

Scientific foundation and practice of Ahimsa  
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Ahimsa is considered as a great human virtue. Is it simply a humane way of living or there are some scientific compulsions for incorporating Ahimsa in the life style? Here we debate the scientific logic behind this principle of preserving and respecting all life.

1. Mach's principle:

To understand the importance of Ahimsa, we must try to understand the nature of the universe. To start with, we go back to Ernst Mach, a scientific philosopher who, in the early 20th century, gave the principle known after him, as Mach's principle. This principle was so profound that it influenced Albert Einstein in his formulations of the theories of the universe as also Relativity. Mach at the time was trying to understand the property of inertia and resolve the mystery of mass (see Sciama, 1953). Why matter has mass, was the question before him. It was known that particles of matter, like electron or proton, when created are massless, that is they have no mass, but most of them acquire this property of mass, which when acted upon by gravity, give us the feeling of their weight. To explain this phenomenon, he postulated the principle that states that mass of a body is due to its interaction with the mass of the rest of the universe or in other words, an isolated body in an otherwise empty universe will have no mass. It is a very profound principle in which everyone and everything in the universe is interconnected and interacting with each other. This led to the principle that everything in the universe, in some measure depends on everything else or we can put it another way by stating that one cannot exist alone. Of course this is a principle confined to material universe. Much before Ernst Mach, Mahaveer had propounded the principle of *parasparopgraho jivanam*, mainly directed at the living beings that each one of them depends on all the other living beings in this universe. This is simply the Mach's principle, proposed for material bodies, extended to the living beings. It can be translated into a more effective statement that 'I exist because of you'. I cannot exist only by myself and therefore, for me to exist, all others must survive. The mystery of mass of matter has been recently resolved by invoking Higgs field and the discovery of Higgs Boson but the Mach's principle still prevails and in the models of the universe everything seems to be multiply connected with each other (see for details Bhandari, 2020).

2. The principle of GAIA:

The principle of interdependence is further strengthened by the hypothesis of Gaia, proposed by the British astronomer Lovelock. He postulated that the whole earth acts as a macro-organism. Just like a living being is made up of some non-living components e.g. chemicals like compounds of carbon, calcium, phosphorus, water etc. and has a living component of consciousness, the earth is also made up of non-living components like lithosphere, hydrosphere, and atmosphere. and living components like biosphere consisting of trees, insects, animals and humans. A closer study shows that all the processes in a living being, in the trillions of living cells of the body are carried out timely and in amazing cooperation. A cell is a veritable workshop where thousands of proteins are produced every second, incessantly, error-free, at the right time and in the right amount. For such an incessant production, all the cells of the body have to work in cooperation, coordination, harmony, in phase, coherence (in steps), unison, synchronisation, spontaneously, in anticipation, without interference and it also has a self correcting faculty, in

case an error is committed inadvertently. The property responsible for such an activity can be termed as ‘one-ness’ at work. The evolution of life on Earth was found to occur in a similar way, when the various gradients required by various species were supplied by geologic, atmospheric and oceanic processes at the right time, in the right amount. A case in point is conversion of the initial reducing environment on earth dominated by methane into an oxidizing atmosphere, about 2.3 billion years ago, as required by the newer species to emerge (see Bhandari, Jain and Sisodia, 2022). Thus extending this argument to the whole earth to act as a macro -organism, leads to the concept that everything, big and small, has a vital role to play, nothing is useless, and everything, living and non-living, must be preserved for the earth to survive. Indeed this concept can be extended to the whole universe.

This principle of One-ness is valid whether we see the working of a small plant or animal cell described above or a huge structure like our planetary system, in which planets go around the sun harmoniously without interfering with each other, or indeed the whole galaxy, consisting of billions of stars and planets. The current models of the universe show that everything in the universe coexists with multiple interconnections (for a review see Bhandari, 2020).

If even one cell of the body becomes violent or even non supportive in activities of the other, the whole process of survival or reproduction of proteins would be affected and the cell would eventually self destruct. And this is evident for the smallest to the biggest structure of the universe, living and non-living One cannot hurt somebody else without hurting himself, in some measure, howsoever small. The principle of non-violence is thus a corollary and the essence of this Law of One-ness.

### 3. The principle of Entanglement

The concepts discussed above can be summed up by the phenomenon of entanglement developed during the past century (see Bhandari, 2015). Simply stated, Entanglement implies that two particles produced simultaneously in any nuclear reaction always remain entangled with each other, no matter where or how far they are. Here entanglement means that the property of one determines how the other particle will behave. Their separation in space is irrelevant and has given rise to the phenomenon of non-locality. For example, if we take the case of a reaction in which two electrons are produced, the spin of both the electrons must be opposite. If then we measure the spin of one, and it is positive, the other one will show negative spin, even if it is far away, in another end of the universe. The question is how does the second electron know what spin the first electron has shown, even when any communication between the two is not possible and information cannot travel with speed faster than the velocity of light, according to the Special Theory of Relativity? Einstein called this phenomenon ‘spooky action at a distance’. In terms of physics we say the two electrons are entangled. The concept of entanglement can possibly be extended to more than two particles, indeed every particle in the universe, because they have been produced, once, all together in a single event of Big Bang. This is the case of space entanglement and even time entanglement is possible, in which particles at different times in the past, present and future can remain entangled. This is a concept which requires further development to be established. Returning to the question of Ahimsa, we can say that every thing in the universe, living and non-living is entangled. Entanglement is much more than dependence implied by the Tattvarthsutra shloka ‘*Parasparopagraho jivanam*’, which is confined to jivas or souls. Jivas are not only dependent on each other or support each other, but entanglement implies that they cannot become independent, even if they try. The universe is like a cobweb from which one can not disentangle oneself; moreover this concept is equally applicable to living as well as non living. We should extend the shlok to include ajiva too and state that

‘*Parasparopagraho jivanam ajivanam*’. This is similar to the Baudhha concept of Sunyavad, a profound theory propounded by the Buddhist scholar Nagarjuna (ca. 150-250 CE). One interpretation of Sunyavad is that nothing has a separate, independent existence. One exists because of the others, otherwise one, by oneself, is cipher or nothing (şunya). Thus the self, like cipher, has only a contextual value. Sunyavad states that everything is an aggregate, and owes its existence to other things and can not exist by itself. Needless to emphasise that this implies that everything is interdependent and one cannot hurt others without hurting oneself, and this is the root cause of the practice of Ahimsa. Thus ahimsa emanates from the profound law of nature, that is the law of mutual interdependence.

#### 4. Ahimsa: sum of many virtues

Ahimsa is generally taken as not committing any violence towards other creatures-avoiding killing or causing hurt to other living beings. But non-killing is only one small aspect of it and confining ahimsa to absence of killing amounts to trivialising ahimsa. In essence, ahimsa is not a single stand alone virtue but a sum total of many positive virtues- Ahimsa is not only respect and compassion towards weaker life forms, but can not be practiced without courage, fearlessness, bravery, friendliness, responsibility, tolerance, forgiveness, and much sacrifice. Tolerance includes tolerance to other’s view points, and philosophies. At the same time suppression by others or surrendering to others is not non-violence. Cowardice or escaping from one’s responsibility can never lead to practice of Ahimsa. Fighting for a right cause, even at the expense of one’s comfort, is also Ahimsa as Mahatma Gandhi showed in application of ahimsa in politics. It entails many other qualities, like independence of thought, equality of all living beings, gender equality, and in extreme situation, violence also becomes Ahimsa. The full shloka is

*Ahimsa paramodharma,  
Dharma himsa Tatheiva cha.*

It implies that ahimsa is the highest dharma (virtue) but any violence to preserve the dharma (nature) is even a higher virtue.

On another extreme, Ahimsa is not confined to non-violence towards living beings but entails nonviolence towards non-living things too as we see below.

#### 5. Ajiva ahimsa:

Ahimsa has been glorified as the best virtue in the world and is considered as the epitome of ideal lifestyle, especially in oriental religions, like Jainism, Buddhism and Hinduism. The concept of ahimsa is, however confined to Jiva ahimsa, that is one should not hurt any living being howsoever trivial it is, by deed or even thought. And people go to any extent to save, not only the visible creatures but also the invisible living beings like insects, fungus, algae etc., to much discomfort to their own selves. People walk barefooted, Irrespective of the distance involved, to save the biome and little insects on the ground.

Important as it is, Jiva himsa or hurting the living beings, does not have immediate effect on the person who commits it. It is only in the netherworld that its consequences will be realised, if one believes in rebirth, heaven and hell.

But what has become a matter of immediate concern is ajiva ahimsa: not hurting the non living, things which one uses in daily life like the house one lives in, clothes one wears, the dyes one uses to colour the clothes, the paper one writes on, the gas one uses for cooking or, the vehicle used for transportation, the soap one uses for bathing and the plastic used in a

variety of activities or the airconditioner or the refrigerator; the list is long. We have mentioned only a few items to illustrate the point. Using these items is *ajiva himsa* and it has become important because it has immediate consequences for the person committing it. The moment any of these things are used, the effect is instantaneous on the environment and the person who is part of the same environment is immediately affected. Its use affects his health, almost instantaneously, by polluting the air one breathes, water one drinks and food one eats. It is also known by the term 'pollution' - pollution of ground by fertilisers, pollution of air by fumes, pollution of water reservoirs by chemicals, and so on. The point we want to make is that the effect is immediate and is not confined to the one who is committing *ajiva himsa* but hurts every one, the humanity at large. Whereas *jiva himsa* only affects the one who commits it, and that too with delayed consequences and not the others cohabitants of this world, *ajiva himsa* affects everyone in the world including those who don't commit it, including the harmless, invisible *jivas*. Most of the effects of *Ajiva himsa* are irreversible, as we have found to our dismay. So far the changes in the environment induced due to human activity have been linear. The global warming (for example the atmospheric temperature) increases linearly with pollutants and we can extrapolate the effect for many decades and it may turn out that the dooms day is far off. *Ahimsa* toward non-living has suddenly become all the more important because the latest calculations show that if any of the Earth's reservoirs, such as oceans or atmosphere exceed or come close to their capacity to absorb the man made chemicals, the effect will be non-linear or even catastrophic. Small changes in environmental chemistry may lead to disproportionately large changes in the environmental conditions of temperature etc. and the earth may acquire a new, unpredictable state. This has happened to the earth in the past in a natural way as geologic evidence shows. A glaring example is Venus, considered to be the twin planet of the Earth, in its size, distance from the Sun, composition etc, but has gone through the run-away green house and the current temperature there is about 500°C. Surely, for survival of our civilisation, we do not want to move in that direction.

*Ajiva ahimsa* is much more than *aparigrah* or minimising possession. *Parigrah*, or accumulation of possessions is only a part of *ajiva himsa*. In a broader sense it calls for minimising energy consumption, natural resource consumption, eliminating packing materials, manufacturing unnecessary products etc. To achieve this goal, we must follow the processes nature adopts in its working. Nature uses cyclic processes everywhere in which nothing is wasted. Hydrological cycle is a good example for most efficient and cyclic process by which multiple goals are achieved. The same is true for biospheric and atmospheric processes. One must realise that what is good for economy, based on single product manufacturing which ends in some wasteful end products is bad for life but this can be improved by adopting cyclic, multi product processes.

It must also be realised that *Ajiva himsa* also involves *jiva himsa*, may be indirectly in many cases. Thus we need to pay more attention to *Ajiva ahimsa*. A healthy Balance between all the components of Earth, living and non-living must be maintained at all costs.

Thus *ahimsa* is not only a desirable practice which ensures peace and harmony in personal, social and international relations but the way of nature, the way nature works.

Thus we have seen that the principle of nonviolence (*ahimsa*) emanates from a fundamental law of nature, the law of mutual dependence, as propounded in many philosophies. It is not just an abstract or ethical aspect of philosophy but has a scientific foundation, and non-violence or *ahimsa* must include both *jiva* and *ajiva*. It has the potential to eradicate most conflicts between different societies, communities, peoples, faiths and nations and is a sure

prescription for mental peace and harmony at personal, family, community, and international levels. Moreover it is necessary for the survival of human civilization.

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