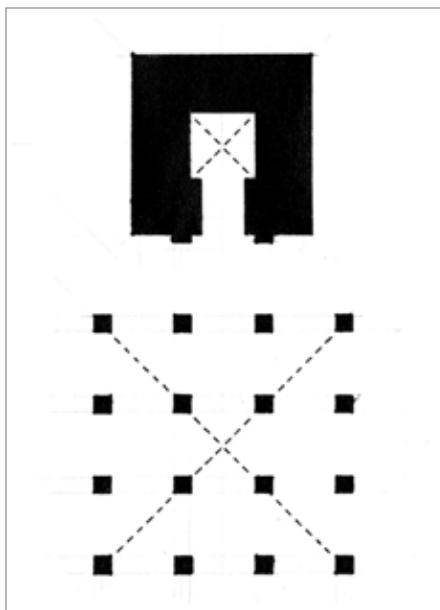


FIG. 2. HINDU TEMPLE TYPOLOGICAL DIVISION. IN ITS MOST BASIC FORM, THE HINDU TEMPLE IS COMPOSED OF AN ENCLOSED ROOM (OR *CELLA*) AND THE HYPOSTYLE HALL. BOTH THESE FORMS ARE COMPOSED TOGETHER IN MULTIPLE LAYOUTS TO GENERATE THE PLAN OF THE TEMPLE DESIGN. | RYAN HUGHES, JANUARY 2012.

other celestial bodies thus act as a cosmic map that was reflected on earth and used to plot the land to receive the building. This tradition can be seen between the Egyptians, the Mayans, the Greeks and the Romans, as well as the civilization today known to us as Hindus. As a site or an edifice dedicated to the worship of a deity, the temple is found in many faiths and religions. Derived from the ancient Latin word *aedes*, meaning “house of the god”—today more generically identified as *templum* or “holy ground on which a temple is built”—a temple is a universal form represented in many cultures with unique features according to the architectural traditions of the religion in which it appears.

The story of the Hindu temple design has a very humble beginning. The first stone temples recorded in India come from the fifth century CE.⁷ These typically had

only a stone *cella*, or inner sanctuary, with a single opening to allow access to the deity with air and light. This simple typology has come a long way since its inception. Temple designs today still use the main *cella*, called the *garbagriha* or sacred womb. But supplementary to the main *cella* are multiple auxiliary halls or *mandapas*. These halls are typically hypostyle in form and are attached in series to the main *cella* (fig. 2). The design of the BAPS Toronto is multifaceted and shows the evolution of the classical temple design to a more Baroque phase, where the highest level of ornamentation and design complexity reveals the signature method of design of many BAPS temples around the globe. For Canada, this building is one of the largest and most iconic temples ever built. Traditionally, Hindu temples are constructed with one spire (*sikhara*) and the BAPS temple shows the evolution of the temple design: there are multiple spires that adorn multiple *cellas* (*garbagrihas*), as well as numerous domes that adorn numerous prayer rooms, recital areas, and halls for people to gather (*mandapas*), plus a large main entry foyer (*ardhamandapa*).

Generally, for a traditional built temple the design is influenced by four important considerations: (1) Vedic text – religious recitations; (2) *Jyotisha* – astronomical and astrological science; (3) *Sthapatya Veda* – site analysis and proportional studies; and (4) *Silpa-sastra* – architectural and sculptural studies.⁸ These considerations collectively and in tandem help the process of temple construction. For example, as I will demonstrate, the ritualistic process for temple construction begins in many contexts with ritualistic prayers (*havan*) conducted at a specific time and at a specific location, with a synchronized sense of direction. Three main players—*Sthapaka*, *Sthapati*, and *Shilpi*—are engaged in a major role in

taking the next steps for construction of the temple edifice. In the Indian classical tradition, architectural form is generated by a priest (*sthapakas*), a master builder (*sthapati*), and craftsmen (*shilpis*) working in concert. The concept of a canonized Hindu temple takes form through the joint parentage of each of these person-ages and their specific responsibilities: (1) the concept of time and space as formalized by the *sthapaka*; (2) the concept of space and proportion as articulated by the *sthapati*; and (3) the concept of myth and its artistic depiction as enacted by the *shilpis*. Derived from the formative Vedic texts, strict compositional guidelines are followed by both the *sthapaka* and the *sthapati* for the building’s basic layout and the formulation of its individual components. The decorative relief is then generated using pattern books, spiritual themes, and the design skills of the *shilpis*.

Construction of a canonical temple can last anywhere from one to ten years, or even more. At BAPS Toronto, the process took four years. The structure consists of twenty-four thousand numbered pieces of hand-carved Italian Carrara marble, Turkish limestone, and Indian pink stone. The detailed sculptured pieces were carved by *shilpis* in India and then shipped in three hundred and five containers to the site in Canada. These shipments totaled around ninety-five thousand cubic feet of solid stone, which gave the temple its loadbearing finish. There are a few locations in India where the traditional skills of sculpting are still known and handed down from family to family. For the BAPS temple, the craftsmen came from the Rajasthan region and the sculptural motifs of this region are displayed in their work. It was a large undertaking that aimed both at representing a community’s prosperity and at making the divinity manifest in the material world.

As in all temple designs, funding and planning are critical in the creation of the building. Construction of the BAPS Toronto complex benefited from donations and volunteer efforts. Estimated to have cost over forty million Canadian dollars, the temple is an architectural wonder. Its walls, pillars, and ceiling consist of intricately crafted designs and statues as per ancient Hindu traditions from India. Four hundred volunteers came together to assemble the thousands of individually carved stones. For example, four hundred and thirty-four pieces were used to make up the ceiling of the front entrance alone. These pieces were assembled using the corbel method of construction traditionally employed in India. Ancient Indian Vedic techniques have been followed, with no steel skeleton holding up the building and all of its walls are loadbearing. Indeed, the building holds one hundred percent true to traditional methods of construction, though in this case the site lacks a conventional relationship between temple and urban context. The erection of the temple was completed relatively quickly. The first stones were purchased less than three years before the temple's inauguration but the actual construction time was only eighteen months. The project was funded entirely by donations from devotees, transforming a barren suburban landscape into a place of worship.

Relation of the Mandala and the Human Body for Temple Design

Conventionally associated with Buddhist tradition, *mandalas* convey an aura of mystery at the same time as they assume beautiful patterns. In addition, however, they actually convey a method of architectural planning long used to build the most traditional Hindu temple designs in India and Nepal.⁹ More specifically, Hinduism associates every planet with a

deity and its own specific characteristics. These planetary deities have an influence on earth and through it on the people who reside in the world. Based on the time and date of one's birth, astrologers study the planetary charts in a tradition known as *Jyotisha*, to help one appreciate the critical influences of these planets in his/her behaviour, the implications of their movements upon one's daily life, and their part in making major life predictions for the future. Such planetary charts are also created for the birth of a temple, with location, orientation, and time of creation playing a major role in the positive impact of the temple on its surrounding and people visiting it. Meditating in such a location further increases the sense of wellbeing, as it reinforces the positive energy associated with the placement and design of the building itself. These planetary charts were converted into *mandala* forms, with deities framed within them to create a visual compass for wider dissemination of the knowledge. The placement of religious deities within the *mandala* and their association with heavenly planets work as a cosmic map.¹⁰

In a related vein, it is important to emphasize that the Hindu temple, at its most fundamental level, is the earthly manifestation of Mount Meru, a link to the cosmic spiritual energy of *Brahman* that transcends time and space. To achieve this connection, each component of the Hindu temple is harmonized with its complete form. The siting and orientation of the temple, its formal and spatial relations, and its symbolic and iconographic program are determined in light of this cosmic meaning and purpose. The Hindu temple can, therefore, be seen as a microcosm of the cosmic order. Further, as an incarnate cosmos, each temple is inescapably an interpretation of the Hindu religion. When reflected on earth, this mapping determines the ground plot and

placement of the main core *cella* of the temple. The priest (*sthapaka*) calibrates the temple's relationship to the cosmos primarily through siting, orientation, and the precise observation of rituals; in turn, the architect (*sthapati*) composes the overall form of the temple and the specific proportioning of its elements; and lastly, the craftsman (*shilpi*) chooses the materials, techniques, and expressive design language used to fashion the temple's decorative patterns and sculptures, making distinctive contributions to the temple's final form.

In the case of the BAPS Toronto temple, the chief priest made various decisions for the benefit of the temple and its supporting community. Foremost, the *sthapaka* was responsible for overseeing the execution of the temple's design from start to finish. The process of building a temple is often treated as a ritual. The structure is oriented in the northwest direction, with sun and other planetary movements examined to place the temple with this specific orientation. Historically, the only drawings that explain the methodology of temple design were found on palm leaves. Even today, various temple priests zealously protect these original texts. Very few palm manuscripts show the compositional use of the *mandala* and the correlation of this figure—and thereby the temple—to the human body (fig. 3). At BAPS, the temple represents the head (*mastaka*) where the *sikhara*s are placed. Within the complex, the entrance is located where the feet are positioned on the human body.

As in Hindu religious philosophy, the *sthapaka* conceives of the temple as a three-dimensional map of the cosmos and aims to replicate its ideal form on the earth using various mathematical calculations that connect time and space. This spatio-temporal unity is precisely recorded

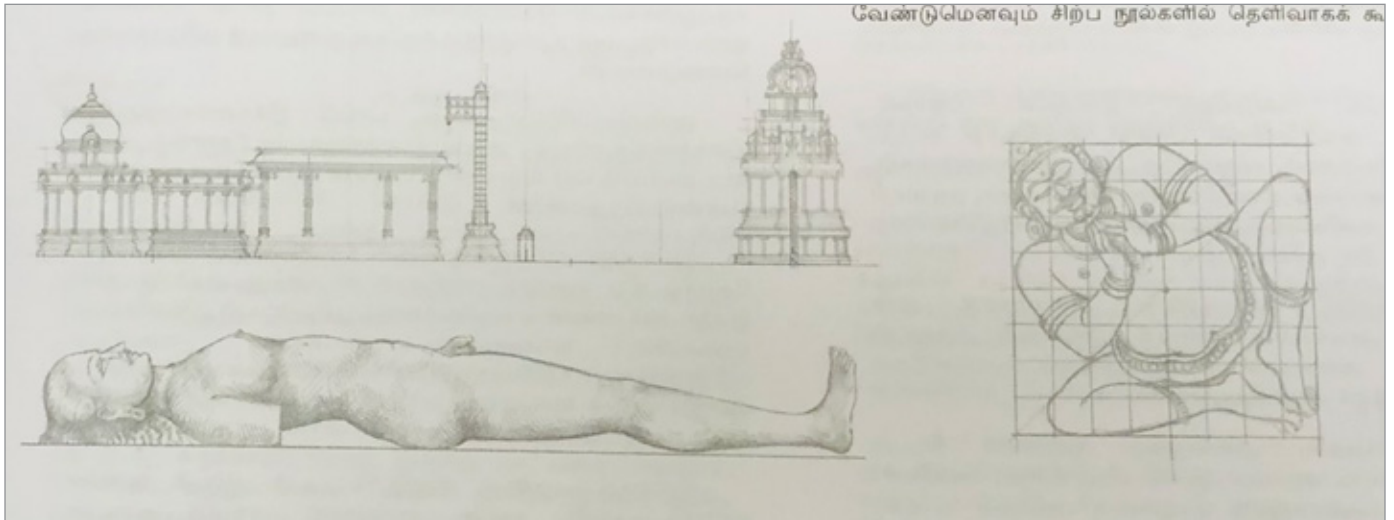


FIG. 3. TEMPLE ELEVATION AND ITS RELATION TO THE HUMAN BODY. | URUVAKKODUGAL PATTERN BOOK BY KALACHEMMAL G. THIRUGNAM (SHILPI).

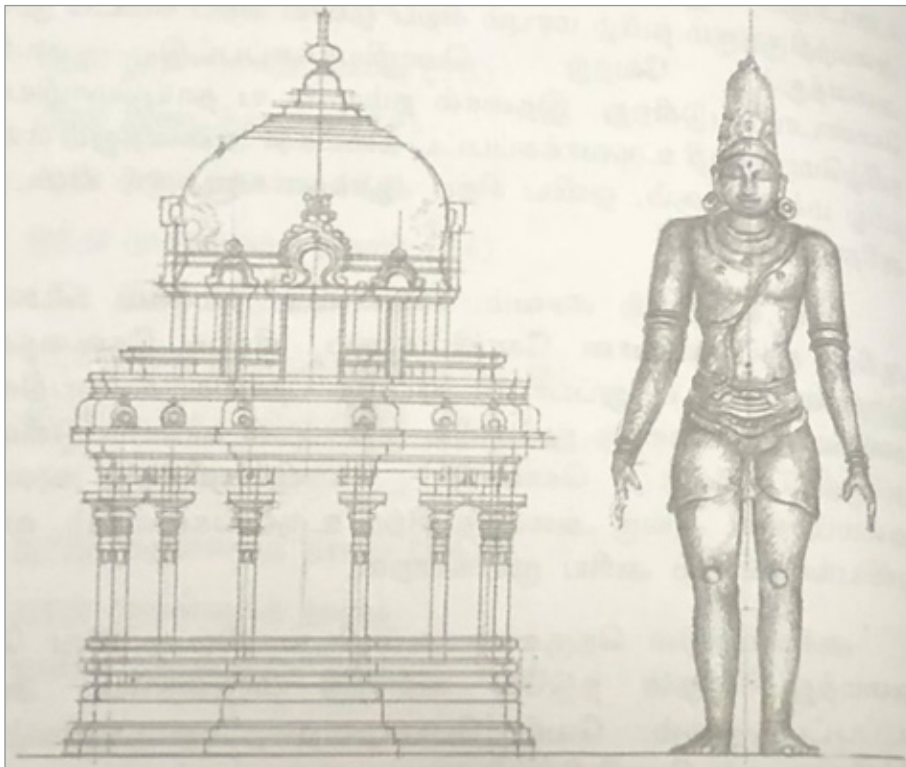


FIG. 4. RELATION OF THE HUMAN BODY WITH THE TEMPLE COMPLEX LAYOUT. RELATION OF THE MANDALA WITH THE BODY AND THE TEMPLE PLAN. | URUVAKKODUGAL PATTERN BOOK BY KALACHEMMAL G. THIRUGNAM (SHILPI).

in the temple form through complex interpretations of planetary movements, knowledge of which is central to the education of the *sthapaka* (fig. 4). Alongside religious custom, charts of planetary positions, astronomical calendars, and sacred scriptures are consulted at every point in the decision-making process in order to ensure the proper creation and placement of the temple. The significance of this relationship is evidenced by the Hindu builder's pursuit of highly precise astronomical measurements, which are directly correlated with the temporal composition. The study of mathematics has long played an important role in Hindu culture. One needs to look no further than the Hindu calendar to see the presence that astronomy and mathematics maintain in the everyday life of Hindus. The calendar, like that of the Mayans, demonstrates a precise conception of the number of days in a year and the number of years in a planetary cycle.

The Hindu temple represents the human body with its seven *chakras*, or "psychic centres." Hindu philosophy suggests *chakras* are interlinked in the human body and are ultimately connected to the universal

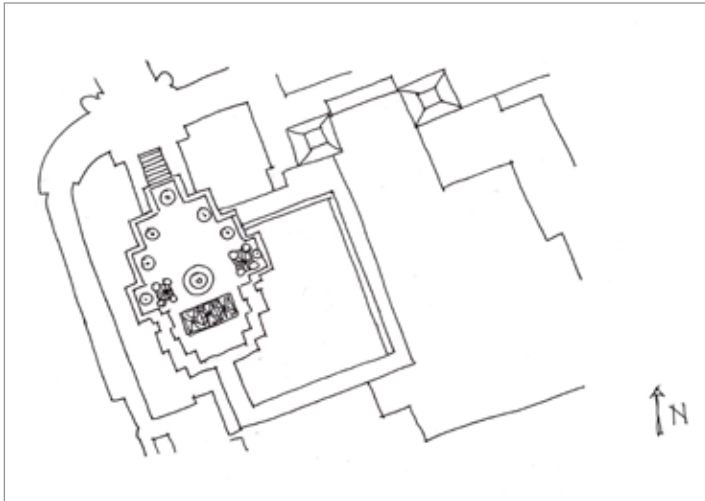


FIG. 5. SITE AND TEMPLE PLAN OF BAPS TORONTO TEMPLE. | KRUPALI UPLEKAR KRUSCHE, OCTOBER 2021.

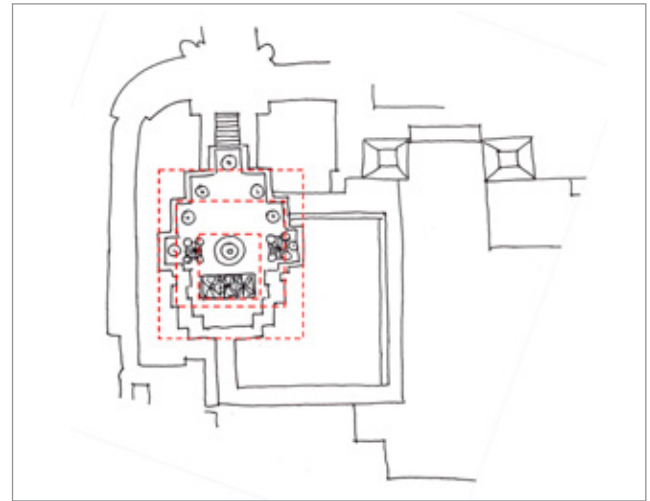


FIG. 6. MANDALA RINGS AROUND THE PLAN OF THE BAPS TORONTO TEMPLE. | KRUPALI UPLEKAR KRUSCHE, OCTOBER 2021.

energy of *Brahman*. The first three of these centres—*mulādhāra*, *svādhīsthāna*, and *manipura*—are situated before the innermost sanctuary, or *garbhagriha*, and represent the *chakras* located at the anus, sex organ, and navel in the human body. The *garbhagriha* itself holds the fourth *chakra*, that is, the *anahata*, which relates to the energies of the heart. The fifth and sixth *chakras*—*visuddha* and *ajna*—are placed in the *sikhara* and are related to the throat and the point between the eyebrows. Crowning the *sikhara*, a finial, known as the *kalasha*, which literally means “pot” or “vase,” holds the seventh *chakra*, which is associated to the top of the human head.

The proportions of the temple play an important, if not definitive role in relating the temple form to the human body. Hindu philosophy believes in the omnipresent God, and the human body, through its proportionality and aesthetic beauty, represents the presence of God on earth. Thus, the temple, like the human body, is conceived proportionally as a mirror of the cosmos. Moreover, the human body in a similar manner reflects the cosmos in the Hindu tradition, and

hence is reflected within the *mandala* and in the layout of the basic form of the temple. Many books and palm-leaf texts demonstrate a one-to-one relation of the temple design to the human body. The *Vastu purusha mandala*—an ancient cosmic diagram used to lay down plans of towns, temples, and buildings—is devised to fit a human body to the confines of a square in the form of a semi-divine *avatar* known as a *rakshasha*. What is more, for a long time the general measurements used by the building industry in India were based on units derived from the human body.

Great importance is attributed to astronomical calculations, as they indicate a location for the temple in alignment with a specific set of stars. This stellar alignment corresponds to the date and time of the ritual that initiates the temple’s construction. Various tests on the soil are also conducted during this process of site selection. These tests include examinations of the soil’s colour, taste, and strength, as well as the natural vegetation it supports. A site facing north or north-east is believed to be ideal, and some of the most culturally significant temple

complexes face in that direction (fig. 5). Finally, the use of a square or rectangular site is preferred, as it is consistent with the *mandala*. These forms generate the base grid from which the whole drawing of the temple plan is created. At Toronto’s BAPS Temple, the building is oriented north and the layout is based on the *mandala* form, with each element of the temple composition reflecting the geometry and grid related to the *mandala* design (fig. 6).

A canonized Hindu temple is organized in a concentric or grid structure according to the cosmic diagram implicated in the *mandala*.¹¹ In particular, the *Vastu purusha mandala* is used as a planning tool in a wide range of applications: cities, forts, palaces, temple complexes, and even individual houses. *Purusha* (man) and *mandala* (the cosmic diagram) orient and place the building.¹² The origins of the *mandala* plan can be traced back to Vedic sacrificial rites and the square shape of ancient altars. The square, an incomparably solid and stable form, played a very important role in Hindu tradition. It represented the firmness of life’s anchorage to the earth and, quite

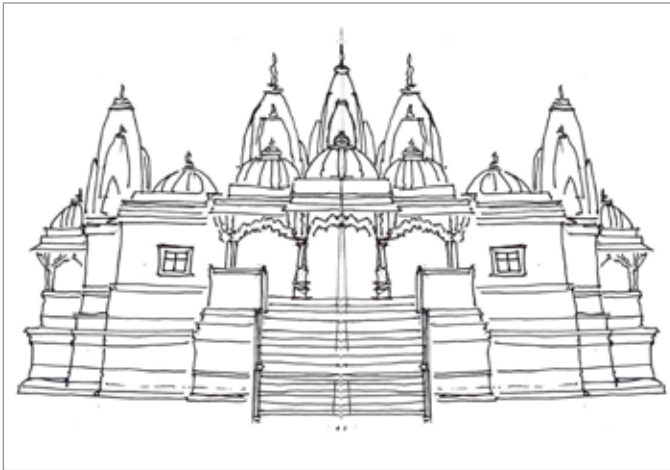


FIG. 7. FAÇADE OF THE BAPS TORONTO TEMPLE. | KRUPALI UPLEKAR KRUSCHE, OCTOBER 2021.



FIG. 8. BUILDING ELEMENTS THAT COMPOSE THE FAÇADE OF THE BAPS TORONTO TEMPLE. | KRUPALI UPLEKAR KRUSCHE, OCTOBER 2021.

naturally, served as a base upon which the *mandala* could develop. The *mandala* is represented as an absolute form oriented to the cardinal directions and as the essential source of constancy in Hindu philosophy.

A temple plan is generally drawn three times: the first plan indicates various dimensions and design details according to various planetary positions; the second plan indicates the *mandala* forms utilized to generate the final design; and the third plan indicates the generative grid. The basic planning system begins with either a square or an intersection of four squares at the centre. This system creates two types of grids in which a square can be divided. Each grid is based on a *mandala*. The *Brhatsamhitā*, a treatise written by the sixth-century scholar Varāhamihira, suggests two site plans consisting of eighty-one and sixty-four squares.¹³ These two plans can be used to construct anything from a small temple to an entire town.¹⁴ In addition to these guidelines, the eleventh-century treatise *Samaranganasutradhan* suggests, together with those mentioned above, another plan made up of one hundred squares. Further, the twelfth-century

Aparajitaprccha recommends eleven other varieties, which are also included in the thirty-two plans recommended in the treatise *Manasara*, collated over many centuries.¹⁵ Each source uses a slightly different nomenclature to identify and describe these plans.

Depending on whether the division is even or odd, the centre of the *mandala* may be drawn either as a square or as the cross-section of four squares.¹⁶ In Toronto's BAPS temple, the *mandala* is divided into eighty-one parts with a grid of nine-by-nine squares. This system of layout and division allowed the *sthapati* to draw the temple on the ground and relate it to the various proportions of the individual façade parts of the overall temple (fig. 7). The horizontal façade profile depends on the number of projections, known as *angas* or "elements," and the proportional relationships between each offset as based on the subdivision of the square grid (fig. 8). The placement of the *mandala* represents the various positions dedicated to various gods and goddesses, with the centre occupied by the chief deity. In every case, Brahma occupies the central position, known as *brahmasthana*. Thus, the *brahmasilā*, or

"Brahma's stone," is located above the *brahmasthana* on the ground plan in the form of the *amalaka*, a segmented stone disk which crowns the *sikhara*.

Colour codes for individual units of the *mandala*, names of deities, and references to the human form were used by the builder to memorize the proper placement and orientation of the *mandala*. As *mandalas* may be very large and complex, the square grid requires another layer of information providing the coding of each square. Interestingly, mythological stories were also added to help memorize the relative positions of deities in a simple and effective way. Thus, with the use of the relative positioning of various mythological characters, artists were able to remember the placement and orientation of the *mandala*, enabling them to generate the plan and related elevation with sculptural reliefs of the structure.¹⁷ In sum, then, employing the *mandala* as a planning tool achieves three essential purposes: site selection, astronomical alignment, and formal façade composition (fig. 9). Paradoxically, even with the *mandala* serving as a general planning principle for all Hindu temples, the built results of this compositional process can



FIG. 9. A. MAIN GARBHAGRIHA WITH SHIKARA AND ARDHAMANDAPA. B. MANDAPA WITH A SMALL DOME ELEVATION, C. ARDHAMANDAPA WITH SHIKARA ON TOP. | KRUPALI UPLEKAR KRUSCHE, OCTOBER 2021.

be highly diverse. Variations in height, volume, sculptural motif, and spatial division serve to distinguish an individual temple from its peers.

COMPOSITION OF THE TEMPLE DESIGN

Toronto’s BAPS temple is composed of multiple parts. The most significant spaces are the holy of holies, or *garbhagriha*; multiple gathering halls, or *mandapas*; and the entrance porticos called *ardhamandapa*, on each side of the temple. Let us examine each of these constituent architectural elements.

The Garbhagriha, or Holy of Holies

The temple is always created outward from the *garbhagriha*—the main *cella* or holy of holies. This sacred centre forms the basis for essentially all elements that get built on the site. Hindu builders have always conceived the temple as a form that relates in essence to the devotees, both internally and externally. The temple complex’s ground plan, drawn with the *mandala*, represents the material

world. And, as the *Aparajitaprccha* suggests, this cosmic diagram aids the worshipper’s circumambulation through the site, from its periphery to the inner core. In every instance, the temple precinct’s exterior is defined by a circumambulatory path, which is connected in turn to interior circulation leading inevitably to the *garbhagriha*. As the devotees approach this centre, all the external layers of gates, courtyards, and circulation routes serve to remind them of earthly limitations obscuring a higher reality. Each successive layer of the temple reveals new depths to the devotee. The temple’s centre is represented as *bindu*, meaning literally “point of focus,” and marks the creative energy of the universe from which everything has evolved.

The *garbhagriha* at the BAPS temple is found in its simplest form. As ornamented as is the temple exterior, the opposite is true of the interior of the main *cella*. There, a far more austere volume is created, free of ornament. Sacred idols of the temple’s primary deities are housed in this inner sanctuary. The Sanskrit word *garbhagriha* means “womb-chamber.”

The *garbhagriha* represents the womb that holds the seed to universal energy. Accordingly, it represents the creation of life and the universe and embodies all energies and life sources. It is the holiest of abodes in the temple and may only rarely be accessed by anyone other than the temple priests. The interior of the *garbhagriha* has no means of illumination save for its entrance, which alone allows light to fall on the chamber’s idol. It is for this reason that facing east is the ideal orientation for the deity, and therefore for the temple. If the conditions of a particular site make this placement impossible, then a western orientation is chosen, as is the case of the Toronto’s BAPS temple. The simple, serene interior of the *garbhagriha* echoes the simple truths of life and brings the devotee to undistracted self-reflection. In this windowless room, the idol of the deity, which is generally made of or clad in precious metal, catches the small amount of light entering the chamber and reflects it back with great intensity. By impairing the devotee’s earthly vision, this experience engenders a contemplative mood and a feeling of humility toward the powers of the universe.

The universal symbol of a Hindu temple, the *sikhara* adorns the top of the *garbhagriha*. Expressed as a spire, the word *sikhara* literally means “the topmost peak of a mountain that aspires toward the skies.” Given that this spire is generally made of solid stone, the walls of the chamber below it need to be thick enough to hold the massive weight of the *sikhara* (fig. 10). Thus, the supporting walls are built to half the thickness of the chamber itself. In most temples, the height of the *sikhara* is two and a half times the width of the *garbhagriha* in plan. This proportion maintains the stability of the temple, providing as well visual emphasis to the building’s sacred centre.

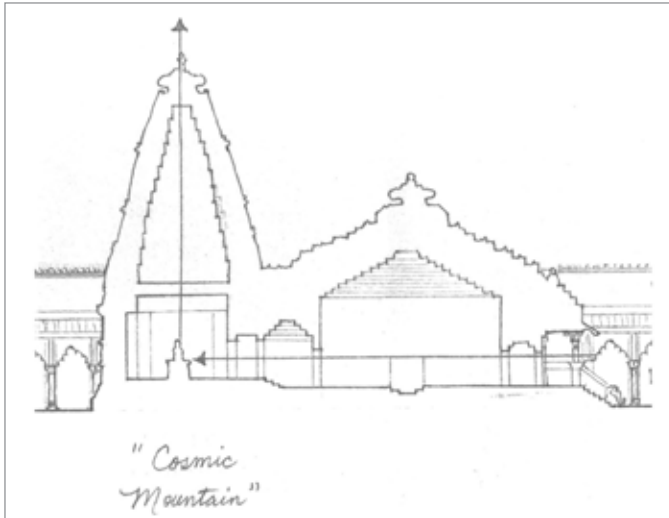


FIG. 10. THE GARBHAGRIHA ON AXIS WITH THE COSMIC ENERGIES REPRESENTS THE COSMIC MOUNT MERU ON EARTH. | ALEJANDRA GUTZET, JANUARY 2012.



FIG. 11. SILHOUETTE OF BAPS TORONTO TEMPLE. | BAPS TORONTO; COPYRIGHT HELD BY BAPS SWAMINARAYAN SANSTHA.

At Toronto's BAPS temple, three *sikhara*s adorn the central *garbhagriha*. The generous proportions of the *cella* make this more complex design possible.

Whereas the inner form of the *garbhagriha* is kept plain, the exterior carries the tall *sikhara* and is highly articulated by laterally radiating projections that progressively rise to the final form of the *sikhara*. These two forms also serve as an ingenious solution for the transition from the square base of the *garbhagriha* to the circular or polygonal form of the *sikhara*. The design reconnects the circle, that is, the heavens, and the square, that is, the earth, in a manner true to Hindu philosophy. The steady rise of the *sikhara* represents the existential relation to space and time. The vertical progression is accentuated by adding sculptures of various incarnations and the pantheon of Hindu gods with ascending spiritual orders and hierarchies. The pinnacle of the *sikhara* is adorned by the *amalaka* form. Thus, the temple, in its axial plane, is said to be in total equilibrium and harmony and is connected with the cosmic energy of the universe. The *garbhagriha*

is the central node of the *sikhara* that is the cosmological manifestation of the three tiers of abode for all living forms—heaven, or *swarg lok*; earth, or *prithvi lok*; and the netherworld, or *patal lok* (fig. 11). Thus, the *sikhara* represents aspiration and ascent from the plane of earthly existence to the spiritual plane of the pure and the divine.

The Mandapa, or Gathering Hall

The great variety in temple designs is achieved not only through variations in the height of the *sikhara* but by introducing auxiliary forms that provide transitional spaces to the main *garbhagriha* (fig. 12). One of the virtues of these spaces is their ability to create and emphasize axiality, with the *garbhagriha* acting either as the centre of the plan or its terminus. One such transitional space of particular importance is the *mandapa*. This space is used as a gathering place for worshippers, who assemble there to honour the deity through devotional songs (*bhagans*) and Vedic recitations (*slokas*). The *mahamandapa*, or main hall, is the prayer room located directly in front of

and connected to the *garbhagriha*. The basic organization of Toronto's BAPS temple follows the shrine-and-*mandapa* style. With the development of ever more sophisticated rituals and festivals, the Hindu temple started to expand and become more elaborate from the eighth century onward. The BAPS temple is a classic example, demonstrating the progression of the various *mandapas* connected to the main *garbhagriha*.

In contrast to the *garbhagriha*, the *mandapa* is open on all sides to provide light, and it is used as a waiting chamber where adherents may stand, sit, or pray on different devotional occasions. The basic geometry used to construct the plan of the *garbhagriha* and the *mandapa* is a square inscribed within a circle. In Toronto, highly ornate stone lintels were used by the Hindu craftsmen to mediate between the square base of the *mandapa* to its polygonal or circular roof. The BAPS temple is an example of an extensively ornamented temple interior utilizing the *mandapa* as space additive to the *garbhagriha*. Externally, the *mandapa* acts as a progressive transition for the eye to

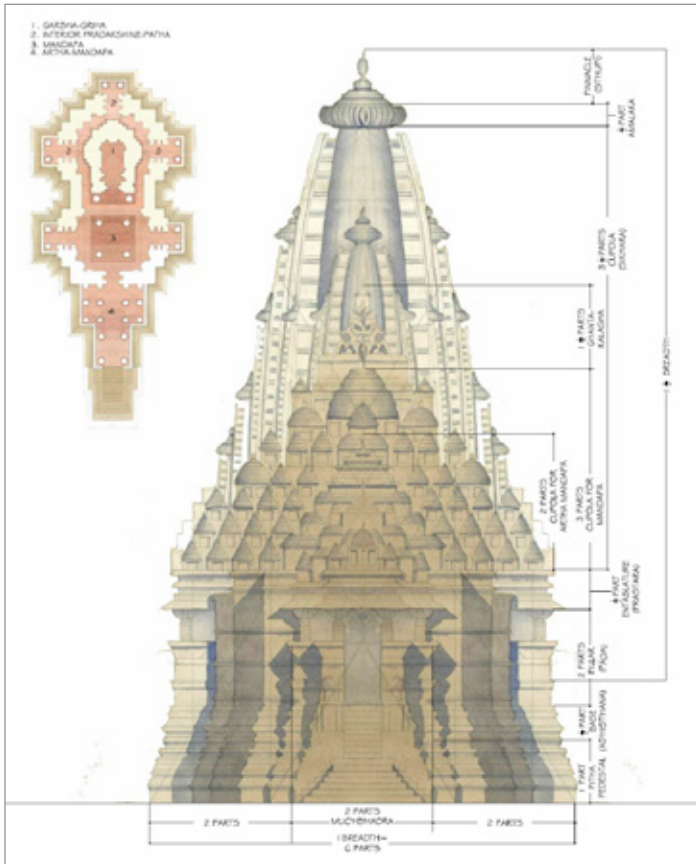


FIG. 12. PLAN AND ELEVATIONAL COMPOSITION OF A TYPICAL NAGARA TEMPLE AS SEEN IN THE CASE OF KHANDARYIA MAHADEVA TEMPLE, KHAJURAHO, INDIA. | DRAWING BY JAMES MICHAEL AND ASHLEY VAUGHAN; RATIO STUDY BY JILL KAPADIA, JANUARY 2012.



FIG. 13. CEILING OF CORBEL CONSTRUCTION USED TO TRANSITION FROM A SQUARE TO A CIRCLE. | BAPS TORONTO. COPYRIGHT HELD BY BAPS SWAMINARAYAN SANSTHA.

move back to Mother Earth from the *sikh-aras* that reiterate the heights of Mount Meru. At the BAPS temple, the *mandapa* has much larger dimensions than the *garbhagriha*; indeed, its interior proportions are as much as four times greater. Its constructed weight is decreased by its smaller, highly ornate stone roof, which is supported on elaborate pillars or columns. Note, finally, the similarity of the origin of the basic plan of the sanctum of the *garbhagriha* and the *mandapa*; both involve the use of the superimposed circle and the square (fig. 13). The *garbhagriha* acquires its form through the *mandala*, which seems to have been the basic underlying influence at various levels of the temple’s design.

The Ardha-mandapa, or Entrance Portico

At the Toronto BAPS temple, an additional front portico, called the *ardha-mandapa*, has been designed in conjunction with the main *mandapa*. The purpose of such addition is to create a gradual, layered transition for the devotee from the chaos of the outside world to the serenity and calmness of the temple’s interior. Here, for example, we have a progression from two small *ardha-mandapas* through a principal *mandapa* and an intermediate *antarala*, or ante-chamber, and finally to the main *garbhagriha*. Laid out on a primary east–west axis with the *garbhagriha* as the goal, opposite which is the entrance

portico, the layout of Toronto’s BAPS temple exemplifies the linear alignment of spaces seen in many Hindu temples.

EVOLUTION OF THE LANGUAGE AND STYLE OF THE HINDU TEMPLE

For a student of Hindu temple architecture, there is no easy solution to the problems associated with classifying Hindu temple architecture. Many scriptures (*shastras*) present the Nagara and Dravida architectural languages as principal contributions to stylistic variety, suggesting that there may have been specific stylistic features that were adopted from each language to form individual styles. These separate



FIG. 14. SEKHARI DESIGN UNDER NAGARA LANGUAGE OF TEMPLE DESIGN. | BAPS TORONTO; COPYRIGHT HELD BY BAPS SWAMINARAYAN SANSTHA.

languages come from two primary schools of education, namely, Vishwakarma and Maya, which contemporary scholars associate respectively with the Nagara and Dravida styles. At the BAPS temple in Toronto, the design of the main building is based on the Nagara composition.

The Nagara Style

The design of Toronto's BAPS temple follows the Nagara school. Most of the temples from the north, west, and east of India adopt the Nagara language of temple design.¹⁸ This temple form is intended to evoke the ascent of a mountain, or the illusion of progressively increasing height. Contributing to this sense of ascent, the *sikhara* is designed with a curvilinear form

that aligns with and curves smoothly up from the base to the pinnacle. Layer upon layer of architectural elements adorn the *sikhara*, all topped by the large, round, segmented, cushion-like element of the *amalaka*.¹⁹ In a simple and unique way, the square base of the *garbhagriha* continues upward in a curvilinear manner to form the *sikhara* and then transitions to the polygonal or circular form of the *amalaka*. The repetition of elements is homogenous along all sides. The main temple structure, including the outer walls of the *garbhagriha* and the *sikhara*, is generally termed the *prasada* or *mula-prasada*. The crowning element of the temple in each of Nagara subcategories is an *amalaka*, a capstone (*candrika*), and a pot or vase (*kalasha*) that adorn the head, or *mastaka*,

of the temple. Generally, in every *sikhara*, the structure culminates with a *kalasha* at its peak. In the north of India, the *sikhara* remains the most prominent element of the temple complex, which usually features a comparatively modest gateway. The *sikhara* itself may take the form of a single spire, known as the *Latina* style, or it may be multi-spired, a style known as *Sekhari*. In case of the BAPS temple, the *sikhara* is of the *Sekhari* form of temple design.

The Sekhari Form of Sikhara

The *Aparajitaprccha* suggests that the multi-spired form of temple, known as *anekandaka*, is the most popular form of temple design. Madhusudan A. Dhaky has written extensively about the *Sekhari* mode in Nagara architectural evolution. The *Sekhari* temple derives its form from the *Latina sikhara*. During the ninth and tenth centuries, the Nagara tradition evolved from the simple *Latina* form of one curved spire to a composite structure of multiple spires interconnected with the main spire. The smaller repetitive aedicules, or *sringas*, of the main *Latina sikhara* are amassed to the basic *sikhara* form. The main *Latina sikhara* is adorned with half and quarter spires that are proportionately related to the central spire. These spires are connected at specific intervals in order to create a staggered fountain effect. In India, the most spectacular examples of this Nagara variety are seen in the tenth and eleventh centuries Candella temples at Khajuraho, Madhya Pradesh. One of the largest centres of *Sekhari* temples is seen in the Jain culture at Mount Shatrunjaya near Palitana, Gujarat. Even today, this mode of temple building is very popular in India and abroad.²⁰ The BAPS Hindu temple in Toronto and the Shri Swaminarayan Mandir in London, England, both follow *Sekhari* principles through a highly complex composition of multiple spires erected over the main shrine (fig. 14).

CONCLUSION

The BAPS temple of Toronto represents a unique window into a very highly evolved design of a Nagara *Sekhari* temple. The intricacy and layers of its composition describe still extant and evolving knowledge of the creation of a temple form that remains coded within the framework of an ancient tradition and those who still today strive to animate such edifices with sacred life. The temple priest, the master builder, and the craftsmen have all inherited a profound appreciation for an understanding of ancient Hindu temple architecture and the ways in which this tradition may provide a specific model for the BAPS Toronto community. In particular, the structure draws upon meanings associated with the ancient figure of the *mandala*, which informs the layout of the BAPS temple as a fundamental generative idea with profound significance for the construction of sacred buildings. Note, finally, that at Toronto's BAPS temple, the orientation, mapping, and layout of the building, while susceptible to scholarly interpretation, still lie to a large degree in the mystery of the codex used by the head priest. This is not public knowledge, so much so that, as a part of the rituals inaugurating construction, it is buried under the temple during the ritualistic commencement of the temple design. Thus, the *mandala* embodied in the building becomes the map to the cosmos that surrounds it, while the building simply stands there for us to experience and decode.

NOTES

1. Ancient Greek refers to India as *Indos*. Internally in India, the word *Bharat* comes into reference in the Mahabharata and is a term generally used to refer to the country by the community. See Dyson, Tim, 2018, *A Population History of India: From the First Modern People to the Present Day*, Oxford, Oxford University Press, p. 4-5; Fisher, Michael, 2018, *An Environmental History of India: From Earliest Times to the Twenty-first Century*, Cambridge, Cambridge University Press, p. 33; Kuiper, Kathleen (ed.), 2010, *The Culture of India*, Chicago, Britannica Educational Publishing.
2. Hindu-stan, the place of the Hindus, was a name introduced during the rise of the Mughal Empire within India. See: Clémentin-Ojha, Catherine, 2014, "India, that is Bharat...': One Country, Two Names," *South Asia Multidisciplinary Academic Journal*, vol. 10, p. 30-50; Barrow, Ian J., 2003, "From Hindustan to India: Naming Change in Changing Names," *South Asia: Journal of South Asian Studies*, vol. 26, no. 1, p. 37-49; Sharma, Arvind, 2002, "On Hindu, Hindustān, Hinduism and Hindutva," *Numen*, vol. 49, no. 1, p. 1-36.
3. Statistics Canada, "2011 National Household Survey," [www12.statcan.gc.ca], accessed April 21, 2016.
4. Bochasanwasi Shri Akshar Purushottam Swaminarayan Sanstha (BAPS) is a socio-spiritual Hindu organization with its roots in the Vedas. It was revealed by Bhagwan Swaminarayan [1781-1830] in the late eighteenth century and established in 1907 by Shastriji Maharaj [1865-1951].
5. Scholars like Michael Meister have produced a series of studies that present the co-relation between the plans of temples and the *mandala* form. See Meister, Michael W., 1981, "Mundesvari: Ambiguity and Certainty in the Analysis of a Temple Plan," in Joanna Gottfried Williams (ed.), *Kalādarśana: American Studies in the Art of India*, New Delhi, Oxford & IBH, in collaboration with the American Institute of Indian Studies, p. 77-90; and Meister, Michael, 1979, "Mandala and Practice in Nagara Architecture in North India," *Journal of the American Oriental Society*, vol. 99, no. 2, p. 204-219.
6. See Bharne, Vinayak and Krupali Krusche, 2012, *Rediscovering the Hindu Temple: The Sacred Architecture and Urbanism of India*, Newcastle, UK, Cambridge Scholars Press.
7. Though Hindu civilization identifies its origins with Vedic culture, during the move of Aryan peoples from the Indus valley to that of the Ganges, the kind of available raw materials led to wood construction techniques replacing building in stone. Knowledge of stone construction returned with the advent of Hellenic schools of sculpting that connected with the reign of the Buddhist convert king Ashoka [304-232 BCE].
8. Religious readings and ritualistic practice, while part of daily life at a temple, is an extensive topic and, accordingly, has been treated separately in chap. 8 of my book with co-author Vinayak Bharne, *Rediscovering the Hindu Temple. The Sacred Architecture and Urbanism of India*, op. cit.
9. Bafna, Sonit, 2000, "On the Idea of the *Mandala* as a Governing Device in Indian Architectural Tradition," *Journal of the Society of Architectural Historians*, vol. 59, no. 1, p. 26-49.
10. See Meister, "Mandala and Practice in Nagara architecture in North India," op. cit.
11. The south Indian temple town of Srirangam is said to represent a *mandala*, a cosmic diagram of worlds situated in concentric rings around Brahman. The south Indian *mandala* differs from the *Vastu purusha mandala* described in north Indian manuals in that it does entertain the legend that disordered Being was confined by Brahma within the orderly form of the *mandala*. The south Indian *mandala* instead visualizes the centre of all Being as Brahma, around which are concentric rings, the innermost being the world of gods, beyond which are the human world and, outermost, the world of goblins, demons, and spirits.
12. Stella Kramrisch states: "The geometric form of the *vastu-purusha mandala* can be explained by reference to the Vedic sacrificial rite, during the performance of which the Aryans carried braziers from one altar to another. A round altar symbolizes the terrestrial world, and a square one the celestial. A circular shape symbolizes movement—the cyclical movement of time as interpreted by the Hindus. A square cannot be moved by itself, but is a final and unequivocal form. As a perfect form, it is used by the Hindus to indicate the Absolute. If one considers the earth merely from its physical, external form, it is depicted as a circle; if, however, it is regarded as the manifestation of the supreme principle, Brahman, it is rendered as a square, fixed by the cardinal points." See Kramrisch, Stella and

- Raymond Burnier, 1976, *The Hindu Temple*, vol. 1, Delhi, Motilal Banarsidass Publication, p. 28. See also, Volwahsen, Andreas, 1969, *Living Architecture: Indian*, New York, Grosset & Dunlap, p. 44.
13. Also see *Bṛihat Saṃhitā*, VII: 27-30. The *Bṛihat Saṃhitā* is a sixth century Sanskrit encyclopedia by Varāhamihira of wide-ranging subjects of human interest, including astrology, planetary movements, eclipses, rainfall, clouds, architecture, growth of crops, manufacture of perfume, matrimony, domestic relations, gems, pearls, and rituals. It contains 106 chapters and is known as the "great compilation." See Varāhamihira and Hendrik Kern, 1864, *The Bṛhat Saṃhitā = Bṛhatsaṃhitā*, Calcutta, Bibliotheca Indica: A Collection of Oriental Works, p. 48.
14. The terms for the 81 squares plan are *ekāṣīti-pada* and *paramasayika*, for the 64 squares plan, *catuṣṣastipada* and *candita*. They appear in the treatises *Bṛhatsaṃhitā* and *Samaranganasutradhara* respectively.
15. See Dubey, Lal Mani, 1987, *Aparajitaprcha: A Critical Study: Encyclopaedic Manual on Art and Architecture*, Allahabad, Lakshmi Publications.
16. Bafna, "On the Idea of the Mandala as a Governing Device in Indian Architectural Tradition," *op. cit.*
17. Through his elaborate study of various *mandalas* in 2004, Govinda Krishna Pillai found: "It is clear that the names of gods (deities) were introduced as a guide to memory; but with the increase made in the number of gods, other methods had to be introduced." He continues: "As the mental visualization of a large number of squares was difficult, a colour scheme was introduced which differentiated one square from the other. Fewer colours and more squares made the scheme a failure; then the gods were made to take the place of colours, that proved to be better, but to remember the relative position of so many gods was still a difficulty, and to overcome this the demon (*Vastu Purusha* or *Rakshasa*) was felled on the floor and gods were located on his body and limbs." See Pillai, Govinda Krishna, 2004, *The Hindu Architecture: (śilpa-śāstra)*, Delhi, Bharatiya Kala Prakashan, p. 27.
18. See Meister, Michael W., Madhusudan A. Dhaky, and Krishna Deva, 1988, "North India, Foundations of North Indian Style, c. 250 BC-AD 1100," *Encyclopaedia of Indian Temple Architecture*, New Delhi, American Institute of Indian Studies; Princeton, Oxford University Press, p. 151-206.
19. Meister, "Mandala and Practice in Nagara Architecture in North India," *op. cit.*
20. Hardy, Adam, 2002, "Śekhārī Temples," *Artibus Asiae*, vol. 62, no. 1, p. 81-137.