

THE INDIAN DOCTRINE OF FIVE ELEMENTS

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Upaniṣadic in origin, the Indian doctrine of five elements has played its role in the development of certain concepts in physical sciences, in particular, those pertaining to matter and medicine. The doctrine deserves to be reassessed in the history of scientific ideas, as it seems to be a forerunner of the theory of elements of the Greeks.

The Vedic as well as the post-Vedic period is characterized by a good deal of speculative activity concerning, among others, with the origin and nature of the world or world-stuff. Poetic sayings and symbolic expressions on the one hand and systematic enquiry on the other, as we find them in the literature of this period, unmistakably uncover a deep desire of the Indian thinkers to comprehend the One amidst the Many. This attitude, a synthetic approach, represents a coherent way of understanding the nature and structure of the world, after a long and protracted course of complex anthropomorphic activity. In the *Ṛgveda*, especially, are found innumerable references which reveal a yearning for understanding the world as a whole¹ and a ceaseless endeavour to experience the eternal essence of the universe. The question is to what extent was this attitude an intellectual abstraction of the empirical knowledge of the time? The *Ṛgvedic* emphasis on cosmic light, cosmic harmony and cosmic law (*ṛtam*), which even the Vedic gods had to follow, shows a synthetic vision towards the universal. It was in the main an aesthetic intuition which perhaps always tried to transcend the empirical knowledge around. Even in the *Upaniṣads* which have foundations of intellectual tradition, the world of matter has been understood in a spiritual perspective.

Yet what is of great importance to the history of sciences in India is that as an integral part of this synthetic approach, emanated one particular strand of thinking which provided a realistic conception for understanding the seemingly unordered, manifold world of matter and qualities. This is the doctrine of five elements or *pañca bhūtas** (*mahābhūtāni*) and the five elements are: *pṛthvī*, *ap*, *tejas*, *vāyu* and *ākāśa*. These may, for purposes of understanding, be designated respectively as earth, water, fire, air and a non-material ubiquitous substance. It is essential to note that the five elements of the doctrine cannot be defined in terms of these equivalents;

* The theories of elements of the Jaina and the Buddha fall outside the purview of this doctrine, as they have a different frame of reference.

for each of the five elements has wider connotation and significance than the familiar earth, water, air or fire. Further, apparently heterogeneous, the doctrine is wholistic in its inner structure and application. In other words, the doctrine has to be viewed in its totality and each element understood in relation to the other four.

Origins.—To be sure, the fivefold character of the doctrine gradually formed out of simpler conceptions. Primeval water is the first element in Indian speculation as in the case of Babylonian. In the famous Ṛgvedic hymn of creation called the Nāsadiya Sūkta, Primeval water is associated with the process of creation, and the world-stuff described at the highest monistic level.²

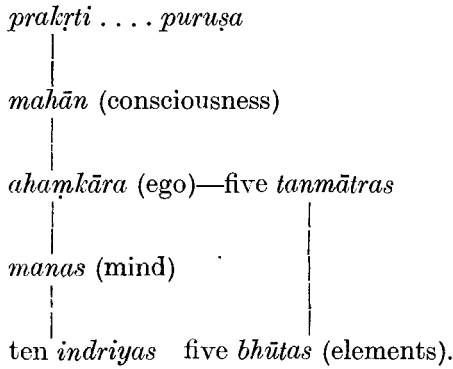
‘Then there was neither Aught nor Nought, nor air nor sky beyond, what covered all? Where rested all? In watery gulf profound? . . . The ONE breathed calmly, self-sustained; nought else beyond it lay. Gloom hid in gloom existed first—One sea, eluding view . . .’

Later in the *Bṛhadāraṇyaka Upaniṣad*,³ it is stated: ‘In the beginning this world was just water.’ The *Chāndogya*⁴ gives an account of the world-stuff as follows: ‘It is just water solidified, that is the earth, . . . the atmosphere, . . . the sky, . . . the gods and men, . . . beasts and birds, . . . grass and trees, . . . animals together with worms, . . . flies and ants; all these are just water solidified.’ In *Kausītaki*,⁵ it is explicitly stated that ‘The waters, verily indeed are my (Brahma’s) world’. A clear and evolutionary development of the three elements, water, fire and ākāśa, occurs again in the *Chāndogya Upaniṣad*, in a series of assertions relating to a progressive understanding of Brahman as the Universal Soul.

Besides, there are a number of passages in the Upaniṣadic literature dealing with the elements, step by step, towards a unitary conception. The idea of five elements occurs in *Maitri Upaniṣad*⁶ where it is explained: ‘the three quartered Brahman has its root above, its branches are ākāśa, vāyu, tejas, ap and pṛthvī.’ It seems to be clear, then, that the doctrine of elements in India has developed as a part of the philosophical speculation towards understanding the cosmic process or monistic Being or Brahman which, it may be added, is the Upaniṣadic world-ground into which coalesced the earlier world-grounds, *Puruṣa*, *Hiraṇyagarbha* and the like. This is an important characteristic of the Indian doctrine of five elements. In course of time, the doctrine began to play a decisive role in the development of certain concepts in physical sciences, in particular, those pertaining to matter and medicine.* Even so, the doctrine could not exercise a direct

* Though the doctrine of five elements does not appear to have had much influence on Indian astronomy, there are some references which show its impact. In the *Sūrya Siddhānta*, for example, which follows the Sāṃkhya system of enumeration, it is stated that the sun and moon, mars, etc., are produced in succession from the five elements.⁸

influence, excepting as a part of the leading systems of Indian thought, viz. the Sāṃkhya and Vaiśeṣika. *Sāṃkhya System*: Nature according to the classical Sāṃkhya system can be schematically understood as follows:



It is interesting to note that each of the five elements has a subtle matter of its own, called the *tanmātra*. The process of formation of the five elements is as follows:⁷

<i>Śabda</i> (sound)	..	..	..	<i>tanmātra</i> — <i>ākāśa</i>
<i>Śabda</i> and <i>sparsā</i> (touch)	..	..	..	<i>tanmātras</i> — <i>vāyu</i>
<i>Śabda</i> , <i>sparsā</i> and <i>rūpa</i> (colour)	..	..	..	„ <i>tejas</i>
<i>Śabda</i> , <i>sparsā</i> , <i>rūpa</i> and <i>rasa</i> (taste)	..	..	..	„ <i>ap</i>
<i>Śabda</i> , <i>sparsā</i> , <i>rūpa</i> , <i>rasa</i> and <i>gandha</i> (odour)	..	..	..	„ <i>pṛthvī</i> .

The qualities of these elements are: *ākāśa*-sound; *vāyu*-sound and touch; *tejas*-sound, touch and colour; *ap*-sound, touch, colour and taste; and *pṛthvī*-sound, touch, colour, taste and odour.

The *tanmātra* is considered to be invisible and eternal, while the five produced elements are held to be perishable. Presumably, the *tanmātra* constitutes the very core of the element in the finest state. It is interesting to note that the pre-classical Sāṃkhya does not mention the *tanmātra* stage. However, some of the later *Upaniṣads* deal discursively with the subtle states of five elements. In the *Praśna Upaniṣad*,⁹ for example, the subtle states are called *pṛthvī-mātra*, *apo-mātra* and the like. The word *tan-mātra* occurs in *Maitri Upaniṣad*. These and allied layers of Upaniṣadic thought might have influenced the followers of Sāṃkhya, with the result the *tanmātras* could become later an essential part of the classical way of explaining the coming into being of the gross world in an evolutionary way.

As subtle state of matter, *tanmātra* seems to be more psychical in its undertone than physical. For, the Sāṃkhya regards *buddhi*, *ahaṃkāra*, *manas*, ten *indriyas* and the five *tanmātras* as getting into the composition of the subtle body, called *liṅgam*. Perhaps, the followers of Sāṃkhya must have felt the necessity of a state of matter which could share the characteristics

of both mind and matter to explain coherently the correspondence between them. Thus the concept of *tanmātra* is an important aspect of the doctrine of five elements.

Vaiśeṣika System.—In the Vaiśeṣika, the five elements are among the nine categories (the other four are time, space, self and mind) constituting what is called substance (*dravya*).¹⁰ In the enumeration of reals of the Vaiśeṣika, substance is mentioned first, and, as the substratum, it is the most important of all. While the Sāṃkhya system thinks of *tanmātras* as subtle states, the Vaiśeṣika, as a logical necessity, posits an atomic concept of matter. The first four, viz. *prthvī*, *ap*, *tejas* and *vāyu*, are considered to be atomic, while *ākāśa* is regarded as non-atomic, but ubiquitous.¹¹ The atom of the Vaiśeṣika is the 'uncaused cause of the impermanence' in the material universe. Each of the five kinds of atoms again has a special quality, viz. *prthvī*—smell; *ap*—taste; *tejas*—colour; *vāyu*—touch; and *ākāśa*—sound. These qualities can be perceived by the respective sense organs.

The atomic concept of matter has been dealt with in great detail in the Vaiśeṣika and, later, in the syncretic Nyāya-Vaiśeṣika literature. Stated in brief, the *modus operandi* is: Two atoms—one dyad (*dvyaṇuka*); three dyads (*tryaṇuka*)—which is the minimum visible body with finite magnitude. What is, however, of great significance to us from the standpoint of the doctrine of five elements is the explanation offered to account for differing qualities in a substance. Set in a logical reference, it is explained that two like atoms (material cause) combine only in the presence of another type of atom (necessary cause). A triad of earth possesses different qualities because of the presence of different types of atoms, say of earth, water, etc. The Nyāya-Vaiśeṣika system has, in a coherent way, stretched the doctrine of five elements towards understanding the problem of matter.¹²

Āyurveda.—Among the sciences of India, medicine is largely influenced by the doctrine of five elements, for Āyurveda leans heavily on the principles of Sāṃkhya with certain modifications¹³:

It must nevertheless be pointed out that Āyurveda does not accept, in sequence, the principles of Sāṃkhya. The protagonists of Āyurveda even hold the view that Āyurveda has its own scheme of evolution. In this scheme, a different interpretation is given of the process of evolution and the status of mind in relation to the *indriyas*. Besides, of no little significance is the fact that special importance is given to the five elements and their role even in physiological processes.

It is explicitly stated that the world consisting of the inorganic as well as the organic is formed out of the five elements.¹⁴ Even the substances which are used for medicinal purposes are, without exception, composed of the five elements. The animal, vegetable and mineral substances, the foodstuffs and the like are also considered to be composed of these elements. As is the

body so are the substances upon which the body is to live and thrive. Further the *indriya*, or the sensory organ, has in it the five elements; only the *indriya* will have a particular element in greater proportion and the other four, in relatively small proportions.¹⁵ The following are among the attributes of the elements: *ākāśa*—*śabda* (sound), ear, the pores and openings of the body; *vāyu*—*sparsā* (touch), skin, bodily movements—external as well as internal, and lightness; *tejas*—*rūpa* (colour), eye, heat of the body, digestive power, anger, sensitivity and valour; *ap*—*rasa* (taste), tongue, liquid portions of the body, heaviness, and semen; *prthvī*—*gandha* (odour), nose, shapes and weights of the body. Human body is considered as a combination of the five elements and of soul.¹⁶

Āyurveda recognizes five types of substances, namely, *ākāśīyadravya*, *vāyavyadravya*, *taijasadravya*, *apyadravya* and *pārthivadravya*.¹⁷ It should be emphasized that, according to the Āyurvedic concept, each of the five types of gross bodies contains the particular element in greater proportion while the other four are also present in it, of course, in minute but different proportions.

In the *Suśruta Saṁhita* we come across a clear exposition of the way in which the five elements constitute a human body from its very conception. The embryo which has in it the energetic principles is separated into form by *vāyu*. The *tejas* transforms the embryo or makes it. The *ap bhūta* maintains its moist nature, while the *prthvī bhūta* tries to give size and shape to it, and keep it intact by contributing hardness to it. *Ākāśa* offers expanse to the embryo to develop. Thus comes into form the body or *śarīra* on account of the five elements.¹⁸

The five elements are also recognized in terms of the three *guṇas* of the Sāṁkhya as follows: *Ākāśa* is predominantly *satva*, *vāyu* is *rajas*, *agni* is *satva* with *rajas*, *ap* is *satva* and *tamas*, and *prthvī* is *tamas*.¹⁹ Even the *tridoṣas* are understood in terms of the five elements: *ākāśa* + *vāyu*—*vāta*; *agni* (*tejas*)—*pitta*; *ap* + *prthvī*—*kapha*.²⁰ The six *rasas*, viz. *madhura*, *āmla*, *lavāṇa*, *tikta*, *kaṭu* and *kaṣāya*, have been interpreted in terms of a combination and preponderance of two elements as follows:²¹

<i>prthvī</i> + <i>ap</i>	— <i>madhura</i> (sweet)
<i>tejas</i> + <i>prthvī</i>	— <i>āmla</i> (sour)
<i>ap</i> + <i>tejas</i>	— <i>lavāṇa</i> (salt)
<i>ākāśa</i> + <i>vāyu</i>	— <i>tikta</i> (bitter)
<i>tejas</i> + <i>vāyu</i>	— <i>kaṭu</i> (acidic)
<i>prthvī</i> + <i>vāyu</i>	— <i>kaṣāya</i> (astringent)

Yet, it should not be understood that the corresponding two elements alone constitute a particular *rasa*. Only these two are predominant in it while the other three would also enter into its composition.

It is also believed that every substance is a substratum of five properties—*rasa*, *guṇa*, *vīrya*, *vipāka* and *prabhāva*,²² caused by the five elements. The several modes and varied pattern in which these elements possibly enter into combination must, it is argued, give rise to diverse substances. It is logical, therefore, to expect that the properties of substances must be latent or in an unmanifested form in the elements themselves. This also appears to be the *raison d'être* for all interpretations regarding the processes of digestion and maintenance of bodily health.

Now it is desirable to understand the Indian doctrine of five elements in the context of the history of science in the ancient period. Historians of science generally think that the elemental theory of matter arose first among the Greek thinkers who were noted for their speculations on the underlying unity in diverse manifestations. The four elements of the Greeks—water, air, fire and earth—have been studied historically. It is also known how, later, the Sicilian philosopher, Empedocles, advocated the theory of four elements with their opposing qualities. According to him, the four 'primary qualities'—heat and cold, moist and dryness—exhibited affinity and opposition, or love and hatred, and represented powers of attraction and repulsion in the phenomenal world. About a century later, Aristotle put his stamp of authority on this doctrine as the basis of all mundane or terrestrial things and further postulated the fifth element—ETHER—which would enter into the composition of celestial bodies.

This view of the phenomenal world, undoubtedly, emanated from a 'sense of wholeness' or a coherent way of looking at nature. There is no gainsaying the fact that the Greek thinkers possessed this sense in an abundant measure, as rightly argued by F. D. Kitto.²³ But let us refresh ourselves with the idea that the Greeks were immigrants and were of mixed origin, settling probably in successive waves. It is well known that the Ionians had developed contact for commercial purposes with the people of Egypt, Mesopotamia and India. The learned historian of science, C. Singer, says that Greek science owes its origin to ancient civilizations and, among them, he mentions India also.²⁴ The Greeks, then, were not a mere isolated lot indulging in speculations about the nature and structure of the world. They might have come into contact with the people of India, who possessed similar propensities. Singer rightly, though vaguely, suggests that the Ionians reached as far as India from where some of their ideas were derived.

The Indian doctrine of five elements is indeed an example of 'mental coherence' fostered by many Indian thinkers. The doctrine had established itself by about the seventh century B.C., i.e. in the Upaniṣadic period. A study of the Upaniṣadic literature reveals the gradual unfolding of the idea. And, in fact, this idea was so well developed at that time that the emerging pre-classical Sāṃkhya and the Vaiśeṣika systems of the period could not but absorb

it *in toto*, for it served as a *speculative bridge between the phenomenal and the noumenal*.

It seems reasonable to suppose that, in the history of human thought, a coherent elemental theory of matter was put forward by the Indian thinkers much earlier than the Ionians. It is probable that the Ionians might have been *influenced* by this doctrine in their speculation to find the ultimate essence of all things.

Cyril Elgwood writes:²⁵ 'In 700 B.C. the Greeks showed no signs of culture, much less of science. Yet 200 years later, so developed were their sciences that Hippocrates was able to write medical treatises that gained for him the title of "Father of Medicine". It is hardly possible that the Greeks should have evolved for themselves the system, which is now known as Hippocratic system, in these two centuries. *Besides, the vocabulary of Hippocratic system gives every evidence of being newly made* (italics author's). There are no signs of dialectic decay . . . Even the Greeks themselves recognized their humoral theory to be an exotic product, and in the fashion of the time labelled it as Persian, though by that they meant foreign.' Elgwood says further that the Indian doctrine of humours (i.e. the *tridoṣa* theory) attracted the Persians who, as torch-bearers, carried it on, 'modifying and expanding it no doubt until it reached a nation that was able to express it in a dogmatic and concise form to give it an independent existence'.

In India, as stated before, the concept of *tridoṣas* was understood and developed in terms of the five elements. Blood, though recognized as a vital factor in the spread as well as the cure of diseases, was not recognized as a fourth humour. However, the Indians had understood the ways in which blood would combine with the *tridoṣas* for the manifestation of the diseases. This is an important aspect because the four humoral concepts (including blood) of the Greeks must have been a later development over the *tridoṣa* theory of the Indians. Viewed from this angle, Elgwood's observation seems to be significant.

Be that as it may, the Indian doctrine of five elements which had established itself by the seventh century B.C. deserves a reassessment in the history of science, and especially in relation to the rise of mental coherence of the Greeks. This does not mean that we are underestimating the role of Greek thinkers in this field of speculation. Maulana Azad has admirably said:²⁶ ' . . . The map of human knowledge cannot, however, be divided into regions of different colours. Knowledge is above all regions and boundaries. Whatever be the region of the globe when it first emerged, it is the common heritage of all mankind. If philosophy began in India earlier than Greece, its only effect is that in narrating the history of philosophy, we should begin with the mention of India. This does not, however, give any special virtue to India nor detract from the glory of Greece.' Is not this statement equally true

of the doctrine of five elements in the history of science? In the end it may be added that a further probe into the Indian doctrine of five elements may throw light on (i) the level, strength or weakness of the empirical knowledge of the time, and (ii) reasons for its failure to dissociate itself from philosophical speculations.

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- ⁴ *Chāndogya*, VII, 10.
- ⁵ *Kausītaki*, I, 7.
- ⁶ *Maitri*, VI, 4; III, 1 and 2.
- ⁷ *Sāṃkhya Kārikā*, 38.
- ⁸ *Sūrya Siddhānta*, XII, 24.
- ⁹ *Praśna*, IV, 8.
- ¹⁰ *Vaiśeṣika Sūtra*, I, i, 4 and 5.
- ¹¹ See *Praśastapāda bhāṣya*; *Prthvīnirūpaṇaprakarṇam* and the following commentary.
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- ¹⁵ *Caraka, Sārīra*, I, 26.
- ¹⁶ *Caraka, Sārīra*, I, 16.
- ¹⁷ *Suśruta, Sūtra*, XLI, 3.
- ¹⁸ *Suśruta, Sārīra*, V, 3.
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