

## **Chapter II**

### **Jyotiḥśāstra and the Concept of Karman**

#### **1. Preface to the Correlation**

Astrology was practiced by many ancient cultures to look into the future. Divinations in those times were the means to interpret future. They supposedly originated from mimetic magic which ‘deduced the future of events from the behaviour of things’. (Religion and Philosophy of the Veda and Upaniṣads, p.388.). Magic was practiced by the Indo-European races with the belief that ‘by imitating the cosmic processes they could control or assist them’. (Magic and Religion, p. 82.). Actively performed actions played a role as an outsource of such a thought process though it was with the aid of the gods and the spirits who were fancied to be controlling the cosmic processes. Actions as prayers and sacrifices were directed towards these gods in order to pacify them. Till the period of the primitive Indo-Germans, magic appear to be separated from Astrology which constituted of omens and portents. (The History of Indian Literature, p.264.) Mythology also played a role in the formulation of Astrology though it surfaced as a product of activity of the human intellect thereby chiefly mental rather than a physical one expressing similar ideas, desires and habits in myths inspite of the difference in the cultural practices. The commonest myths pertained to the Sun and the Moon, the day and the night and the sky as explanations of the recurring natural phenomena in connection with the life and death of human. These were perhaps the first of the kind in conceptualizing the ideology of man regarding his connection with the other world as also of the course of the rising and the setting Sun providing the notion of rebirth of man thereby establishing a religious creativity resulting in the worship of the luminaries. The belief of existence and its travel outside the body is recorded in the Paleolithic through the Mesolithic continuing in the Neolithic population reflecting in their systems of burials orienting them towards the east displaying a tendency of connecting the destiny of the soul with the path of the Sun. (A History of Religious Ideas, Volume I, p. 33.). The idea of immortality also co-existed in the early cultures. The anthropomorphized

deities in all probability represented this idea and were commonly addressed as *deivos* (Skt. *Deva-s* originating from √ div ‘to shine’.) in the Indo-European period while were being connected with light and heaven (Vedic Mythology, p. 8.).

The same root contributed for the term day and also for the bright sky (The Origin of the Aryans, p. 324, 328.) and *Dyaus* a development as to sharing the divinity with the gods appears in the correspondence between the heaven and the earth by means of the cosmic light forms and their motion. The connection with light is evidently natural on the ground especially a moral one that man prefers light and shrinks from darkness which can be expressed as a man’s instinct rather than a religious one (Origin and Evolution of Religion, p. 106) and which reflects in the observance and worship of early man connecting Astrology with cosmic and human actions in the early period.

The idea of the order in the universe as a supreme law governing all the things in the world conceptualized as *Rta* also contributed to the correlation of cosmic order of the light forms to the ritual order in the Indo-Iranian phase. Although the concept of time displayed in the notion of *Rta* or *Aśa* connected with ritual actions have a utility as early as the Upper Paleolithic period which records the usage of a lunar cycle for a practical purpose.(A History of Religious Ideas, Volume I, p.22). Sacrifices though reported in somewhat similar period the worship of fire until the Indo-European times was animalist rather than anthropomorphic (Religion and Philosophy of Veda, p. 38). Intermingling of human qualities and actions with the cosmic activity is a development later to this and till the period of the Veda frequent association of man and cosmos for enquiries regarding future is evident and an organized system for the same in the form of divinations and actions on luminaries for their fulfillment occurs up to this period though the growth up to here can be termed as that of an adolescent standing on the verge of his cosmic habitat eager to surpass it and with the knowledge gathered from the habitat ready for a more mature footing for a better understanding of the roots of his own identity and their outcome.

## 2. Jyotiḥśāstra

Astronomy or Astrology is termed as Jyotiḥśāstra in Sanskrit literature and is defined as the knowledge or science of light.

### *i. Derivation of the term*

The term *jyotiḥ* is derived from √dyut or √jyut<sup>1</sup> meaning 'to shine'. The √dyut followed by uṇādi suffix-isin<sup>2</sup> makes 'jyotiḥ' after the elision of 'n' and the substitution of 'j' for the initial 'd'.<sup>3</sup> √dyut (to light) is used directly or in the causative sense for the formation of 'jyotiḥ'.<sup>4</sup> The use of √jyut 'to shine' has been traced in Vedic literature only and in the late ages its use has become obsolete.<sup>5</sup>

### *ii. Meaning of the term*

In the Vedic and later literature, the term 'jyotiḥ' appears in connection with that which shines. In this sense, 'jyotiḥ' comes in a widely extensive meaning in the literature. Jyotiḥ<sup>6</sup> (n) means light, luster or brilliance, heavenly body or luminary, the celestial world, lightning, light of Brahman, the faculty of seeing. Jyotiḥ (m) means the sun and fire. The function of jyotiḥ is *prakāśa* that is to manifest, to illuminate or to dispel darkness.

In the above senses Jyotiḥśāstra constitutes the study of various light forms in nature and the term jyotiḥ<sup>7</sup> appears in connotation with the above meanings in the literature.

### *iii. Sources of Light in the Literature*

The initial light forms in the literature primarily observed due to their physical light nature in the sky are Sūrya, Candra and the Nakṣatras. Along with their appearances and character, they have a practical utility in the culture.

#### **a. Sūrya**

Sūrya is the material Sun and is marked by his effulgence in the sky. Sūrya is generated from the (brilliant) dawn (RV. VII.63.3), he shines forth and moves in the highest region of the Dyaus (RV I.50.11) in a singular path (RV. I. 164.14) is observed in the R̥gveda.

The chief action of Sūrya is his shining for all the world (RV. VII. 63.1), he is the dispeller of darkness due to his light (RV. X. 37.4) and is considered as the support of the world (RV.I 164.14).

Sūrya is attributed the quality of vision in the literature and is described as far seeing (RV. VII. 35.8, RV. X. 37.1), with his eye he views the world (RV. I 50.2). On account of such a characterization he is a prime light form. He is the eye of Medhya Aśwa (sacrificial horse) (Tai. Saṁ.VII.5.25.) and of various gods like Agni (RV.I. 15.1), Mitra and Varuṇa (RV.I.115.1, X.37.1, VII.61.1). In connection with human, the eye of man after death goes to Sūrya (RV. X. 16.3).

Being a prominently perceptible light form, the movement of Sūrya in the various divisions of the sky is observed in the culture and is made an instrument to measure the world.<sup>8</sup> Sūrya never really rises or sets but due to its motion produces (the division of ) day and night is mentioned in the Aitareya Brāhmaṇa (14.6). Saṁvatsara or Varṣa is a solar division in the Veda. Sūrya is the cause of Ṛtus (seasons) (RV. I. 95.3) is known, they being five (Mai. Saṁ.I.7.3) or six (Śat. Brā. II.1.3.16, AV. VI.55.2) find mention in the literature.

The apparent motion of Sūrya in the Northern and the Southern hemisphere for six months each is observed<sup>9</sup> and the movement of Sūrya along with Candra in the twenty seven Nakṣatras and later the twelve Rāśi divisions is the basis of Jyotiḥśāstra as far as its practical utility is concerned.

The Ṛgveda<sup>10</sup> declares the highest point of the Sun as the abode of the fathers. Sūrya is made a distinct mark to differentiate time with and without parts. An effort to connect Sūrya as the soul of all that moves and rests is observed in RV.I.115.1 and in connection with the Brahman world Sūrya does not (really) rises or sets but remains established in himself is mentioned in the Chāndogya Upaniṣad (III. 11.1,2). Thereby apart from the perceptible material form Sūrya was also viewed from an ideological perspective by the culture.

## **b. Candra**

Moon is addressed as Candra or Canda, the terms which express its luminous nature and with the term Candramas moon is the luminous measurer<sup>11</sup>. Often Candra

is addressed as Soma<sup>12</sup> and in the Ṛgveda the name shares a parallel<sup>13</sup> with the personified terrestrial Soma plant and its juice. The light nature of Soma is expressed in RV. IX.86.45. Soma (juice) is addressed as ‘Śukra’ or ‘Śuci’, bright<sup>14</sup> in its purified form or as ‘indu’<sup>15</sup> the ‘bright drop’ or ‘drop’ (RV.VI. 44.21). Soma thus has a terrestrial as well as a celestial origin in the literature.

Candra receives light rays from Sūrya is known and is thereby addressed as *Sūryaraśmi* in the Saṁhitās.<sup>16</sup> The birth of Soma from Sūrya is recognized and also its regular death. (RV.X.55.5, Tai. Brā. ii.5.7.3). The total disappearance of Candra on New Moon (Amāvāsyā) is observed and that it enters Āditya on this day is mentioned in Aitareya Brāhmaṇa (40.5). Months were lunar and in Vedic times compared to the *Amānta* (New Moon), months beginning or ending with the *Paurṇamānta* (Full Moon) were preferred (Tai. on Saṁ. 7.5.6). These phases<sup>17</sup> formed the base for ritual actions including the performance of Darśapūrṇamāseṣṭi (sacrifices on the New Moon and Full Moon day). In the later literature, the position of Candra was the basis for Muhūrta (proper time) for the performance of any auspicious act. The Jātaka branch of Jyotiḥśāstra sets the pattern of Nakṣatras for the purpose of predictions of life of an individual and for the performance of actions, depending on the Nakṣatra in which the Moon at the time of birth of an individual is situated.<sup>18</sup>

Candra is associated with the Kālapuruṣa as his mind.<sup>19</sup> In relation with the human journey after death, Candra is deemed a station for the performers of sacrificial actions and also the abode, eye and light of the fathers.<sup>20</sup>

### c. Nakṣatras

The system of Nakṣatras form the substratum on which Jyotiḥśāstra atleast of the Veda and Vedāṅga period rests. The term Nakṣatra appears in the literature as stars in general and also as lunar mansions.

#### As stars in general

The term Nakṣatra is applied to stars in general in RV. III. 54.19, VII. 86.1, other terms applied to stars in the early literature are ‘*stṛ*’, ‘*ṛkṣa*’ or *rocanā*.<sup>21</sup> Specified by their bright appearance in the sky stars can be related to the words *stṛ*<sup>22</sup> or *rocanā*<sup>23</sup>

which is not the case with the word Nakṣatra which is of obscure origin and shows divergence of opinion in its derivation.<sup>24</sup>

The term Nakṣatra appears distinguished from the stars in Tai. Saṁ. 7.5.25 which explains Nakṣatra as Rūpa (form) and Tārakā or stars as Asthi (bone) of the sacrificial horse.

Sūrya is addressed as a Nakṣatra (m) in RV.VI. 67.6, finds a separate mention along with the Nakṣatras (RV. III. 54.19) and also is contrasted from the Nakṣatras in a later hymn of RV and in other Saṁhitās (RV.I.50.2, AV XIII.2.17, XX. 47.14).

### **As lunar mansions**

Compared to Sūrya or any other heavenly body, Candra shares an elaborate and somewhat exclusive relationship with the Nakṣatras in the literature. As far as the cultural ideology and its implementation is concerned, Nakṣatras appear as stars or star clusters on the path of the Moon. This sense already appears in the Saṁhitās.<sup>25</sup> They being 27 or 28 in connection with the lunar month is recognized, the expression arise in the form of a marriage union.<sup>26</sup>

### **The arrangement of Nakṣatras**

The names<sup>27</sup> of a few probable ones occur in the RV but the number fixed as 27<sup>28</sup> with the complete list of their names, order of appearance and the deities ascribed to them appear in and after the Yajurveda.<sup>29</sup> Though the record occurs in Taittirīya and other Saṁhitās yet much prior to them and in the time of the Ṛgveda, the Nakṣatra system must had been a functioning unit in the culture in connection with the sacrificial and other activities.<sup>30</sup>

The shapes and colours of the star clusters<sup>31</sup> visible in the sky may be attributed the stimulus for the names of the Nakṣatras occurring from prior lingo,<sup>32</sup> or due to their coinciding with the natural phenomenon,<sup>33</sup> yet few others are named after the figures and the perceptive qualities of objects on earth appearing as their mirror images in the sky.<sup>34</sup> But certain characteristics attached to Nakṣatras in naming them probably generated from a thought process integrated since the earliest development of the culture<sup>35</sup> and is seemingly improbable to unwind.

The process of fitting the order of Nakṣatras arising in a natural succession on the path of the Moon to their counter parts on the Earth supposedly resulted due to an exchange from both the celestial and terrestrial factual as well as ideological quarters and somewhat stretching of the cosmic facts displayed in the concepts like the form of Nakṣatra Prajāpati visible in the sky.<sup>36</sup> Also the presiding deities of Nakṣatras mentioned in the Samhitās are exclusively Vedic<sup>37</sup> their anthropomorphism an independently Indian observation and retained their place in the later development.<sup>38</sup>

Dikshit mentions the seed of auspiciousness or inauspiciousness of the Nakṣatras lying in the concept of Muhūrtas (proper times to perform acts).<sup>39</sup> The system of Nakṣatras is connected to Muhūrtaśāstra and is utilized for the performance of prescribed actions throughout the literature. Nakṣatras were considered important for Agnyādhāna<sup>40</sup> (consecration of the sacred fires), offerings were made on certain nakṣatras termed as male.<sup>41</sup> Months were known from the names of Nakṣatras (Tai Samh. ii.2.10.1, Pañ. Brā. V.9.1), names of Nakṣatras were employed for Full Moon or New Moon (Śat. Brā. ii.6.3.11, Kauṣ.Brā.i.3, iv.4), Full Moon on certain Nakṣatra appears recorded (Śat. Brā.6.2.2.18) and prescribed for certain act (Tai.Samh. 7.4.38). A Nakṣatreṣṭi is also mentioned in Tai Brā.III.1.

The Bṛhat Samhitā enumerates actions to be performed on various types of Nakṣatras.<sup>42</sup> In relation with marriage Gobhila prefers an auspicious Nakṣatra.<sup>43</sup> The Ātharvaṇa-Jyotiṣa (Nakṣatra section, verse 4) & Vaikhānasa-Ssmārta-Sūtra (IV.14) refer to a pattern of Nakṣatras in connection with the Nakṣatra at birth.

### **Nakṣatra as divisions of the Ecliptic**

A third meaning of Nakṣatra as divisions of the Ecliptic appear in the literature especially for Astronomical purpose. The Sūryaprajñapti divides the Ecliptic by the sidereal month. The Vedāṅga Jyotiṣa records the positions of the Sun and the Moon at the Equinox and Solstices with reference to the Nakṣatras. In the Vedic literature, the Nakṣatra list began with Kṛttikā (which supposedly coincided with the Vernal Equinox)<sup>44</sup> and in the classical Sanskrit period it (Vernal Equinox) coincided with Aśvinī.<sup>45</sup> Apart from clear and ample references of above in the literature attempts have been made to mark the Nakṣatras at the Equinoxes and the Solstices and these

expressions have been utilized as a sequel to fix the age of the Veda.<sup>46</sup> The discovery of placing Mṛgaśīrṣa (Orion) or Āgrahāyana (as the commencement of the year) at the Autumnal Equinox<sup>47</sup> gave an access to a still older system of Nakṣatras prior to the Kṛttikā list which began with Mṛgaśīrṣa (Orion).<sup>48</sup> These references about the Nakṣatra in relation with the Equinoxes and Solstices show that the initial point of the sphere of the Nakṣatras was a movable point in comparison to the point of Equinox (and thereby the Solstices) which is a fixed point. The records to this extent awards the literature the knowledge of Precession to some extent.<sup>49</sup> Yet Precession which is an astronomical concept as also Nakṣatras being divided in twenty-seven equal parts of the ecliptic, these and such studies were perhaps not the aim of the culture but were preliminary steps to their astrological purpose of practical performance of prescribed actions on proper times.<sup>50</sup> Thereby the Nakṣatra which marked the initial point of the sphere and which coincided with the Vernal Equinox was perhaps equally observed from an Astrological viewpoint. The passage of the Śatapatha Brāhmaṇa which indicates the position of Kṛttikā at the Vernal Equinox also specifies the characteristics of the Nakṣatara and thereby its utility to the sacrificer.<sup>51</sup>

Some general observations from the above data in the literature related to the Nakṣatras can be derived as under:-

The formation of a Nakṣatra system and relating it to human actions exhibits the tendency of the culture

- 1) To connect the objects and activities of the sky or heaven and the Earth by means of study of characteristics of Nakṣatras.
- 2) To study the cosmic activity through the order of the Nakṣatras and introduce it to the activities of the culture.
- 3) To establish a practical connectivity to the Cosmos with the concept of Muhūrta (proper time) for sacrifices and other actions with the agency of the Sun, the Moon and the Nakṣatras.

The practical utility of the Nakṣatra System with ritual actions can be termed as a systematic attempt on part of the Vedic culture to establish a unity between man and cosmos through perceptible objects and means and thereby an actual or a concrete

effort to connect the same in the Samhitā and the Brāhmaṇa period prior to the Upaniṣads which rely on the abstract notions of the Brahman and Ātman.

Perhaps some theory or else a germ of a theory related to this unity existed in the culture in the above period. Nakṣatras are mentioned as the abode of the gods.<sup>52</sup> Stars in general and even Nakṣatras are mentioned as the lights of pious men who depart to the heavenly world.<sup>53</sup> The Taittirīya Āraṇyaka 1.11.1.2 mentions the Saptarṣi's (the seven sages). Atri and Agastya as being raised to stars. These and such statements occurring occasionally in the literature point out a purposeful connectivity between Nakṣatras, gods and men.

As far as the derivation of the term Nakṣatra goes the Taittirīya Brāhmaṇa explains that one who performs sacrificial actions here goes to that (Nakṣatra) world<sup>54</sup> thereby explaining the characteristics of Nakṣatra as a place obtained by those who perform sacrificial actions here. (in this world). Yāska derives the term Nakṣatra from √ Nakṣ 'to obtain' or 'to go' from the above statement in the Taittirīya Brāhmaṇa.

The other derivation of the word Nakṣatra comes as a compound from the negative particle na plus Kṣatra meaning not a Kṣatra. Pāṇini VI. 3.75 derives it in this sense from Śatapatha Brāhmaṇa II.1.2.18.19. Kṣatra means dominion or power and therefore Nakṣatra or na plus Kṣatra means no dominion or no power. The word Kṣatra can be derived either from √ Kṣi to dwell, to rule, to decay or from √ Kṣar to move, to flow, to perish. Thus Nakṣatra would mean from √ Kṣi no dwell, no rule, no decay and from √ Kṣar no movement, no flow, no perish. The Tattvāmṛta commentary on the Sūrya Siddhānta 1.25 explains the word Nakṣatra as ‘na kṣarati na gacchati nakṣatram’ in the sense that Nakṣatras have no movement. This meaning of Nakṣatra is nearer to Kṣar than Kṣi and thereby means no movement, no flow, no perish. Also Nakṣatra in this sense appears in many places in the early literature.<sup>55</sup> Therefore Nakṣatra appears to be more nearer to the above sense of √ Kṣar specifying ‘no movement’ or ‘no perish’.

From the above derivations, it appears that Nakṣatras were considered by the culture as ‘without movement’ or ‘non perishable’ or in a more direct sense of Na plus Kṣatra as ‘powerless’ (objects or places). RV. X.85.2 states that Soma

(Moon)lies in or is placed in the lap of the Nakṣatras. To ‘lie in’ specifies a horizontal position, a position at rest on a supporting surface<sup>56</sup> therefore Moon is deposited, situated or is at rest in the lap of the Nakṣatras. Also नक्षत्राणि वै सर्वेषां देवानामायतनम्। (Śatapatha Brāhmaṇa XIV.3.2.) or a similar statement in the Taittirīya Brāhmaṇa I.2.5.11. specify Nakṣatras as the abode of the gods and Tai. Brā.further says that the knower of this *abides*. Again abide is to remain (in the same place) or to stay in or endure<sup>57</sup> (with the gods).

Thereby Nakṣatras can be taken as non-movable or non-perishable residence or resting place of Moon, gods and (knower) mens. This is nearer to Pāṇini and Śatapatha Brāhmaṇa which explain Nakṣatra as a place with no dominion or power. Whereas the contrast in Nakṣ ‘to go’ or ‘to obtain’ by Yāska and Taittirīya Brāhmaṇa with Uṇādi suffix *atran* specifying ceaseless motion is applicable or related to the sacrificer or performer of prescribed actions who receives ceaseless motion due to the performance of actions and which land him or by aid of which, obtains the steady or stable stations termed as Nakṣatras.

Other important light forms are the Deities of light or the ‘Devatā’ which are the anthropomorphic forms of nature, the Grahas (Planets) which are of later origin and the universal and abstract light principle Brahman and its counterpart the Ātman.

#### **d. Deities of light**

The most prominent of the light forms in the initial literature are the deities on which rests perhaps the physical substrate as well as the moral character of the early Vedic culture. Vedic deities are anthropomorphized nature and light forms spread in the three regions viz, Celestial, Atmospheric or Aerial and Terrestrial areas of the cosmos.

Jyotiḥśāstra as the study of light constitute the study of the deities of light. Being anthropomorphized forms, the deities play a major role in explaining the nature and action of light in the early literature.

## Celestial light forms

The parental celestial deity is Dyaus representing the actual or concrete sky in many places in the RV. Dyaus goes back to the Indo-European period and the word is derived from the √ div, 'to shine'.<sup>58</sup>

The commonest light source appearing as a group of gods representing the celestial light is the Sun-god group.<sup>59</sup> Sūrya or Sun is the chief amongst these and closely associated to him are the Savitṛ, Mitra and the other Ādityas. The chief action of Sūrya is his shining for all the world,(RV.VII.63.1), for gods and for men (RV.I.50.5). Savitṛ again is a golden deity (RV.I.35.8,9; RV VI.71.3) with a golden car (RV. I.35.2,5) and the epithet *Sūryaraśmi* is exclusively addressed to Savitṛ in the RV. (X.139.1). The Ādityas are styled so since their real character is that they are the gods of the light of the heaven.<sup>60</sup> Varuṇa is the chief of the Ādityas with a shining robe (RV.I.25.18) and a shining car similar to the Sun (RV.I.22). He is the one who spread the Sun in the heaven (RV. V.85.2). Varuṇa is far sighted (RV.I.25, VIII.90) with thousand eyes (RV. VII. 34) and his viewing the world and mankind is connected to the moral aspect (RV. I.50.6), his watching all deeds is mentioned in RV. I.25.10,11. Varuṇa is the firmament and the physical Sun is the eye of Varuṇa and also Mitra (RV. I. 115.1, RV. I. 61.1), both are often associated with each other. Atharvaveda<sup>61</sup> connects Mitra and Varuṇa with day and night respectively.

Apart from the Sun god group and the most brilliant of the celestial light forms is Uśas (Dawn) derived from √ vas 'to shine.' Uśas is a dispeller of darkness (RV.VI.64.3) while she arrives in her shining (RV.VII.78.1) bright (RV.III. 61.2) car. Uśas is closely allied with Sūrya, her shining associated with the light of Sūrya (RV.I.113.9)

Frequently mentioned amongst the deities of light are the Aświns. They are described as bright (RV.VII. 68.1), brilliant (RV.VIII. 8.2) and are addressed as the rulers of luster (RV.X. 93.6). Aświns often are associated with Sūrya.<sup>62</sup>

Among other celestial light deities are Viṣṇu whose three steps are the rising, culminating and setting course of the Sun.<sup>63</sup> Pūṣan is also connected to the Sun.<sup>64</sup> (Íśa. Up. 15,16) and Vivasvant, a representation of Sun or the rising Sun<sup>65</sup> in the post Vedic

literature. In the R̥gveda<sup>66</sup> Vivasvant is called as an Āditya and Śatapatha Brāhmaṇa<sup>67</sup> explains him to be the illuminer of day and night. Visvasvant is connected with the human race and men are said to be his off springs. (Tai. Saṁ.6.5.6.2, Śat Brā. 3.1.3.4.).

### **Atmospheric deities associated with light**

The Atmospheric deities share the light nature to a lesser extent compared to the celestial deities. Worth mentioning are Indra and Marut amongst whom Indra is described as golden (RV.I.7.2, RV.VIII. 55.3), with golden arms (RV.VII. 34.4). The Vajra of Indra is compared to the Sun (RV. VIII. 59.2), he has a golden car ( RV. VI. 29.2) and is the winner of light (RV. VIII.78.4). The troop of Maruts are said to be brilliant (RV. I. 165.12), born from the laughter of lightning (RV. I.23.12), they ride on golden cars (RV.V. 57.1) which gleam with lightning (RV. I. 88.1, III. 54.13), they dispel darkness (RV. VII.56.20) and produce light (RV. I.86.10).They are said to prepare a path for the Sun (RV.VIII. 7.8). They represent storm-gods in the RV and with √ mar, ‘to shine’ accord best with their description.<sup>68</sup>

### **Terrestrial light forms**

Agni is the most important of the terrestrial light forms due to its association with the sacrifices which centered the Vedic cult. Agni holds a threefold character as a light form the terrestrial fire, the atmospheric lightning and the Sun in the celestial region or heaven.<sup>69</sup> He is threefold light is mentioned in early RV. III.26.7, his shine is compared to the Sun (RV.VII. 3.6). The descent of Agni from the heaven expressed in the form of lightening is personified as Mātariśvan.<sup>70</sup> As a terrestrial sacrificial fire he is designated with epithets which explain his bright form.<sup>71</sup>

An aspect of Agni is Bṛhaspati whose birth is from the light in the highest heaven (RV.IV.50.4.) Bṛhaspati is connected with the constellation Tīṣya (Tai.Saṁ iv.4.10.1.) and later in post-Vedic with the planet Jupiter.

### **e. Graha**

The term Graha broadly and prevalently denotes Planet in Jyotiḥśāstra. The body of Navagraha<sup>72</sup> or Nine Planets is a conglomeration of Sun and Moon, the five Planets proper and Rāhu and Ketu.<sup>73</sup> The Planetary system is commonly utilized for

Jātaka purpose<sup>74</sup> in present Jyotiḥśāstra and shows a blending of Indian and foreign elements.<sup>75</sup>

Amongst the initial references to the probable Planets,<sup>76</sup> Bṛhaspati appears in the most clear sense.<sup>77</sup> The earliest mention of Planets occur in the Taittirīya Āraṇyaka<sup>78</sup> Śani, Rāhu and Ketu are referred in Maitrāyaṇi Upaniṣad (VII.6). Baudhāyana Dharmasūtra (ii.5.99) mentions all the nine Planets.<sup>79</sup> Mahābhārata (ii. 11.37) names them. Characteristics of Planets are mentioned in Bṛhat Jātaka. II., Arthaśāstra II. 24 connect Planets as predictive of natural events. The worship of planets is suggested by Yājñavalkyasmṛti (I. 307-308).

The motion of Planets was scientifically studied. The Vedāṅga Jyotiṣa records the motion and positions of Sun and Moon only and reference to the motions of other Planets occur from the period of the Siddhāntas.

Rāhu finds mention in the Atharvaveda (XIX. 9.10) but without an astronomical meaning is present also in the Chāndogya Upaniṣad (VIII.13) but not in the sense of a Planet. Both Rāhu and even Ketu, who is first mentioned in the Yājñavalkya, are Indian inclusions to the list of Planets and were understood as the head and tail respectively of the demon believed to be causing the eclipses.<sup>80</sup> Bṛhat Saṃhitā includes a chapter (chap.V) on Rāhucāra (Rāhu's course). तमः (M) means Rāhu and one of the meanings of तमः is darkness.<sup>81</sup> The legend<sup>82</sup> explaining Rāhu being cut off from the trunk yet on account of the Amṛta (nectar) consumed by him continued alive and became a graha also connects Rāhu with immortality and thereby with light. If taken as an astronomical point, Rāhu can supposedly be explained as a cosmic area with a mixture of darkness and light as considered by the culture.

Also one of the meanings of 'Graha', the term applied to Planets in general in the later period is connected to grasping or eclipsing of Sun and Moon<sup>83</sup> comes in association with Rāhu from the earliest times.<sup>84</sup>

The term graha overall means 'seizing'<sup>85</sup> or seizer & comes in the sense of powers which hold the fates of men.<sup>86</sup> Weber mentions the term to be of Astrological origin.<sup>87</sup> Sun is addressed as a Graha in the sense of seizing in the Śat. Brā.(IV.6.5.1.).

The Bṛhadāraṇyaka Upaniṣad (iii. 2.2-9.) addresses the organs as the *grahas* and the corresponding objects as the *Atigrahas* and with graha meaning seize Keith<sup>88</sup> points out the possibility of the soul fettered by the organs and their activity thus adding a philosophical meaning to the term.

Through the horoscopy or Jātaka branch planets are also connected to the past actions (actions done in previous lives) of men.<sup>89</sup> Thereby attributing the cause of rebirth and overall life to the past actions of men and not to the planets.

#### **f. Brahman and Ātman**

Brahman and Ātman are the most abstract of the light forms in the literature. Brahman is of the nature of light and is explained in the Upaniṣads as the immortal cosmic light principle or cosmic fire.<sup>90</sup> Thereby Brahman is expressed as the light of lights and thus the source of light in the universe.

Being an abstract light form various representations expressing the light nature of Brahman are sought for in the literature. Whereas Brahman (n) is the first principle, Brahman (m) also equated with Hiraṇyagarbha is expressed as the first born of creation<sup>91</sup> and the former being the soul of the universe the latter is its body. Hiraṇyagarbha is one of the twenty one names of Brahmā or Brahman.<sup>92</sup> He is addressed as the golden womb or golden egg from which the world originated<sup>93</sup> and is stated as one who ascribes names, actions and states to the created beings.<sup>94</sup>

Prajāpati appears as a representation of Brahman. Prajāpati the abstract creator god is also addressed as Hiraṇyagarbha in RV.X. 121.1. The three lights Agni, Vāyu and Āditya are produced from the three worlds created by Prajāpati. Identification of Prajāpati with the year and thereby with time or the timed form of Brahman and arranging actions on its parts is a development which the Brāhmaṇas inflate, prior to the Upaniṣads which also endeavoured on the timeless form of Brahman.

More materially is Brahman identified with the physical Sun.<sup>95</sup> In this sense Brahman is the Sun of the universe and the material Sun is explained as the phenomenal form of Brahman. Since Brahman being inherent in the Sun as the first principle, the Chāndogya Upaniṣad. (III. 19.1.) makes Sun as an object to be worshipped as Brahman.

Whereas the cosmic Brahman is fire or cosmic fire (jyotis),<sup>96</sup> Ātman or the fire which composes the self of the individual is metaphorically represented by the power of thought.<sup>97</sup> Both Ātman and Brahman are compared to smokeless flame or fire whose fuel is consumed. (Śvetā. Up.VI. 19., Mai. Up.VI.34). Representation of Sūrya or Sun as the self of that which stands and moves also occur in the early literature.<sup>98</sup>

#### **g. Regions of light**

The Puruṣasūkta addresses the three divisions of the cosmos, Dyaus, Antarikṣa and Pṛthvi.<sup>99</sup> These regions pertain to brightness and are addressed as the three Dyaus.<sup>100</sup> More localized is Heaven as a region of eternal light. (RV.IX. 113. 7-9). It is expressed as the highest luminous world. (AV. IV. 34.2)

#### **h. Path of light**

Chāndogya Upaniṣad IV. 15.5 describes devayāna (way of the gods), the path of light which leads the souls of the dead.

#### **iv. Classification of Jyotiḥśāstra**

Jyotiḥśāstra is divided into three Skandhas (branches) I) Gaṇita or Siddhānta II) Saṁhitā or Śākhā and III) Horā or Jātaka.<sup>101</sup>

#### **I) Gaṇita**

Gaṇita branch deals with the study of movements of heavenly bodies by means of calculations.<sup>102</sup> The development of this branch of Jyotiḥśāstra is divided chiefly in two phases A) the Veda and Vedāṅga Period and B) the Siddhānta Period. The later or the third phase is the period of the Karaṇa texts.

#### **A) Gaṇita of the Veda and the Vedāṅga Period**

The Veda and the Vedāṅga Period extends from the oldest of the Saṁhitās up to the Smṛtis and the Epics.<sup>103</sup>

##### **a. Units of time**

Gaṇita of the Veda and the Vedāṅga Period is primarily a record of the natural divisions of time based on the motion of the Sun and the Moon. Ṛtus (seasons), a natural division of time and on which depended the extent of the Vedic year, were discovered to be five or six. (Mai, Saṁ. I. 7.3, AV VI. 55.2). Vasanta is the first of the Ṛtus<sup>104</sup> and marks the beginning of the year a Ṛtu being a solar division of time, the

year is naturally solar with 12 months, 360 days or of 720 days and nights together.<sup>105</sup> The six seasons were distributed amongst the twelve months.<sup>106</sup>

The apparent motion of the Sun observed for six months each in the Northern and the Southern parts of the hemisphere was recorded<sup>107</sup> and a day named Viṣuva which marked a day and night of equal length which was placed in the middle of the sacrificial year was already discovered in the Brāhmaṇa period.<sup>108</sup>

The culture followed a lunisolar calendar and the lunar months occurring in one solar year were observed. They being twelve in number is mentioned in RV. I. 25.8 and were preferably counted on the basis of Full Moons (Tai. Saṁ.VII.5.6). An additional thirteenth intercalary month also finds mention. (Tai. Saṁ.IV 6.7.1-2, Kauṣ. Brā. 19.2). Tithi, a lunar measurer of time specifying a day and night characterized by the daily rising and setting of Moon is recognised.<sup>109</sup>

The division of a day depended on the Sun and was either from Sunrise to Sunset or from one Sunrise to the next one including a day and a night together termed as an Ahorātra. Such broad divisions of a day as 2, 3 or 5 parts occur in the literature and division of a day (and night) in 30 parts is also mentioned.<sup>110</sup> Atharvaveda (9.6.46) records the sandhi (joints) of the divisions of the day. A small division of time termed as Abhijit characterized by an (almost) still shadow which constituted the eighth Muhūrta of the day was found out.<sup>111</sup> Certain minute divisions of time are recorded in the Vedāṅga literature.<sup>112</sup> Similarly calculations of long time spans such as Yuga,<sup>113</sup> Kalpa and Manvantara also occur which are employed to specify the comparative time differences between gods and men.

A Saṁvatsara (year) of man is equalled to a day of the gods.<sup>114</sup> Sahastra (one thousand) Yuga are equalled to a single day of Brahmadeva (Nirukta 14.4). Later in the Purāṇa literature the fourteen Manvantaras together constitute a Kalpa which makes one day of Brahmā<sup>115</sup> Manusmṛti (I. 68-86) provided an elaborate pattern of Yuga which was followed by the later Jyotiṣa texts.

These calculated year reckonings were practically employed to express important events. Āryabhaṭṭa in Āryabhaṭṭavarṇam refers to the commencement of Mahābhārata war at the end of the Dvāpāra Yuga. Also the characteristics of different

Yugas and the events occurring in them are expressed in Manusmṛti and Purāṇa literature.

### **b. Study of motions of Sun and Moon**

The Kārajñāna or the Knowledge of Time in the Veda and the Vedāṅgā period was chiefly dependent on the motion and positions of the Sun and the Moon, their positions in the various quarters of the sky and with each other with reference to the Nakṣatras. These were essential for the purpose of calendars related to sacrificial activities<sup>116</sup> especially for the Darśapūraṇamāseṣṭi to be performed on the *parvasandhis* (joints) of the New Moon and the Full Moon. The mean longitude of the Sun and the Moon were studied to calculate these *parvasandhis*. Study of Planetary phenomenon other than Sun and Moon is absent up to and in Vedaṅga Jyotiṣa,<sup>117</sup> the oldest extant text on Gaṇita.

The positions of Sun and Moon were marked with reference to the Nakṣatras which in relation with the Gaṇita branch of Jyotiḥśāstra appear as twenty seven equal divisions of the ecliptic or as measurement of arcs on the ecliptic of 13<sup>o</sup>20' each<sup>118</sup> beginning with the Vernal Equinox.

### **c. Ayana and Saṃpāta**

Ayana (solstices) and Saṃpāta (equinoxes) are certain surface markings in the sky naturally created due to the motion of the Sun and the Moon and which were recorded with reference to the Nakṣatras and the fixed stars in this phase of the literature.<sup>119</sup>

#### **i. Ayana (Solstice)**

An Ayana<sup>120</sup> (Solstice) marks the initial point of the apparent course of the Sun in the Northern and Southern hemisphere. Vedāṅga Jyotiṣa records the initial point of the Northern progress of Sun (located with moon) in Śraviṣṭhā (Dhaniṣṭhā) and the beginning of the Southern progress in the mid of Āśreṣā.<sup>121</sup>

#### **ii) Saṃpāta (Equinox)**

The Saṃpāta or Equinox is an Astronomical point which marks the junction (or is an intersection) of the Ecliptic and the Equator. Factually this occurs twice in an year. The Astronomical sense occurs late in the literature and denotes the point of

time when days and nights are equal. The Equinox is termed as Viṣuvat and Kaye renders it as ‘a point of equal separation.’<sup>122</sup> The Aitareya Brāhmaṇa<sup>123</sup> records a day named ‘Viṣuvat’ which marked a day and night of equal length and was connected with the sacrificial activities.

Though the Nakṣatras come in an astronomical set up and expressly mark the Ayana, the Nakṣatra list which begins with Kṛttikā in the Vedāṅga Jyotiṣa occurs in accordance with their deities<sup>124</sup> thereby showing a marked connection of Gaṇita with Dharmaśāstra.

### **Peculiarities**

Vedāṅga Jyotiṣa a text on Gaṇita exists as the first extant one of this period sought especially for sacrifices to be carried on the *parvasandhis*.<sup>125</sup> The study of *parvans* advanced in the Veda and the Vedāṅga period to the extent that refined observations as eclipses occurred at the end part of the *parvan* was acknowledged in this period.

The Sūryaprajñapti a contemporary and later text which displays a similar astronomical pattern to Vedāṅga Jyotiṣa furnishes the concept of Mount Meru, placed at the centre of the Earth which obstructs the light of the heavenly bodies moving parallel to the surface of the Earth. It offers that centre’s of the orbits of heavenly bodies are at the Meru and that Sun revolves round mount Meru at the same height (from the plane of Earth) but at different distances from Meru. These and such calculations based on a centralized Meru reveals that Gaṇita (calculations) of the Veda and the Vedāṅga period rests on an ideological quarter rather than an actual one.

This notion of Meru appears in a generalized form in the Purāṇa literature which make Meru as a dwelling place of the gods.<sup>126</sup> Even Bṛhat Saṁhitā XXIV.2. mentions the grove of Mount Meru, as the abode of the *Devas* for which were displayed the laws of the Rohiṇi Yoga by Nārada to Bṛhaspati and later by the astrological teachers to their disciples.

Post-Greek Astronomers like Āryabhaṭṭa and Brahmagupta also comment on mount Meru. Āryabhaṭṭa mentions that Meru had no absolute height. Such reference retained the character of Jyotiṣagaṇita even after the advent of the Greek additions as

pursuing the conventional idea of calculations of a region or a cosmic point which was perhaps without an astronomical base and which followed or was secondary to answer or implement an idea rooted in another quarter of the culture.

After the Veda and the Vedāṅga period there is a dark age in the development of Jyotiḥśāstra inclusive of the Gaṇita branch in which lie works like Arthaśāstra (2.20) and Śārdūlakarṇāvadāna (Divyāvadāna 33) which display Gaṇita similar to the Vedāṅga Jyotiṣa but these are not exclusively based on Gaṇita.

A striking feature of the Gaṇita up to this period is that it, calculate the mean longitudes of the Sun and Moon with reference to the Nakṣatras and there is an absence of mention of planets and the zodiacal signs. Also if Vedāṅga Jyotiṣa is a text on Gaṇita it is chiefly a text on Jyotiṣa in both senses as a representation on the earlier form of Jyotiṣa as well as of its purpose. It can be termed as a pioneer of the later Siddhāntas and can be termed as the first of Siddhāntas being the only one on Gaṇita in the known history of the Veda and the Vedāṅga period. Yet it starkly differs from the Siddhāntas as they neither carry the form nor the purpose of Jyotiṣa in its complete and true sense.

The phase between the two main astronomical periods, the Veda and the Vedāṅga period and the Siddhānta period can be perhaps in this sense termed as a dark age in which there is no clear evidence which reveals the collapse of the facade of Jyotiṣa Gaṇita of the prior period and the emergence of the latter one.

### **A. Period of the Siddhāntas**

The advent of the Siddhāntas bifurcate the Gaṇita branch of Jyotiḥśāstra into pre-scientific and scientific period.<sup>127</sup> Gaṇita branch is also termed as the Siddhānta branch. Siddhāntas chiefly dealt with the study of planetary phenomenon. The study rest on independent Indian observations and refute any supposed Greek influence.<sup>128</sup>

#### **a. Characteristics of a Siddhānta**

Siddhāntas deal with topics related to physical Astronomy, with the calculations related to the mean and true longitudes of Planets and the difference between them at a certain point of time.<sup>129</sup> Bhaskarācārya<sup>130</sup> characterizes a Siddhānta specifying that Siddhānta must deal with enumerations of the units of time from truṭi

to the end of the *pralaya*. Thereby Siddhānta and Tantra deal with planetary calculations, cosmogony and calculations of units of time.

Siddhāntas work on planetary calculations beginning from a Kalpa, the Tantra texts calculate from a Mahāyuga and Karaṇa<sup>131</sup> texts on the mean motions of planets in a given epoch close to the date of their composition.

#### **b. Schools of Siddhāntas**

The Siddhānta works differed amongst themselves in calculation related to the length of the year and the calculation related to the motion of planets in a Kalpa or a Mahāyuga. This difference gave rise to three main schools of Astronomy, the Saurya, the Ārya and the Brahma.<sup>132</sup>

The features which differentiated one school (Pakṣa) from another were the choice of subdivisions of the Kalpa and the number of rotations of each of the planets within the Kalpa or the Mahāyuga.

#### **c. The Peculiarities of the Siddhāntas**

The Paitāmaha Siddhānta<sup>133</sup> is later and closer to Vedāṅga Jyotiṣa<sup>134</sup> where as the Vasiṣṭha Siddhānta in PS (Pañcasiddhāntikā) mentions the concept of *lagna* somewhat similar to the present one<sup>135</sup> Sūrya Siddhānta in the PS is the most clear of the five (4<sup>th</sup> Āryā) and Romaka which is the latest of the PS matches in year length with Hipparchus<sup>136</sup> and does not mention the pattern of Yuga.<sup>137</sup>

Āryabhaṭīya or Āryasiddhānta is the oldest of the Pauruṣa Siddhāntas and the most independent one. It includes both Astronomy as well as Mathematics. Āryasiddhānta refers to the diurnal rotation as a rotation of the Earth (in the first part named Daśagītikā. 3 and also in Golapāda 9 and 10). The concept of motion to the Earth was an innovation in comparison to the traditional ideas of Earth believed to be a fixed sphere placed at the centre of the universe around which the whole world including the heavenly bodies revolved.

Siddhāntas deal with calculations of Ahargaṇa (the number of days lapsed since epoch), it also includes the calculations of the number of years, the intercalary months and also the tithis (omitted) in a Yuga. The Romaka<sup>138</sup> specifies the method of

calculating an Ahargaṇa. Pauliṣa almost matches with Romaka in Ahargaṇa (Pañcasiddhāntikā I. 10)

The motion of the planets was determined in relation with the Nakṣatras which move faster than the planets. Thereby the planets appear to move from west to East. Jyotiḥśāstra deals with this Eastward motion of planets which is in a relative scale with reference to the Nakṣatras. The Sūrya Siddhānta<sup>139</sup> comments on this relatively lacking behind and thus eastward daily motion of planets.

The Siddhāntas also talk about the cause of the motion of planets and Nakṣatras due to a wind named *Pravaha*<sup>140</sup>

The Siddhāntas also work on the pole star Dhruva and its distance from various places on earth.

In the initial stage of the Siddhāntas, Gaṇita appears in an intermingled form with Astrology<sup>141</sup> which later bifurcated on an advancement in the Gaṇita branch and Astrology came to be a topic dealt with the other two branches.

## **II) Saṁhitā**

Saṁhitā is the term coined to the compilation of all the three branches of Jyotiḥśāstra.<sup>142</sup> The third branch other than Gaṇita and Jātaka is also named as Saṁhitā or Śākhā. Saṁhitā is the elder branch of the three. The branching already existed at the time of Garga who is placed later than the Vedāṅga period at the end of which Gaṇita and Hora were emerging as independent branches from the principle bulk of Saṁhitā.

Saṁhitā as a branch is primarily a record of movements or actions in nature and their effects on man and cosmos.<sup>143</sup> Saṁhitā is divided in two sections A) Śākuna or Divinations and B) Muhūrta or science of proper times for acts.

### **A) Śākuna**

Śākuna very initially were signs or spontaneous expressions of nature interpreted to understand future. Later a systematic study evolved creating a separate section which dealt with the interpretation of the actions of cosmic beings and the underlying phenomenon to view human as well as cosmic future. The texts displaying

this study of divinations are termed as Samhitās, most of which depend on the Garga Samhitā.<sup>144</sup>

Śakuna is technically defined as ‘a means of arriving at a definite knowledge about auspicious or inauspicious consequences.’<sup>145</sup>

The term already appears in the early Ṛgveda<sup>146</sup> in connection with the appearance of a bird<sup>147</sup> and gradually in the literature with prognostications related to all sorts of birds and animals,<sup>148</sup> *Aṅgavidyā*<sup>149</sup> (body signs or throbbing of body parts), dreams<sup>150</sup>, in connection with sacrifices,<sup>151</sup> natural phenomenon,<sup>152</sup> *Yātra* (journey)<sup>153</sup> and many more topics. The extent and importance of the Śakuna branch in the literature can be estimated by a declaration in a Jaina text on omens named *Aṅgavijjā* which categorises ‘every perceptible object in the world as an ominous entity’.<sup>154</sup>

### 1. Synonyms for Śakuna

Śakuna in the sense of prognostications has other synonyms such as a) ‘Adbhuta’, b) ‘Utpāta’ or c) ‘Nimitta’ in the literature.

#### a) Adbhuta

Adbhuta mean ‘wonderful’ or ‘supernatural’.<sup>155</sup> The word occur in the Ṛgveda in connection with the deities (RV I. 25.11, RV X 105.7) Vṛddhagarga defines adbhuta as that ‘which has not happened before’ or ‘a complete turnover of that which has happened before’.<sup>156</sup> Up to the period of Nirukta I. 5 the term Adbhuta include the sense of future. The Adbhutaśānti of Atharvavedapariśiṣṭa connects the term with the seven deities<sup>157</sup> and the phenomena with the three regions.

#### b) Utpāta

Utpāta is a ‘portent’ or ‘portentous’ or ‘unusual phenomenon’. It has the sense of ‘flying up’, ‘springing up’ or ‘rebounding’.<sup>158</sup> The word is often used in the Purāṇas and Epics (Vanaparva 155.2-6). Utpāta was generally considered as an unlucky omen in the literature and indicative of a calamity. The Bṛhat Samhitā<sup>159</sup> puts forward the abrupt nature of Utpāta while defining it as ‘that which is opposite or contrary to the natural order’. Umtata are classified as of three kinds, Diva (celestial), Āntarikṣa (atmospheric) and Bhauma (Terrestrial).<sup>160</sup> Divya are connected to the Nakṣatra, eclipse and planets, Āntarikṣa to the fall of meteors, rainfall, whereas

Bhauma to earthquakes and water reservoirs. Counteractions to the Utpāta are provided in Bṛhat Saṁhitā 45.7.

### c) **Nimitta**

Nimitta is a ‘mark’ or a ‘sign’. It indicates an auspicious as well as an inauspicious happening and is used in the literature in a restricted meaning as throbbing of body parts<sup>161</sup> (Matsya Puraṇa chap. 241) and also in a wider sense (Gitā I. 31). Aṅgavijjā mentions various kinds of Nimitta as Aṅga, Svapna, Lakṣaṇa, Bhauma, Antarikṣa.

Nimitta carries an other sense in the literature. Nimitta means a ‘cause’ or a ‘reason’, cause in the sense of an ‘instrumental’ or an ‘efficient’ cause.<sup>162</sup> In this sense, the term leaves behind the simple sense of being an omen, a mark or a sign of interpreting future. Instead along with being a means to perceive future the term also carries an additional sense of being a ‘motive’ to serve ‘some definite purpose’. It becomes a voluntarily searched instrumental cause either to look into the future or to perform a (prescribed) act or both.

Voluntary means (of divinations) were employed by many ancient cultures to look into the future.<sup>163</sup> In the Gobhila Gṛhyasūtra IV. 8.15, through the means of brightness and smoke of fire, wealth and luck is estimated. Ramala (Geomancy) introduced from Persian sources and Praśna (Interrogations) answered from an horoscope are the later development of voluntary divinations. Prior to these, the Nakṣatras occupied by the moon were studied to determine the prognostications related to the earthquakes (Śārdulakarnāvadana). Nakṣatras were associated with good and bad portents, thereby kindling of sacrificial fire was prescribed only on certain Nakṣatras.

### **Kāla as a Nimitta**

The above instances especially, divinations related to the heavenly bodies on account of their regularity were connected to specific time limits as well. Such literature related to Jyotiḥśāstra connecting divination to specific times exist in the culture. A class of Saṁhitās which can be placed as intermediate texts combining the

Omens and Muhūrtas were composed.<sup>164</sup> These texts gave an added meaning to Muhūrtas as voluntarily searched auspicious divinations.

Already in the Āraṇyakas definite time is introduced for evil portents to bring off their results.<sup>165</sup> Prophecies of an extensive time unit as Yuga also occurs in the Yuga Purāṇa<sup>166</sup>. The Samhitā branch though an extensive one worked on the systematic study of time prior to the development of the Gaṇita branch through the study of heavenly bodies in the form of Nakṣatras and connecting the time and the act through cosmic means thereby making Kāla as a Nimitta or a cause to perform actions.

## 2. The cause of Śakuna

In an effort to find the cause of omens, the culture related Śakunas to the past actions of men. Varāha mentions Śakunas as the fruition of past actions of man which manifest on a journey.<sup>167</sup> Utpātas, a form of Śakuna are the impacts of the wrong doings of men. The dissatisfaction of the gods related to the conduct of the mortals resulted in earthquakes according to the commentary on the Bṛhat Samhitā (chap.31) citing Vṛddhagarga.

## B. Muhūrta

The counterpart of Samhitā branch of Jyotiḥśāstra which is exclusively based on time is Muhūrta. The term ‘Muhūrta’ comes in the senses of ‘short time’, ‘particular division of time’ viz. two ghaṭikās, and ‘proper time for performing an auspicious act.’<sup>168</sup> The definition of Muhūrta occurs in a third sense in Muhūrta darśana.<sup>169</sup>

Muhūrtas as particular divisions of time were named<sup>170</sup> and later on were allotted deities<sup>171</sup> Actions were arranged on them<sup>172</sup> along with combinations of proper Tithi, Nakṣatra and Karaṇa, out of which Muhūrta was primarily important for success.<sup>173</sup>

The concept of Muhūrta already occurs in the early Ṛgveda<sup>174</sup> which combines an auspicious day with an act ensuring prosperity. Gradually with the study of various time units deemed to be asuspicious or inauspicious, Muhūrtaśāstra was composed combining the Tithis Months, Nakṣatras and such factors prescribed for the

performance of several actions. Jyotiḥśāstra in its complete sense as Kālavidhānaśāstra displays itself in the Muhūrta section of Saṁhitā branch which works for proper times right from sacrifices, to propitiatory rites, for the performance of various individual actions and in later times for Saṁskāras.

The requisite of Moon in connection with a particular Nakṣatra or a particular Rāśi (zodiacal sign) forms the base of Muhūrtaśāstra which connects moment to the motion of Moon for the performance of most actions.

The Muhūrta Skandha is important in the sense that due to its utility retained the existence and growth of Jyotiḥśāstra in the culture. After c. 700 AD Muhūrta became the third branch of Jyotiḥśāstra apart from Gaṇita and Horā. Śakuna and Muhūrta were equally important at the time of Varāha. Though later from Śrīpati onwards the importance of Śakuna declined and Muhūrta (1035 AD) became prominent.<sup>175</sup>

The Saṁhitā branch chiefly dwelt with the study of characteristics of cosmos and the study of time through Śakuna and Muhūrta Skandha and unfortunately very few or almost negligible new inventions were introduced in the Saṁhitā branch of Jyotiḥśāstra later to Varāha.<sup>176</sup>

### **III) Horā**

Horā branch of Jyotiḥśāstra developed later to the Vedānga period and with the additions of Greek elements. Horā chiefly works to forecast the life of an individual<sup>177</sup> Horā can be termed as a technique of voluntary divination by means of astronomical calculation of the birth point. In this sense horā is a combination of Saṁhitā and Gaṇita.

#### **Meaning of term Horā**

Horā means 'lagna'<sup>178</sup> or 'half a raśi' (Bṛhajjātaka I. 9.) in its technical meaning. In simple terms horā is an 'hour', 'mark' or 'line'.<sup>179</sup>

Horā branch has a claim of a foreign origin. 'Horos' is a Greek term meaning boundary. It was received by the Greeks from Babylonian sources.<sup>180</sup> It flourished in Hellenistic Egypt in 2<sup>nd</sup> c. B.C. and with Greek elements was introduced to India in 2<sup>nd</sup>. C.A.D.<sup>181</sup>

## Indian Development

Horā gelled with the Jātaka branch which earlier existed in the culture and which predicted the life of an individual with the aid of Nakṣatras. Sārāvali (II.4) mentions Horā ‘as a technical term for Jātaka.’<sup>182</sup> Horā also has other two sub-sections, Yātra (prognostications on starting a journey or a king’s invasion) and Vivāha (match making from horoscopy for the bride and the groom).<sup>183</sup> Garga acknowledges the influence of Yavanas on this branch.<sup>184</sup>

The seed of Jātaka branch existed at the end of the Vedāṅga period. Jātaka texts find mention atleast 800 years prior to Varāha.<sup>185</sup>

Earlier the Atharvaveda VI. 110.2-3 gives impending happenings of the life of a native by aid of the Nakṣatra of birth. The Jātaka system existing in the Atharvaṇa Jyotiṣa which furnishes a pattern of the Nakṣatras unlike the present form of Horoscopy is not only predictive but came with a practical purpose in which actions were arranged on the nine sets of Nakṣatras three each in a set.

The later horoscopy relates the houses in a horoscope with the body parts of Kālapuruṣa identified with the twelve rāśis (Bṛhajjātaka. I.4). Aṅga in Aṅgaviniccaya (Bṛ. Saṁ I. 9) is body and denotes the sign just rising. The other term for the houses is *Bhāva* and *Bhāva* denotes ‘birth and growth’<sup>186</sup> or ‘being and becoming’.

The term Horā according to the Indian counterpart is derived from the term ‘*Ahorātra*’ by dropping of ‘अ’ and ‘त्र’, the first and the last syllable of the term.<sup>187</sup> Elsewhere the term *Ahorātra* is employed to the thirty Muhūrtas of the day and night together and the meanings of the term Horā does not agree in the sense of an hour<sup>188</sup>

The Jātaka system in addition also include certain rectificatory measures along with predictions of life from the Nakṣatra at birth.<sup>189</sup>

## A Synonym for Daiva

The most distinguishing feature of the Horā branch of Jyotiḥśāstra in comparison to its western counterpart is that it is ‘a synonym for consideration of Daiva’.<sup>190</sup> Horoscopy in its present form connected to the reading of Daiva or past actions has an exclusively Indian geneology.<sup>191</sup>

The Bṛhajjātaka<sup>192</sup> mentions that Horāśāstra manifests the fruits of actions done in previous lives. These past actions were perhaps believed to create certain characteristics in human which could supposedly be known by the Moon placed in the Nakṣatra at birth. Moon later was also connected through the Bhāva and Rāśi system of Horā branch to the Rāśi at birth and the Daśā system by Pṛthuyasha supposedly reveal the period of fruition of past actions in the present life of the individuals.

Also the Human body displays certain characteristics which are in accordance with the lagna and the planetary placements in the sky which can thus be an aid to predict about future.<sup>193</sup>

### **Other means of Jātaka**

Jātaka branch includes other means than a horoscope<sup>194</sup> to look into the future. The Nāḍīgrantha and Ramala are a few of them. other means of Jātaka branch.

### ***v. The Extended Areas of Jyotiḥśāstra***

The classification reveals the extensive compass of Jyotiḥśāstra in the literature and the Jātaka and the Saṁhitā branch exerted a vast influence especially on the Dharmaśāstra.

Though the traditional classification limits itself to three branches of Jyotiḥśāstra, many branches of Jyotiḥśāstra might have independently existed and perhaps were in operation at some point of time in the culture which either gelled with the present classification or lost their connecting links with Jyotiḥśāstra and flourished separately.

Prominent of these is Nakṣatravidyā which existed as a separate branch of study mentioned in the Chāndogya Upaniṣad (VII. 1.2, 7.1.). Manusmṛti VI. 50., along with Nakṣatravidyā enumerates Aṅgavidyā, Utpāta, and Nimitta as well which presently form a part of the Saṁhitā branch.

Amongst the ones which chipped of their links with Jyotiḥśāstra are the Śulbasūtras which provided rules related to geometry for the construction of the fire altars.<sup>195</sup> Even Mathematics which intermingled with Astronomy and Astrology severed connections with Jyotiḥśāstra and presently exists as an independent subject.<sup>196</sup> One more is Vedāntaśāstra, a combination of which with Jyotiḥśāstra

occurs in a remnant form in few passages of the Brāhmaṇas.<sup>197</sup> Perhaps independent treatises related to these existed in the culture in the earlier times.

Persons specialized in various areas of Jyotiḥśāstra existed in the culture. Reference to Gaṇaka and Nakṣatradarśa occur very early in the literature.<sup>198</sup> In the Sūtra period, information related to (the precise time of) the *parvan* (New Moon and Full Moon) was to be gathered from those who knew it.<sup>199</sup> The Gautama Dharmasūtra XI. 15-16, refers to दैवोत्पातचिन्तक whose advice was to be followed for the welfare of the king and the country. Even Arthaśāstra (I.9.) advises a king to appoint a priest who has studied Daiva, Nimitta along with the Vedas, the Vedāṅgas and other subjects.

The above instances show that Jyotiḥśāstra held a respectable position and was quiet established in the routine life of the culture though it perhaps carried some restricted quarters. An excessive reliance on the portents of stars was prohibited and Kauṭilya considered the desire to search any auspicious Tithi and Nakṣatra as an obstacle.<sup>200</sup> Also earning of livelihood by practicing of Nakṣatravidyā, Utpāta, Aṅgavidyā and such branches of Jyotiḥśāstra is repeatedly condemned in the literature especially in the Dharmaśāstra texts<sup>201</sup> which excessively rely on the Saṃhitā and the Jātaka branch. Yet the above branches show inclusion in the later systematized classification of Jyotiḥśāstra and there by were considerable from other angles perhaps serving some higher purpose.

Also maintaining oneself by the practice of Astrology though blamed yet the mere study of Nakṣatravidyā, Daiva, Utpātas was allowed by the culture. Such reference show that Jyotiḥśāstra was highly valued and perhaps also involved some unexposed quarters and goals which do not surface or stand out in the present facade of Jyotiḥśāstra.

#### ***vi. Prime Purposes of Cultivation of Jyotiḥśāstra***

##### **I Curiosity about future**

Vedic civilization as most other ancient cultures used Śakuna as a means to know about human and cosmic future as also the later development of Jātaka branch to view the future of an individual. The curiosity about future can be said to be the primary motive of the overall development of Jyotiḥśāstra of past and present.

## **II Performance of Sacrifices**

The chief purpose of cultivation of Jyotiḥśāstra at least in the Vedic times is calculation of proper times for sacrifices which were arranged on the orderly succession of times and were a means to attain long life, heaven and such desired and prescribed forms of future.

## **III Muhūrtas**

The requirement of Muhūrtas or auspicious times for the performance of actions was a basic necessity in the culture and perhaps being the prime purpose of the culture, the sole reason that Jyotiḥśāstra retained its identity in the various developmental phases of the culture. The initial purpose of Muhūrtas for fixing the proper times for sacrifices by recording the positions of the Sun and the Moon with reference to Ayanas and Nakṣatras later shifted to fix the time fit for the performance of Saṁskāra. Muhūrta were also sought for the performance of rectificatory rites. Also Muhūrtas for the performance of daily activities were framed by texts like Ātharvaṇa Jyotiṣa (2.1-11, 3.1-6.).

## **IV Astronomy as an independent development**

The study of Astronomy proper, initially which was secondary to the sacrifices is a later development in the Siddhānta period. It developed to study the positions of Planets and their motions independently revealing the later development of Gaṇita branch as chiefly for pure astronomical matters.

## **V Horoscopy**

The casting of Horoscopes and their reading thereby to infer future became a common practice after the advent of the Greeks and is prevalent till date. Also the angle of Daiva attached to it called for rectifications related to the afflicted Nakṣatras of birth and such matters retained the easy survival of Muhūrtas

## **VI Pañcāṅgas for Dharmaśāstra purpose**

Pañcāṅgas and such ready reckoners prepared from Mīśrakas and other sources can also be attributed the sustenance of Jyotiḥśāstra which chiefly serve the purpose of Dharmaśāstra.

### *vii. The Place of Jyotiṣa in the Literature.*

In the initial stage Jyotiṣa appears in a scattered form in the literature. Later in the Sūtra period Jyotiṣa occurs as a separate branch of study along with few others.

#### **Jyotiṣa as a vedāṅga**

Jyotiṣa in the literature attained the position of a limb of the Veda. It comes as one of the Vedāṅgas, the treatises which deal with the subsidiary studies of the Veda.

Amongst the six Vedāṅgas,<sup>202</sup> Jyotiṣa and Kalpa constitute the studies essential for proper sacrificial employment of the Vedas. Jyotiṣa thus comes from the very beginning with a purely practical purpose of conveying the knowledge of the heavenly bodies essential for fixing of proper times for sacrifices. The earliest text on Jyotiṣa, the Vedāṅga Jyotiṣa does not profess to be a treatise on Astronomy instead it supplies the information of Astronomy essential to fulfill the practical aim of the culture of the Veda. To study the practical aim of the Veda fulfilled by the Jyotiṣa as a Vedāṅga, the Brāhmaṇas and the Sūtras were to be looked into.<sup>203</sup>

#### **The quality: As a Cakṣu of the Veda**

Amongst the limbs Jyotiṣa is termed as the *cakṣu* (eye) of the Veda.<sup>204</sup> *Cakṣu* is evidently connected with the quality of Perception and Perception in relation with Jyotiṣa in the literature in its very fundamental form is the Perception or vision of the future of man.

The ideology related to future in Veda has a comprehensive compass and extends from simple ideas related to next life and heaven up to a definite explanation of the ultimate form of future prescribed by the culture. Thereby future in Veda appears in two forms, one as a part of time and the other beyond time. Jyotiṣa is labeled as *Kālavidhānśāstra* and though the Muṇḍakopaniṣad (I. 1.4-5) labels Jyotiṣa as one of the *aparā vidyās* (science connected to inferior exoteric knowledge.), yet with this concept of the ‘time’ and the ‘timeless form’, Jyotiṣa known as an *aparā* science perhaps also subserves as a bridge to the *parā* world connected with the superior exoteric knowledge. With such an interpretation Jyotiṣa labeled as a Cakṣu of the Veda along with the vision of future provided on the physical perceptive basis of the units of time formed by the days, nights and years also connects itself to

perception in the sense of insight about the ultimate form of human termed as 'Release'.

The post-Vedic development of Jyotiṣa as a *caḅṣu* provided by the culture for a vision of the past actions is chiefly through the Jātaka branch. Such a backward glance into the past of human from a certain point of time can be said to be a purposeful one on part of the Jīva heading towards an ultimate goal prescribed by the Veda to get an idea about the past actions amongst the cycle of rebirths and their inevitable outcome.

The concept of rebirths of man reflects in a broader sense in the idea of creation and recreation of the universe adding an extensive angle to Jyotiṣa as a *Caḅṣu* building up the theories of Kalpa, Yuga and Manvantaras.

### **3. The practical utility : As a Vedāᅅga**

The practical utility of Jyotiṣa in the culture of the Veda is inevitable and reflects from the very beginning. Providing times for the performance of ritual works for a certain future render Gaᅅita as a secondary development. Jyotiṣa shows a primordial emergence from the Astrological quarter,<sup>205</sup> calculations thereby seem to be a requirement of astrology. The idea of proper times for sacrifices itself comes from a conceptualized quarter related to the ideas about future and efforts to attain such an accuracy as to acquire such a future was the basic intention behind the calculation of times. This appears to be the base of Jyotiṣagaᅅita in the initial stages in contrast to the later development of the Siddhāntas which worked for Astronomy proper.

The practical utility of Jyotiṣa in the Veda displayed in the system of the Nakṣatras and their order clearly deemed to be ritualistic or astrological and not astronomical.<sup>206</sup> Though Colebrooke hints to a common quarter of origin of the prior developed Astrology and the later Astronomy erupted there from.<sup>207</sup>

Thereby Jyotiṣa in its practical utility is instrumental to the body of the Veda and as a functional unit of the working body of the Veda provide a vision of human as well as cosmic future equally providing proper times for performance of actions for the formulation of a specific future.

### 3. Concept of Karman

Karman designates action and carries a comprehensive character in the literature.

#### *i. Derivation of the term*

The term Karman (n) is derived from the √ kṛ which means to do, make, perform, accomplish, cause, effect, prepare.<sup>208</sup> In compounds it becomes Karma.

#### *ii. Meaning of the term*

Karman or Karma chiefly means action (kriyā), work (kārya), deed (kṛtya).<sup>209</sup> In its phase wise development in the literature, it comes in the sense of a religious rite, duty, moral duty, fate and such meanings all in accordance with the changeable connotations of action.

#### *iii. Origin in the Literature*

The term occurs in the Ṛgveda in the sense of ‘doing’.<sup>210</sup> It also appears as a ‘good deed’ (*sukṛta*).<sup>211</sup>

#### *iv. Developmental Nature*

In the Ṛgveda, the word Karman is often an expression of the ‘brave deeds’ of deities.<sup>212</sup> It also comes as ‘religious works’ in the form of ‘sacrifices’ or ‘offering of gifts’.<sup>213</sup> In the Saṃhitās, Karman generally meant action and also carried a specific meaning of ‘action according to Vedic injunction’. Performance of meritorious sacrificial work<sup>214</sup> was the nature of Karma in this period.

The Vedic sacrifice itself was termed as Karma in the Brāhmaṇas which lay a pre-eminence on *yajñakarma*.<sup>215</sup> The acts or religious rites in this period were generally performed in hope of future recompenses such as long life, wealth, heroic sons, heaven and immortality and the term Karma came with an underlying sense as an unseen merit fructifying in future for acts or prescribed acts performed in present.

These actions explicitly differed from the later development of Karman in the Upaniṣadic thought where karma while retaining its prior meaning as ritual actions, also meant knowledge (Vidyā) regarding speculations of the soul. Karman as religious rites and as knowledge (Vidyā) appears to be distinguished already in the Śatapatha Brāhmaṇa X. 4.3.4-10. Later the Bṛhadāraṇyaka Upaniṣad while praising

Vidyā as Karman specify the differentiation between these actions in terms of their fruits.<sup>216</sup>

Karman as Vidyā resulted in extension of the concept to the mental and moral sphere. The fire offering sacrifices were declared to be producing ephemeral and thereby perishable results.<sup>217</sup> The expression of action changed from mechanically potential fruit bearing ritual acts to ethically retributive ones which were explanatory to the sufferings and inequality in the world. Ethical nature of Karman also oriented the sense of Karman chiefly to human deeds. The nature of the moral act performed came to be considered as a decisive factor for the future becoming of man.<sup>218</sup> Also Karma as a binding force extended its sphere to the successive existences of man operating as fate.

The belief in continuation of existence after bodily death in different forms and planes prevailed in the culture. The idea of being born once again after death is expressed in Śat Brā. XI. 2.1.1. Meritorious actions were performed for deliverance from Punarmṛtyu (Śat. Brā. II. 3.3.7) or conquering of Punarmṛtyu (Śat. Brā. X. 1.4.14). The soul was supposed to follow the *iṣṭāpūrta* after death of the body.<sup>219</sup>

With rebirth (Punarjanma) fixed as a consequence of actions, the concept of Punarmṛtyu of the Brāhmaṇas disappeared in the background. The utility of the elementary *iṣṭāpūrta* was denounced by the Upaniṣads as well.<sup>220</sup>

Vidyā (karma as ritual knowledge) came to be condemned in the later stages as leading to darkness<sup>221</sup> considering Karma in this sense as a bond release from which was sought for. The attainment of Brahman or Brahman world which was beyond good and evil actions became the final goal to be reached by man.<sup>222</sup> The basic meaning of Karma as action subsided at this point and Karma acquired an obscure sense of non-action.

Post-Vedic the doctrine of Karma developed in a composite form. The Vedāṅgas advocated prescribed actions. The ritualistic nature of Karma as *yajña Karma* conducive to happiness by performance of the principle sacrifices was retained in the systems. Karma and Saṃsāra were the general consideration of Dharmaśāstra (Manusmṛti 12.1-82) and also the ultimate retribution for actions (Manusmṛti 12.1).

Whereas the Epics followed the Philosophy of the Upaniṣadic preaching's of the becoming of human according to his deeds (Br. Up. 4.4.5) and ponder on *Daiva* and human effort, the Purāṇa literature retain the Vedic attitude of performance of Śrāddha and such rituals to achieve rebirth.

The concept of transfer of merit or demerit<sup>223</sup> appears to be deeply rooted in the tradition. Karma is transactional amongst individuals<sup>224</sup> and also among the individual and his generations<sup>225</sup> though this is the general acceptance in the non-philosophical context and systems like Yoga and Advaita Vedānta deny any transfer of Karma amongst persons and express it as an individual process.

Moral Karma as primarily mental in its nature and that the intention behind the act than the actual act resulted in puṇya (merit) and pāpa (demerit) was propounded by Aṅguttaranikāya Text iii, LX111.11. Whereas the material nature of Karma with the property of downward gravity (adhogurutva)<sup>226</sup> or Karma as a product of Prakṛti or primordial matter and not Puruṣa was also discovered.

Karma came to be considered as the cause of all activity amongst the living beings,<sup>227</sup> named as Pradhāna, the originator and source of the material world.<sup>228</sup>

#### ***v. Sources of Karma***

In the creation hymns of the RV, the sources from which the cosmic activity originated are said to be various such as Viśwakarman (RV. X. 81.82), Puruṣa (RV. X.90) and also the nameless, Tad-ekam (RV.X.129). Amongst the individual gods, Savitṛ defined as the stimulator of everything<sup>229</sup> is described as the great stimulator of life and motion in the world.<sup>230</sup> Uṣas is said to have arisen all living beings to motion.<sup>231</sup> Pūṣan is the helper god serving as marking the doings of the whole world (RV. II. 40.5) whereas Varuṇa is supposed to be the controller of the laws of nature, he and Mitra uphold the physical and moral order in nature, both rule over the whole world (RV.V.63.7). The Atharvaveda<sup>232</sup> projects Kāla as the source of creation of the world. The Śvetāśvatara Upaniṣad (VI.11) states that Karma is ordained by god. Cosmic action as a projection from the absolute Brahman from which all bhūtas spring, sustain, return to and are absorbed therein is expressed in Taiṭṭirīya Upaniṣad.<sup>233</sup>

Along with the advent to human orientation of the Karma theory mental activity came to be regarded as the root of Karma.<sup>234</sup> In this context Karma is said to be born of will or intention,<sup>235</sup> desire and action rested on ignorance (*avidyā*), which became the source of all activity. Priorly Karma evolved from ritualistic actions (*yajñakarma*), whereas in and later to the Upaniṣads, it claimed an ethical origin.

External actions or *bāhyakarma* came to be defined on account of speech and body whereas time on the basis of maturation of stored Karmas, came to be considered as a source of karma.<sup>236</sup> Karma is also said to be a product of *Prakṛti*.<sup>237</sup>

God (*Īśvara*) is postulated as the efficient cause (*nimittakāraṇa*) who incites the *dharmā* and *adharma* residing in the soul and the elements to activity.<sup>238</sup> Since Karmas are acetana, god is the giver of the fruits of actions (*Vedāntasūtra* 3.2.38). He brings about the fruition of past actions (of men) and their distribution according to *vidhi* (law) is distinctly expressed.<sup>239</sup>

## ***vi. Effects of Karma***

### **1) Karmavipāka (maturation of karma)**

Karma once performed bear fruit.<sup>240</sup> This fruition or maturing of karma is termed as ‘Karmavipāka’ which deals with the operative part of the doctrine of Karma. Karmavipāka explained the consequences of Karma as to how and when they fructify.

Vipāka<sup>241</sup> in case of man is in the form of experiencing the results of his actions after their maturation. The *Sañcita* Karmas or accumulated Karmas in due course fructify according to their nature resulting in ‘pleasure’ or ‘pain’ which is experienced by the self. Karma was believed to provide the stimulus for the causation of happiness as well as unhappiness which were its virtues<sup>242</sup>

Karma is termed as instrumental to the relationship between *puruṣa* and *Prakṛti*.<sup>243</sup> The nature of *adrṣṭa* a complex of the previous deeds became a decisive factor in the future discourse of the individual. Broadly the determination of *jāti* (birth), *āyuh* (the length of life) and *bhoga* (pleasure and pain) depended on Karma (in the sense of fruition of past deeds.).<sup>244</sup> Thereby present life is considered as a fruit of

the Karmas of the past life. (Rāmāyaṇa 2.47.19). Life span is a result of Karmavipāka and thereby a sum total of the actions of past lives.

## **2) Rebirth and transmigration**

Rebirth and transmigration became the necessary corollaries to the theory of Karma as an explanation of the effects of Karma.

Rebirth is postulated as the foremost consequence of Karma as a binding force. Action produced (good or bad) results and thereby rebirth occurs “by way of a necessary supplement to the result of actions” or “in order to bring the result of actions to completion”.<sup>245</sup> Yājñavalkya (3.206-209) makes a mention of the rebirths of ‘mortal sinners’. Caraka believes rebirth as a function of Karma, mentioning unrighteous actions of past life leading to diseases. (Caraka Samhitā IV.2.44).<sup>246</sup> Thereby physical deformity and mental sufferings are the products of past-karmas and the shape (body-form) and mind of an individual accord with his past actions.<sup>247</sup> Rather the body originates of Karmas as causal to experience them,<sup>248</sup> and that the past-karma of the soul determine the connection of soul with a body at a time as also create a body fit to experience the consequences of the past-karmas<sup>249</sup> as the fundamentals to effectuate past Karmas.

The consequences of sacrificial and other prescribed actions performed in present life also subject to rebirth to receive their fruits.<sup>250</sup> A man who has duly followed his duties (Dharma), after death and on his ‘return’ experiences the consequence of his actions.<sup>251</sup> Thus the quality of actions determine the quality of rebirth thereby rebirth occurs in various worlds according to the nature of actions<sup>252</sup> and the subtle body (Līṅgaśarīra) as a vehicle transmigrates after the death of the body as a link to a new one for the workings of the unexhausted Karmas is also a subordinated postulate of the theory.

### ***vii. Classification of Karma***

Karma is broadly classified in the literature as Daiva and Puruṣakāra. Daiva<sup>253</sup> is defined as one’s own Karma, accumulated in the past lives in the cycle of transmigration and rebirths. Life and death sufferings, pleasure and pain result from accumulated past actions and are thereby said to be attributes of daiva.<sup>254</sup> In this sense

Daiva carries a 'passive' aspect. The efficacy of Karma from this pessimistic view point as against its effectiveness in case of present human actions is skeptically mentioned as *deva-guhyāni*<sup>255</sup> (the mysteries of the gods.)

Puruṣakāra (self effort) as action in the sense of actively pursued present human actions is also termed as Karma<sup>256</sup> in its very simple sense. The superiority amongst Daiva and Puruṣakāra is enquired (Mbh.13.6.1). They are equated with each other (Matsyapurāṇa 30.12) and also contrasted as regards rebirth<sup>257</sup> which depends on niyati or daiva and is beyond reach of one's deeds. Yet Puruṣakāra in terms of importance of present actions and their results is rendered superior.<sup>258</sup> The Epics accord 'the shaping of Daiva through human actions' as Puruṣakāra<sup>259</sup> and with relation to Āyurveda, Puruṣakāra carried the meaning of therapeutic measures to be followed to cure diseases which are results of past actions. Ātreya mentions life span dependent on both Daiva and Puruṣakāra<sup>260</sup> whereas the accomplishment of a deed is said to be dependent on both Daiva and Puruṣārtha (effort) by Mārkaṇḍeyapurāṇa XXIII.26 which is reiterated by Agnipurāṇa.<sup>261</sup>

The fruition of action is also dependent on time along with Daiva and Puruṣakāra.<sup>262</sup> To this extent the time related classification of Karma on the basis of their maturation as 'niyatavipāka' and 'aniyatavipāka' occurs,<sup>263</sup> as well the Karma which begins with one's birth and determines one's present existence the 'Prārabdha' (Ārabdha)<sup>264</sup> Karma, is also a classification of Karma operating for a single lifetime.

Karmas are also classified according to the qualities,<sup>265</sup> on the basis of body mechanism<sup>266</sup> and also on the basis of their consequences.

#### **viii. Karma as a Remedy**

The inclination towards neutralizing the effects of Karma especially in its negative sense thought to be the cause of sufferings or ill-effects is an early tendency of the Veda. Prayers to deities to this effect occur in the early part of the Veda as also the oblations offered through the medium of sacrifices. Sacrifices were also performed to obtain heaven for enjoying their rewards. Very initially accumulation of merit through ritual actions and creating Kārmic potential to be utilized in near or distant future was the form of prescribed Karma.

Sharing of Karma as transfer of merit in the form of offerings to pitṛs<sup>267</sup> who were believed to set free or save their descendants from evil things was a common cultural practice. Śrāddha rites were performed for the welfare of the departed souls.<sup>268</sup> Earlier prayers are addressed to deities to cast away from the transgression of the fathers<sup>269</sup> the RV mentions about aversions to share the evils of others.<sup>270</sup> Whereas Jainism did not favour the transfer of merit, Buddhism on the other hand believed on a class of *preta* living on the gifts of others (*paradattaupajīvi*-Milindapañha IV. 8.29). the philosophical systems did not accept the concept of transfer of merit.<sup>271</sup>

Increase in merit by measures such as Dāna (charity or gift),<sup>272</sup> Japa<sup>273</sup> (recitation of Vedic mantras and names of gods) Vratas<sup>274</sup> (religious observances) in the form of obligatory, expiatory, purificatory acts; Tīrthayātra,<sup>275</sup> (visiting places of Pilgrimage) and such actions were brought about. This came about initially for securing merit and later with the development of Karma theory also for removal of accumulated demerit.

With the concept of ethical retribution of Karma, moral actions as good (puṇya) and evil (pāpa) and their results thereon came to be studied.<sup>276</sup> With the notion that the chain of existence continue its operation until Karma expires., Karma became as a bondage and freedom from the bondage to escape from the workings of Karma was sought for. The measures employed were in the form of Saṁvara,<sup>277</sup> desirelessness,<sup>278</sup> Niṣkāma Karma<sup>279</sup> (detached actions) and such others.

### ***ix. Essential Constituents of the Theory of Karma***

The gist of the theory of Karma in the literature can be explained as under

#### **1) As a law of causation**

Karma is a causal law, the law of action and reaction applicable to all sorts of cosmic actions. In case of human, it extends along with the physical actions to the mental and moral sphere as well.

#### **2) Moral orientation**

With the responsibility of one's own actions being retributive, Karma theory apart from physical actions enhanced the moral actions. Good actions resulted in

happiness and inversely evil one's produced sufferings Human effort (Puruṣārtha) and free will became the important ingredients of Karma.

### **3) Operation of Karma through rebirth and transmigration**

Karma being causal and subjected to retribution, rebirth and thereby transmigration in various forms of existence came as an inevitable effect for the past actions. Karma became explanatory for the present fate of an individual.

### **4) Deliverance from Karma**

Puruṣārtha in the form of performance of prescribed action to reduce the effect of daiva (past actions) and final liberation from the operations of karma also appear as endpoints of the theory. Karma being an efficient cause and not a primordial one gave a scope for Puruṣakāra. Prescribed actions to such extent as to release from the bondage of Karma existed in the culture. Facing the Prārabdha Karma was also a means of deliverance from Karma.

## ***x. Aspects of Karma***

### **1. Karma is central**

Karma is centrally placed to the explanation of the universe by the culture. It is proposed as the cause of the activity in the entire world and thereby a fundamental percept being the cause of everything (Padma Purāṇa 2.94). whereas it actively pursued in the Vedic period in the form of ritual and ethical actions as a chief means for the obtaining of heaven, immortality and the for Brahman world, in the post-Vedic period it provides a causal platform for the working of the world as an effect of past actions.

### **2. Karma is unseen and fructifies with time.**

Karma as an unseen magical virtue or as a merit of ritualistic actions fructifying at some later point of time is repeatedly expressed in the literature. Its manifestation after bodily death is also mentioned (AV.XVIII.2.57). In the later phase the daiva aspect of Karma considering birth as an expiation for the actions of previous lives also retained the unseen angle of Karma. In its literal sense it is termed as 'adṛṣṭa' or 'apūrva'.<sup>280</sup> Its connectivity with the parts of time as fruition of past actions

or fructification in a distant future beyond bodily existence, makes 'time' a function of karma.

### 3. Storage of Karma

Karma possessed a tendency of gathering. Every action once performed was believed to fructify, and those which do not fructify instantly were bound to be stored. Whether meritorious or non-meritorious every action being consequential and resulting in fruition after a certain lapse of time attributed Karman the property of accumulation until they being fructified or exhausted. These were inclusive of accumulated Karmas of all the past existences, whose fruits remain to be experienced. These set of Karmas are termed as 'Sañcita Karma'.

The stored Karma is material or lay in a matter form being compared to a lump of earth or wood and insentient in character.<sup>281</sup> Sāṃkhya make it a part of the primordial matter (Prakṛti).

The association of the matter form of Karman (*Pudgala* of Jainas) with the soul is believed the basis of the *karmaṇaśarīra* or else the *liṅgaśarīra* (subtle body) which is controlled by Karma residing in it along with avidyā and desire.<sup>282</sup> These residues of the acts stored in the form of tendencies (saṃskāras) fructify in many lives is also a presupposition.

A special type of Karma stored in the form of action potential namely apūrva, the subtle potency arising from the sacrificial action is said to reside in the agent and stands as a connecting link between the act and the reward over the lapse of time. In an earlier period the idea of accumulated merit is expressed in the Taittirīya Samhitā V. 7.7.2

### 4. Inequality due to Karma

Inequality amongst human beings is attributed to past-karma as good and evil resulting in variation in caste, form or appearance, in economic status and success and fortune.<sup>283</sup> The variety in the biological species is also accorded to Karmas<sup>284</sup> on virtue of their deeds leading to superior forms of life as a consequence of higher merit. Rather the entire differentiation from Brahmā to a blade of grass is made dependant on Karma.<sup>285</sup> Thereby diversity is made a result of *Karmavipāka*.

Inequality along with difference in the nature of individual actions also manifests in the time of Vipāka.<sup>286</sup> The inequality in the body forms and mental faculties of human are accorded to the rajas and tamas along with the *pūrvakarmas*.<sup>287</sup>

Deeds also determine the plane of fruition.<sup>288</sup> Good conduct results birth as a human being or in heaven whereas evil conduct leads to animal birth or hell. Kauṣītaki Upaniṣad (I.2) mentions rebirth in different planes of existence. The ideas of other worlds viz, devaloka (heaven) and yamaloka (world of fathers) reached by devayāna & pitṛyāna respectively and even the idea of hell expressed in earlier Veda modulated along with the theory of Karma and in the later part with rebirth essentially in this world, swarga (heaven) came to be defined not as a region but as a state (of mind) denoting happiness (Śābarabhāṣya on Mīm. Sū.VI.1.1). Karma at this stage thereby became directly associated with emotional experiences and their bifurcations.

## 5. Motion of Karma

Karma is equated with motion. The idea subsists itself in its literary expression and in its basic concept that every action is inevitably subjected to fruition. It is also frequently expressed in the notion of transference or exchange of Karma. It is said to possess downward gravity (adhogurutva) in opposition to or relatively with the soul possessing an upward movement. (ūrdhvagurutva).<sup>289</sup> This thought in sense of being tied down (due to immoral actions) is expressed very early in the concept of the fetters of Varuṇa, whereas the idea continues in later period where a man with true insight is not restrained by his actions in opposition to those without insight who are tied down to repeated births and deaths. (Manusmṛti 6.74)

Karma (human action) is determinative of a man's gati<sup>290</sup> is an important concept in relation with the doctrine. In the initial literature, the soul was supposed to move by its inherent power (स्वधा)<sup>291</sup> and later because of the accumulated Karmas. Or it was the complex of dharmādharmā (adrṣṭa) which decided the future course of the soul. The possible courses (gati) or destinies<sup>292</sup> depended upon the nature of the acts.<sup>293</sup> The state between two material or gross bodies defined as *vigraha-gati*<sup>294</sup> also finds mention in the literature.

#### 4. Vedāṅga Jyotiṣa and Karman

In relation with Jyotiṣa, Karma carries a comprehensive meaning. In contrast to its later sense as restricted to the acts of human beings, with the entire form of Jyotiṣa it is related to the overall cosmic activity, the action and reaction in the happenings of the cosmos, inclusive of physical and moral things, the living non-living things and perceptible and imperceptible objects. Elsewhere in the literature this broader sense of Karman occurs in the Vaiśeṣika darśana and also seen in the Bhagavadgītā.<sup>295</sup> The correlation comes chiefly in two sorts, firstly it includes the study and interpretation of the natural cosmic activity and secondly it works to provide proper times from the cosmic activity for the performance of voluntary actions of human beings.

##### *i. Cosmic Actions: The Substratum of Jyotiṣa*

With Karma as natural cosmic actions, Vedāṅga Jyotiṣa in alliance with Karma deals with the study of the nature and the light objects and the phenomena dealt with it. It included the study of divinations, the voluntary and involuntary natural actions for the interpretation of human future. Also the learning of the regularity of the cosmic process depicted by the animated nature gods and the application of the orderly motion of the luminaries and the heavenly bodies for performance of prescribed human actions. The sattrā (yearly session) was arranged on the course of the Sun. Most of the later rites were based on the position of the Moon in the divisions of the sky, the acts in accordance with the characteristics of the Nakṣatras in which the Moon was situated.

As daiva came to be regarded as good and bad actions of the previous birth/s of human<sup>296</sup> Vedāṅga Jyotiṣa provided a substratum for the reading of the past actions. Daiva and its synonyms<sup>297</sup> came to be regarded as divine will,<sup>298</sup> its course coming from the gods or operated by the agency of the gods with the common expression as the fruits of (one's own) actions coming from the gods.<sup>299</sup> Daivabalapravṛtta<sup>300</sup> included lightning and natural disorders along with curses, wraths of demons directly related to the gods with human at the receiving end.

The perceptive cosmos served as a base for the ideological implementation of the culture. Worshipping the rising and the setting Sun was said to deliver from the sins (Kauṣītaki Upaniṣad 2.7). It also worked as a live screen for the happenings or myths in the past exhibited in the form of impressions to present vision. Allied with this the stars visible in the sky were the lights of the virtuous men in the past (Tai. Saṁ. 5.4.1.3) due to their chaste deeds were raised to stars. Also were informative the star clusters in examples like the Orion myth which showed the desirous Prajapati and the consequence of his actions. These messages served as way a sort of evidence of the results of good and bad actions and were obviously utilized for the future designing of man.

In connection with Karma through the cosmic activity Vedāṅga Jyotiṣa came to be considered a Cakṣu (eye) for the vision and an insight for shaping of future and also provided a look-out for the past actions. Actively pursued human actions in present retained its importance through out, adverse daiva could be unwind by self effort was believed, yet there was a dependency on cosmic activity as amongst the two destinies (vidhāne) ordained for men one was brought about by the gods and also the fruits of Karma depended upon daiva and the effects of the past, present and future along with human efforts.<sup>301</sup>

## ***ii. Kāla and Karma***

Puruṣakāra and daiva though parts of Karma, are contrasted on the basis of Time. Time (Kāla) is also considered an important factor along with action (Karma) for the functioning of the world.<sup>302</sup> Often time is equated with the *daiva* counterpart of Karma in the later literature in connection with *Karmavipāka* or fruition of karma. Kāla is accorded the quality of bringing to fruition the past actions. Ādiparvan (1.1. 188-191) elaborates the working of Kāla as to ripen and then decay the beings.<sup>303</sup> This function of Kāla was perhaps subordinate to the early culture yet work on a certain time could lead to a desired future was a thought prevalent in the culture since very early times. Ṛgveda (III. 8.5.) mentions the utility of an auspicious day for planting a sacrificial post and the resultant prosperity. Ritual actions on the *parvan* of Prajāpati, a

personification of Kāla, representing a Samvatsara was a regular practice in the Brāhmaṇa period.

In the later flow of thought, the culture ascribed activity to matter and materialistic forms. All actions were said to be performed by the guṇas (constituents) of the primordial matter (Prakṛti), thereby qualities were connected with matter. Guṇa (quality) and Karma are essentially related to the substance whereas Kāla is amūrta (non-embodied / formless) and is an acting force in bringing forth the activity (whether good or bad) residing in the substance. Thereby, if Karma qualitatively specifies the cosmic activity (of material forms), then Kāla can be termed as the record or account of that particular activity. This quality of Kāla is expressed in the literature as keeping an account of days, nights and its other fractions and causing sufferings.<sup>304</sup> Further these divisions of Kāla as day and night and such factors also are said to arise due to activity of the material cosmic objects as the Sun and the Moon resulting in light and darkness. The study of these qualities of cosmic matter, the resulting Kāla and its effects on human and cosmic future continued till the period of Varāha.<sup>305</sup>

Also since the activity of the cosmic matter becomes the cause of cosmic time, the variations in the cosmic activity can also be said as the cause of the variations in cosmic time. A mutual dependency arises here as time becomes an operation of Karma and Karma depends on time for its fruition. A study of any such unit of time can be a ready reckoner for providing information about the activity of the cosmos stored in it in the form of characteristics or qualities.

A study of the characteristics of the cosmos occurs very early in the Veda in form of the natural phenomenon represented by the deities. The order in the cosmos and one process changing into the next one resulting in a successive changeability of events is recorded with the aid of time and its units. Also a complete change in the characteristics occur at some point of time and the moment which brings forward this change is also discovered in the form of the joints of days and nights, the New Moon and the Full Moons, the Ṛtusandhis, the Uttarāyana and the Dakṣiṇāyana occurring due to the motion of the heavenly objects. The notion of future and the impending

auspicious or inauspicious happening is made dependent on this change and the unit of time which brings out this change in the Veda.

On part of the moment, it being a carrier of the stored cosmic activity inclusive of the characteristic in it and being devoid of any quality of its own since it is non-embodied; this quality of the cosmos becomes an identity of that particular moment. Inversely, the moment which carries it is a witness of that specific activity lying in it and also a witness of the change it may lead to, in the next successive moment, as the activity may proceed. Thereby any such moment becomes a *sign* or a *mark* for that particular activity.

Veda and the later period has utilized the strength of the moment and the further units of time to seek knowledge about the impending future from the variety of cosmic activity which lie in the divisions of time. Long time spans as Kalpa, Yuga, Manvantara and such spans have been studied in the relation with the quality of the cosmos and the moments of the beginning of these time spans have been calculated and studied to understand their effects on man and cosmos and also to calculate the age of the cosmos.

Apart from the variety in the cosmos from which activity arises or is stored in the form of characteristics and is brought forth by time, the culture has discovered certain part of the cosmos as non-active or without activity or motion. The concept is present in the expression of the all pervading Brahman in the Upaniṣads or later in the notion of the non modified part of the primordial matter of the Sāṃkhya philosophy or else in Sun without parts. The idea of time beyond its three parts as past, present and future offers a connectivity to such parts of the cosmos. The negation of time or time as a whole or else the timelessness of the universe follow such regions of cosmos which explicitly refer to a time plane rendered superior than its other counter parts which differentiate on account of variable activity.

### *iii. Perception by Kāla*

One of the chief concern with the correlation of Jyotiṣa and the Karma theory is its connectivity to human future. The nature of the working of cosmic activity and time being gradual and successive, the study related to future from these two becomes

an ordered process and rules out any possibility of suddenness in any event or happening. In an attempt to read future from cosmic activity, the onset of involuntary divinations mentioned as Utpāta or Adbhuta, or the apparent motion of the Sun in the two hemispheres, count to the limitations of the human senses rather than the actual process. This was perhaps acknowledged very early since the Sun never really rises or sets is already mentioned in the Aitareya Brāhmaṇa<sup>306</sup>. The daily occurrence of day and night too seemingly indicate a restricted point of observation. Apart from these future from long time spans or timelessness of the universe being beyond a single human life span restricted by births and deaths, or rebirths obscuring the memories of past lives the perceptive faculty of Time with cosmos as the standard means has been used to transcend the limitations of human to read the past actions and the future of man.

*iv. Actions on specific time*

The transmigration of the self is said to be due to acts and bondage to time.<sup>307</sup> And destiny is made a factor operating with time which decide the fate of earthly existence of man. Thereby time in relation with past-Karma decide the period of fruition<sup>308</sup> of action whereas human endowed with free will possess the independence of action. Cosmos being passive and non-intelligent is rendered non-active in terms of free will.

Cosmic activity with aid of time is utilized as a standard means for performance of prescribed actions and also for reading of the past ones. Fruition of action on appropriate time is made the quality of the cosmos, whereas man is given an injunction to act on prescribed times derived from the cosmic material by the culture thereby making work on appropriate times a necessity for an ideal future.

Thus, the limitation of perception is to human and not to time and cosmos. Whereas the limitation of independent action is to time and cosmos and not to human. Therefore the mutual qualities of cosmic time with its ability of perception and human with his independence to act are brought together by the culture to work on human and cosmic future and which forms the basis of the co-relation of Vedāṅga Jyotiṣa and Karma in the literature.

#### *v. Future of Man and Cosmos*

Very early ritual actions and time are intentionally connected through the medium of sacrifices for futures recompenses. The importance of moment to such effect as a unit of cosmic time, its transitory existence on part of the observer is acknowledged. That it carries along with it certain qualities of the cosmos deemed special for human work and while passing away it takes along with it the qualities it brought forth also the fact that being a part of the natural law it cannot be reproduced voluntarily and is beyond human intervention is also acknowledged. This is what can be termed as the 'strength of the moment' which must have been contemplated in the prevalent culture then and thereby specific actions are seen to be arranged on its occurrence.

The importance of right moment, in relation with its qualities and its transitory existence for a sacrificer appears to be studied and utilized in the Vedic times where the man was said to be cut off from the heavenly world if the proper time for Darśapūrṇamāsa rite was not followed. The importance of cosmic time as one which connects man to other planes on performance of proper actions was acknowledge since early period.

The ideology of cosmic paths and regions materialized as a practical device to the study of human and cosmic future. Work aimed at a right direction in cosmos for desired effect in terms of future was arranged and the path of natural light displayed by the heavenly bodies was followed. The order of light brought forth by Kāla was pursued to such an effect. The initial study of cosmic order by means of the deities leading to the sacrificial order and then the moral order in and later to the Upaniṣads divulge the flow of the correlation as beginning with a cosmic orientation and ending with centralization around human. Rather, the transformation of Ṛta, the physical cosmic order into Dharma, the sacrificial and moral order which served as a basis of culture can equally be termed as a basis for the correlation of Jyotiḥśāstra and the concept of Karman. Though serving a physical substratum to the ideology of the culture was the initial role of Jyotiḥśāstra, with the concept such as the deliverance of the soul where Prakṛti becomes a mere illusionary appearance, the role of cosmos

became more and more passive with Jyotiṣa confined as a mechanical time reckoner and the later Karma theory limiting itself to human actions. The Vedāṅga Jyotiṣa, the first of the extant texts on Jyotiṣa, deemed technically as a calendar is a sound proof of the reliance of human activity on the cosmic order for a definite future and also of the cultural line of thought connecting appropriate cosmic time and human action for the achievement of such a future which was believed to be an ideal one by the man of early times.

Jyotiṣa which was very initially connected to the study of light forms, loosely bound to the physical and moral actions of human gradually came to be labeled as Kālavidhānśāstra, the law of times which appropriated specific times for the performance of human actions. There occurs a shuffling between cosmic time and human actions, as a cause as well as an effect in terms of shaping of the human future on account of which Kāla is equaled with a potter (Mbh. 12.34.10). A systematic effort directed towards organizing human future with the aid of Kāla is evident in the culture. The development is gradual and essentially phase wise but not linear on terms of the cultural versatility and occurs in an attempt to decipher repeatedly the cosmic puzzle in relation with man and his future along with the apt usage of time and actions to restore the perhaps attenuated harmony of human and nature.

### **Concluding Remarks**

Conclusively, the study of Jyotiḥśāstra and the concept of Karman pursued by the culture happens to be a study of nature and light forms brought forth by Kāla and its order on part of Jyotiṣa and the systematic study of physical and moral actions of human on part of Karman. Also, etymologically the term dharma originating from √ dhṛ or the term religion from *religere* meaning 'to bind', in connection with the correlation appears as 'a binding of prescribed human actions to the cosmic actions through Kāla' brought about by the culture for the shaping of human future.

## ***End notes***

- 1) Dhātupātha 1.2.
- 2) in the sense of nominative.
- 3) Nighaṇṭu 1.16, Nirukta 2.1, Pāṇini 6.3.85.
- 4) Mīm. Sū. 4.4.40.
- 5) The import of term jyotis in Upaniṣadic context, p.102.
- 6) Apte. p.224. Amarkośa. 3.3.230. Amarkośa gives four meanings of ज्योतिस् (n). viz. Nakṣatra, Prakāśa, Dṛṣṭi, Jyotiḥśāstra.
- 7) As light / lustre (RV. 1.48.8, IV.10.2.).  
As heavenly light (RV.VIII.48.3.).  
As luminary, as Sun (RV.1.124.1,IV.13.1.).  
As dawn (RV.1.113.1,AV. IV.14.3.).  
As light of Brahman (Br.Up. 4.3.2-7.). As fire (AV. 1.9.2,1.35.3.). As Tejas (Chān. Up. 6.4.1.). As Agni (Tai. Up..2.1.3.). As Jyotiṣ (Muṇḍ.Up. 2.1.3.). As faculty of seeing (RV. I.117.17.).
- 8) Measures the days (RV. I. 50.7.), prolongs life (RV. VIII. 48.7.), life as the count of Sunrise (RV. IV. 25.1, VI. 52.5.).
- 9) As Āditya (Br. Up. VI. 2.15, 16.).
- 10) RV. IX. 113.9.
- 11) √ cand. I P. ‘to shine’, *mās* (the measurer) RV. VIII. 94.2.
- 12) RV. X. 55.5; Chān. Up. 5.10.1; Śat. Brā. 1.6.4.5.
- 13) Vedic Mythology, p. 113.
- 14) RV. VIII. 2.10, IX. 33.2.
- 15) Moon is commonly addressed as *indu* in post -Vedic literature, Yāj. Smṛ. I.80.
- 16) सूर्यरश्मिश्चंद्रमा गंधर्वः। Tai. Saṁ. 3.4.7.1.
- 17) Aṣṭakā (8<sup>th</sup> tithi in the fortnight after Full Moon) was considered worthy of offerings.  
History of Dharmaśāstra, Vol. V.1. p. 65.
- 18) Yogayātrā IX. 1-3, 10; Nārada Purāṇa I.56.358-359.
- 19) RV. X. 90.13.

- 20) Mai. Sañ. Iv. 2.1, Kauṣ Brā. 1.2, Śat. Brā.ii.4.2.2.
- 21) Str. (RV.II. 34.2, IV. 7.3.) , ṛkṣa (RV. I. 24.10.).
- 22) Str in the sense of decking the sky is an Indo-European word. H/o Dh. V.1.p.496.
- 23) Rocanā ‘the bright sky’ Apte, , p.472.
- 24) Vedic Index, p.409.
- 25) अथो नक्षत्राणामेषामुपस्थे सोम आहितः। RV. X 85.2; AV 14.1.2.
- 26) Also Kāthaka. Sañhitā. X. 19.1, Mahābhārata ix. 35.
- 27) Tiṣya (Puṣya) in RV. X. 64.8; Citrā. RV. IV. 51.2; Revati RV. IV.51.47.
- 28) The 28<sup>th</sup> is Abhijit mentioned in AV. 19.7.2-5 and Mai. Sañ. II.13.20. Tai: Brā. I.5.2 marks it as a new comer where as Mahābhārata (Vanaparva III.230) mentions it as being dropped out.
- 29) Tai. Sañ. IV..4.10.1-3; Kāthaka. Sañhitā. 39.13; Tai Brā. I.5, III.1; Vedānga Jyotiṣa (RV) 25,26.
- 30) History of Dharmaśāstra, Vol. V.1,p.509; Bhāratīya Jyotiṣaśāstra. p.52.
- 31) ‘Āśreṣā’ the embracer which fits the constellation, ‘Citrā’ meaning bright or ‘Śatabhiṣak’, having hundred stars. Vedic Index p.416.
- 32) Punarvasu, Citrā, Maghā, Revati. Bhāratīya Jyotiṣaśāstra p. 57.
- 33) Ārdrā, moist or wet, in solar connection with rain. H/o Dh. V.1. p.509.
- 34) Hasta, the shape of hand or palm, Puṣya , the golden boat in the sky (AV.5.4.4, 6.95.2); यानि वा इमानि पृथिव्याश्चित्राणि॥ तानि नक्षत्राणि॥ Tai.Brā. 1.5.2.
- 35) Niṣṭyā (Swāti) means ‘outcaste’ in Rg. VI. 75.19, X. 133.5; Śronā (Śravaṇa) means ‘lame’ (RV. I.112.8); Mūla as ‘root’ or ‘foot’ RV.X.87.10.
- 36) हस्त एवास्य हस्तः।चित्रा शिरः। निष्ठ्या हृदयम्। उरू विशाखे। प्रतिष्ठा अनुराधाः। एष वै नक्षत्रियः प्रजापतिः। Tai. Bra. I.5.2-7, Bṛhat-Sañhitā (104.1-5); ‘The Nakṣatra Puruṣa cannot be made fit to the comtellations’. Hindu Astronomy .p.24.
- 37) History of Dharmaśāstra, Vol. V.1., p.509.
- 38) Vedānga Jyotiṣa (RV. 25-27); Bṛ. Sañ. 97. 4-5; Bṛ. Sañ. 98.3
- 39) Bhāratīya Jyotiṣaśāstra, p. 470.
- 40) Śat. Brā. II. 1.2.
- 41) Bṛ. Up. VI.3.1.

- 42) Br. Saṁ. 97. 6-11.
- 43) Gobhila-Gṛhyasūtra. II.1.1.
- 44) Kṛttikā marked the Vernal Equinox in circa 3100 B. C. Dikshit calculates this date from a verse in Śat. Brā. (II.1.2.3). Bhāratīya Jyotiṣaśāstra) p.128.
- 45) History of Dharmaśāstra, Vol. V. 1. p.507.
- 46) Hindu Astronomy pp. 30-32.
- 47) Orion p. 166, referring to RV. X. 86.22.
- 48) Vedic Chronology, Introduction p.5. A supposition of an pre-orion or Aditi period when the Vernal Equinox coincided with the constellation Punarvasu (around about 8000 - 5000 BC which was the period of migration of the surviving Āryans following the destruction of the original Arctic home by the last Ice age) also exists. 'The Arctic Home in the Vedas' in Samagra Lokmanya Tilak, Vol. II, p. 372.
- 49) Hindu Astronomy, p.29. The knowledge was marked due to inaccurate length of the year and crude methods of fixing the solstices.
- 50) Vedāṅga Jyotiṣa (RV) v.36.
- 51) एकं द्वे त्रीणि चत्वारि वा अन्यानि नक्षत्राण्यथैता एव भूयिष्ठा यत्कृत्तिकास्तद्भूमनमेवैतदुपैति। तस्मात्कृत्तिकास्वादधीत। एता ह वै प्राच्यै दिशो न च्यवन्ते सर्वाणि ह वा अन्यानि नक्षत्राणि प्राच्यै दिशश्च्यवन्ते। Śat. Brā.II. 1.2. 2-3.
- 52) देवगृहा वै नक्षत्राणि। एवं वेद गृह्येव भवति। Tai. Brā. I.2.5.11
- 53) Tai. Saṁ. 5.4.1.3, Śat. Brā.VI. 5.4.8.
- 54) यो वा इह यजते अमुं लोकं नक्षते । तन्नक्षत्राणां नक्षत्रत्वम्॥ Tai. Brā. 1.5.2.10.
- 55) RV. I.50.2, II .34, IV. 7.3, X. 68.11.; Tai. Saṁ. 7.5.25; Tai. Brā. 2.7.18.3, This is also accepted by modern science. Basic concept of Nakṣatras, p. 25.
- 56) Webster's Dictionary p. 571.
- 57) Webster's Dictionary p. 2.
- 58) Vedic Mythology, p. 22.
- 59) Kaye summarizes the characteristics of the group. Hindu Astronomy p. 103.
- 60) The Religion and Philosophy of the Veda and Upanishads p. 99.
- 61) XIII. 3.13.; IX. 3.18.
- 62) Hindu Astronomy, p. 104.

- 63) Vedic Mythology, p. 38.
- 64) Also Yāska equates him with the Sun (Nirukta vii.9).
- 65) The Religion and Philosophy of Veda and Upanishads p. 113.
- 66) RV. X. 39. 2.
- 67) Śat, Brā. X. 5.2.4.
- 68) Vedic Mythology, p.81.
- 69) History of Sanskrit Literature, p.25.
- 70) Vedic Mythology, p. 72.
- 71) As golden (RV. V.2.3) or golden form (RV.IV.3.1), as bright flamed (RV. VII.15.10), as brilliant history (RV.II.10.2).
- 72) The nine planets with their various names are enumerated in Bṛhat Jātaka (II.2-3), Sārāvalī (IV.10-11).
- 73) A planet is one of a body in space other than a comet, meteor or satellite / which revolve around the Sun of the Earth's solar system / shining by reflected light from the Sun / any similar body revolving about a star. Webster's Dictionary, p.768. In this sense Sun and Moon are not planets. Also Rāhu and Ketu do not fit the definition. They are the ascending and descending nodes of the orbit of the Moon (Pañcasiddhāntikā ix.6).
- 74) For Horoscopy which is based on the system of bhāva, Rāsi divisions and Planets and which predicts life of an individual.
- 75) Planet comes from a Greek word meaning 'wanderer' H/o Dh.V.1 p.570, Also horos (boundary) and other are Greek terms. H/o Dh. V.1.p.554, Preface to Bṛhat Samhitā p.28, Also Bṛhat Samhitā II. 15, History of Indian Literature, pp. 254-255.
- 76) 34 lights in RV. X. 55.3 (Ludwig and Oldenberg), seven Ādityas in RV.IX.114.3 (Oldenberg), five Adhvaryus in RV.III.7.7 (Hillerbrandt) compiled in Hindu Astronomy p.34, H/o Dh. V. I. p. 494, Vena in RV.X.123.2 is equated with Venus in Orion, p. 162.
- 77) RV. IV.50.4; Bṛhaspati is equated with Gurū or Jupiter in later literature, fn 1 above; also Jīvo jñanasukham Bṛhat. Jātaka. II.1.
- 78) The History of Indian literature. p. 249.

- 79) The genuineness of this portion of the text is questioned, Hindu Astronomy, p. 33,
- 80) The History of Indian Literature. p. 250.
- 81) राहौ ध्वान्ते गुणे तमः। Amarkośa 3.3.231.
- 82) Bṛhat Saṁhitā chap. V.
- 83) निर्बन्धोपरगाकार्कदयो ग्रहाः। Amarkośa 3.3.236.
- 84) RV. V. 40.5
- 85) Vedic Index, p. 243
- 86) Hindu Astronomy, p. 36
- 87) The History of Indian Literature, p. 250.
- 88) The Religion and Philosophy of the Veda and Upaniṣads, p. 554.
- 89) Bṛhajjātaka. I. 3.
- 90) Bṛ. Up. IV. 4.16; Chān Up. VIII. 3.4, 4.2; Muṇḍ. Up. II. 2.8.
- 91) RV. X. 121.1.
- 92) Amarkośa I. 1.16.
- 93) RV. X. 129.3.
- 94) Manusmṛti I. 21.
- 95) Bṛ Up. V. 15.
- 96) Chān. Up. III. 19.1.
- 97) Bṛ. Up. IV. 3-7; Chān Up. III 14.2
- 98) RV. I. 115.1, IX. 2.10; VI. 8.
- 99) नाभ्या आसीदंतरिक्षं शीर्ष्णोद्यौः समवर्तत॥ पदभ्यां भूमि Puruṣasūkta.
- 100) तिस्रो द्यावः सवितुर्द्या उपस्थां एका यमस्य भुवने विराघाट्॥ आर्णि न रथ्यमृताधि तस्युः RV. I. 35.6.
- 101) सिद्धांतसंहिताहोरारूपं स्कंधत्रयात्मकं। वेदस्य निर्मलं चक्षु ज्योतिः शास्त्रमनूत्तमं॥ 1Nārada Saṁhitā I.4.
- 102) गणितेन वा ग्रहगतितन्त्राभिधानस्त्वसौ। Bṛhat-Saṁhitā I.9.
- 103) History of Dharmaśāstra, V. 1, p. 484.
- 104) मुखं वा एतद् ऋतूनां॥यद्वसंतः॥ Tai Brā 1.1.2.6,7
- 105) RV. I. 164. 11-13, 48; Śat. Brā. IX. 1.1.43; Ait. Brā. VII. 7.
- 106) Tai. Saṁ. IV. 4.11 names the months in accordance with the ṛtus. Mahābhārata (Udyoga Parvas 83.7, Vanaparva 182.16) retains the names of ṛtus but furnishes different. names for months.

- 1107) तस्मादादित्यः षण्मासो दक्षिणेनैति षडुत्तरेण। Tai. Sañ. VI. 5.3.
- 1108) Aitareya Brāhmaṇa IV. 18.
- 1109) यां पर्यस्तमियादभ्युदियादिति सा तिथिः॥ Aitareya Brāhmaṇa 32.10.
- 1110) 3 or 5 parts (Tai, Brā. 3.12.9.1 , 1.5.3), 30 parts (Tai. Brā 3.10.9.).
- 1111) Ādīparva 123.6; Bhāratīya Jyotiṣaśāstra p. 98.
- 1112) Muhūrta and Kṣaṇa (Nirukta 1.25.); Pāṇini mentions Muhūrta (3.3.9.) and perhaps bāḍi (5.4.159.) according to Dikshīt, (Bhāratīya Jyotiṣaśāstra, p.102) was a division of time. Also kāṣṭhā and kalā (Śāntīparva 7.2.). Two Nāḍikās = one Muhūrta (Vedāṅga Jyotiṣa. (RV).7.).
- 1113) Yuga comprises a short as well as a long period. H/o Dh. V. 1 p. 486.
- 1114) एकं वा एतद्देवानामहः॥ यत्संवत्सरः॥ Tai. Brā. 3.9.22.
- 1115) Viṣṇu Purāṇa VI. 3.11, 12.
- 1116) वेदा हि यज्ञार्थमभिप्रवृत्ताः कालानुपूर्व्या विहिताश्च यज्ञाः। तस्मादिदं कालविधानशास्त्रं यो ज्योतिषं वेद स वेद यज्ञम्। Vedāṅga Jyotiṣa (Yajurveda) verse 3.
- 1117) Certain Mesopotamian concepts were introduced to Indian Astronomy in Vedāṅga Jyotiṣa. Jyotiṣśāstrā p. 10.
- 1118) The unit of measurement is the Nakṣatra and not the degree. Hindu Astronomy, p.18.
- 1119) These are shifting points and their changing positions are mentioned in various texts in relation with the Nakṣatras. Suryaprajñapti marks the (Udagayana) (winter solstice in Abhijit, Pañcasiddhāntikā (iii.25) marks it in the first point of Capricorn (Rāśi) and Mahābhārata (i. 71.34) in Śravaṇa.
- 1120) Ayana means ‘motion’ or ‘path’ āyan-n-āpo ayanam - iccha - mānāh, RV. III. 33.7.
- 1121) प्रपद्येते श्रविष्ठादौ सूर्याचांद्रमसावुदक्। सार्पार्थे दक्षिणार्कस्य माघश्रावणयोः सदा॥ Vedāṅga Jyotiṣa (RV). 6.
- 1122) Hindu Astronomy, p. 27.
- 1123) एकविंशमेतदहरूपयन्ति विषुवन्तं मध्ये संवत्सरस्य। Ait. Brā. IV. 18.
- 1124) Vedāṅga Jyotiṣa (RV) 25, 26, 27.
- 1125) Vedāṅga Jyotiṣa (RV) verse 3.
- 1126) Matsya Purāṇa 11.37-38; Padma Purāṇa V. 8.72-73.
- 1127) Siddhāntaprākkāla and Jyotiṣiddhāntakāla Bhāratīya Jyotiṣaśāstra. P.11.

- 128) History of DharmaśāstraV. 1 pp. 514-519, Siddhānta period is after Greek invasion from 100 BC to 1000 AD upto Bhaskaracārya and carried Greek elements. Bhārātīya Jyotiṣaśāstra, Praśamsana, p.2,3; Varāha mentions the Greek method of Siddhānta. Hindu Astronomy, p.64..
- 129) Bhārātīya Jyotiṣaśāstra, p. 185.
- 130) त्रुत्यादिप्रलयांतकालकलनामानप्रभेदः क्रमाधाराश्च द्युसदां द्विधान गणितं प्रश्नास्तथा सोत्तराः। भूधिष्ण्यग्रह संस्थितेश्च कथन् यंत्रादि यत्रोच्यते सिद्धांतः स उदाहृतोऽत्र गणितस्कंधप्रबंधे बुधैः॥ Siddhānta Shiromaṇi I. 6.
- 131) Karaṇas are sequels to Siddhāntas. These are concise texts which emphasize on pragmatic rules for computations. Jyotiḥśāstra, p. 32. Varāha addresses his Pañcasiddhāntikā as a karaṇa. Preface to Br.sām. p. 24. Karaṇa texts are chiefly used for preparing pañcāṅga. Bhārātīya Jyotiṣaśāstra, p. 372.
- 132) Pingree mentions five schools the other two being Ardharātrika (= Āryapakṣa) and Gaṇeṣa. Jyotiḥśāstra p. 13,14.
- 133) Paitāmahasiddhānta in Varāhas Pañcasiddhāntikā (12.1-5) is the oldest amongst the Prācinsiddhāntapañcaka and relates it to the Brahmasiddhānta referred or mentioned by Brahmagupta in his Siddhānta (I-2) Bhārātīya Jyotiṣaśāstra, p. 152. Pingree, Jyotiḥśāstra p.17 differs as Paitāmahasiddhānta incorporated in the Viṣṇudharmottara is according to him the earliest. A third Paitāmaha or Brahmasiddhānta is related to Śākalyasamhitā Bhārātīya Jyotiṣaśāstra p.151.
- The Prācinsiddhāntapañcaka (पौलिशरोमकबसिष्ठसौरपैतामहास्तुपञ्चसिद्धांताः) are mentioned in Varāhas Pañcasiddhāntikā. These are non-extant and composed before the Śaka era. According to Thibaut they are composed around 400 A.D. Bhārātīya Jyotiṣaśāstra p.160. the Prācinsiddhāntapañcaka, the modern five viz. Sūrya, Soma, Vasiṣṭha, Romaśa and Brahmasiddhānta (in Śākalya Samhitā) and Brahmasiddhānta (Paitāmahasiddhānta) in Viṣṇudharmottara are Apauruṣeya. Bhārātīya Jyotiṣaśāstra p.169.
- 134) In five year cycle (of 1830 days), the year can beginning with Śraviṣṭhā and calculation of the length of the day. It differs from Vedāṅga Jyotiṣa in length of the year and adds Bhaunumādi (Mars and the rest) planets to Sun and Moon.

- 135) Bhāratiya Jyotiṣāśāstra, p. 151.
- 136) Of 365 days 14 ghatīs and 48 palas.
- 137) For which accused by Brahmagupta. While the other Romaka by Sriṣena mentions Yuga. (11.55).
- 138) सप्तश्विदे संख्यं शककालमपास्य चैत्रशुक्लादौ। अर्धास्तमिते भानौ यवनपुरे भौमादिवसाद्यः॥ Romaka Siddhānta I. 1 (Pañcasiddhāntikā verse 8)
- 139) Sūrya Siddhānta (Madhyamādhikāra verse 25).
- 140) Sūrya Siddhānta II. 3, Hindu Astronomy, p. 85.
- 141) Paitāmahasiddhānta chap. I and II deal with Astrology, Jyotiṣāśāstra, p. 17.; such a composite form is also displayed in Śārdulakarṇāvdāna, a divination text in its chap. 33 (Divyāvdāna) which deals with Astronomy. Jyotiṣāśāstra, p. 10.
- 142) गणितं जातकं शाखां योवेत्ति द्विजपुङ्गवः। त्रिस्कन्धज्ञो विनिर्दिष्टः संहितापारगश्च सः॥ Garga quoted by Utpala on Bṛ. Saṁ I. 9.
- 143) In this sense, Kern terms it as a '*phalagranth*', Preface to Bṛ. Saṁ. p. 22.
- 144) Jyotiṣāśāstra, p. 71.
- 145) As quoted by Vasantarāja Śākuna, History of Dharmaśāstra V. 2 p. 806.
- 146) Weber traces the origin of the link of omens and portents with the Indians way back to the primitive Indo-Germanic period. The History of Indian Literature, p. 264.
- 147) Śākuni (RV. II. 42.1, 43.2, 3).
- 148) Kapota (RV. X. 165) ; elephants (Bṛ. Saṁ. 98. 1-14.). Horses (Bṛ. Saṁ. 92. 1-14.), Bṛhat Yogayātra 22. 1-4, Yogayātra XI 1-14, on cries and movements of birds and animals (Śakunārṇava by Vasantarāja varga I-XX), Gargasamhitā Aṅga. 42, 46-50.
- 149) Bṛhadyogayātrā XIII .1; Vasantarāja Śākuna VI. 4.10; Bṛ. Saṁ. (51.10), Śākuntala I.11. Matsyapurāṇa 241. 1-14; Bṛhadyogayātrā XIII 1-10.
- 150) RV. VIII. 47.15; Aitareya-Araṇyaka iii. 2.4.
- 151) Śat. Brā. IV. 5.8.11.; ŚGS v. 11.10.
- 152) Bṛ Saṁ. 45. 82-95.
- 153) Garga Samhitā aṅgas 32-34.
- 154) Jyotiṣāśāstra, p. 75.
- 155) Apte, p.13.

- 156) History of Dhamaśāstra, Vol. V. 2, p. 741
- 157) Indra, Varuṇa, Yama, Agni, Vaiśravaṇa, Viṣnu, Vāyu,
- 158) Apte.p. 102.
- 159) Bṛ Sam. 45.1.
- 160) उत्पाताः पार्थिवान्तरिक्षाः शं नो दिविचरा ग्रहाः। Atharvaveda 19.9.7 दिव्यान्तरिक्षा भौमं च त्रिविधं संप्रकीर्तितम्। Matsya Purāṇa 229.6 तेषां द्यौन्तरिक्षं भूरेताश्चाश्रयः। Garga quoted by Adbutasagara and Sabhāparva 46.8,9.
- 161) Here nimitta carries the sense of Aṅgavidyā though Manusmṛti (VI.50) mentions Nimitta and Aṅgavidyā separately.
- 162) Apte, p. 289.
- 163) H/o Dh. V. 1, p. 522,
- 164) For instance Gargasamhitā.
- 165) Aitareya-Āraṇyaka III. 2.4.
- 166) Preface to Bṛhat-Samhitā, p. 36.
- 167) जन्मजन्मान्तरकृतं पुंसां कर्म शुभाशुभम्। यत्तस्य शकुनः पाकं निवेदयति गच्छवाम्॥ Bṛhadyogayātra 23.1.
- 168) H/o Dh. Vol. V.I. p. 543.
- 169) कालः शुभक्रिया योग्यो मुहूर्त इति कथ्यते। Muhūrtadarśana I. 20.
- 170) Ātharvaṇa-Jyotiṣa I. 6-11, earlier in Tai. Br. III. 10.1.1-3.
- 171) Bṛhad Yogayātra VI. 2.4.
- 172) Ātharvaṇa-Jyotiṣa II. 1-11, III. 1-6.
- 173) Ātharvaṇa-Jyotiṣa VII. 12, 16.
- 174) RV. III. 8.5 जातो जायते सुदिनत्वे अह्नां समर्थ आ विदथे वर्धमानः। Also Tai. Brā. 1.52 which mentions the success of an act performed on an auspicious time.
- 175) Bhāratīya Jyotiṣaśāstra. p.97.
- 176) Bhāratīya Jyotiṣaśāstra. p. 520.
- 177) With the aid of an horoscope. Horoscope or kundali is a chart displaying the position of planets in different quarters of the sky at the moment of birth of an individual. It divides the zodiac in twelve equal parts specified by Rāsis or Signs.

- 178) Lagna is the starting point of the Kundali which coincides with the point of birth. It specifies the zodiacal sign rising on the eastern horizon at the moment of birth of an individual. The term Lagna appears in Vasiṣṭha Siddhānta with a similar meaning as in Jātaka. Bhāratīya Jyotiṣaśāstra, p. 517.
- 179) Apte, p. 644.
- 180) H/o Dh. Vol. V.1, pp. 549-551.
- 181) Jyotiḥśāstra, p. 81.
- 182) जातकमिती प्रसिद्धं यल्लोके तदिह कीर्त्यते होरा। Sārāvali II. 4.
- 183) History of Dharmaśāstra, Vol. V. 1, p. 479-480.
- 184) Garga quoted by Varāha in Bṛhat-Saṁhita II. 15.
- 185) Bhāratīya Jyotiṣaśāstra, p. 482.
- 186) Ancient Sanskrit literature, Introduction, p. 42.
- 187) होरेत्यहोरात्रविकल्पमेके वाञ्छन्ति पूर्वापरवर्णलोपात्। Brhājātaka. Also Sārāvali II. 2.
- 188) History of Dharmaśāstra, Vol. V. 1. p. 585.
- 189) History of Dharmaśāstra, vol. V.1, p.597, ff. 892.
- 190) अथवा दैवविमर्शनपर्यायः खल्वयं शब्दः॥ Sārāvali II. 4.
- 191) Horoscopy believed to be borrowed from the Babylonians and Greeks had no (generally believed) doctrine of Karma and Punarjanma. H/o Dh. V.1, p. 546.
- 192) कर्माजितं पूर्वभवे सदादि यत्तस्य पङ्क्ति समभिव्यनक्ति॥ Bṛ. Jā. I.3. यदुपचितमन्यजन्मानि शुभाशुभं तस्य कर्मणः पङ्क्ति । व्यञ्जयति शास्त्रमेतत् तमसिद्रव्याणि दीप इव॥ Laghujātaka I.3 quoted by Utpala on Bṛ. Jā. I. 3.
- 193) Such an instance is mentioned in Bhāratīya Jyotiṣaśāstra pp. 478-480. Dikshit concludes (of Sāmuḍrika Jyotiḥśāstra) from this that planets share a relation with human and his life.
- 194) Interrogations or Praśna and Tājika (Solar return) also answer about the future from a horoscope which is based on the moment of question and the solar return instead of the birth point as Lagna.
- 195) Pingree includes Śulbasutras in his list of topics related to Jyotiḥśāstra. Jyotiḥśāstra, p. 3.

- 196) Jyotiḥśāstra, p.2, 56. Earlier Mathematics was connected to Jyotiḥśāstra, and most Mathematician were Astrologers.
- 197) Dikshit mentions this connection from a passage in Tai. Brā 3.10.9. Bhāratīya Jyotiḥśāstra, , p. 69.
- 198) Vāj. Saṁ. XXX. 10, 20; Tai. Brā. IV. 5.
- 199) पृथगेवैतस्य ज्ञानस्याध्यायो भवति, अधीयीत वा तद्विद्वद्भ्यो वा पर्व आगमयेत। Gobhila Gṛhyasutra I.5.13.
- 200) Arthaśāstra VI. 4.
- 201) Enumerated on p. 527, H/o Dh. V.1
- 202) षडङ्गो वेदः छन्दः कल्पो व्याकरणं ज्योतिषं निरुक्तं शिक्षा छन्दो विचिदिरिति। ĀpDS II. 4.8.11.
- 203) History of Ancient Sanskrit literature, p. 56.
- 204) ज्योतिषामयनं चक्षुः। Pāṇinīya Śikṣā.41.
- 205) History of Ancient Sanskrit Literature, p. 263.
- 206) Hindu Astronomy, p. 24.
- 207) Colebrooke Essays, ii, p. 373.
- 208) √ kṛ II.8 U.
- 209) Apte, p.136.
- 210) RV. VI. 51.7.
- 211) RV. III. 38.2.
- 212) RV. I. 22.19, 101.4; RV. X. 54.4.
- 213) RV. I. 148.2 , VIII . 36.7, IX .96.11.
- 214) Termed as iṣṭāpūrta. Tai. Saṁ. V. 7.7.2.
- 215) यज्ञो वै कर्म। Śat. Brā. I. 1.2.1 यज्ञो वै श्रेष्ठतमम् कर्म। Śat. Brā. I.7.1.5; Tai. Brā. III. 2.1.4
- 216) कर्मणा पितृलोकः विद्यया देवलोकः। देवलको वै लोकानां श्रेष्ठ तस्माद्विद्यां प्रशंसन्ति।। Bṛ. Up. I. 5.16.
- 217) Bṛ. Up. III. 8.10.
- 218) पुण्यः पुण्येन कर्मणा भवति, पापः पापेन। Bṛ. Up. 4.4.5.
- 219) Atharvaveda XVIII. 2.57.
- 220) Chān. Up. 5.10.3, Muṇḍ. Up. 1.2.10.
- 221) Iśā Upaniṣad 9.

- 222) Brahman beyond good and evil (Br. Up. 4.3.22), Chān. Up. 4.14.3. magnifies the state of a knower of Brahman.
- 223) Mahābhārata 1.75.2.
- 224) Brahma Purāṇa 35.31-60.
- 225) Mahābhārata 1.86.7, 1.76-91, 5.118-120.
- 226) Uttarādhyayana Sūtra 33.17-18.
- 227) कर्मभिः प्राणिनाम् लोके सर्वचेष्टाप्रवर्तकः। Vāyu Purāṇa 31.42.
- 228) Padma Purāṇa II. 94.8.
- 229) सर्वस्य प्रसविता। Nirukta 10.31.
- 230) Vedic Mythology, p.34.
- 231) RV, I, 92.9; VII. 77.1.
- 232) Atharvaveda XIX. 58 (10 verses), 54 (5 verses).
- 233) यतो वा इमानि भूतानि जायन्ते येन जातानि जीवन्ति यत्प्रयन्त्यभिसांविशन्ति तद् विजिज्ञासस्व। तद् ब्रह्मेति।  
Tai.Up. III. 1.
- 234) कर्मबीजं मनस्पंदः Yogavāsiṣṭha Rāmāyaṇa III. 96.11.
- 235) चेतना कम्मम्। Aṅguttaranikāya iii. VI. 63.
- 236) Yogasūtra II. 13.
- 237) Guṇas of Prakṛti (Gītā 3.28, 14.19).
- 238) Nyāya Bhāṣā 4.1.21.
- 239) Mahābhārata 3.33.20.
- 240) Mahābhārata. 13.13.5.
- 241) यत्कालम् हि यत्सुखम् दुःखम् वा आत्मना भुञ्जयति तस्मैव लोके फलत्वम् प्रसिद्धम्। Śāṅkarabhāṣya on Brahmasūtra III. 2.38.
- 242) Padmapurāṇa II. 94.11.
- 243) Sāṅkhyapravacanasūtra 6.67.
- 244) Yogasūtra II. 13, Also Mahābhārata 12. 233.11.
- 245) Karma and Rebirth in the Dharmaśāstras p.80 in Karma and Rebirth in Classical Indian Traditions, p.80.
- 246) Pūrvāparādhajaḥ is one of the three classes of diseases, Aṣṭāṅgaḥṛdaya, Sūtrasthāna I. 12.57. Also Vasiṣṭha (20.43-44) relates illnesses to mortal sins of previous lives.

- 247) Caraka Saṁhitā IV. 2.36.
- 248) कर्मजन्योपभोगार्थम् शरीरम्। Ślokavārttika 19.109.
- 249) Tantravārttika II. 1.2.
- 250) Śābarabhāṣya 4.3.27.
- 251) ĀpDS 2.1.2.2.
- 252) Gītā 14.18.
- 253) निर्दिष्टम् दैवशब्देन कर्म यत् पौर्वदेहिकम्। Caraka Saṁhitā (Śārirasthāna) IV. 1.116.  
Matsyapurāṇa CCXXI. 1. 5 Mahābhārata 3.33.18.
- 254) Rāmāyaṇa 2.19.20.
- 255) Mahābhārata 3.32.33; Daiva etymologically means 'that which pertain to the gods'  
(*devas*).
- 256) Karma as an 'action requiring some effort' Caraka 1.1.49-56.
- 257) Dīgha II. 19-20.
- 258) मानुष्याद्देवताम् गताः I Mahābhārata 13.6.14; Matsyapurāṇa CCXXI.2.
- 259) कृतः पुरुषकारस्तु दैवमेवानुवर्तते I Mahābhārata 13.6.22.
- 260) Caraka Saṁhitā III. 3.29 , 36.
- 261) दैवम् पुरुषकारश्च द्वयम् पुंसः फलावहम्। Agni Purāṇa CCXX VI.1.3.
- 262) Matsyapurāṇa (221.8).
- 263) Yogasūtra II. 12, 13.
- 264) Brahmasūtra 4.1.19.
- 265) Gītā 14. 5-9.
- 266) Kāya, Vācī, Manokamma, Majjhimanikāya 56.
- 267) RV. X. 14.8, Atharvaveda XI. 6.11, 1.3.
- 268) Garuḍapurāṇa II.5.47, 10.20.
- 269) RV. VII. 86.5.
- 270) RV. VI. 51.7, VII. 52.2.
- 271) Karma theory in some Indian Philosophical Systems, p.266.
- 272) RV I 125.2, Matsyapurāṇa LXXXIII to XC II.
- 273) Gautamadharmasūtra 19.12, Yāj. Smṛ. III. 301-304.
- 274) Manusmṛti XI. 116-17, 131-32, 170-71, Milindapañha IV. 1.2.

- 275) Tai.Saṁ. VI. 1-1, Kūrmapurāṇa II. 34.142.
- 276) Chānd. Up. 5.10.7, Praśna Upaniṣad III.7.
- 277) Sarvadarśana-Saṁgraha 15.23.
- 278) Bṛ. Up. 4.4.7, Muṇḍ. Up. III. ii.1.
- 279) Gītā 3.7; 18.2, 6; 5.10; 4.20.
- 280) Śāṅkarācārya's commentary on Brahmasūtra 3.2.40
- 281) Brahmasūtra Śāṅkarabhāṣya 3.2.38,41.
- 282) अविद्या काम कर्म वासनाश्रय लिङ्ग उपाधि आत्मेष्ट्वरौ। Śāṅkarabhāṣya on Muṇḍ. Up. 3.1.1.
- 283) Sūtrakṛtāṅga 2.1.13,
- 284) Matsya Purāṇa CL IV. 147-152,
- 285) Śrībhāṣya on Brahmasūtra 1.2.1.
- 286) Yogasūtra II. 12.
- 287) Caraka Saṁhitā IV. 2.36.
- 288) Yogavāsiṣṭha Rāmāyaṇa III. 54.29.
- 289) Encyclopaedia of Religion and Ethics, Vol. IV., 484 b.
- 290) कर्मजा गतयो नृणाम्। Manusmṛti 12.3.
- 291) RV. I. 164.30.
- 292) Five types of Gatis are listed in Dīgha Nikāya 3.234, Majjhima Nikāya 1.73.
- 293) Sugati (pleasant course) or duggati (unpleasant course) depending on the conduct, Majjhima Nikāya 3.178.179.
- 294) Sarvārthasiddhi 2.25.
- 295) भूतभावोद्भवकरो विसर्गः कर्मसंज्ञितः। Gītā VIII. 3.
- 296) कर्माण्यजन्मानि कृतम् सदसच् च दैवम्। Yogayātra 1.3.
- 297) Niyati, diṣṭa, bhāgya, vidhi. Amarkośa 1.4.28.
- 298) Relating to Gods, Apte p.261.
- 299) ईश्वरस्तु फलम् ददातीत्यनुपपन्नम्। Vedāntasūtra 3.2.41. Śāṅkarabhāṣya on this explains that the fruit come from the gods in accordance with the acts done by the individual.
- 300) Suśṛta Saṁhitā 1.24.7., or *daivakṛta*. Rāmāyaṇa. 2.19.16, 6.98.23.
- 301) Matsya Purāṇa 221. 1-12.
- 302) कर्मणा कालयुक्तेन तथेदम् भ्राम्यते जगत्। Mahābhārata 12.34.

- 303) कालः पचति भूतानि कालः संहरति प्रजाः। Mahābhārata I 1.188.
- 304) Mahābhārata 12.220 97-98.
- 305) Bhāratiya Jyotiṣaśāstra, p. 216.
- 306) Aitareya Brāhmaṇa III. 44.
- 307) Mahābhārata 12.206.13.
- 308) Rāmāyaṇa 3.28.7.

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