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Concept of biological individuality in Jain philosophy

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Abstract

The biological basis of individuality in all organisms is their 'genes.' Genes are small portions of DNA which are responsible for all individual characteristics in living organisms. This paper attempts to establish a relationship between the scientific basis of biological individuality and the basic ideas of *varganas* in Jain philosophy. A *vargana* is a cluster of similar *parmanus*. A *parmanu* is a subtle most and indivisible unit of any matter (*pudgala*). *Varganas* have been classified into two major groups i.e., associable and non-associable *varganas*. Associable *varganas* are associated with the soul and form several types of subtle bodies and gross bodies (*audarik shareer*). All the structures which are visible to us by any means are form of *pudgala* which are made up of *varganas*. The numbers of variation of associable *varganas* which are responsible for formation of subtle and gross body are known as *kulkoti*. There may be 14 trillion different combinations of associable *varganas* for human beings, which can result in innumerable numbers of physical, anatomical, biological and behavioral aspects of an organism.

Keywords: Vargana, Jain philosophy, DNA, Arham Dhyana Yog, Jainism.

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Introduction

Jainism is one of the oldest religions of the world. Jainism has its own explanation of the functioning of universe which is made up of six eternal substances or realities where each of them are independent and act according to their qualities and attributes. These six substances are *jivadrava* (soul/consciousness), *pudgaladravya* (matter and energy), *dharmdravya* (medium of motion), *adharmdravya* (medium of rest), *aakashdravya* (space) and *kaal dravya* (time) [1, 2]. The *Jiva* substance is infinite in number and each individual *jiva* has its separate distinguished identity. These substances are characterized by eternal existence through infinite

sequence of origination and disappearance; however, the basic nature of existence is always preserved in this transformation of the substance. This is called permanence of the substance [3]. Hence, all the six substances are eternal, beginning-less, and endless which cannot be created or destroyed by any means of power. All the physical things which are visible and non-visible to us such ranging from atom to stars and planets are different modes of *pudgala*.

The *vargana*

The word *pudgala* is derived from two words i.e., *pud* meaning combining or fusion and *gala* meaning dissociation or fission [4]. In other words, *pudgala* is a substance which undergoes modification by combination and dissociation. *Pudgala* is characterized by four attributes i.e., color, taste, odor, and touch and therefore it can be perceived by sense organs, and therefore it is different from described 'atom' by science

which further possesses numerous subatomic particles [5]. A *parmanu* is the most subtle form of and ultimate indivisible unit of *pudgala*. A *parmanu* is eternal; it cannot be created or destroyed. However, division of *pudgala* finally results in a *parmanu* [6]. Since it is the subtle most physical entity, and hence cannot be perceived by senses, although it possesses the same sensible qualities as *pudgala* and basic constituents of all perceivable objects [7]. When similar *parmanus* aggregates with each other they are known as *Vargana*. Therefore, a *vargana* is a cluster of enormous, infinite number of *parmanus*. These clusters could be of infinite types according to the number of *parmanus* involved in the formation of *vargana*. The 'atom' in modern science, is a *vargana* according to Jain philosophy [Kachhara 2000; 8].

Role of *varganas* in the formation of the body

According to Jain philosophy, there are five kinds of bodies viz. *audarik* body (gross physical body), *vaikriyak* body (transformable body), *aharak* body (translocation body), *tejas* body (fiery or electric body) and *karman* body (karma body). As we go from first to last, these bodies become increasingly subtle [9-10]. The karma and fiery body are associated with *jiva* for beginning-less time and have infinite times more *pudgalas* in comparison to the previous three bodies [11-12]. The karma and fiery body can pass through all types of impediments throughout the universe or *loka* and is present in every worldly being. At the same time, it is imperceptible to the senses e.g., the eyes cannot see it [13-14]. The first body, i.e., gross physical body is gross as the name suggests, and can be felt by senses such as eye. Therefore, all types of phenotypic diversity we observe are the subject of gross physical body only. Human beings, plants and animals possess this type of body. This body occupies the maximum space among all and the types of *pudgala* involved in making such body are subtle in nature.

According to science, the human body is made up of atoms such as oxygen, hydrogen, nitrogen, carbon, calcium, phosphorous, sodium, potassium etc. These atoms together make molecules; molecules make organelles; organelles make cells and so on as depicted in figure 1. According to Jain philosophy, these atoms are basically *varganas* which are made up by union of different *parmanus*. The combination of *parmanus* takes place by their positive and negative charges [15]. A *varganas* can have infinite number of *parmanus* of unequal positive and negative charges and therefore, the

net charge on *varganas* may be positive and negative. These *varganas* have been classified into 23 categories based on number of *parmanus* into their cluster. Out of them only some of the *varganas* are associated with soul and useful in the formation of body which are known as *ahara varganas* (responsible for gross body), *mano varganas* (supports thought process in the mind), *bhasha vargana* (responsible to produce and transmit sound and speech in organisms and inanimate objects), *tejas varganas* (responsible for formation of fiery body) and *karman varganas* (responsible for formation of karman body). The full elaboration of these *varganas* has been extensively reviewed by N. L. Kachhara in his book *Jain Metaphysics and Science* [8].

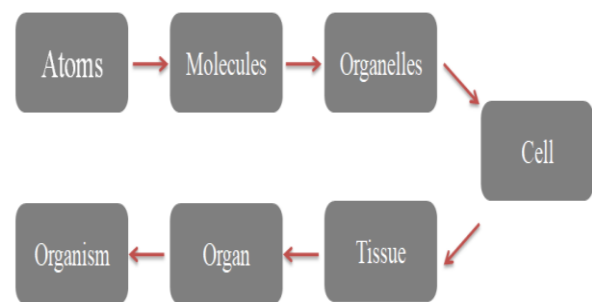


Figure 1: Different level of organizations in multicellular organism e.g. human body

Kulkoti

The numbers of variations of *varganas* which are solely responsible for making any organism are known as *Kul*. These *Kulas* are crores in numbers and therefore commonly known as *kulkoti* (*koti*= crore). The total number of *kulkoti* are 199.5 trillion for all living organisms ranging from single celled organism to human being as per the Jain annals. For human beings the number of *kulkoti* is 14 trillion i.e., 14,000,000,000,000. This means that there are 14 trillion combinations of *varganas* which are responsible for formation of human body. For plants; the *kulkoti* is double that of humans i.e., 28 trillion. For animals having complete five senses the *kulkoti* is 43.5 trillion [16]. By this description, one can imagine the uncountable unique formation of *varganas* which are responsible for the formation of variety of molecules of life, and which are again responsible for various physical, anatomical, biological and behavioral aspects of a person.

The basic living unit of the human body is a cell. A cell has a nucleus where deoxyribonucleic acid (DNA) molecule is packaged into thread-like structure called chromosomes. A portion of this DNA sequence is called a gene; or we can say that genes are contained in the chromosomes. A chromosome contains hundreds to

thousands of genes. The different versions of a gene that contains different sequences of DNA are called alleles. These genes determine various traits of a human being. Each person has a unique combination of genes which is known as his genotype. The observable traits of a person such as height, eye color, blood group etc. are known as phenotypes. It is a well-known fact that each person's DNA is unique that means every individual has a unique profile of DNA. It is unlikely that two people will share the same DNA profile except identical twins. According to a study, there can be 10^{21} different DNA profiles in the world. This means that DNA profile of a person is unique in 10^{21} persons which far exceed the total world population [Weir 2007: 17].

Vargana as cause of individuality

Now, we understand that genotypic and phenotypic variation in a person is a result of his unique genes and DNA. Additionally, we also know that due to 14 trillion different combinations there can be innumerable number of *varganas* responsible for formation of human body. As stated, earlier, everything which is visible or can be perceived by any means is a mode of *pudgala*, therefore, all the components of cell such as chromosomes, genes and DNA are also *pudgala*. These *pudgalas* consists of subtle *varganas* and different combinations of *varganas* results in different DNA and genes. Thus, we have two kinds of determinants of body processes i.e., genes and *varganas*. We can conclude that *varganas* are the cause and genes are their effects. Figure 2 depicts the full process of formation of organisms through various *varganas*.

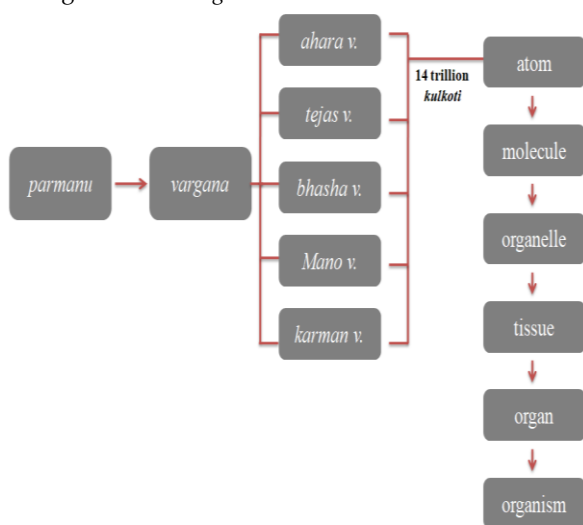


Figure 2: Formation of an organism by combinations of various *varganas*.

Jain philosophy classifies *pudgala* (i.e., matter) into six categories viz. gross-gross, gross, gross-subtle, subtle-gross, subtle, and subtle-subtle. The matter which is visible or perceived by us belongs to the initial four categories. Fifth and sixth categories i.e., subtle and subtle-subtle are the fine and extra fine matter which is not visible or perceived by us [18]. *Varganas* which are involved in the formation of the body belong to subtle and subtle-subtle category which together makes *pudgala* which can be put into first four categories. For example, our body which is visible by naked eyes is gross-gross; the vital organs inside the body are gross. Cells and cellular components can be classified as gross-subtle and subtle-gross. The question arises, why these *varganas* come together and form a body? The question can be answered by analyzing the first substances of universe i.e., *jiva* (soul). Consciousness, knowledge, perception, bliss, and vitality are some of the attributes of the soul. Soul is the doer and enjoyer of sensual acts through its senses, body, speech, and mind. There are two types of soul i.e., pure and impure. Naturally *jiva* exists as impure soul. As described earlier, the impure soul has *tejas* (fiery) and *karman* (karma) body attached to it since beginning less time [8].

The *karman* body is formed by *karman varganas* and *tejas body* is formed by *tejas varganas*. Both these bodies and *varganas* are subtle-subtle in nature and therefore not perceived by any means. These two bodies act like a bridge between the soul and *audarik* body (gross body). The *karman body* is the seed of all physical and mental activities [18]. The soul is the composite form of *jiva* and *karman varganas*. When the union of egg and sperm takes place, the soul occupies the first cell produced by this union guided by its *karman* body. With the help of this *karman body* formation of *audarik body* (gross body) begins by attracting *varganas* from its surroundings.

This power of development of a new body is termed as *pariyapti* (biopotential) of the soul. These biopotentials have been classified into six categories in Jain philosophy viz. *ahara pariyapti* (food biopotential), *shareer pariyapti* (body biopotential), *indriya pariyapti* (sense biopotential), *swasochhwas pariyapti* (respiration biopotential), *bhasha pariyapti* (speech biopotential) and *mano pariyapti* (mind biopotential). All these six biopotentials are accomplished by their respective *varganas* [19]. Complete achievement of these six biopotentials results into *audarik* body which is visible to us. Each biopotentials is dependent upon its peculiar *vargana*, which are again unique in nature and can have innumerable combinations and therefore give rise to

genotypic and phenotypic variations as discussed earlier.

Conclusion

The Jain philosophy proposed the concept of *parmanu*, *vargana* and *pudgala*. The approach of science has been gross to fine, whereas the Jain philosophy begins from subtle to fine and then gross. According to Jain philosophy the fundamental unit of nature is a *parmanu* which together makes a *vargana*. These *varganas* in the form of different combinations make the matter which is visible to us. Our body and its anatomical features are also a form of matter. The larger the number of variations of *varganas* more will be the observable variations in our body. The 14 trillion possible combinations of associable *varganas* can result into innumerable number of more *varganas* which are involved in the formation of gross body and its features. Since *varganas* which are used in the formation of gross matter are subtle and subtle-subtle in nature; they are still undetectable by science.

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Disclosure of conflict of interest

The authors declare no conflict of interest

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