

## CHAPTER - 4

### The Concept of Śūnya or Zero

It is stated by L. Hogben that the invention of *śūnya* of 'Zero' liberated the human intellect from the prison bows of the counting frame. The invention of Zero is an wonderful thing in ancient Mathematical literature. Though there is the diversity of opinion regarding the date and time of the invention of '0' and agency of such invention, it is an established fact that the ancient thinkers were completely aware of its usages. Professor Hallsted said – "The importance of the creation of the zero mark can never be exaggerated. This giving to airy nothing, not merely a local habitation and a name a picture, a symbol, but helpful power is the characteristic of the Hindu race whence it sprang".

All the Western thinkers have agreed that the Indian thinkers had used it since a long time. In the fourth century B.C. Kautilya had used the term *śūnya* in his *Arthaśāstra*. The term like *śūnya-niveśana*, *śūnya-sthāna* etc. are found in use in his book. The Indian Mathematicians had been using the term *śūnya* in order to convince the 'unknown number' (*ajñātarāśi*).

Moreover, the use of *śūnya* is found in the literary pieces like *Vāsavadattā* of Subandhu, *Kādambari* of Bānabhaṭṭa and in the *Naiṣadhacarita* of Śrīharsa etc.

Brahmagupta in his writing called *Brahmasphuṭasiddhānta* has given a clarified view on *śūnya*. It is stated by Āryabhaṭṭa that, if zero is conjoined with some number, the value of the number remains unchanged. This is also true in the case of subtraction. If some number multiplies zero, the result will be zero. It is said by Brahmagupta – "*Dhanayordhanamṛnamṛṇayoranantaram śamakai kham/Rṇamaikyam ca dhanamṛṇa-dhanaśūnyayoḥ śūnyayoḥ śūnyam!*" That is, the positive numbers if added with another

positive numbers, the result would be positive. If otherwise, it would be negative. If zero is added to a positive number, the number will remain same or unchanged. If zero were added to a negative number, the result would be unchanged equally. If two zeros are added the result will be of zero. If this theory is explained in terms of modern mathematical idioms, it would be as follows :

$$a - a = 0; \quad a + a = a; \quad -a + -0 = -a; \quad 0 + 0 = 0$$

In the case of multiplication there are some rules. If zero is multiplied with a positive number the result will be zero. If a negative number multiplies it then also the result is zero. If zero is multiplied by zero, it is also zero ( $a \times 0 = 0$ ;  $-a \times 0 = 0$ ;  $0 \times 0 = 0$ ). The original *sūtra* runs as follows “*Śūnyānayoḥ ṛdhanayoḥ ṛśūnyayoḥ vā vadhaḥ śūnyam.*”

Brahmagupta has laid some principles also. If zero is divided by zero, the result will be zero. If zero divides a positive or negative number, the result will be zero. The original *śloka* runs as follows

“*Dhanabhaktam dhanamṛṇāḥṛtamṛṇam*  
*dhanam bhavati kham khabhaktam kham/*  
*bhaktamṛṇena dhanamṛṇam dhaneni*  
*ḥṛtamṛṇamṛṇam bhavati/”*

Achārya Bhāskara thinks that if a number is divided by zero the value of the number will remain the same, which is technically called *kha-hara*, i.e.  $a/0 = kha-hara$ . If some number is added to zero, the result remains unchanged as admitted by Bhāskara also. We had hinted to great Indian theory in this context. He said that the origination and destruction of innumerable individual beings are occurring in god having infinite power of omnipotent. With this origination and destruction of innumerable beings the Omnipotent god is not affected. In other words, with this he remains unchanged. From this it is known that, if something is added or subtracted to the Almighty, He remains unchanged. It can be understood with the help of the metaphor of ocean, which is also unbound. If water of a jar is poured on the ocean, it remains unchanged, only because ocean is unbound and unmeasured, which is described by the *Upaniṣadic* seers as

'Pūrṇa' or 'full'. If something is full or *pūrṇa*, it is not possible to affect its holistic character. It is said in the Upaniṣad "Oum pūrṇamadaḥ pūrṇamidaṁ pūrṇāt pūrṇamudacyate/Pūrṇasya pūrṇamādāya pūrṇamevāvaśisyate." (*Bṛhadāranyaka Upaniṣad, Shantimantra*). That is, something is added to *Pūrṇa* or subtracted from *Pūrṇa*, it remains as *Pūrṇa*. Even if *Pūrṇa* is taken away from *Pūrṇa*, the *Pūrṇa* entity remains unchanged or *Pūrṇa*. It can be symbolically represented as follows :

$$Pūrṇa + a = Pūrṇa; \quad Pūrṇa - a = Pūrṇa; \quad Pūrṇa - Pūrṇa = Pūrṇa.$$

From the above it can be said that almighty or omniscient or omnipotent being is *Pūrṇa* and hence all limited objects either added or subtracted to Him cannot affect Him at all. Moreover, can we really know the definite character of such *Pūrṇa* entity ? The entity, which is capable of being perceived or visualized, can be described. Something which is not capable of being seen or known and which has no colour, shape, size etc. can never be described, because it is not possible to get its holistic character. If at all He is described, it either partial nature or a human being's imagination which has no reality at all. In this sense He may be described as *śūnya*, because no description is adequate to catch hold of His real nature. That is why, the Buddhists argued that is true in any case of Reality, which is linguistically indescribable and hence each and every real object is empty or *śūnya*. The Buddhists admit that each and every entity is relative and hence it is empty having no particular character of its own.

For the sake of attaining the state of abiding in the illimitable the Buddhists admonish that each and every person should realize the essenceless character of objects, it is which is technically called *Śūnya*. When the knowledge of silver occurs in the place of a sea shell, it is sublated by the subsequent knowledge and what is revealed to us is that the silver was not at there. In a like manner, the awareness that no real silver etc. are met with the states of waking and dreaming counters the knowledge of silver etc. Had there been a piece of real silver, there would have been the true knowledge of the action of seen, the substratum of the illusory silver i.e., the shell referred to by the term 'this' (*idam*), the superimposed property i.e., silverness and the relation of inherence between

silverness and shell ness.<sup>1</sup> Actually it is not taken as true. For, if the illusory silver were present, all these would have been real. All of us are of the opinion that the perception of silver of a seashell is illusory. It cannot be said that these things are partially real and partially unreal, because it is unthinkable to assume an object, which is real as well as unreal. In the case of the superimposed objects, locus of superimposition, their relation, action of seeing and viewer, if one is countered, others will also be the same. In other words, the knower, the object known and knowledge are mutually dependent. The reality of one object is dependent on the other. If one is considered to be illusory, others would also be similarly fated,<sup>2</sup> just the fatherhood of a man is false if it is proved that the case of his having children is false. The object, which is real, must be independent and should not depend on others for its origination and existence. But actually each and every object is found to be dependent on others and hence it is not real.

The Buddhist believes in the theory of momentariness on account of which they do not accept the permanent character of an object. Such impermanent character also exists in the feeling of pleasure; universal etc. This amounts to the acceptance of *Sarvaśūnyavāda*. An object is known in four ways :

- a) as existent;
- b) as non-existent;
- c) as both existent and non-existent; and
- d) as different from existent and non-existent (*sadasadbhinna*).

The object, which is free from this four-fold ways of description, is called *Śūnya*.<sup>3</sup> This may be illustrated in the following way. If 'existence' (*sattā*) becomes the essence of an object, the function of the instrumental causes (*Kāraṅkavyāpāra*) for its manifestation would become useless. If the 'non-existence' (*asattā*) is accepted as the nature of objects like jar etc., the effort to produce it is useless due to its non-existent character. There cannot be the cause of the existent objects like space etc. While it is impossible to look for a cause of the non-existent objects like sky-flower etc. As the 'existence' is diametrically opposite to 'non-existence', there can be an object bearing both existence and non-existence character like sky-flower etc. As the 'existence' is diametrically

opposite to 'non-existence', there cannot be an object bearing both existence and non-existence, and also an object devoid of both existence and non-existence.<sup>4</sup>

*Śūnyatā* or voidness is the nature for this indeterminable, indescribable nature of things. Things appear to exist, but our intellect fails to draw out a real nature of their existence if we try to understand them. That is why, it is accepted that the apparent phenomenal world is perceived by us. Behind this phenomenal world there is a reality, which is not capable of being described.

It has been said in the *Lankāvatārasūtra* that the nature of objects conceived with the help of intellect is indeterminable. That is why, the objects are stated to be indescribable due to not having any essence. When it is said 'This is that object', it is only for verbal communication. But when an effort is made to conceive the object, it will be seen as lacking any essence. Just as an object seen in the dream is nothing but the work of imagination, the object seen in the waking state is also imaginary due to its relation with our ignorance.<sup>5</sup> This point is highlighted with the help of a metaphor. Just as a female body is imagined as a combination of flesh and bone, locus of desire and enjoyable edible object by a saint, amorous person and a dog respectively, an object also is similarly imagined in various predisposition and attitude.<sup>6</sup>

If the very nature of an object is imagined, there is no reality of it. Such an object is properly to be called indescribable as it dependent on other things. Nāgārjuna describes this fact about dependent origination as *Śūnya*. In other words, it is the *Dharma* of a thing that it depends on other things for its origination. *Dharma* does not exist there if it is not *Śūnya*. An object is *śūnya*, which means an object has got conditional and changable character, which ultimately suggests its indescribability.<sup>7</sup>

If an object is always dependent on other conditions, it is called conditional on account of which an object is impossible to be described as either *sat*, or *asat* etc. For this reason it follows that each and every thing exists in relation to others and hence it is relative. So, the theory called *Śūnyavāda* may be described as the theory of relativity. No

phenomenal object or experience is absolute, or independent and hence, it is not absolutely or unconditionally true.

The Buddhist formulated the theory of impermanence, dependent origination etc. to be applied to the phenomenal world which enjoys only an apparent reality (*samvṛtīsatyatā*). Apart from this there is a world where these theories do not apply. That world which is unconditional, unchanging, non-relative has got absolute reality (*paramārthasatyatā*). Each and every teaching of Buddha is to be understood in two ways : first through the light of phenomenal reality and secondly through that of absolute reality.<sup>8</sup>

It should be clearly borne in mind that the truth at the phenomenal level points to the attainment of the truth at the absolute level. An individual, after pondering over the impermanent and dependent nature of a thing, can transcend this world and attain the world of *Nirvāṇa*. The transcendent world may be described as possessing the characteristics opposite of those of the phenomenal world, though Buddha had never directly spoken of that state owing to its indescribable character. The state, which is not capable of being known through ordinary intellect, is indescribable. That is why, Buddha observed silence whenever he was asked about the transcendent state. This fact indicates that the truth of the transcendental experience cannot be described with the apparatus of ordinary intellect and descriptive capability. Moreover, any description through language, being *Kalpanā* or imposition, cannot disclose the reality.<sup>9</sup>

The object known through language has a secondary reality known as *Samvṛtīsatyatā*. The transcendent reality, which we are talking about, cannot be expressed through any *Vikalpa* or *Kalpanā* as it possesses *paramārthasatyatā*.

This theory is known as *Mādhyamika* as it adopts the middle path (*madhyama*). It does not accept the extreme views i.e. absolute reality and absolute unreality of the things. To say that an object relatively real means that it is neither absolutely real nor absolutely unreal.<sup>10</sup>

In the present time suffering of mankind is found in a global scale due to violence in mind, body and speech. All individual beings have become disintegrated because they are suffering from this worldly disease (*bhavaroga*) due to the absence of right vision (*Samyag dr̥ṣṭi*) of the objects.

If the nature of an object is known as *sūnya*, an individual may be free from the wrong notion of an object. The detachment towards the enjoyable objects is possible for a man if he realises that the nature of the known object is relative, conditional and apparent. The phenomenon of *upekṣā*, which is accepted as *Brahmavihāra*, is possible if the void character of an object is realized. Detachment towards an object gives rise to *Upekṣā* where a man can remain indifferent in loss and gain and in different to the ups and downs of life. The detachment and *Upekṣā* again are related to the understanding of the void character of an object in the sense as mentioned earlier.

Nāgārjuna has highlighted this point with the metaphor of mirage. According to him, an individual who, mistaking a mirage for water and then comes to know that it was not at all water is not a fool. In the same way, a man who considers this world as having existence just like a mirage and afterwards comes to know its absence is a real knower having no infatuation towards the external world.<sup>11</sup>

One who understands *Sūnyatā* (voidness) can understand dependent origination (*pratītyasamutpāda*). The knower of dependent origination alone can realise four Noble Truths, which are the causes of the removal of thirst etc. Due to this an individual can know the real *Dharma* as well as the cause of it and its result leading to the knowledge of suffering. Those who know these can know the real nature of happiness and suffering, and also know the means of the attainment of happiness and removal of suffering.<sup>12</sup>

This state is known as right vision (*samyagdr̥ṣṭi*). Ignorance of the real nature of an object is the main cause of our suffering. Morality is possible only through the change of attitude towards the objects of enjoyment. The real or right knowledge of them can

generate in us detachment and this in turn renders moral action possible. All other ways like right resolve (*samyak samkalpa*), right speech (*samyak vāk*), right conduct (*samyak karmānta*), right livelihood (*samyag ājīva*), right effort (*samyag vyāyāma*) right attention (*samyak smṛti*) and right concentration (*samyak samādhi*) follow from the right knowledge of the objects. All other moral action like *maitrī*, *karuṇā* and *muditā* apart from *upekṣā* are possible due to one's realizing the non-essential or void character of sensuous objects.

If we can understand that the objects known as pleasant etc. are not really such, and relative in nature, we shall not lust for enjoying them. This is the root of the possible change of attitude toward them and would lead one to the path of renunciation. Having renounced the world might bring us at the threshold of the transcendental wisdom, only then we shall be able to perform moral actions and enjoy the taste of abiding in the illimitable (*brahmavihāra*). Under this circumstance an individual is purged of his ignorance, the root of violence, jealousy, exploitation etc. and be a model for others in society. That *Śūnyavāda* a relevant point of view for restoring world-peace by removing the cause of violence, exploitation etc. is accepted by Nāgārjuna who has said that the person knowing *Śūnyavāda* knows the meaning of all and otherwise, he does not know anything (“*Prabhavati ca śūnyateyam yasya prabhanti tasya sarvarthāḥ/Prabhavati na tasya kiñcit na bhavati śūnyatā yasya*”).<sup>13</sup>

An object is essenceless (*śūnya*) because it is relative. This sense of devoidness is a mathematical concept described as zero as mentioned earlier. The Buddha Logician Nāgārjuna has successfully shown another dimension of *śūnyata* which is used in the sense of relativity. If an object is known in terms of other objects, which are technically called by them as *apoha*, then the object known has no essence of its own. Had it been, it would have been known independent of other entities. As it is not possible, it is better to take it as void or *Śūnya*, which is the property of mathematics.

## REFERENCES

- 1 “*Svapne jāgarane ca na mayā dr̥ṣṭamidam rajatāditi viśiṣṭaniṣedhaśyopalambhāt. Yadi dr̥ṣṭam sat tadā tadviśiṣṭasya darśanaśyedāntayā adhiṣṭhānasya ca tasminnadhyastasya rajatatvādestatsambhandhasya ca samavāyādeḥ sattvartm syāt.*” – *Sarvadarśanasamgraha* (Bauddha-darśana).
- 2 *Sarvadarśana samgrahah*, Bauddhadarśana.
- 3 “*Bhikṣupāpraśaraṇanyāyena kṣaṇābhāṅgādyabhidhānamukhena sthāyitvānukūlavedaniya-tvānugatatvasarva satyatvabhṛma-vyāvartanena sarvaśūṇyatāyāmeta paryavasānam. Atastattm Sadasadubhayānubhayātmakacatuṣkoṭi vinirmuktaṁ śūṇyameva.*” *Ibid.*
- 4 *Tathāhi yadi ghaṭādeḥ sattvam svabhāvastarhi kārakavyāpāravaiyarrthyam. Asatsvabhāva iti pakṣe prācina eva doṣa prāduḥ syāt. Yathoktam-na sataḥ kāraṇāpekṣa vyomāderiva yujyate. Kāryasyāsambhāvihetuḥ khāpuṣpā-derivāsata iti.*” – *Ibid.*
- 5 “*Buddhyā vivicyamānānam svabhāvo nāvadhāryāte ato nirabhilāpyastē niḥsvabhāvaśca darśitā iti, idam vastuvalayatam yadvadanti vipāścitaḥ, yathā yathārthaścintyante viśiryante tathā tatheti ca.*” *Ibid.*
- 6 “*Paribrāṭkāmukasunamēkasya pramadatanou kuṇāpaḥ kāminibhaksya iti tisro vikalpana iti*” *Ibid.*
- 7 *Mādhyamikaśāstra, kārikā 18.*
- 8 *Ibid, kārikā – 19.*
- 9 *Ibid., kārikā no. 8-9.*
- 10 “*Kalpanāpodhamabhrāntam pratyakṣam*” Nyāyabindu with ṭīkā, Pratyakṣa pariccheda.
- 11 *Mūlamadhyamakārikā No. 18.*
- 12 *Ibid. 56.*
- 13 Rahul Sankirtayana : *Darshan Digdarshan* Vol. 2, Trs. By Chhanda Chattopadhyay, p. 127, Cirayata 1988.