

**The Spatio-geometrical analysis of first Sikh shrine- Sri Harmandar Sahib, Amritsar
Historicity and hermeneutics**

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Abstract: Amongst all the religions of the world, Sikhism is the youngest one. It was founded by Guru Nanak, followed by nine Gurus, who guided this religion. Sikh gurus scripted their thoughts which are incorporated in a single scripture known as Guru Granth. It contained the words known as Gurbani- the verses of Gurus. The thought of Sikh Architecture emerged from the first guru, Guru Nanak, but formally final shape was given by fifth Guru - Arjandev with construction of first Gurudwara Sri Harmandar Sahib, located in Amritsar where Guru Granth was installed for the first time in 1604. As the new religion needed a separate architectural school of thought, this paper tries to throw light on forming philosophical and spatial relationships through understanding of geometry of first Sikh shrine- Sri Harmandar Sahib.

Keywords- Geometry, Sikh Architecture, philosophy and hermeneutics,

The holy land of Indian subcontinent has been blessed with many spiritual leaders since ages. These spiritual leaders, of various religions, conveyed the message of universal brotherhood which is incorporated in their respective holy scriptures. In fact, having a scripture or to be *Ahl-i-kitab* is considered an essential requirement for laying a claim to the status of a valid/genuine religion. The scriptures contain the message of God revealed to the prophets. These are, therefore, sacred (Kharak-p.7). In Sikhism, Sri Guru Granth Sahib is recognized as the Holy Scripture. The verses, Gurbani have been scripted by various Sikh Gurus, Sufi Saints, and other holy people. This Holy Scripture was edited by fifth soul of Guru Nanak- Guru Arjandev, which was enshrined in Harmandar Sahib in 1604. There are several features that distinguish Guru Granth Sahib from other scriptures. It preaches a

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practical way of leading a whole some religious life based on strict monotheism, fatherhood of God and brotherhood of mankind. Its concept of a loving God, a real world and a positive view of life is different from other faiths. It decries asceticism, and advocates active participation in temporal affairs as a householder engaged in honest means of learning one's livelihood , and sharing one's earnings with others in need , with one's mind constantly fixed on God. The goal it preaches is also different, viz., to be linked with Him and the love of His lotus feet, in this life, and not heavens or *moksha* after death. Its methodology to achieve this goal is active life of love, service and sacrifice, altruistic deeds, and highest ethical and moral conduct (Kharak-p.7-8).

There are three features, however, which make this scripture unique:-

- It enjoys the status of an eternal Guru.
- It embodies the doctrine of *Shabad Guru*.
- It was recorded and authenticated by Guru Arjandev himself, its original compiler (Kharak-p.7).

In the series of developments made by Sikh Gurus, the Sikh town/cities were made in various historical layers. The town of *kartarpur* (now in Pakistan), *khadoor*, *Goindwal*, *Tarn Taran*, *Amritsar*, The development of the city Amritsar in the guru period was in the pattern of bead and thread (FIGURE-1). The site was selected by the third and the fourth Guru for development of the town. The city was planned on the basis of the topography of the town, climate and vegetation, the regional linkages available to connect new settlement with the main cities like Delhi and Lahore. The fourth Guru formed secular city and the Religious complex. The construction of the Religious complex was undertaken by fifth Guru. Further the sixth Guru developed Akal Takhat, Lohgarh Fort and Bibeksar (FIGURE-2). So during the succession of the various Gurus the city developed in the linear form; although the overall form was conceived by the fourth guru. The city took form in the bead and thread pattern in which different nodes acting as the beads and the streets or linkages connecting them acts as the thread weaving those beads (Aulakh- p.35-36).

There was a Kucha pond, a small water body, whose sanctity was known to the third and the fourth Guru. As per some sources the sanctity of the pond was also known to the first Guru- Guru Nanak Sahib. This sanctity became guiding factor for whole of the city (Singh, Parm B. Ed. Pg-1). This further came under the construction of a pool of Nectar. This pool of

nectar was made by the Fourth Guru and the construction of Harmandar Sahib was guided by the fifth Guru- Guru Arjandev ji. This was the time when the migrants from the near surroundings came for the construction of holy shrine. The temporary structures were made out of thatch roofs (Nabha Pg-57). These were the places for keeping all the material, tools, and other infrastructure required for construction purposes. The sixth Guru- Guru Hargobind Singh got constructed Akal Takhat and the Lohgarh fort for administrative purpose and the training centre for warfare. This training was given to fight against rulers for the defence of the city and its residents (G.Gian- p-12). It also acted as diffusion point of social change. The city came to be known as the receptacle of talent and manpower. The editing of the holy scripture- Guru Granth Sahib was done at the spiritual node called- Ramsar. The fourth guru started excavation of the pool of nectar, and fifth guru started construction of sanctum sanctorum within the excavated area. The sanctum sanctorum became popular as- Sri Harmandar Sahib. Before this, the place where Guru used to stay was known as Dharamshal. So this structure was the first to be known as Gurudwara- a place where Guru is seated. Not only the Sikhs, but also the Gurus showed utmost reverence to the Granth Sahib. After the *Bir* was ready, "it was decided to send Bir to Ramsar at night and brings it back to its seat in sanctum sanctorum next morning. The Granth Sahib rested at a seat under the canopy, whereas the Guru and the Sikhs slept on the ground." After its installation in the Harmandar Sahib, Guru Arjun directed that during day time the *Adi Granth* should remain in the Harmandar and at night, after the *sohila* was read, it should be taken to the room he had built for himself in *Guru ke Mahal*. The Granth Sahib was placed on the appointed seat and the Guru slept on the ground by its side (Kharak-p.14).

The *Adi Granth* (the original *Bir*), prepared by Guru Arjundev, has a history, which is well known. As stated earlier, it was originally compiled at the spot known as Ramsar in Amritsar. It was completed and installed at Harmandar Sahib in year 1604. This *Bir* was scripted by Bhai Gurdas as told by Guru Arjandev. It was later taken to Kartarpur by Guru Hargobind, and remained there even after the Guru shifted to Kiratpur Sahib. It was taken over by Dhirmal Sodhi and is still there in the custody of his descendants. This *Bir* is known as *Kartarpuri Bir* (Kharak-p.14). It is interesting to note that two activities- Editing of *Adi Granth* and making of Harmandar Sahib, was going simultaneously. The probability of psychological and physiological interrelationship between the two increases at the same time. If any relation would have been there, becomes a matter of research in order to understand Spatio-logical approach for construction of first Sikh shrine- Sri Harmandar Sahib.

1. QILA LOHGARH- DEFENCE NODE
2. GURU KE MEHAL- RESIDENTIAL NODE
3. AKAL TAKHAT- ADMINISTRATIVE NODE
4. HARMANDAR SAHIB- RELIGIOUS NODE
5. G. BABA ATAL SAHIB- SOCIAL NODE
6. G. RAMSAR SAHIB- SPIRITUAL NODE

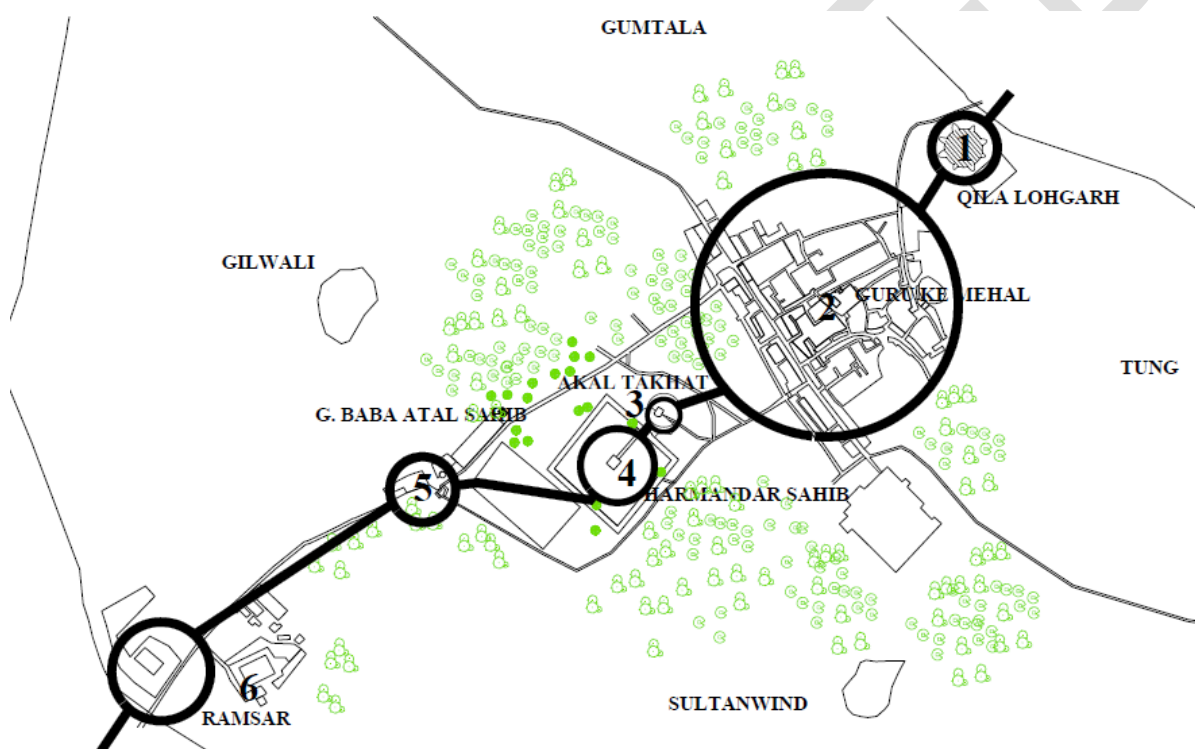
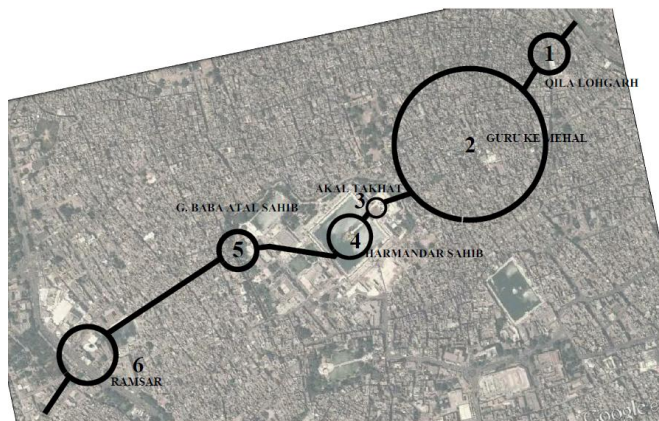


FIGURE-1 BEAD AND THREAD PATTERN USED FOR DEVELOPMENT OF CITY AND FIRST SIKH SHRINE- SRI HARMANDAR SAHIB

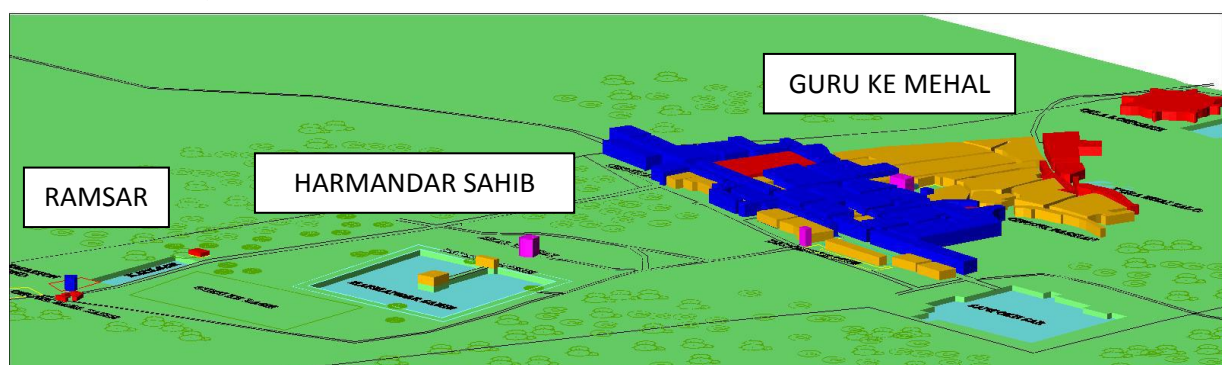


FIGURE-2 VIEW OF VARIOUS DEVELOPMENTAL NODES IN GURU PERIOD
Architecture, Hermeneutics, and Philosophy

All the spaces to be used as socio-religious purposes are based on specific functional zones which are further based on the spatial philosophies that describes for how the spaces are to be designed. This may be understood by knowing how the various zones are to be put together or to be arranged in particular manner that suits them the best as per concept/ design philosophy of these spaces. The basic design philosophy in any religion for designing of Religious structures is pre-defined with set of rules and regulations. For example in Hindu, Muslim or any other religious architecture typology, the design is based on mythic-spatial design. In Hindu Temples the zones are divided in set pattern. The various zones like- Mandapa, Garba Griha etc. have the special significance with respect to their location and use. Many a times these encapsulating zones divide the space in fixed pattern in which the use of the space is defined. Similarly in Muslim Architecture, in Indian sub-continent, the western face has to be kept closed with a deep Arched Niche to pray in the direction of Mecca (Chahal-p.40).

The Sikh history revolves around Sikh shrines. The structure narrates the making, destruction, and remaking throughout the history. The architectural vocabulary also changed with time and reign of various people. In general, the spaces were encapsulated in strict spatial order in both Hindu and Muslim architectures. Due to missing encapsulated forms for the different spaces, the Sikh architecture defines itself as *non encapsulating architecture*. The architectural forms were simulated in quiet a different manner. The Sikh architecture got a different dimension added to the philosophy. (Chahal- p.40).

Hermeneutics is defined as the theory and practice of interpretation of text. This technique has a long history of application since the time of Greek civilization. It became popular during its application in resolving the differences among the original three Holy Bibles, written at three different places, in three different countries, and in three different languages. The conservative approach to hermeneutics accepts the following principles and rules. The truth of the text reflects the author's intentions and / or what the original audience would understand the text to mean. Truth is understood

- To mean correspondence between the interpreter's idea and the text's meaning.
- To get to the truth of a text one needs to do scholarly research into the historical context in which it was written. An understanding of the historical, cultural and autobiographical background of the author helps to understand the meaning of the text.
- To get to the truth of a text one needs to understand the genre and language of the text, specifically how words are being used, and what these mean to the original audience.

The hermeneutic circle means that the interpreter must understand the parts of a text in terms of the whole. This applies at the micro-level of words, sentences and paragraphs, as well as at macro-level of a particular text in relation to an author's corpus and other writing of the time. Although there may be different points of view on the meaning of a text, differences are in principle resolvable by appealing to some independent standard of rationality, human spirit or evidence (Chahal-p.42).

In the study of scripture of in the study of scripture of a prophetic religion by the use of science and art of hermeneutics, the first axiom is the acceptance of revelation of the scripture. In Sikhism the *Word of God* is (*shabad Guru*) recorded in Guru Granth Sahib. This has been the message of God as understood by the Gurus of Sikh religion, over a period of about two hundred years. This *Word of God* recorded by Gurus is *message* of God while the Prophet, the Guru itself is the *messenger*. The devotee who receives this *message* is the *recipient* (*the Gurmukh*). Thus, in Sikhism, the trinity of *message*, *messenger* and *recipient* is defined by the terms *shabad*, *Guru* and *Gurmukh* respectively. In Sikh hermeneutics, for the understanding and interpretation of gurbani in Guru Granth Sahib, the following basic principles and rules are observed.

- a) The Guru Granth Sahib is the *shabad Guru* of Sikhs that contains the *message* for Sikhs.
- b) A *Gurmukh*, who seeks answer to any question, related to its temporal or spiritual life, has to read and understand gurbani for this purpose.
- c) For this purpose, the relevant verse/*sloak* is to be sought and studied carefully to seek correct information.
- d) The meanings of each verse/*sloak* are to be cross-checked with the use of internal evidence from AGGS and may be supported by external evidence, if available.

- e) These meaning must satisfy the following three criteria in order to confirm its correctness and usefulness for the solution of the problem; *unanimity*, *harmony* and *consistency* with the *main focus* of Guru Granth Sahib.

This set of rules clearly states that sovereignty of Sikh faith does not permit any *Gursikh* to go out of the boundaries, defined in Guru Granth Sahib, to seek answers to the questions of faith from any other religious text (Chahal-p.43-44).

The Sikh Philosophy describes Five Realms those are described in the Bani:

- 1. **Dharam Khand:** the realm of righteous action (pauri 35),
- 2. **Gian Khand:** the realm of knowledge (pauri 36),
- 3. **Saram Khand:** the realm of spiritual endeavour (pauri 36),
- 4. **Karam Khand:** the realm of grace, (pauri 37) and
- 5. **Sach Khand:** the realm of Truth (pauri 37).

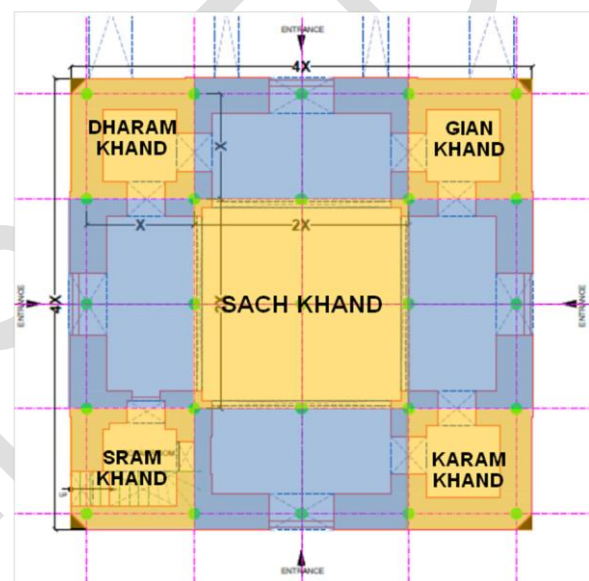
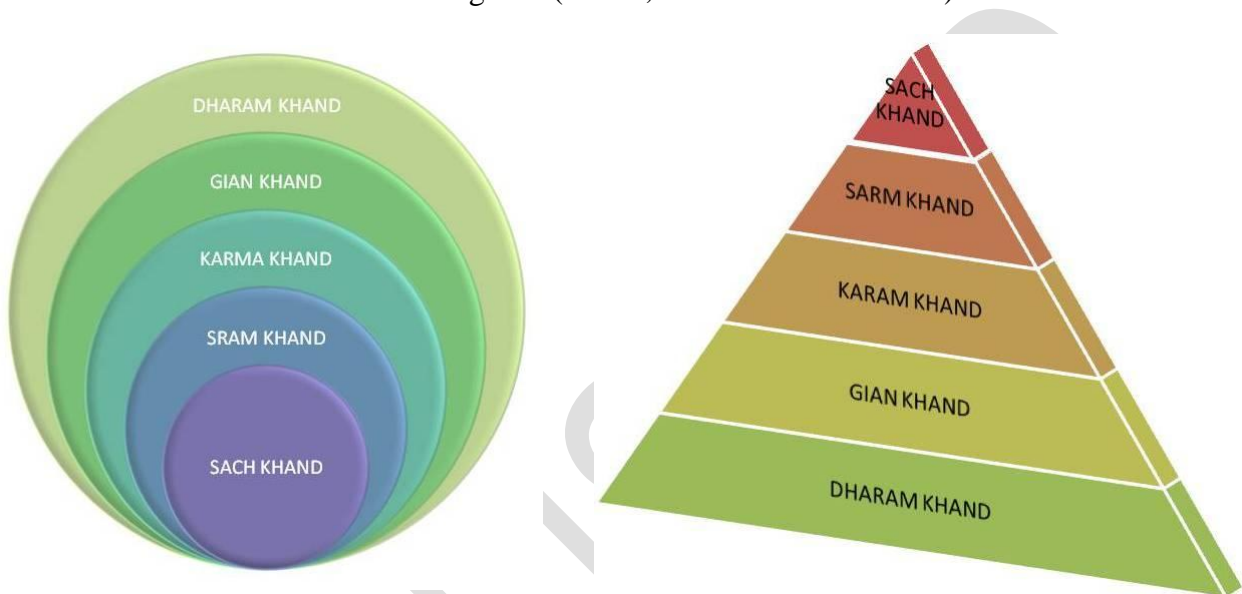


FIGURE-3

This is the final stage in the five realms or domains discussed by Guru Nanak in the final stages of the first Bani in the Guru Granth Sahib called the Japji Sahib. "*Sach*" means "*true*" so "*Sach Khand*" means "*the realm of Truth*". The final stage of spiritual ascent, i.e. "*Sach Khand*" (the realm of the Truth), defies description. "Hard as steel is the story of this state to narrate." Described as the abode of the *Nirankar*, the Formless One, *Sach Khand* is not a geographical spot, but the final state of the evolution of human consciousness. These all Khands superimpose completely over the plan of Harmandar Sahib, with pathways leading to Sach Khand via all others. The geometry of the plan suggests that Sach Khand is four times the area of each Khand taken in isolation. E.g. if the area of Dharam Khand is X sqm, then area of Sach Khand is $4X$. I.e. area of all the Khands taken together is equivalent to area of Sach Khand where God resides in form of Guru Granth.

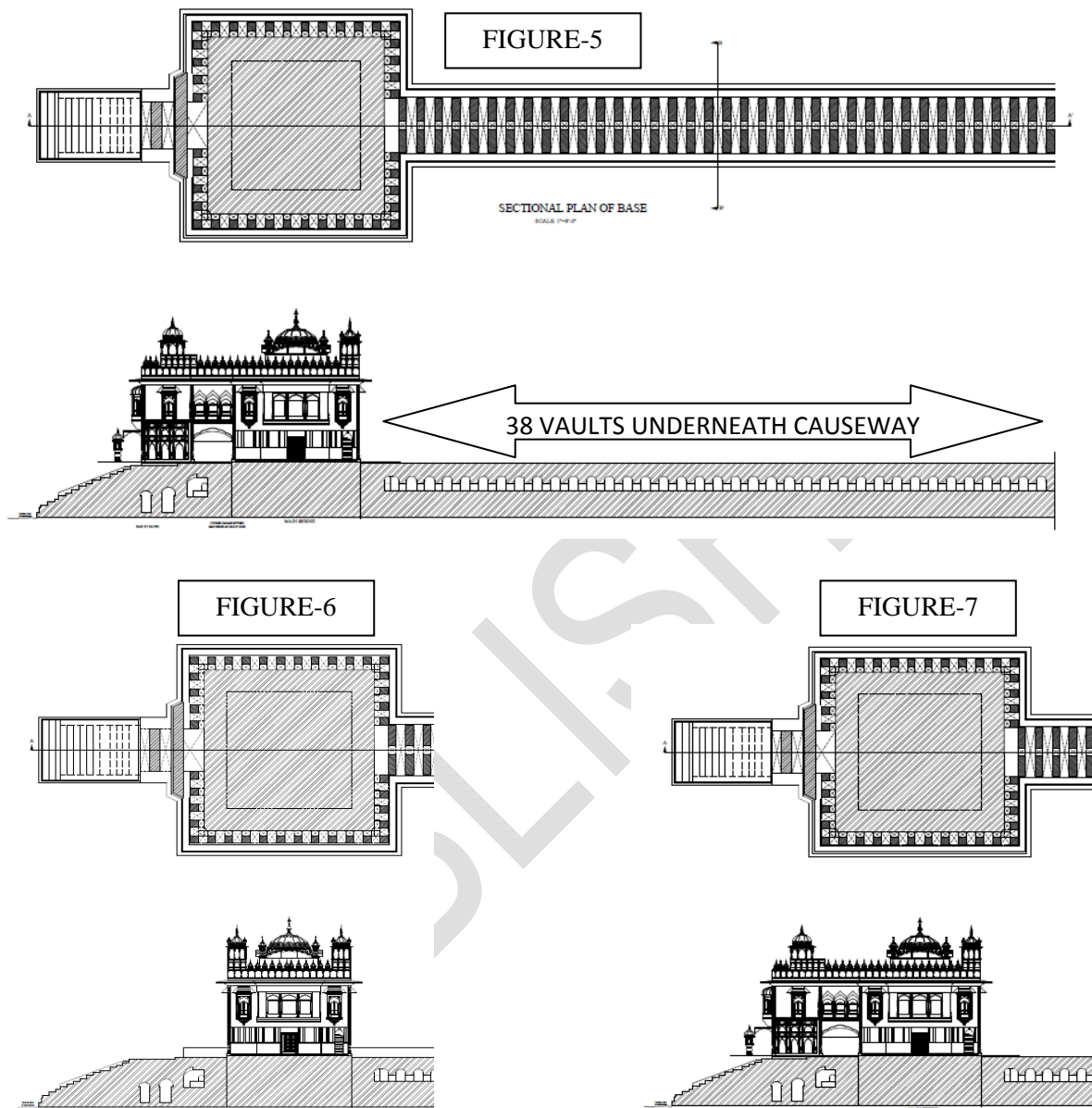
This is the realm of God, the *Nirankar*. Since this plane cannot be described by the language of the world of three dimensional forms, Guru Nanak Dev Ji refers to it simply as **Sach Khand – the realm of Truth**. This is where *Nirankar* himself dwells. *Sach Khand* is huge and the whole creation including other 4 Khands are within *Sach Khand*. Sach Khand surrounds the whole of creation and is inside the whole of creation. In essence *Sach Khand* is Waheguru himself. It is futile to write anything about it. Guru Nanak Sahib has written that to describe Sach Khand is like chewing iron (*Nanak, Kathna Kararaa Saar*).



“Sach Khand vasai Nirankar, kar kar vekhai nadhar nihaal Tithai khand mandal varbhand, Je ko kathai ta ant na ant Tithai loa loa akar, Jiv jiv hukam tivai tiv kar, Vekhay vigsay kar vichaar, Nanak kathna karara saar”

Nirankar dwells here and looks upon his creation with benign attention. There are countless universes, planets and continents, all of which He sees and watches over. All these are beyond one's power to explain, for how can formlessness be described through forms? The making of Harmandir Sahib on 5- Khand principles, may be, explains the philosophical grounds and deep interface between physical and metaphysical world. The space where *Nirankar* (God) dwells is given double height in order to symbolize spacelessness and timelessness quality of Him (God). The space may even be read as, all the other 4 Khands- Dharam Khand, Gian Khand, Karam Khand, Sarm Khand, are parts of Sach Khand only. The space would have been envisaged by Guru Arjandev on basis of all 5 Khands.

Harmandir sahib, the first Sikh shrine was envisioned by fourth guru and was given the final shape by the fifth guru. Standing right in the centre of a brick lined pond, the



sanctum sanctorum rests 5.18M from the base of Kucha sarovar. Approached by causeway 6.0M wide and 65.45M length (from interior face of *Darshni Deorhi*), the sanctum measuring 12.35M X 12.35M is placed over a platform measuring 20.83M X 20.83M with an extension of wedge shaped area housing second part of *Har ki Pauri* comprising of set of 2 staircases leading to upper floors. Under the causeway, there are 38 cross-sectional vaults (FIGURE-5), known as *swarg-dwarian* (doors to heaven), and same number of 38 underneath the sanctum sanctorum. In the holy scripture- Guru Granth, the first verse or *paath*, *Jap Ji Sahib*, there are 38 *pauris* resembling the odd figure of 38 *swarg-dwarian*, which could also have been 35 or

40 as round-off figure. Philosophically, the paath of Japji sahib is considered to be the summary of the complete guru Granth sahib, and was written by the first guru Guru Nanak. The fifth guru would have had thought to construct the sanctum sanctorum on the numeric theology of *Japji Sahib* that has been inscribed within 38 *pauris*. Rest the *Har ki pauri* part elongates after the squarest extents of 38 *swarg-dwarian* (FIGURE-7).

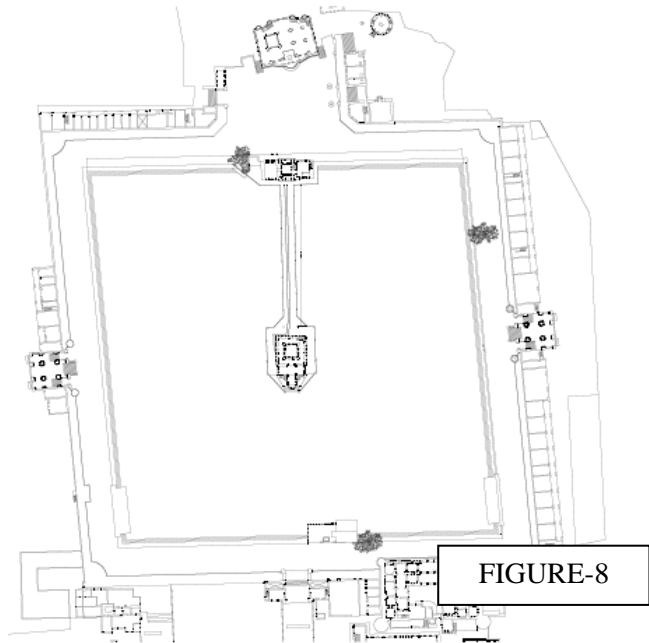


FIGURE-8

As per the geometrics space, a square shape of any structure will suit to its surroundings only when it is fitted finely in a larger same or proportionate shape. The structure of *Harmandar Sahib* and its *parkarma*, the outermost circumambulatory, was demolished a number of times during early 18th century. The perfect shape would have changed in making and remaking of adjoining circumambulatory (*parkarma*) and *Harmandar Sahib* itself. Elsewhere, the point to make a non geometrical shape to house the perfectly geometrical shape does not exist (FIGURE-8). After the attacks in the late 18th century, there must have been pressure on Sikh *Misls* (Sikh Confederacies) to reconstruct the sanctum sanctorum as early as possible, as Harmandar sahib became an important node for Sikhs.

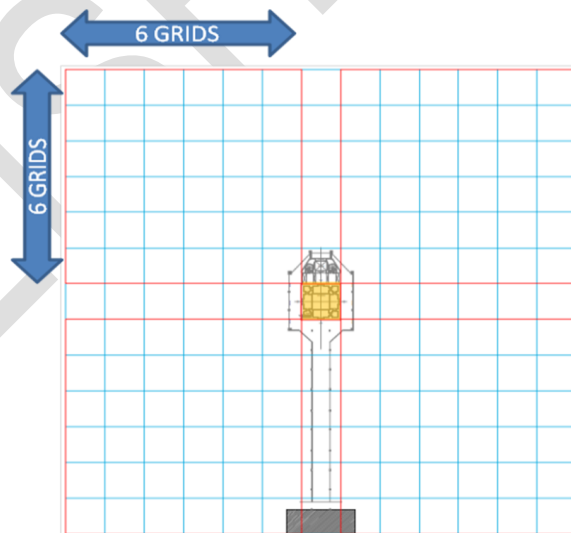


FIGURE-9

The Harmandir Sahib was specifically placed in the geometrical centre of perfect square shape (FIGURE-9). The distance that would have never changed is the extents of outer face of *Darshni deorhi* (entrance gateway). This clearly reflects that taking the size of 13X13 grids on each side, sanctum sanctorum was placed in the geometrical centre. The philosophy supports the division into 6 grids on each side is inscribed in Guru Granth Sahib, is quoted in as:

ਛਿਅ ਘਰ ਛਿਅ ਗੁਰ ਛਿਅ ਉਪਦੇਸ਼ ॥

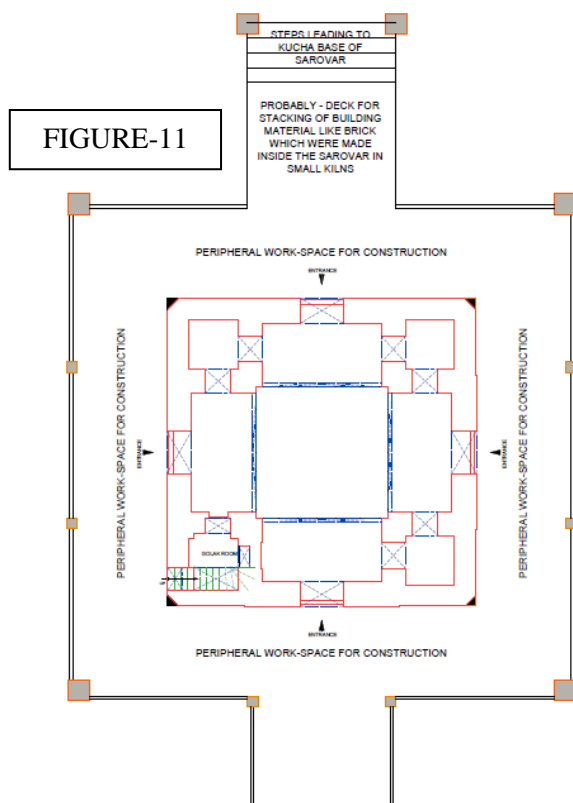


FIGURE-11

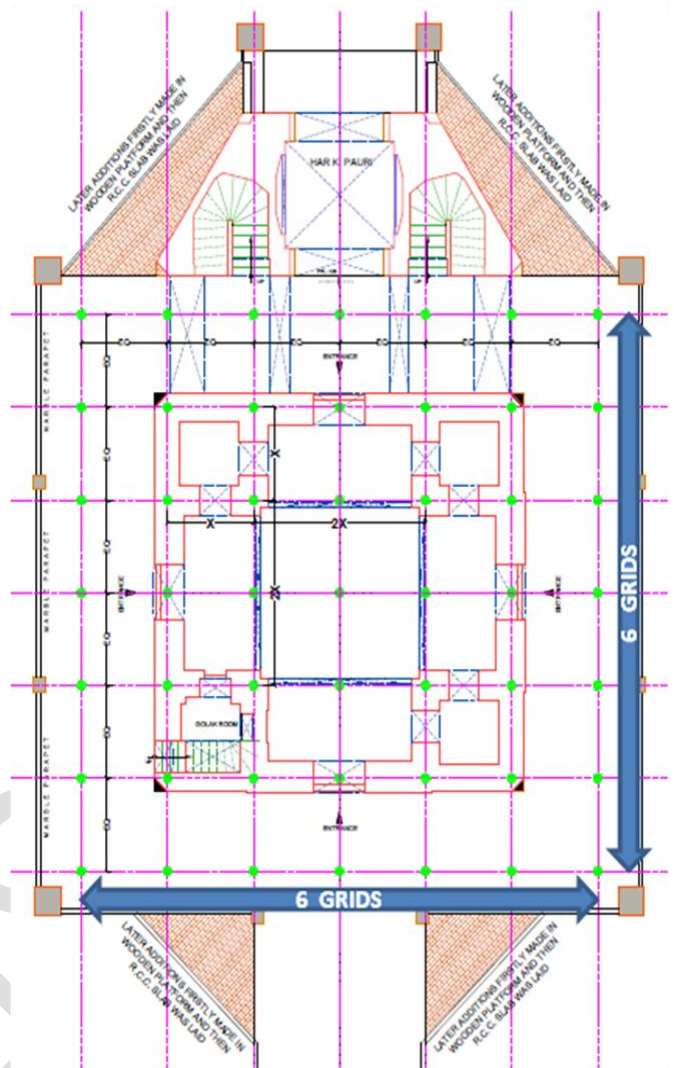


FIGURE-10

ਗੁਰ ਗੁਰ ਏਕੇ ਵੇਸ ਅਨੇਕ ॥੧॥

Che Ghar Che Gur Che Updesh

Gur gur aeko vaes anek... SGGS-12

There are six schools of philosophy, six teachers, and six sets of teachings; But the Teacher of teachers is the One, who appears in so many forms. Here mentioned the word 'che'- is a numeric 6. Furthermore the centre lines of the sanctum sanctorum divided the

area into 6X6 equal grids. Each grid is a measure of extents of sanctum sanctorum itself.

The geometrical division needs no proof further to establish the relevance of numeric-6. The structure would have been designed on the strict centre lines at the space into 16 equal quadrants with proportion of central space as twice the bays on all sides.

As the construction of Harmandir sahib took place many times, the exact architectural form that would have been made by fifth guru is not known. On the analysis of base structure and the formation of cross vaulted roofing to support causeway and base of sanctum sanctorum, the forms come out to be a bit different than is seen today. The elevations of sanctum sanctorum resemble each other to a very great extent further supporting for the above said hypothesis. The geometry of space expressively earmarks for its unique identity. Many sources quote for destruction of Harmandir sahib along various timelines viz- 1746, 1757, 1762, and 1764 (SGPC), nevertheless any writer or historian has mentioned for any fact or hypothesis of its reconstruction in any year. The question arises, when in 1757 AD, ahmed shah abdali demolished it with the help of gun powder (SGPC), from which point his army would have had targeted sanctum sanctorum? What would have been gun powder type or mix that it could really de-surface sanctum completely? Or had it been targeted above the level of 1m from the present plinth level? If the shells would have been targeted inside the sarovar filled with water, the net effect over the structure of sanctum sanctorum would have been lesser damaging. Secondly, did ahmed shah abdali would have had so much of time to break each and every brick of sanctum sanctorum? If not then how much would have been total damage to sanctum sanctorum? The total area of sarovar at present is 23216 sq m, and average depth is 5.18m. This provides total of 120260 cum approx. The historical sources also mentioned that sarovar was infilled with debris and levelled the holy tank (SGPC), a question arises that from where filling material of 120260 cum would have been bought to infill the whole sarovar. The above said database suggests that neither sanctum sanctorum would have been demolished completely nor the sarovar would have been levelled to surface of parkarma. This hypothesis resolves that if the structure was not completely destroyed, and pulling down structure again and again by the afghan invaders would have been symbolically marked, then from which level onwards the Sikh Misls would have reconstructed it number of times. This is the matter of research to be conducted through various Non Destructive Tests (NDT) taking samples at various levels. This will actually earmark the ageing of structure that will help to locate the extents of construction in various timelines and check for

the actual construction in the Guru period, Misl period, Ranjit Singh's period and construction at present.

Conclusion

In the above stated facts and hypothesis, it is established that there is a strong relationship between Gurbani (the verses/ paath) and the structure, that proves the hermeneutical approach would have been followed by fourth and fifth guru to design first Sikh shrine and a masterpiece- Sri Harmandar Sahib. The form is not based on cardinal direction system- as to follow any specific orientation with respect to geographic north. In all other religions, the plinth of structure is taken above the NSL (Natural Surface Level), but in Harmandar Sahib, it follows opposite rule, denoting humble nature whence one is entering in religious core. The structure of Sanctum Sanctorum rests over a square base, probably filled in the central part and the circumambulatory of intersection of vaults 38 in nos. follows the perimeter. This is connected to intersected vaults again 38 in nos., under the causeway (bridge connecting Darshni Deorhi to Sanctum Sanctorum. When it is related to the philosophical angle of the architectural vocabulary, it overlaps with 38 psalms (Pauris) of first Paath- Japji Sahib. It may be noted here that Japji sahib is said to be as a summary of the complete Sri Guru Granth Sahib.

This is the only structure in which all art forms are blended- Like Gach (Stucco work), Tukri (Mirror inlay work), Jaratkari (stone inlay work), and Mohrakashi. The idea of making the structure inside the pool of nectar would have been to give fourth dimension, as reflection of structure over the water surface, to the sanctum sanctorum. The security system of the religious core was enriched with 72 Bungas (rest house of Sikh confederacies) along the perimeter of the circumambulatory of the Sarovar. The side elevation is enclosed within the golden ratio (geometric form given by le Corbusier in 19th century) i.e. 1:1.618. Within this ratio, almost all the major building structures fits in, like Great pyramids of Egypt, Taj Mahal, etc. It may here be registered that the best possible proportions of architectural vocabulary were constructed in late 14th century envisioned by Fifth Guru Sahib.

This marked a foundation of new architectural school of Sikh architecture. There is a need to study the complete structure in detail like doing carbon dating at various locations in order to know precise age of structure, GPR (Ground penetrating radars) surveys needed to

know the composition of walls and their structural behaviour, material of construction in lime mortar and its constituents, etc.

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Archives:

1. The elevation part, only, in Figure 5, 6, and 7, have been accessed from archives of documentation, department of architecture, batch 1998-2003.