

THE CAKRAS IN THE BODY

(An Anatomical Study)

J.E SIGDELL

P.O. Box 194, CH-4012 Basel, Switzerland

Received: 23 May 1988

Accepted: 10 October 1988

ABSTRACT: Based on the book "Tantra Vidya" of Oscar Marcel Hinze, the author interprets here the chapter 1.4 of the book and traces the manifestation of Cakras in the body.

Hinze has in his studies of, a.o., the Tantric philosophy discovered many interesting relationships concerning the cakras, such as systematic principles for the bija-mantras and the "peripheral" letters of the petals and structures in planetary motions for the allocation of planets to the corresponding centers in medieval European metaphysics, and also a numerical relationships between certain cakras and certain groups of vertebrae in the spinal column (partly relating to suggestions by Wood-roffe [4,pp. 103-109]-not to be understood as an attempt to identify cakras with groups of vertebrae. As concerns the latter and will be shown in more detail below, he has pointed out that the five lumbar vertebrae relate to the manipura cakra through a structure $5+5=10$ found in the peta letter arrangement of this cakra [2,p.98] (five dentals and five others, which in their subdivision $2+3=5$ relate in further detail to a corresponding astronomical phenomenon [2,pp.71-82 and 3,pp. 58-61]. He has also in detail shown that the number 12 of petals of the anahata cakra relates in its structure of divisions to an astronomical phenomenon, which again in a structure of divisions, clearly relates to the arrangement of the ribs in the chest and thus to the number 12 of the thoracic vertebrae [2,p.98]. He therefore assumed that there may be relationships between the two lower cakras and vertebrae also, especially since the total number of petals of muladhara and svadeisthana, taken together, is 10, as is also the total number of sacral and coccygeal vertebrae together (see below) [2,pp.98-99]. However, the conventional anatomical division is into 5 sacral and 5 coccygeal vertebrae, whereas the cakras have 6 and 4 petals, respectively. Also, a structure 2×8 (see below) found for the petals of visuddha would at least relate to the 8 cervical spinal nerves, but there are only seven cervical vertebrae defined in the anatomy [2,pp.99-102]. Independent remarks by Dr. Eric Gomes (Ghent, Belgium) and the present author gave a hint on the solution of the latter problem, and Mr. Hinze asked the present author to study the relationship between cakras and vertebrae in detail. As a result, the relations were clarified also for svadhisthana and muladhara, and verified for visuddha. Furthermore, a suggestion by Hinze concerning a relation between the twelve-petalled dvadosarna cakra (close to ajna) and the twelve cranial nerves was verified and, in addition, a relation with bones in the skull was found. In the following, the detailed anatomical proof of relations between the numbers of petals of cakras and corresponding groups of vertebrae is given, and some additional results are presented.

The relation between anahata and the twelve thoracic vertebrae is not discussed in much detail in the original article (the chapter in “Tantra Vidya”) of the author, since it was already given by Hinze in earlier sections of the book. There he shows that the astronomical phenomenon of conjunctions of the sun and the moon has two structures: $7+3+2=12$ and $5+5+2=12$, relating to sure and possible eclipses. He furthermore shows that anahata has a structure $5+5+2$ of its petal letters: five gutturals, five palatals and two cerebrals, and that the system of ribs in the chest has a structure $7+3+2=12$: seven are joined to the breast bone (sternum), three are not, but are joined to each other, and two are free. Each rib belongs to a corresponding thoracic vertebra, such that those vertebrae can be said to have a structure $7+3+2$ through their ribs [2, pp. 83-86 and 3, pp. 64-66]. The two subdivisions of 12, i.e. $5+5+2$ and $7+3+2$, evolve as different aspects of on and the same astronomical phenomenon, relating to those structures.

Hinze also points out that m and h in the petal letters am and ah of visuddha indicate that the sought “eight cervical vertebra” (see below) would be in the skull [2, p. 101], and he, furthermore, brings an explanation for the fact that the 5 petals of manipura relate to five and not to ten vertebrae, in that the corresponding astronomical phenomenon traces two coincident pentagrams in the sky (a double five – pointed figure and not a two-pointed one), whereas in the case of svadhisthana a hexagram of two opposite triangles is formed [2, pp. 98, and 3, pp. 57-58, 69-82]. The astronomical phenomenon relating to visuddha has 8 as its primary number, explaining its relation to 8 vertebrae (see below) [2, pp. 98, 87-92 and 3, pp. 66-72]. (As connecting the gestalt-astronomical relationships with cakras (and the concept of “gestalt-astronomy” by itself), the various editions of Hinze’s book are referred to (a partial translation into English is published in India (3)., having only two of the eight sections of the original; it treats gestalt-astronomy on pp. 25-75, but does not have the below article of the present author).

Here it may be mentioned that Hinze in much detail demonstrates exactly an allocation of the Moon to muladhara, Mercury to svadhisthana, Venus to manipura, the sun to anahata, Mars to visuddha, Jupiter to ajna and Saturn to sahasrara padma. A similar allocation of planets to points or regions of the body, which correspond to the locations of the cakras, is found in medieval European philosophy. Hinze’s work shows that both systems are really identical expressing the same in different terms.

In the following translation of the German text, some references (in square brackets) have been incorporated, as compared to the original.

Anatomical confirmation of a manifestation of the cakras in the body.

Oscar Marcel Hinze has demonstrated that there is a specific relation between anahata, the twelve-petalled cakra of the archaic “psychic anatomy” in Indian spiritual science (4) and the system of ribs in the chest (2 pp. 83-86, and 3, pp. 64-66p) this relation shows a detailed correspondence –on one side between the distribution of devanagari letters on the cakra’s lotus petals” and the astronomical phenomenon which can be associated with it, and on the other side between the same astronomical phenomenon and the arrangement of the ribs. As a consequence, not only the number twelve of the ribs, but also the number twelve of the thoracic vertebrae, corresponds to the number of petals of this

cakra. Now, it has been found by Hinze” that such a relation between a cakra and a set of vertebrae is in a notable way valid for each cakra, which is the subject of this study. The aim is to anatomically confirm the validity of such a general relation between cakras and vertebrae.

In the following, we denote the individual vertebrae in an anatomical manner as follows:

7 cervical vertebrae: C1-C7

12 thoracic vertebrae: Th1-Th12

5 lumbar vertebrae: L1-L5

5 sacral vertebrae: S1-S5

3-5 coccygeal vertebrae: Cx1-Cx3...5

(Here, Arabic *numerical are used, instead of the more common notation using roman numerals.)

Manipura, the ten-petalled cakra

In this case it is clear that the Correspondence along the vertebral column would have to be the five lumbar vertebrae [2, pp. 98, 71-82 and 3, pp. 58 – 61]. Anatomically, those five vertebrae are clearly defined; their position and their number lead us directly to manipura, having a number of petals which is based on the number five (cf. Introduction) [2, pp. 71-82 and 3, pp. 58-61].

Svadhithana, the six- petalled cakra, and muladhara, the four-petalled cakra

We would here expect a relation between the sacral vertebrae and svadhithana, and between the coccygeal vertebrae and muladhara. However, the number of the sacral vertebrae is five, and , concerning the coccygeal vertebrae, the anatomy mentions a varying number 3-5 vertebrae [5,p.286]. the coccygeal vertebrae are mostly more or less rudimentary or fused, and it would not be far-fetched to assume that five would be the original number of those vertebrae, the anatomy mentions a varying number 3-5 vertebrae [5,p.286]. the coccygeal vertebrae are mostly more or less rudimentary or fused, and it would not be far-fetched to assume that five would be the original number of those vertebrae,

*Commonly, our numerals are called “Arabic” in the West, even though their origin is Indian (passed on the West though the Arabs in ancient times). (Note added in the translation). And that the appearances of three or four could be explained by atrophies or fusions. Thus, the total number of sacral and coccygeal vertebrae, together, would actually be ten, and as a natural hypothesis (cf [2,pp.98-99], we would like to assign a correspondence with svadhithana to the five sacral vertebrae plus the first coccygeal vertebra, Cx, and a correspondence with muladhara to the other four original coccygeal vertebrae. However, this requires further anatomic evidence, so as not to raise objections of arbitrariness. It can actually be shown that Cx1 in its anatomical nature rather has the appearance of an unfused sacral vertebra, than of one of the coccygeal vertebra. It may even occur that this vertebra is, in fact, fused with the sacral bone, and, therefore, forms an actual sixth sacral vertebra in conventional anatomical terms [5,p. 286 -287 and Fig 279C]. This fusion may in such a case be one-sided (5,p. 286 and

Fig 279A]. in the case when Cx 1, is not fused with the sacral bone, it is the only one of the coccygeal vertebrae which has a transverse process on each side; those processes correspond to the “Scutiformally” fused transverse processes of sacral vertebrae in the lateral parts of the sacral bone [5,pp.287, Figs. 271-272 and pp. 421-422]. Furthermore, this vertebra had two ‘horns’ pointing upwards (coccygeal cornua), which correspond to the fused articular processes of the sacral vertebrae (forming parts of the intermediate sacral crest) [5,p.120]. Those “horns” often articulate against corresponding “horns” (sacral cornua) on S5 [5, p. 120]. The other coccygeal vertebrae lack such appearances.

As further, the number of the coccygeal vertebrae a possible divisibility into five parts is not easily recognizable in such cases, but in which only three or four separable bones are formed. It can then, however be assumed that a Cx5 and, in applicable cases, also a Cx4, had regressed into disappearing [5, fig 422]. But it could also be that two or three coccygeal vertebrae have fused to form one single bone [5 figs, 271-272). One may in any case take the maximum number of five as an indication of an original or basic number, especially since the occurrence of this number is not as rare as to be taken for an anomaly. A modern encyclopaedia, furthermore, states that the coccygeal bone “arises from fusion of the five last, incompletely formed, vertebrae, which follow after the sacral bone” [6].

Hence, the number of vertebrae which correspond to svadhithana has the structure $5+1=6$. A correspondence to the devanagari letters of the cakra would be, one aspirated sound (bha) and five unaspirated (ba,ma,ya,ra,la) [cf,[4].

Furthermore, there is inside svadhithana also a twice appearing eight-petalled lotus [4,p.365]. this could be related to the eight quite notable sacral foramina, inside the sacrum, which are formed by the fused transverse processes and are arranged as a row of four holes each on either side of the intermediate sacral crest [4,p.282 and Fig.266].

Visuddha, the sixteen-petalled cakra

The structure of the petals is here 8×2 and the location leads us to the cervical vertebrae. However, the anatomy describes only seven cervical vertebrae. Can an eighth be found?

An indirect indication of an eighth cervical vertebra is given by Bohm: “Goethe assumed an inflated and inverted dorsal vertebra in the head” [7,p.55]. Apparently, Boym has not recognized the deeper implications of this (he nowhere mentions relations between cakras and numbers of vertebrae). A closer study of Goethe’s *Naturwissen schaltfiche Schriften* (Treatises on Natural science) shows, however, that he didn’t see the origin of the cranium in one single vertebra, but first in three and later on in six vertebrae [8,pp.L-L1,271,316, 318-319,322 and 9, pp. 33 ff]. The primary indication thereof is found in 1786 in the works of Goethe (in his treatise on the “intermediate bone”) [8,p.316]. In 1807, a similar theory was published by Lorenz Oken, Professor in Jena [8,p. 322]. In the modern comparative history of animal development, this “Goethe-Oken’s theory of the skull” has been taken up anew [10,pp.394-401]. A vertebral origin of the occipital region of the cranium can be shown by means of general comparison of relations in the zoological evolution [10,p.394].

*This shown by Hinze, a.o by means of the astronomical phenomenon which can be related to visuddha, and also through the pairing of the petal vowels: a and a, i and i u and u, etc. (Note added in the translation).

As a summary, we thus have the following correspondences:

Eight	C0-C7
Twelve	Th1-Th12
Five	L1-L5
Six	S1-S5 +CxI
Four	Cx2 – Cx5
Visuddha	(2x8 – petalled)
Anahata	(12 – Petalled)
Manipura	(2x5 – Petalled)
Svadhithana	(6 – Petalled)
Muladhara	(4- Petalled)

A fossile fish, Eustenopteron (a Crossopterygean) even gives a double indication of a vertebral origin of the base of the skull [10,p. 399].

The embryological development of man also indicates a vertebral origin of this part of the skull. The vertebral column is formed by the dorsal cord (chorda dorsalis or notofhorda), which then completely disappears [5,pp. 103 and 135-140]. This chord continues in the embryonic form of the base of the skull, up to the hypophysis [5,pp.138-139 and Fig.119]. Furthermore, the following parts of the skull-like the vertebrae – are of a cartilageneous origin (the other parts originate from connective tissue): the occipital bone (except the squamous part), the petrous part of the two temporal bones, the lesser wings and the roots of the two greater wings of the sphenoidal bone, as well as the ethmoidal bone [5,pp.140,351,356-357, 362-364 and 372]. The squamous part of the occipital bone is sometimes separated as an individual bone (the interparietal bone) [5,p.351].

Thus, we may regard as confirmed that the basis of the skull may, on an evolutional basis, be viewed as an eighth cervical vertebra (below, we will denote it by C0; actually, C0 is the first, C1 the second and C7 the eighth cervical vertebra). This shows the hinted on by Hinze, to be valid for visuddha as well.

The special position of C0 has a correspondence in the letters of visuddha. The corresponding letters in the circle of petals are special letters in the devana-gari (am and ah- here rather amm and ahm [2 Fig 10; 3, Fig.9; 4 plate VII at p 391 and 7, Fig. at 84] which also reflect the bija-sounds (m and h) of the two cakras in the head [11].

The confirmed relations are, of course, not to be taken for an identification of such groups of vertebrae with their corresponding cakras. They merely indicate that the cakras, among other things in the structures of the body also manifest in groups of vertebrae.

Concerning the view of Goethe that the skull would develop out of several vertebrae, it may be remarked that a vertebrae, it may be remarked that a vertebra itself usually develops out of several bony parts, which then fuse to form an unseparable unit [5, pp. 278-280 and Figs 273-278]. The presence of several bony parts in the base of the skull can, therefore, still be associated with a single vertebra. Goethe assumed individual vertebral origins for six different bones of the skull. Three of those belong to the bones of the face, which neither develop from cartilaginous tissue nor form the dorsal chord. The other three are parts of the base of the skull, here-for reasons given – viewed as originating as a whole from one vertebra*.

Discussion of the bones of the skull

Among the bones of the face (the facial cranium), the ethmoidal bone and the inferior nasal conchae are often also mentioned [12., Vol. 1, p.260]. As we have seen, however, the ethmoidal bone in its entirety develops out of cartilaginous tissue and, therefore, belongs to the base of the skull, or to the “eighth” (or, rather: first) “cervical vertebra”. One also finds that the two inferior nasal conchae develop out of cartilaginous tissue as well, and this in the form of ossifications of the nasal cartilage [5, p. 373]. We can, therefore, either refer those bones to the base of the skull (which was not done above, in accord with Gray’s Anatomy [5], or, alternatively, view them separately as mere such ossifications of that cartilage. Then twelve facial bones remain, which do not develop from cartilage, but from connective tissue. Of these, five are paired and two are singular. Those bones are: the nasal bones, the lacrimal bones, the zygomatic bones, the palatine bones and the maxillae (paired bones), as well as the vomer and the mandible (singular bones). Hence, we here find a structure $2 \times 5 + 2 = 12$, as we already did for anahata. Another expression of the fundamental 12-parted structure was found for the ribs 9cf. the introduction). Now, a small twelve-petalled secondary cakra in the head is also mentioned: davdasarna [4, pp.128, 482-500; and 2, pp. 93-96 and 3, pp.72-75], whose related main cakra, ajna, may be regarded as a repetition of anahata [2 and 3, Ch.I). what is remarkable here, is, that even the bone structure repeats an arrangement in twelve! It may, therefore, be proper to regard the facial bones as corresponding to the region of ajna. A correspondence to ajan alone could then, logically, be the two inferior nasal conchae, even though this is not quite as obvious as for the other correspondences discussed above.).

*The three last sentences here differ some what from the original German text, in which the bones are listed in Goethe’s teaminology.

The other cranial bones, which also develop from connective tissue, form the roof of the skull, the calvaria [5, p. 303]. Those are the frontal bone, parts of the occipital bone and the sphenoidal bone (singular bones), as well as the parietal bones and parts of the temporal bones (paired bones). (The other parts of the bones mentioned here not fully included bones belong to the base of the skull, as shown above.) The number of those bones are $2 \times 2 + 3 = 7$. A possibility to connect sahasrara padma with bility to connect sahasrara pada with those bones could at first appear to be the fact that this cakra is the seventh, which cannot be taken for an obvious correspondence. However, saharara padma is also a kind of totality of all cakras [2,p.44; 3, p. 33; 4,p.164 and 7,p.119], which can be represented by the formula $4+3=7$ (four"matrial" cakras of the trunk and three "Superior" cakras of the neck and head*). This seems to sustain the correspondence hinted on, even though it should still be taken as somewhat hypothetical.

The other bones which are associated with the head, the hyoid bone and the extremely small bones in the ear, cannot here be truly referred to the actual skull. (The hyoid bone may rather

[5+5]+2 facial bones:

Twice (7+3)+2 thoracic ribs:

[5+5 2 sacral "ribs":

Be regarded as an ossification of a tracheal cartilage, and hence belongs to the trachea, and the little bones in the ear as ossifications in the auditory organ).

Discussion of the repetition of 12-parted structures.

We have seen that the 12-parted structure for anahata is repeated for the facial bones according to the formula $2 \times 5 + 2 = 12$. If we study the complex of the sacral bone, we again find the same 12-parted structure ! At each of the five anatomical sacral vertebrae, we have two "ribs" (costae) fused with each other, as well as with their vertebrae, which buikld up the "shield" of the sacral bone [5,pp. 282-283]. We have, furthermore, seen that the first coccygeal bone is to be regarded as a separate sixth sacral vertebra, which also had two ribs, which are fused with the vertebra but otherwise usually separate. Thus, we again find the formula $2 \times 5 + 2 = 12$: two rows of five fused ribs and two separate ribs.

Now, the six cakras below sahasrara padma are paired in three groups [2,p. 45 and 3,p.34), and we find that the 12-parted structures can be associated wit those groups**. As a summary:

Group III (ajna, visuddha),

Group II (anahata, manipnra),

Group I (svadhisthana, muladhara).

*This is a cosmologically feasible division relating the four "material" cakras to the grassly material world and the othrs to higher cosmological levels (including akasa). Another division is in five "lowerlar"

cakras, eting to the five elements, and consequently, in two “higher” cakras. However, akasa has a special position among the elements. (Note added in the translation.)

**As concerns the relation between the subdivisions 5+5+2 and 7+3+2, see the introduction. (note added in the translation.)

Neuroanatomical discussion

The spinal nerves, which pass through the vertebral column and form the proximal part of the peripheral nervous system, are [12,p.121]:

8 cervical nerves, NCI – NC8,

12 thoracic nerves, NTh1 – NTh12,

5 lumbar nerves, NL1 – NL5,

5 sacral nerves, NS1 – NS5,

1 coccygeal nerve, NCx1.

In which, according to the above, the last six nerves should obviously be taken together.

A spinal nerve leaves the spinal channel below its corresponding vertebra. The first cervical nerve, however, leaves below the base of the skull. The number eight of the cervical nerves already hints on the question of a eighth cervical vertebra and the position of NCI on it location [11] the neurology again confirms the finding that the base of the skull is to be regarded as an eighth (or, rather: first) cervical vertebra.

At the lower end of the vertebral column, there are two peripheral nervous plexuses: the sacral plexus [12, Vol.3, p. 137] and the coccygeal plexus [12 Vol.3, p. 143]. Of those, the sacra, plexus in mainly formed by NSI-NS5 and NCx 1, but also by NL4-NL5 [12. The coccygeal plexus is also formed by NS1-NS5 and NCx1 [12]. This constituted further evidence that Cx1 really belongs to the group of sacral vertebrae. Another evidence is found in that the spinal medulla, including its terminal filament (filum terminale), passes on down to CX1. Cx2 is the first vertebral without even a terminal filament [5,p. 983 and fig 793].

It is, furthermore, of interest that also the twelve paired cranial nerves belong to the peripheral nervous system [12, vol.3, p. 146]. A correspondence to dvadasarna and the twelve facial bones appears as a natural consequence.

*In the 35th edition of Gray’s Anotomy, the sacral plexus is described as formed by NL4, NL5 and NSI4 9pp. 1054-1055 and the coccygeal plexus as formed by NS4, NS5 and NCx1 (p. 1061).

(Note added in the translation.)

**The mere fact that Cx1 is the only coccygeal vertebra with an associated nerve already separates it from Cx2-5 and puts it in a class like that of the sacral vertebrae. (Note added in the translation)

Can cakras be identified with physical structures?

Due to the herewith demonstrated clear correspondences between cakras and groups of vertebrae and also groups of spinal nerves, one might be tempted to identify cakras with anatomical structures. This has also been tried (Iaro., by B.K. Sarkar and B Seal [4, pp. 153-158], and identifications with nervous plexuses have been suggested. Woodroff (=Avalon), however, clearly states [4, pp. 158-164] that, according to the Indian doctrine, the cakras are not located in the gross body (thula sarira), but only have certain relations to it. According to this doctrine, a subtle body (suksma sarira) is superordinate to the gross body, and cakras are located to this subtle body. Woodroff remarks: "to connect or correlate and to identify are different things" [4;p.161].

From Indian scriptures on the subject, we can only deduce that any attempt to identify cakras with structures of the gross body constitutes a limitation of the view or a projection of a subtle reality on to a gross physical level (a view usually forced about by the fact that western science limits itself to accept only the latter as existent)*.

Mathematical note

The petal numbers of the five cakras form a "bi-arithmetical" series with a periodically changing difference of two and four, respectively. The posetal numbers of a cakra n (numbered 1-5 from below) can for those five be expressed as

$$B_n = \sum_{i=1}^n [3 - (-1)^i].$$

The three upper cakras (here including dvadasarna as a separate cakra, since we have found it to play a certain role above) form a kind of power sequence, which, however, is a little complicated. If we number them by m=1 for ajna, m=2 for dvadasarna and m=3 for sahasrara padma, the petal number is

$$B_m = 2^n (2m-1)^{2m-3}.$$

Those relations are here mainly of mathematical interest, since philosophical or other consequences are, so far, hard to see, but the fact that such relations are found appears worth mentioning.

REFERENCES

- 1) Hinze, O.M. Tantra Vidya, 1st edition. Theseus, Zurich (Switzerland) (1976).
- 2) Hinze, O.M. Tantra Vidya revised edition. Aurum, Freiburg (W. Germany), (1983).
- 3) Hinze, O.M. Tantra Vidya English Translation Motilal Banarsidass, Delhi, Varanasi and Patna, (1979).

- 4) Woodroffe, Sir John (pseudonym; Arthur Avalon): The serpent Power, being the Sai-cakra Nirupana and Paduka-pancaka. Ganesh, Madars, (1974).
- 5) Davies, D.V (ed). Gray's Anatomy, descriptive and applied, 34th ed., 3rd printing. Longmans, green & Co., London, (1972).
- 6) Dtv-Lexikon, Vol. 17. P. 272. Deutscher Taschenbush-Verlag, Munich (W.Germany) (1973).
- 7) Bohm, W. Chakras, 2nd ed. O.W. Barth, 2nd ed., Weilheim (W. Germany), (1966).
- 8) Goethe, J.W. Naturwissenschaftliche schriften, vol .1. In: Goethes Werke, published by R. Steiner. W. Spemann Berlin and stuttgart (W. Germany (no year).
- 9) Goethe, J.W. Ibid.
- 10) Sieving, R. Lehrbuch der vergleichenden Entwicklungsgeschichte der Tiere. Paul Parey, Hamburg and Berlin (W. Germany), (1969).
- 11) Hinze, O.M. personal communication.
- 12) Voss, H., Herrlinger, R. Taschenbuch der Anatomie, 14th ed. C Fischer, Stuttgart (W. Germany), (1971).