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TEMPLE ARCHITECTURE IN INDIA
AT THE BEGINNING OF THE 6TH CENTURY
ACCORDING TO VARĀHAMIHIRA'S *BRĤATSAMĤITĀ*

Introduction

Varāhamihira and Brĥatsamĥitā

Varāhamihira's *Brĥatsamĥitā* deals in the whole with *samĥitā* that is to say general astrology. However, thus doing it touches upon several subjects, amongst them architecture and image making. Its author was most probably writing at the beginning of 6th century AD, which means that his work contains one of the oldest theoretical presentations about architecture that we get in India, if not the oldest.

The book itself is well known and since long. Commentated upon in the 10th century by Utpala, it was widely referred to and partly translated into Arabic by Al Biruni at the beginning of 11th c.¹ Often quoted in later literature, it has been used as a main source by compilers and/or by what we may call amplifiers/developers of puranic texts and the like. Thus as far as architecture is concerned, its chapter 55 (*Prāsādalakṣaṇa*) has been fully inserted in the corresponding chapter of *Bhaviṣyapurāṇa* (1st part, Chap. 130) of which it makes the half; in the same way, several verses pertaining to the same chapter have been

1. See - Sachau (Edward C.), *Alberuni's India...*, Ed. with notes and Indices by- , London 1910, 2 vols. [reprint in one volume, New Delhi 1983].

reused in *Viṣṇudharmottara P.* (IIIrd khaṇḍa, 88th Chap.), in *Agni Purāṇa* (104th Chap.), in *Matsya Purāṇa* (270th Chap.) and most probably in other texts of the same ink.

Edited and translated by Heinrich Kern in the 19th century, it has been edited again by Sudhākara Dvivedi (1895-97) then A.V. Tripathi (1968),² translated twice by M.R. Bhatt (1947 then 1981)³ and studied by Ajay Mitra Sastri (1969) in a comprehensive book⁴, while being referred to by several authors of various scientific fields, e.g. Stella Kramrisch, about temple architecture. Lastly (1994), the *Bṛhatsaṃhitā*'s text (according to Dvivedi/Tripathi edition) has been put on the web by Michio Yano together with Mizue Sugita in a very practical way, especially when looking for lexical questions; it is this text we are using here.

In this paper, we shall concentrate on temple architecture and more precisely on some of those lexical problems which must be solved before attempting any useful confrontation between that earliest theorization of architecture and actual monuments of, let us say, Gupta era. Let us add that one of our problems is that we have to rely for the most on Varāhamihira's text itself. It appears clearly that Utpala writing in the 10th century had implicitly used as referent the architecture of his time, of which it results that its commentary is most often less an explanation than a kind of revision intending to update Varāhamihira's original.

As he does in other fields, Varāhamihira when dealing with architecture and iconography, refers there and there to authorities. It does so often by name, thus for temples to Maya (55.29), Viśvakarman (ibid.), Garga (55.31), "Manu, etc." (ibid.) and, when dealing with images, to Nagnajit (57.4, 15), Vasiṣṭha (57.8), while in some places there are less precise references to "those who know" (*jñais*, e.g.

2. *Bṛhatsaṃhitā by Varāhamihirācārya with the commentary of Bhaṭṭotpala*, edited by Avadha Vihāri Tripathī [sic], 2 vol., Varanasi 1968, 40 + 1266 pages (Sarasvatī Bhavan Granthamālā, vol. 97) [mere reprint of Sudhākara Dvivedi edition, Varanasi 1895-97].

3. Bhatt (M. Ramakrishna), *Varāhamihira's Bṛhatsaṃhitā with English Translation, Exhaustive notes and Literary Comments*, 2 vols., Delhi [1981-1982].

4. Sastri (Ajay Mitra), *India as seen in the Bṛhatsaṃhitā of Varāhamihira*, Delhi 1969.

52.21 or 57.20). Corresponding quotations of those authors are given by Utpala in his commentary, where are also found numerous and often lengthy quotations of a text placed under the authorship of Kāśyapa, but who is not the well known South Indian *Kāśyapaśilpaśāstra* (alias *Aṃśumadbhedakāśyapa*, etc.) (as well as “Maya” does not correspond to *Mayamata*).

Architecture in B.S.

The *B.S.* deals with architecture in two chapters. The first one (Chap. 52, 125 verses) is titled “Housing science” (*Vāstuvidyā*), and gives general matter as well as rules related to houses and connected buildings. On the other hand, Chapter 55 (*Prāsādalakṣaṇa*) on which we shall concentrate is shorter (31 v.); it deals with characteristics of temples and describes in a few words twenty types of them. Besides that two chapters deal with image-making and installation ceremonies (Chap. 57: *Pratimālakṣaṇa*, 58 v., and 59: *Pratimāpratiṣṭhāpana*, 22 v.), while a third one gives rules related to “adamantine mortar” used for masonry and fixing of images (Chap. 56: *Vajralepalakṣaṇa*, 8 v.), and gives some recipes to prepare mortar used for masonry as well as fixing of images. Lastly, some data are scattered here and there in the book,⁵ but they are few and when looking for technical terms regarding architecture (or even iconography), we have found them mostly in the chapters listed above.

B.S. about temples

Chapter 55 which deals with temples, refers often (implicitly at least) to chapter 52 (*Vāstuvidyā*). At the start (verses 1-2) it places temple building in a field which is more “political” than religious: construction of a temple is said to come once hydraulic works and parks have been established; thus it brings glory and *dharma*, that is to

5. See about anthropometrics (Chap. 67: *Puruṣalakṣaṇa*, see esp. v.105) used as a basis for iconometry in 57th chapter.

say the simultaneous fruits of a religious foundation (*iṣṭā*) and a charitable one (*pūrta*).

After that short introduction we are given a lengthy list of favorable sites, which are to be fresh, watery and agreeable to the gods (55.3-8). Tests are to be made to verify the good qualities of the ground, but they are not described as they are wholly similar to those practiced when planning to build an house (55.9 and see chapter 52). A diagram with 64 parts is to be drawn, while it was preferably a 81 part one for houses; the door is to be placed in the middle of one of its four faces and it is to be strictly cardinal (*samadikstha*, see 55.10).

Proportions are based on the width (see below Appendix I); they are given with a special emphasis on the door which consists of one or several decorated frames (*śākhā* and *udumbara*) (55.11-16). The height of the image together with its pedestal is to be a little less than that of that door (55.16 as well as 57.3).⁶

Then comes a list of twenty temple types (55.17-19) followed by matching descriptions (55.20-28): they deal with plan, number of levels (*bhūmikā*) and several types of cover and superstructure (*aṇḍa*, *śṛṅga*, *śikhara*, see below) as well as windows, niches and false dormer-windows (*jalagavakṣa*, *kuhara*, *candraśālā*), doors (*dvāra*) and width (which goes from 32 to 8 cubits). The four last types are not described for they have explicit names (Vṛtta, Catuṣkoṇa, Śoḍaśāśrī et Aṣṭāśrī); however they are said to be “with an obscure form” (*añjanarūpa*) which is not very clear (see below).⁷

At the end of the chapter Varāhamihira quotes two contradictory statements attributed to Maya and Viśvakarman and regarding the height of a *bhūmikā* (“level”), adding that “wise architects say that there is only one opinion: the two authors arrive to the same result, one adding the height of *kapotapāli* to that of the *bhūmikā* and the other not doing so”.⁸

6. Cf. 55. 16: *dvāra^māna^aṣṭa^bhāga^ūnā pratimā syāt sapiṇḍikā / dvau bhāgau pratimā tatra tṛtīyāṃśaś ca piṇḍikā /* and 57. 3: *devāgāra^dvārasya^aṣṭa^amśa^ūnasya yas tṛtīyo +aṃśau / tat^piṇḍikā^pramāṇam pratimā tad^ dviguṇa^ parimāṇā.*

7. Cf. 55.28b: *catvāro +añjana^rūpāḥ pañca^aṇḍa^yutas tu caturasrah [K.caturaśrah].* On that point Utpala quotes an extract of “Kāśyapa”» according to which those four temples are one-storied and, excepting Caturaśra type, get one *aṇḍa* only.

Temple according to B.S.

Before going into details, we may say that according to *B.S.* the temple is a building which comprises only one room, a central one which is the sanctum and where is housed a divine representation placed upon a pedestal; that building which may or may not comprise upper storeys, is topped by various architectural devices.

Proportions and dimensions

As far as proportions are concerned, the reference is the width of the temple, the only dimension which is given in an absolute value of cubits for the twenty types. From that width we shall go down to the image height which is to be 7/48 of the width.

Widths given for the twenty temples go from 32 down to 8 cubits, which makes roughly from 14,4 meters down to 3,6 meters (see Appendix I); for the sake of comparison we may say that most of the Gupta temples known to us are around 4,80 meters and a little less, with some exceptions such Śīva octagonal temple at Ramgadh (alias Mundesvari) which date is probably 7th c. and makes up around 13,9 meters.

Horizontal organization

Plan

Several types of plan are mentioned when dealing with the twenty temples. Some are regular and of common use in India since the very beginning of temple architecture: square (*caturaśra*), circular (*vṛtta*), or, interestingly, apsidal (*gajaprṣṭha*) which was used since the start

8. *Kapotapāli*: that expression designates here in a precise way a part of the entablature; according to Utpala it may be a cornice comprising a row of projecting beam ends decorated with lion masks. (*kapotapāliḡrahanena bahirnīrgatāni siṅhamukhāni kāṣṭhāny ucyante / tathā cōktam-kapotapāliḡ bruvate viṅaṅkaḡ ca bahuśrutāḡ //*).

for Buddhist and Brahmanic structures (see for instance the Sonkh Nāga's temple at Mathura⁹). Some other plans are probably variations of the circular type: thus lotus shaped or vase-shaped temples.

Less clear and more ambiguous as several polygonal structures: thus an *aṣṭāśrī* temple which may be octagonal – see the Muṇḍesvari Śiva temple at Ramgadh – or have stellate plan with eight angles as are found but a little later in Kośala (e.g. Dhobinī temple).¹⁰ Besides that hexagonal, twelve-sided and sixteen-sided plans are unaccounted for, as far as we know and it is most probable thus that *Ṣaḍaśrī*, *Dvādaśakoṇa*, *Ṣoḍaśa* temples also correspond to stellate plans.¹¹

Lastly some plans are really intriguing such are those which are Garuḍa-shaped, Nandin-shaped or Haṃsa-shaped. The first at least may remind us of a form given to the Vedic altar and it is probably its *raison d'être*, and perhaps that of the others; however Utpala in its commentary gives definitions which may seem farfetched.¹² Besides that nothing is said about elongated plans (oblong, elliptic,...), which are in common use since the 3rd c. B.C.

Sanctum and walls

The sanctum for which Varāhamihira uses the word *garbha* makes up half the total width of the building and is surrounded by a thick wall which occupies on all sides of the sanctum a quarter of the width of the building.¹³ According to Utpala there is a corridor or por-

9. H. Haertel, *Excavations at Sonkh*, Berlin 1993, pp. 63 sq.

10. Michael W. Meister, M.A. Dhaky, Krishna Deva (eds.), *Encyclopaedia of Indian Temple Architecture-North India - Foundations of North Indian Style* (c.250 B.C. - A.D. 1100), Delhi 1988, pp. 246 sq.

11. Unless we follow the interpretation given by Stella Kramrisch for the so called hexagonal (*ṣaḍaśrī*): according to that author such an expression designates a square temple with central buttresses on three faces (the fourth one being occupied by a porch and/or a pavilion), which gives us three main faces and three projecting ones upon them (see S. Kramrisch, *The Hindu temple*, Calcutta, 1946 t. I p.271).

12. Garuḍa plan would get wings and tail and Nandin shaped one would not get them, while the Haṃsa plan is endowed with beak, wings and tail (see comm. ad 55.24 and 26).

13. *Garbha* (see 55.12a and 55.12b): in the later languages that word will designate the foundation deposit while terms such as *garbhagr̥ha* will be applied to the sanctum.

tico which goes around that sanctum, taking a part (1/4) of the thickness of the wall.¹⁴ However nothing in Varāhamihira's text seems to justify such an interpretation, even if some temples of special type deemed as "having an obscure form" may have something of the kind of a circumambulatory passage (see below); thus we would think that here as elsewhere Utpala updates the text.

Door(s)

As told before the door of the sanctum is located in the middle of a side and faces a cardinal point, most often the east it seems. Sarvatobhadra and Meru temples are said to have four cardinal doors, while for those deemed as obscure entrance is made through a complicated circuit (see below).

The door is the only part of the building of which the decoration is detailed: it comprises from three to nine frames (*śākhā*) (55.12 sq): their lower part is occupied by images of the two doorkeepers (*pratihāra*); above are various motives: scrolls and the like, as well as birds, amorous pairs, *pramatha* and other divine personages.¹⁵

Windows, niches and false dormer-windows

Besides door(s) they may be screened windows (*jālagavakṣa*), probably similar to those seen at Nachna temple.¹⁶ Besides that, Meru temple is said to be endowed with *kuhara-s* (55.20): according to

14. Comm. ad. 55.12: ... *anyāḥ samantataḥ sarvāsu dikṣu vidikṣu bhittayo bhavanti / hastamātram bhramaṇāya sarvāsu dikṣv anāvṛtaṃ sthāpayitvā śeṣaṃ hastatrayaṃ...* (Utpala take as an example the Meru temple whose width is 16 cubits, which means that the sanctum is eight cubit wide and the wall all around four cubits).

15. 55.14-15: "The door must comprise three, five, seven or nine frames. The two doorkeepers are to be placed on the lower quarter of the doorjambs; elsewhere there is an ornamentation of auspicious birds, Śrī-trees, *svastika-s*, vases, amorous pairs as well as foliate scrolls and *pramatha*" (*tri^pañca^sapta^navabhiḥ śākhābhis tat praśasyate/ adhaḥ śākhā^caturbhāge pratihārau niveśayet //55.14/ śeṣaṃ maṅgalya^vihagaiḥ *śrīvr̥kṣaiḥ svastikair [K.śrīvr̥kṣasvastikair] ghañaiḥ/ mithunaiḥ patra^vallibhiḥ pramathaiś ca^upaśobhayet//55.15/*).

16. See e.g. J. Williams, *The Art of Gupta India: Empire and Province*, Princeton 1982, pl.157.

Utpala they are “interior windows” (*abhyantaragavākṣa*), that is to say windows pierced in the wall separating the sanctum from a surrounding circumambulatory passage; however, as told before, the presence of such a passage seems to be a mere hypothesis and we suppose that the term *kuhara*, which in classical Sanskrit designates a hole or a cavity, is applied to niches or perhaps to false dormer-windows, smaller than the *candraśālā-s* which are also mentioned when dealing with Kuñjara, Guharāja and Sarvatobhadra temples.

Cult image

In the centre of the sanctum is to be placed an image installed on a pedestal, the total height of both of them making up 7/8 of the height of the door, which means that they may be put in the sanctum once the temple is build.

Elevation: base and ground floor

If the details concerning the plan of the temple are more or less clear, the same cannot be said about elevation. That last almost certainly comprises at least three parts: the body of the ground floor, with below it a base and above a superstructure or a similar covering device. Thus being the case, little or nothing is said in our text about their respective arrangement: we are told that the height is double the width, and that a third of that height is for the *kaṭi*,¹⁷ without any explanation being given about that *kaṭi* nor about other words such as *bhūmikā* as well as all the terms related to the roof or superstructure covering the temple.

Kaṭi: ground floor and/or base?

As far as we know, *kaṭi* which literal meaning is “hips” is applied to architecture *only* in the *B.S.* and in texts which are related to it, that is to say *ViṣṇudharmottaraP.*, *MatsyaP.* and naturally *BhaviṣyaP.* As

17. 55.11: *yo vistāro bhaved yasya dviguṇā tatsamunnatiḥ / ucchrāyād yas tṛṭiyāṃśas tena tulyā *kaṭiḥ smṛtā [K.kaṭir bhavet] //*

a matter of fact the same statement about its height being a third that of the temple is found in those three texts as well as in the *B.S.* itself. When turning to Utpala, we learn that *kaṭi* is “the beginning of the temple which is above the stairs”¹⁸, which gloss may lead to more than one interpretation.

The most simple would be to identify *kaṭi* with the “middle” part of the temple, that is to say its ground floor where is located the sanctum and which would be placed upon a wider terrace. Such an interpretation is not adverse to the metaphor of hips and agrees with the *ViṣṇudharmottaraP.* which in an apparently very clear way divides the temple elevation in three equal parts: the *vasudhā* (“basis”) makes up a third, the *kaṭi* another one, and the *mañjarī* (“roof”?) the last one.¹⁹ However several hindrances come against that interpretation which has been followed by St. Kramrisch and others.²⁰ The first problem regards proportions of temple door as indicated in the *B.S.* itself: the height of that door being half of the width of the sanctum is 1/4 of the width of the temple, while the height of the *kaṭi*, being a third of the total height is 2/3 of the same width of the temple. That is to say that the height of the door is only 3/8 of that of the *kaṭi*.²¹ If that last is the ground floor the given proportion seems to be totally unaccounted for in practical architecture and more precisely in the 6th century Indian architecture, more or less contemporaneous with Varāhamihira.

Another difficulty lies in the fact that, as told before, nothing is said in *Bṛhatsaṃhitā* about the base which is below the sanctum and which *ViṣṇudharmottaraP.* designates as *vasudhā* (lit. “earth”), telling

18. Comm. ad 55.11.: *sopānopari yato devagrhasya prārambhaḥ sā kaṭir ucyate.*

19. *ViṣṇudharmottaraP.* 88.6b-7A: *tr̥tīyam aṃśam vasudhā tr̥tīyāṃśaḥ kaṭir bhavet // mañjarī catr̥tīyāṃśaḥ prāsādasya mahābhujā /.*

20. S. Kramrisch 1946 t. I p. 238, 411, etc.

21. The height of the door is double of its width which is a quarter of that of the sanctum which is half of that of the temple; thus the height of the door is 2/8 of the width of the temple, that is to say the *kaṭi*, while the height of that *kaṭi* is 2/3 the same width of the temple. The *Bhaviṣyapurāna* while reproducing the same text gives an other reading (*garbhapādonavistīrṇam dvāram* in lieu of *garbhapādena vistīrṇam dvāram*) according to which the width of the door is 3/4 that of the sanctum, which gives us for that door a height which is 3/4 the width of the temple, thus bigger than the *kaṭi* in which it is supposed to be pierced!

that it makes up one third of the total height. However the *ViṣṇudharmottaraP.* text on that point is confused and even to some extent inconsistent (far more than appears in Priyabala Shah English gloss, see p. 199): thus it seems safer to leave aside, at least when trying to explain *B.S.* statement on *kaṭi*.

To go back to our point, as base is not mentioned in *B.S.*, it may be comprised in the part designated as *kaṭi* which leads us toward two possibilities: either the word *kaṭi* is applied to the whole lower part of the building (base and ground floor), either it designates *only* a terraced base which is below the ground floor, a not infrequent feature of early Gupta temples. Such terrace being wider than the ground floor that second hypothesis can go along with the hips metaphor and it seems that it could even tally with Utpala gloss. As for myself I will voluntarily accept it, for in fact there is one more difficulty regarding the ground floor being the *kaṭi* or a part of it: it lies in the meaning which is to be given to *bhūmikā* (and its derivative *bhauma*).

Kaṭi and bhūmikā

When describing each of the twenty temple types, *B.S.* indicates in most of the case how much *bhūmikā-s* comprises the temple dealt with: for instance Meru temple is deemed as *dvādaśabhauma*; that is to say get twelve *bhūmi* or *bhūmikā*. In technical literature dealing with architecture *bhūmikā* as several terms applied normally to earth or ground – *bhū*, *bhūmi* or *tala* – are commonly used to designate a “level”, that is to say a “floor” (or a “storey”), in such a way that the first level of a building is its ground floor, above which is the *second* level, which is the first upper storey (or the first “*étage*” in French way), the third level being the second upper storey or the second “*étage*”, etc.; in Indian temple architecture those upper storeys are often purely decorative features in such a way that they may be deemed as “false-storeys” (“*faux-étage*” as we say in French). However several of early Gupta temples (notably Sanchi No.40 and Nachna) are endowed with an upper floor which is an actual structure containing an upper room; which upper room however devoid of any stair or steps or even ladder, that is to say that it is inaccessible!

To go back to our twelve *bhūmikā* Meru temple, it is thus a building which the elevation is made up of a ground floor and *eleven* upper storeys (or false upper storeys), while a temple with a single *bhūmikā* is a building without any upper storey. This is at least the normal use in all the later *śilpaśāstra*, and without taking it as granted we may accept that it is also applicable to *B.S.*

The first *bhūmikā* of a temple being thus its ground floor, that means that according to the meaning given to *kaṭi*, that first *bhūmikā* is same as *kaṭi* (if *kaṭi* = ground floor) or is part of *kaṭi* (if *kaṭi* = base and ground floor) or is an element placed above *kaṭi* (if *kaṭi* = terraced base).

Conclusion about kaṭi

To try to summarize in a positive way what has been said up to now about *kaṭi*, we should say that *as far as the B.S. is concerned*, the most satisfying hypothesis will be to consider that the word *kaṭi* designates the lower part of the temple, that is to say its base, probably a terraced one (hence the name “hips”). Upon that base is placed the ground floor, that is the first or only one *bhūmikā*, together with the superstructure, those two parts making up two thirds of the total height of the temple.

An alternative would be to consider that the *kaṭi* comprises the base and the ground floor (alias first *bhūmikā*). The metaphor would then underline the narrowing of the temple at the top of the ground floor and at the start of superstructure, which is not very satisfactory. However in that case the superstructure alone would occupy two-thirds of the total height of the temple, which proportion would be better in accord with the few temples where superstructure has not fully disappeared: see Bhitargaon temple or Rajivalocana temple in Rajim.

In any case it does not seem possible to admit that the *kaṭi* is the ground floor, placed between base and superstructure (even if it appears that it is the averred position of *Viṣṇudharmottara*).

Elevation: superstructure

The top part of Indian temples, that is to say their covering, most generally comprises a superstructure which extends from above the top of the ground floor; it may pertain to various styles, while in most of the cases it comprises several repetitive levels.

According to Varāhamihira whose descriptions are not very explicit, a superstructure may or may not comprises upper storeys, but it comprises necessarily one or several elements pertaining to series of various designations and probably types, that is to say *aṇḍa*, *śikhara*, and *śṛṅga*. The problem is to know if such terms designate mere decorative features such as *aediculae*, or else a tower or the like.

Crowning elements and/or aediculae

Aṇḍa is always in the plural, at least as far as Varāhamihira's text itself is concerned: we learn that temples may get five (Caturaśra type), sixteen (Nandana type) or even twenty of them (Garuḍa and Nandivardhana types). However Utpala in its commentary mentions *ekabhūmika* temples which have one *aṇḍa* only (ad 55.28). That term *aṇḍa* (lit. "egg"), is usually translated in technical terms by "cupola" (see Acharya 1946, following Kern): that seems to imply a rounded form, for which however we lack parallels in actual architecture²²; S. Kramrisch takes it as a synonym of *āmalaka* which is perhaps better (see below).²³ Besides that we may see that in the *B.S.* when *aṇḍa-s* are in high numbers, there is a clear connection with the number of upper storeys: thus the five upper storey Nandana temple gets 16 *aṇḍa-s*, but the six upper storey Garuḍa and Nandi temples have 20 of them: that means clearly that all the upper storeys of those three temples, less one, get each four *aṇḍa-s* which we may consider as being corner *aediculae*; as one knows which corner *aediculae* are a typical features of temple superstructure, whichever is the regional style; the

22. One knows that *aṇḍa* is regularly applied to the rounded dome of buddhist *stūpas*!

23. S. Kramrisch 1946 t. I p. 273.

Kramrisch's hypothesis giving *aṇḍa* as a synonym to *āmalaka* may lead to the same result, for the *aediculae* may be crowned by such *āmalaka* (see Orissan temples). To summarize the five upper storeys of the six storey Garuḍa and Nandin temples make up the superstructure of those temples and get each four corner *aediculae*, in the same way there are four *aediculae* on the four upper storeys of the five storey Nandana temple. To end with *aṇḍa*, the Caturaśra temple which is *without upper storeys* gets five *aṇḍa*-s: such an uneven number may suggest a quincunx, the central *aṇḍa* making up the top of the roof of the temple.

Our second term, *śikhara* is often applied to a roof or a curvilinear superstructure. However in the *B.S.* it seems to be always used in the *plural* or in a way that implies such a plural;²⁴ in which case it cannot designate a unitary element, central pinnacle, roof or "tapering superstructure" as suggested by St. Kramrisch in her *Hindu Temple*.²⁵ On the other hand we can see that it is mentioned in connection with three multi-storied temples: Mandara getting nine upper storeys, Kailāsa seven and Sarvatobhadra four. Thus we think that it designate most probably *aediculae* or likewise elements which placed upon the storeys may be similar to *aṇḍa*-s.

The last term we have to deal with is *śṛṅga* ("horn..."): it appears in the description of Samudga and Padma temples (55.23) as well as of Vṛṣa one (55.26); in each case it is said to be unique (*ekaśṛṅga*) and to be connected with *ekabhūmika* temples, that is to say buildings without upper storeys,²⁶ and all of rounded form. Thus it seems to designate a superstructure built straight upon a ground floor, which may be of a curvilinear or the like form. However a slight difficulty may result from the fact that Utpala glosses *śṛṅga* by the two other terms *aṇḍa* (ad 55.23) and *śikhara* (ad 55.26)!

24. True plural is used only about Sarvatobhadra temple of which it is told that it has numerous *śikhara* (*bahuśikhara*, 52.27), but Utpala glosses *śikharayuktah* (concerning Mandara temple, 55.21) et *śikharavān* (Kailāsa temple, *ibid.*) by *śikharair yuktah*.

25. S. Kramrisch 1946 t. I p. 273.

26. According to Utpala, Hamsa and Ghata temples which he deems as *ekabhūmika* are also *ekaśṛṅga*.

Superstructure: summary

It appears that according to *B.S.* two kinds of superstructure are to be met. The first one is made up of several upper storeys on which are placed corner *aediculae* deemed as *aṇḍa* or *aediculae* of an other type (*śikhara*). The storeys are separated one from another by an element called *kapotapāli*, which, according to Utpala, is probably a cornice made up of a row of timber beam ends featuring lion-faces. The number of storeys is not necessarily in proportion with actual height of the building: thus if both Meru and Nandana temples make up 64 cubits in height and are the biggest temples according to *B.S.*, the first gets eleven storeys, while there are only six for the second one, that is to say less than for other smaller temples such as the Mandara (9 storeys for 60 cubits only), Kailāsa (7 storeys for 56 cubits, or Garuḍa and Nandivardhana (6 storeys for 48 cubits).

The second type of superstructure which do not comprise upper storeys seems to get several variations: sometime it is made up of a spire or a tower (*śṛṅga*), on a round plan; in one case it seems to be organized as a quincunx on a square basis; in others it may comprise, according to Utpala, one *aṇḍa*.

When looking at the relative size of temples, it appears that only the biggest ones (whose width makes up 21 cubits and above, and height 42 cubits and above) get superstructure with upper storeys. That last feature is probably to be paired with the corbelling technique used to build the upper part of the temple: widest is the temple, highest it is and vice versa. On the contrary the temple of lesser widths (16, 12 and 8 cubits) are all endowed with a *śṛṅga* – probably a kind of tapering superstructure – built right upon the ground floor.

*Temple types**List and description*

As told before twenty temple types are listed and summarily (or for some very summarily) described (see Appendix II). The list does not follow a regular decreasing order, while starting however with the

biggest of all – Meru temple which is 32 cubit wide and get a total of twelve levels. As far as plan is concerned, temples with high storey numbers (more than five which means a ground-floor and four upper storeys), get always ambiguous or unaccounted for plan types: thus the 12, 10 and 8 level types get an “hexagonal” plan which may be a true hexagonal plan – unaccounted for in early and probably later Indian temple architecture – or, as suggested by Stella Kramrisch in a farfetched way, a square but buttressed plan; in the same way the seven level types are said to be Garuḍa- and Nandin-shaped, which gives little meaning, while the plan of the six level Nandana temple is not given.

The more classical and the more likely plans are generally linked to small size temple without upper storeys: thus are the square, circular, octagonal, apsidal and probably stellate plans, for all of which the size is no more than 16 cubits; notable exception being the Sarvatobhadra type (26 cubits, four doors and four upper storeys). Besides that we may note amongst the small temples queer types such as those which plan is like an *haṃsa* or a vase.

The four last types are not described for they have explicit names (Vṛtta, Catuṣkoṇa, – ṣoḍaśāśrī et Aṣṭāśrī); however there are said to be “with an obscure form” (*añjanarūpa*) which is not very clear.²⁷ Utpala says that they are narrowly surrounded by a wall which dissimulate their first floor and that is to be passed by a lateral door; the whole is arranged in such way that the only light in the sanctum is the one produce by the jewel image which it contains.²⁸ In spite of several uncer-

27. Cf. 55.28b: *catvāro + añjana^rūpāḥ pañca^aṇḍa^yutas tu caturasraḥ* [K.caturaśraḥ]. Utpala quotes an extract of “Kāśyapa” according to which those four temples are *ekabhūmika* and, to the exception of Catuṣkoṇa type, *ekāṇḍa* (see below).

28. Cf. comm. ad 55.28: “(...) the four others – that is to say Vṛtta, Catuṣkoṇa, Ṣoḍaśa et Aṣṭāśra – are in accord with their names...” ... “They get ‘dark form’, which means that they have sens not well defined forms (*avyaktarūpa*), that they are obscure (*sāndhakāra*); that means that outside light does not enter inside them; once have been build walls on the four directions, running very near the temple (*devaprāsāda*), on must place a door on western side of the temple; walls are to be open on their upper part in such a way as they appear as parts of the temple itself ant as built up separately. Once having entered (inside those walls) through the outer door, one goes around the temple by the left (the north) and open a door on the eastern side of the temple; the cult image made of jewels which is inside the temple produces light (...)” (*ete añjanarūpā avyaktarūpāḥ sāndhakārā ity arthaḥ / bāhyaprākāśyaṃ teṣu na*

tainties, it is probable that those four temples are endowed with an outside circumambulatory passage, a feature well known in Gupta temple architecture; however according to *B.S.*, that feature has the unusual characteristics of being open-sky, and without axial entrance.

Ornaments and images

Before concluding it is worth to underline that a category of details is conspicuously absent from the above descriptions – general or specific; it regards ornamentation and iconography of the walls. About ornamentation, we have already seen that the only precise indication concerns the door; besides that there is no more than mentions of screened windows (*jālagavākṣa*), niches or the like (*kuhara*), big false dormer windows (*candraśālā*) or entablature of frieze (*kapotapāli*); to that it may be added that a Simha temple is decorated with lions but we don't not where and how lions images are used. Lastly pillars (and pilasters) are not mentioned specifically about temples, but they were dealt with some detail in chapter 52 where four types are described: Rucaka (square section), Vajra (octagonal), Dvivajra (16-sided), Pralīnaka (32-sided) and Vṛtta (circular); we were told too that pillars comprises a base and a crowning: base is made up of a “support” (*vahana*) and a vase (*ghaṭa*), while another vase, a lotus shaped moulding (*padma*) and an “upper lip” (*uttaroṣṭha*) are seen on the top part;²⁹ one may note the use of decorative vase a common features since early Gupta temples. Lastly mouldings are nowhere accounted for, even for the base (*kaṭi*?) which is often the only moulded element.

As far as wall iconography is concerned, apart of the door-keepers (*pratihāra*) located on the doorjambs, nothing is said about divine images being placed on temple walls, neither in the chapter describing

praviśary ayam arthaḥ / devaprāsādasya sannīṣṭās catasṛṣv api dikṣu bhītīḥ kṛtvā prāsādasya paścimabhāge dvāraṃ kāryam / tāś ca bhittaya ūrdhvaabhāge tathā chedanīyā yathā prāsādotpannā eva lakṣyante, na pṛthaksthāḥ / tatra bahirdvārāt praviśya prāsādasya vāmbhāgenāgatya purataḥ prāsādasya dvārāi kāryam / tatra maṇimayī pratimā tatkāntīyā yatra prākāśyam utpadyate /

29. See 52.28-29: **samacaturasro* [K.*samacaturaśro*] *rucako vajro* *+*aṣṭāsrir* [K.*aṣṭāśris*] *divvajrako dviguṇāu/ dvātriṃśatā tu madhye pralīnako vṛtta iti vṛttau //52.28/ stambhaṃ vibhajya navadhā vahanam bhāgo ghaṭo +asya bhāgo +anyah/ padmaṃ tathā^uttaroṣṭhaṃ kuryād bhāgena bhāgena //52.29/*

temples nor in those dealing with iconography (Chap. 57) and installation ceremony (Chap. 58). Everywhere the only images accounted for those which are to be installed in a sanctum. Some painted images are alluded to when dealing with iconometry, but we are not told where they have to be placed.³⁰

Conclusion

B.S. which is not a technical treatise on architecture gives us however some data about Indian temple architecture of the – let us say – 6th century. On a technical point of view, while nothing precise is said about the building materials, we can infer from the important thickness of the wall that temple are to be built in stone or brick; we may add that most probably same heavy material is used for the upper part of the building which must be corbelled; there is no hint of a roofing made up of wood and tiles.

The horizontal arrangement of those temples seems to be a very simple one: while it is most of the time limited to the sanctum, there are some hints of the presence of an external circumambulatory passage built on the periphery of a terraced base and covered by a lean to roof resting on sanctum external wall. The sanctum gets one or four doors; the main one, most probably facing the image, has its several frames richly decorated, with the conspicuous presence of two doorkeepers and the no less conspicuous absence of Gaṅgā and Yamunā.

As far as the general plan is concerned, the simple arrangement we have just been talking about concerns several types of plan which represent a sort of “catalogue” of Indian temple plans, the only notable absence being that of elongated forms (oblong and elliptic). Thus we have square, circular and apsidal plans, as well as several types of the stellate one.

The general arrangement of elevation seems to be in three parts: base, ground floor and superstructure, while it is not clear if super-

30. See 57.14: “From the thirty two (digits) making up the periphery of the head, fourteen are for its width; in case of a painting, twelve are to be visible, while twenty are concealed” (*dvātriṃśat pariṇāhāc caturdaśa^āyāmato+añgulāni śiraḥ / dvādaśa tu citra^karmaṇi drśyante viṃśatir adrśyāḥ //*).

structure makes up a third or two thirds of the total height of the temple. We know nothing about the external aspect of the base; as for the ground floor, there may be windows besides the door, and the walls may also comprise niches or similar features; however there is no hint of the presence of images (as may be seen at Marhia, Bhitargaon and other places).

The superstructure, whichever its type is an important element, which suggests that it goes with a corbelled covering of the sanctum (the wider the sanctum the higher the tower). There seems to be two types of superstructure. the storied one which corresponds to the biggest temples may have actual parallels in Kośala (see temples of Rajim, Kharod and the like in eastern Madhya Pradesh). Like those actual examples, *B.S.* temples seems to be decorated with corner *aediculae* (*aṇḍa*) and features of *śikhara* type whichever that means. The second type which corresponds to smaller types has no upper storeys, while it gets a *śṛṅga* type spire (?) and seems to be reckoned only with circular plan.

Several problems remains to be solved such as the case of temples with upper room or presence of outward deambulatory and the like. Thus being the case the main interest of the *Bṛhatsaṃhitā* is to be one of the rare technical texts dealing with architecture of which the date is undisputed. Thus it can be used as a tool to place other normative texts in an historical perspective.

Appendix I: Dimensions of the twenty temples (B.S. 55.20-28)

Name	Storey number	Width in cubit	Width in meters (x 0,450)	Heigh in meters (x 0,350t)	Width in meters (x 0,350)	Height x 0350
01. Meru	12	32	14,4	28,8	11,2	22,4
05. Nandana	6	32	14,4	28,8	11,2	22,4
02. Mandara	10	30	13,5	27	10,5	21
03. Kailāsa	8	28	12,6	25,2	9,8	19,6
15. Sarvatobhadra	5	26	11,8	23,6	9,1	18,2
08. Garuḍa	7	24	10,9	21,8	8,4	16,8
09. Nandivardhana	7	24	10,9	21,8	8,4	16,8
04. Vimānacchanda	(8)*	21	9,45	18,9	7,35	14,7
10. Kuñjara	(1)*	16	7,2	14,4	5,6	11,2
11. Guharāja	(1)*	16	7,2	14,4	5,6	11,2
12. Vṛṣa	(1)*	12	5,4	10,8	4,2	8,4
06. Samudga	1	8	3,6	7,2	2,8	5,6
07. Padma	1	8	3,6	7,2	2,8	5,6
14. Ghata	(1)*	8	3,6	7,2	2,8	5,6
16. Siṃha	(1)*	8	3,6	7,2	2,8	5,6
13. Haṃsa	(1)*	-				
17. Vṛtta	(1)*	-				
18. Catuṣ-koṇa	(1)*	-				
19. Śoḍaśa	(1)*	-				
20. Aṣṭāśrī	(1)*	-				

Appendix II: Features of the twenty temples (B.S. 55.20-28)

Name	W	Plan	Doors	Windows	Storey number (tot.)	Cover
01. Meru	32	hexagonal	4	kuhara	12	-
02. Mandara	30	hexagonal*	-	-	10	śikhara
03. Kailāsa	28	hexagonal*	-	-	8	śikhara
04. Vimānacchanda	21	-	-	jālagavākṣa	-	-
05. Nandana	32	-	-	-	6	16 aṇḍa
06. Samudga	8	circular	-	-	1	one śrīṅga
07. Padma	8	lotus shaped	-	-	1	one śrīṅga
08. Garuḍa	24	f. of Garuḍa	-	-	7	20 aṇḍa
09. Nandivardhana	24	f. of Nandin	-	-	7	20 aṇḍa
10. Kuñjara	16	apsidal	-	3 candraśālā	(1)*	valabhī?
11. Guharāja	16	-	-	3 candraśālā	(1)*	valabhī?
12. Vṛṣa	12	circular	-	-	1	one śrīṅga
13. Haṃsa	-	haṃsākāra	-	-	(1)*	one śrīṅga*
14. Ghata	8	kalaśarūpa	-	-	(1)*	one śrīṅga*
15. Sarvatobhadra	26	-	4	numerous candraśālā	5	numerous śikhara
16. Siṃha	8	12 sides	-	lions decoration	(1)*	1 aṇḍa*
17. Vṛtta		circular	-	-	(1)*	1 aṇḍa*
18. Catuṣkoṇa		square	-	-	(1)*	5 aṇḍa
19. Ṣoḍaśa		16 sides	-	-	(1)*	1 aṇḍa*
20. Aṣṭāśrī		octagonal	-	-	(1)*	1 aṇḍa*