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# Substance and Nature of Concrete and Abstract Forms

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Everything that is excellent, is equally difficult as rare. Spinoza<sup>1</sup>

Spit on this grave. Here lies Spinoza. 'T would be better if his teachings were buried here too.<sup>2</sup>

# Abstract

Democritus argued that all forms are compositions of solid, yet invisible, objects with the smallest possible size. Size, shape, mass, arrangement and position of each specific atom was one from an infinite variety of possibilities. Questions about the substance of chemical and biological forms did not emerge. Descartes and Spinoza recognised the existence of concrete and abstract forms. While Descartes concluded that the two were "really distinct from each other," Spinoza proposed a single, absolute substance as primordial for body and mind. Both philosophers did not investigate the nature of that substance.

Indian philosophy advocated two primal elements in concrete and abstract forms: consciousness and energy. The philosopher Shri Sarkar perceived consciousness as the material cause of abstract and concrete forms and assigned energy a role in all transformations and changes of location. The two components have the potential to simultaneously exist in non-local, non-specific, but also in local, specific forms. In the evolutionary process from non-specific energy to specific organic forms, subatomic particles are the indispensable basis. Local forms of consciousness, called microvita, are the creative catalysts in the process. If non-local and local forms are integrated, the universe must be both granular and continuous. GRANULARITY OR CONTINUITY?

# Two Greek philosophers

The Greeks, and especially Leucippus (470? - 410? BCE) and Democritus (460? - 356 BCE), developed the idea that the universe is not continuous but granular, which means that all space contains tiny little objects with a specific identity. By logical thinking, not by testing, they concluded that none of these small objects could be divided infinitely. Their procedure was like this: assume that all objects can be divided infinitely<sup>3</sup>. After that division, two possibilities remain<sup>4</sup>. A first one is that a remaining part exists. The existence of such a part indicates that the period of infinity would not be long enough for the division, which would be a violation of the underlying assumption. A second possibility is that nothing remains. If, after reaching that phase, the gaze is turned backwards, it turns out that what remains is 'nothing,' could never have been 'something' because, even if zero will be multiplied infinitely, what remains will be zero. The logical conclusion was that objects could only be divided finitely, and the ultimate result of the splitting would be solid objects of the smallest possible size, which Democritus called 'atoms.' These smallest objects had no standard size; their substance was one of an infinite series of possibilities.

Democritus was convinced that only atoms and empty space existed. Since atoms were solid, indivisible and continuously moving, empty space between them had to exist. Otherwise, it would not be possible to explain how a knife could be used to cut an apple<sup>5</sup>. Although he only accepted atoms as elementary objects, he did recognise the existence of the soul, albeit that it also had to consist of atoms. Not all atoms were equal in size and weight. The atoms of the soul were small, light and spherical. Like souls, also the gods were composed of atoms<sup>6</sup>.

All forms, whether concrete or abstract, physical or metaphysical<sup>7</sup> are based on a substance and a composition of an infinite variety of 'atoms.' If atoms can vary, they must be based on a substance with an infinite potential to realise that infinite variety. When dealing with 'substance,' it will be essential to have at least some idea about what it is or what it is composed of. A definition is needed or at least a coherent picture. Greek philosophy did not define 'substance.' The same goes for words like 'mind' 'matter,' 'consciousness,' 'concrete,' and 'abstract.' Complex systems do not fall out of an open sky, they gradually grow and evolve within time-space. If matter, mind, soul, etc. exist, what then could be involved in the evolution of the homogenous, solid atoms into heterogeneous biological organisms?

# **Two Catalysts of Empirical Testing**

Descartes (1596-1650 ACE) discussed 'substance.' In doing so, he distinguished between a perfect substance (God) and an imperfect, created substance. A substance is a thing that depends on no other thing. Only one thing depends on no other thing: God. God created the universe and with it, all things in it. Two categories of their substances exist extended substances—res extensa—and thinking substances—res cogitans—. Extended substances concern objects that take up space and have volume. Thinking substances do not take up space; they are mind. All substances have attributes and modes. However, the substances of mind and body "are really distinct from each other." The word 'attribute' can be translated as 'inherent properties'. Attributes of an extended substance, like a concrete beam, are, e.g. its chemical composition, colour, weight, fire resistance and sound reflection. Modes of the same attribute, the constructive element mentioned before, are for instance its shape and dimension. Attributes of a thinking substance, like a human being, are intelligence, creativity, emotions or indifference. Modes of that same human being, are ideas, as well as thoughts, convictions, mental pictures, attitudes and fears.

Descartes distinguished between body and mind, that is to say, in human beings. It was not yet possible for him to include plants, single-celled and multicellular organisms in his approach, because a technology to investigate these bodies

did not yet exist. Nevertheless, the approach that he developed was a big boost to implement what the Greeks never considered: empirical testing. He showed that only logical analysis was insufficient. His strength was a systematic approach that included observation. Do not expect precise definitions or even limited descriptions of the plethora of bodies and minds that can be observed. Descartes did not touch that subject.

When Baruch de Spinoza (1632-1677 ACE) was an infant of two years, Descartes stayed in Amsterdam in the summer of 1634. The two never met, but already at the age of 22 years Spinoza read texts from Descartes, but also from Greek, Latin, French and Belgian authors Reading is done to enter into the world of an author or to collect information. Spinoza was a bookworm but saw what he read as a catalyst to mirror, test and increase his understanding of the universe and life. While Descartes opted for a split between body and mind, each with a distinguished substance, Spinoza advocated one single, absolute substance as primordial to both corporeality and mind. To attribute one substance to both chemicals, biological organisms and thoughts, in any form of development, is not particularly obvious. So, what a courage to dedicate a life to the development of that idea! After him, this approach was called 'neutral monism.' Bertrand Russell describes 'neutral monism' as a theory that sees the material from which the world has been made [as] neither mind, nor matter, but [as] something that precedes both.'

Greek philosophy paid attention to the existence of things and the cause of their existence. Descartes and Spinoza had a closer look at the existing 'things' and their substance and advocated that the universe is filled with objects and because of that can be called 'granular.' Both mentioned the existence of some substance, without zooming in to the question. Spinoza did not explain how forms of matter can be based on a similar substance as forms of mind. He also did not include the principle of dynamism in the universe. Dynamism means changes of a substratum in spacetime, which need the inclusion of energy. Many questions remain. If one universal substratum exists," What is the nature of it?" "What is mind?" "What is the substratum of a thought or an idea?" "What is life and how can it emerge from chemical forms, like atoms and molecules?" "What is the origin of intelligence, intuition, emotions and ideas?" "What causes disease? "What does it mean to choose a positive or negative approach and what are the consequences of such a choice?"

# TWO INDIAN APPROACHES Samkhva

The quest for an answer to the question "What can be the primordial substance of both concrete and abstract forms?" cannot yet be answered in a way that that does justice to both Matter and Mind. After Descartes and Spinoza, the Western world started looking for answers by following a path from outside to inside. Indian philosophy has the opposite approach. These two opposing approaches hold the promise of a complementary vision. International communication has increased so much that an exchange of thought holds the promise of an answer to longstanding questions. The pending issues of this paragraph will include the Indian approach.

The focus of Indian philosophical systems is not even intellectual knowledge or perception, but first-person experience of third-person systems or, in the vocabulary of David Chalmers, 'qualia<sup>14</sup>'. The oldest school of philosophy, Samkhya, knows two approaches, atheism and theism. Classical<sup>15</sup> Samkhya is atheistic. Theistic Samkhya is called Yoga. Prakrti (nature or skilful energy) and Purusa (consciousness) are the primordial principles of Samkhya<sup>16</sup>. Prakrti is one, omnipresent, nonlocal and infinite. Its manifestations are many, local and finite. Prakrti itself is in equilibrium, but because it is composed of essence (sattva), energy (rajas), and inertia (tamas), this state of balance is a kind of tension. Purusa is the subject of knowledge, intelligent and conscious. Prakrti is non-intelligent, not-conscious and the object of knowledge. Aristotle sought what could be the causes of an effect, and concluded four causes of form: a material, an efficient, a formal and a final cause. Samkhya recognises two causes: a material and an efficient cause. Sinha writes:

"Gold is the material cause of an ornament; it enters into its constitution and will continue to be operative as long as the ornament will last, and after its destruction, it will relapse into the potential condition again. But the activity of the goldsmith is the efficient cause of the ornament; it liberates the causal energy inherent in the material cause and actualises the potentiality of the effect; its causality ceases with the production of the ornament."

Gold is the material cause of the ornament, while the goldsmith is the efficient cause of the ornament. But the material cause has no intelligence to know about the ornament and its future form. It is mind, so consciousness, that knows about the attributes, the characteristics, of gold and starts looking for it, collects it and brings it to the goldsmith. It is another mind that wants an ornament of gold, and it is the intellectual and creative mind of the goldsmith that knows how to design it. The same mind knows the characteristics of the material gold and how design could fit in with the features of the material gold, as well as the desire in the mind of the buyer. The material follows merely the directives of the maker; it is what it is. It is the first-person mind of a human being that will discover and experience the third-person object.

The above text of Sinha does not show a very efficient relation between consciousness and energy. How can nature afford not to be efficient? What is the cause of the existence of a specific intelligent philosopher, a loving parent, a bright teacher, or a creative and skilled goldsmith? Of the two principles, it is consciousness that has intelligence and creative skill. Observation is undoubtedly needed, but only observation will not suffice to win a match<sup>17</sup>. How will a creative goldsmith ever emerge from a single-celled organism if the characteristics of both consciousness and energy are not implemented in the course of evolution? Even here the question remains: "If consciousness and energy are primordial components of the universe, and the universe is granular, do granular forms of both exist?"

# Shri P.R. Sarkar

The Indian philosopher Shri P.R. Sarkar (1921-1990 ACE) also saw consciousness and the operative principle, energy, as the two primordial principles of the universe, as the first chapter of *Ananda Sutram* shows. In addition to that, he indicated that the two could never be separated: they are an inalienable concomitance<sup>18</sup>. This can only mean inherent cooperation, rather

than competition between the two. In this duality, either of the two may still have no expression and be dormant, but their collaboration is always alert for opportunities to adjust.

Different from what science at this moment in time accepts, consciousness is the material cause of all forms and not only subtler than space but also of a different nature. It has an infinite potential to express in any universe, should more than one exist. One such expression is awareness; others are e.g. observation, concentration, intellect, creativity and emotions. Energy cannot analyse and take decisions; it can only take the form that consciousness in nonlocal or local form suggests. Like the goldsmith mentioned before, consciousness knows the characteristics of energy and will not ignore the presently discovered and still undiscovered qualities of physics. It also means that in situations like an avalanche or a mudslide, where consciousness is only latent, energy will cause damage and suffering to biological organisms.

Like Aristotle and Samkhya, Shri P. R. Sarkar asked questions about the cause of forms. In the second chapter of *Ananda Sutram* he stated:

- "every object has a material cause and an efficient cause."
- "Over and above these there is also a conjunctive agency linking the material cause with the efficient or instrumental cause"
- "In the process of creation, the principle of Consciousness is the material cause."
- "as the efficient cause Consciousness is the primary factor."
- "The operative principle is the conjunctive agency linking the material cause with the efficient or instrumental force" 20

His discourse of December 31, 1986, was the first of a series, in which he described the existence of local forms of consciousness and energy. That link was not announced and caused great excitement (and curiosity for what more could come) amongst his listeners. These ideas caused new openings to answer old questions, not to speak of new ones. One such questions concerns, in fact, subatomic particles. If the material cause of all forms is consciousness, how can the substance 'gold' not be a composition of energy, as particle physics has discovered, but of consciousness? The underlying question is whether elementary particles are sole particles of energy —elementary or composite particles— or a composition of elementary particles with microvita. The following paragraphs contain three approaches.

- 1 All objects have a mind or at least in potential form. If micro minds are part of biological organisms, our universe must have a Macro mind. In all minds, consciousness and the operative principle are entangled. Only consciousness has insight and visual power, but also the determination to decide for a direction of action<sup>21</sup>. Consciousness needs energy for any activity, be it abstract or concrete, so it asked its operative principle: "Needed are very particular particles, which after 13.78 x 10<sup>9</sup> years someone will call 'elementary particles.' Can you take those forms?" and the answer was: "Sure, I can do it. Just guide me!" Then, a split second after the Big Bifurcation, the first energy particles, lepton quarks, quarks, electrons and photons, emerged. These very subtle, local forms of only energy may not be directly connected with microvita, but still, they are entangled with nonlocal consciousness. Soon after, quarks united into protons and neutrons, the first composite particles. A relatively short time later, 378,000 years after their appearance, they were connected to the particles of consciousness, microvita, with the first atoms as an outcome.
- 2 A second approach to conclude whether elementary particles are directly connected to microvita or not, is researching the nature of elementary particles. If "every object has a material cause," one could ask "What is an object?" Because, if elementary particles are not objects, but amounts of energy with a specific behaviour, their relations with consciousness are as described in the previous paragraph. An object can be defined as "a thing that can be seen and touched"<sup>22</sup>. We cannot see atoms; we can only see the reflection of light on their electrons. Quarks can never be seen; they remain hidden within the electron cloud. A not unimportant characteristic of objects is that they are three dimensional, which should also apply to electrons. In quantum physics, elementary particles are also called "point particles" with an intrinsic size that is exactly zero<sup>23</sup>. If electrons have zero dimension, they must be purely local amounts of energy that are entangled with nonlocal consciousness. What we see, is the reflection of light on their wave packet that partly absorbs and reflects light waves.
- 3 A third approach can be found in cosmology. Immediately after Planck epoch, the temperature was  $10^{32}$ K. Since microvita are sensitive to temperature<sup>24</sup>:

"They will undergo contraction and hibernation at freezing temperature and expansion and hibernation at boiling temperature."

The first microvita woke up at the end of the photon epoch, when the temperature had gone down to 3,500 K, which is still quite hot. Not all microvita have the same reaction to temperature; the least sensitive ones are crude, negative microvita. These were the ones to wake up first, and huge homogeneous collections of them stepped on board of or were instrumental in, the formation of Hydrogen atoms. Although in that early period of our universe any form of life was far away, these hydrogen atoms were, in fact, the forefathers of life.

# **GRANULARITY AND CONTINUITY**

Democritus concluded that all forms in the universe were compositions of solid atoms. Almost 2,200 years later, in 1905, Einstein wrote a paper, in which he proposed that *small spheres* –ultimately atoms– cause Brownian motion<sup>25</sup>. His analysis and arguments were quickly accepted because they explained many existing phenomena in physics. Six years later, in 1911, Rutherford proposed that atoms consist of a nucleus with heavy particles, surrounded by a cloud of light electrons. In 1913, Bohr and Rutherford refined the previous proposal into a model that integrated the principle of quanta.

To a certain extent, the new findings confirmed the model developed by Democritus. In his opinion atoms did exist and, even when they were connected with more atoms, they were surrounded by empty space. It will come as no surprise to see that the model of Bohr was more refined and showed more profound knowledge. In the Bohr model, the existence of space remained, not only outside the volume of atoms but also inside. If I would state that space, different from water, is entirely continuous and cannot be blocked by anything, there is little chance that someone will call me back. That might be different if I

would claim that empty space does not exist, even theoretically not so. Yet, so-called 'empty space' or 'void' still contains gravitons<sup>26</sup>, virtual particles, nonlocal consciousness and its local forms, microvita<sup>27</sup>. If consciousness is nonlocal and granular at the same time, everything in the universe must be interconnected. Nonlocality is also a property of space, be it, that even the existence of its supposed local gravitons still needs confirmation.

# THE NATURE OF GRANULAR FORMS Atoms

Different from what Democritus thought, atoms are not solid, and perception just brings "an illusion of solidness". Only in very particular conditions, will atoms of the same element be identical. This means that atoms have their own identity unless the temperature of their immediate environment goes up to 4000K or down to almost absolute zero. In the last situation, they lose their identity but do not get lost. After the temperature goes up, they appear again.

Simple or complex atoms alike, all are composed of quarks, protons, neutrons –except in hydrogen atoms–, and electrons, which are not homogeneous but heterogeneous groups of particles. All subatomic particles of one kind, are identical and indistinguishable unless their conditions change.

Another essential characteristic of all these particles is that they are dynamic and move at high speeds. Electrons have a speed of 2.200 km/s, while quarks move at 99.995% of the speed of light<sup>30</sup>. Similarly, as propellers of an aircraft accumulate energy through their speed, electrons and quarks also collect large amounts of energy. It will be difficult to break through their shield because it requires a larger amount of energy, and new particles will appear in such an action. Precision is an essential characteristic: despite the extreme speeds, no collisions occur.

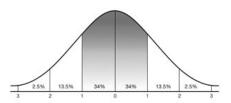
Chemical properties mainly depend on the number of protons. Nature cannot be said to ignore possible choices; the number of protons that can be found in natural elements, ranges from 1 to 92 and all seats are occupied. Diversity is a natural law, and that also applies here. Both internally and externally, atoms can have a homogeneous or heterogeneous character<sup>31</sup>. Does diversity end here and atoms need to be considered as individual objects that exist independent of the milieu they take part in? No, they are sensitive and react in accordance with, e.g. changes in the temperature of their environment, other forms of radiation and the presence of chemical objects and living organisms. Not only that, atoms are homo- or heterogeneous collections of elementary and composite particles, they also contain microvita.

# Microvita

Energy can be nonlocal, and nonspecific, like in the hot plasma after the Big Bang and, in appropriate temperatures, with form, local and specific, as in nucleons. Why could consciousness not have the same or at least similar characteristics? If that is indeed true, consciousness can both be nonlocal, as well as local, in the form of its particles of consciousness, called microvita, and the substance of the universe will be nonlocal as well as local.

If even the most uncomplicated atom is heterogeneous, why would atoms of mind<sup>32</sup> appear as homogeneous collections? Atoms can form molecules with identical or different atoms and unite into molecules, mega molecules, clusters, homo- or heterogeneous mixtures and fulfil various functions. These molecules do not choose or accept a location due to the presence of similar or the same particles but because it offers an appropriate breeding ground.

Some types of microvita can be mentioned here, such as crude negative, subtle negative, intermediary and positive microvita. Positive and subtle negative microvita are the same but have an opposite focus. The same also applies to human minds, which are huge heterogeneous collections of those microvita. In our biological universe, extremes are rare, which means that super positive, as well as super negative minds, are unique. Between black and white, many shades exist. The bell shape of a Gaussian distribution model visualises that of all actions:



# Figure 1:

0.1% is extreme positive or negative
2.5% is clearly positive or negative
13.5% is acceptably positive or negative
34% is neither apparent positive nor negative

Out of one thousand actions, only one will be 100% positive or negative. 'Like attracts like', is an indication that positive and negatively minded people seek contact with their own category. In the Figure 1.middle group of 68%, most negativity is caused by lack of information and lack of communication. To change negativity into cooperation, positive minded, knowledgeable persons must contact and mix with their opponents, after which the formation of groups will occur. In everyday life positivists and negativist mingle. This situation also applies to their microvita. No mind is a composition of only subtle positive or negative microvita.

# Human minds and bodiless minds

Atoms are precisely functioning structures, and I see no reason why simple or developed minds would not have the characteristic of precision. The constituting basic components of mind and its basic components, atoms of mind, must function with the same attention to detail.

The biological hierarchy is based upon the evolution from the simplest form without a mind to the most complex organism with one. In other words, subatomic particles stay without microvita as I mentioned before, while atoms, molecules,

clusters, compounds, macromolecules, organelles and cells<sup>33</sup> include crude, negative microvita. Macromolecules also contain subtle negative microvita in smaller or more significant quantities, but these are not enough to already be called 'mind'. The first minds can be found in organelles and single-celled organisms because they not only include positive microvita in their component parts, but also have a 'unit mind' that 'manages' their identity. Each level on the ladder of the biological hierarchy will show more complex minds.

Human beings are enormous biological structures, composed of tissues, organs and groups of organs and the unity of all these, their human body. Not only a human body has a mind, but also cells, tissues, organisms and groups of them have their own mind<sup>34</sup>. Both sperm and ova have a mind, but when the two have reached the phase of embryo, the present mind is far too elementary to fit the mind of a mature person. At the end of the embryonic period all organs are present, be it that they cannot yet be used except the heart that rhythmically contracts at a double rate of the mother. This moment could be the stage when a specific bodiless mind recognises its future body and settles down into it. Intense cooperation between mother and embryo then includes the mind of the future baby. The name of the embryo changes into 'foetus' and from then on, the foetus is approached as a baby.

After birth, each human being starts acting in broad- or narrow-minded, in positive or negative ways until the body is no longer able or appropriate to serve the mind. Because the mind leaves its body, it can no longer take care of itself, dies and becomes a bodiless mind. What remains is a mind with a mixture of positive and negative microvita as they were collected during its previous incarnation or incarnations.

The word 'mind' has come up many times already, and mind is described as a collection of subtle microvita. To have a minimal understanding between incarnated and bodiless minds some additional information is needed. Are these collections of microvita homogeneous collections like, e.g. Fe-atoms in steel beams or H<sub>2</sub>O-molecules in a drinking glass? No, to see them as structured, hybrid compositions, will create a more realistic picture. Different kinds of microvita unite into homo- and heterogeneous groups and clusters. Many clusters are connected by pathways, roads and crossroads of vital energy. More intensely used clusters and connecting paths generate more energy for internal or external expression. Areas of high intensity may be similar or of opposite character, be close or far apart.

Minds of people, as well as bodiless minds, can have a specific positive or negative focus on a specific structure and intensity. The chapters 3,14-A and 14-B of 'Microvitum in a nutshell' illustrate the relation between individual microvita and collections of them. As I mentioned before: three types of individual microvita exist: crude negative, subtle negative and positive microvita. Subtle, negative and positive microvita form the basis of three categories of bodiless minds: pretayonis, devayonis and gandha yaksinii.

**Pretayonis** mainly contain subtle negative microvita. The minds of **Devayonis** on the other hand, include many, and mostly positive, microvita, but not only these. The concerned persons are not entirely free because they still have personal preferences. See Figure 2. The substratum 'consciousness' has infinite attributes that can be expressed, which means that its local forms, microvita, have the same potential. So, many subcategories with a different focus exist, even more than the seven that are mentioned in 'Microvitum in a nutshell'.

Chapter 3 and 14-B give information about e.g. **Yaksas**, which are a subcategory of pretayonis. In principle, persons of this subcategory were deeply spiritual people, but in the course of time, they gradually developed more focus on what they were doing –collecting money for a good cause– instead of enlarging their horizon. In such a situation the amount of positive microvita might decrease, while the number of subtle, negative microvita certainly will increase. After death, these bodiless minds roam around in the universe, wanting to help. If their help is received by the wrong kind of people, it might lead to an obsession with material wealth and control. This obsession can rightfully be called a mental disease, here not of the bodiless mind but of the involved embodied minds<sup>35</sup>.

Another example that was given is the **Siddha**. A Siddha is not a positive microvitum, but the name of a subcategory of devayonis. Bodiless minds with this character have specific positive qualities and contain specific groups of positive microvita. These people were genuinely spiritual people, but still felt a strong preference for e.g. knowledge or beauty. To call these personal preferences a disease may not be wholly appropriate, but for sure they are personal limitations.

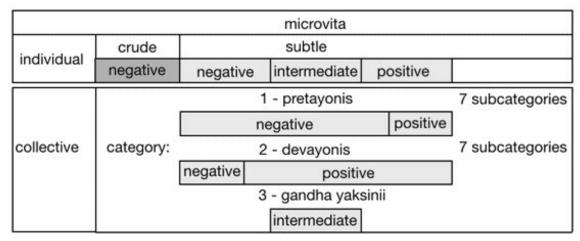


Figure 2

# **CONCLUSION**

The universe is a nonlocal space that gives shelter to a vast number of local physical forms, of which the smallest are atoms. The substratum of all forms of consciousness in its local potential, is called microvita. Different from energy, these microvita have attributes like conscience, intellect and creative skill. One deep characteristic of Nature is cooperation. This abstract principle finds its translation in the evolution of mindlessness into mindfulness, into being conscious of consciousness.

Microvita are the substratum of both body and mind. Microvita contain intrinsic, as well as kinetic energy and because of that they can realise their intentions and take part in both abstract and concrete reality. They operate and cooperate in quantities beyond imagination. Crude negative microvita 'are instrumental in emanating life throughout the Universe<sup>36</sup>, while subtle negative and positive microvita form the substance of mind that builds up the impetus to ultimately pass beyond the horizon of psycho-spirituality. When reading the words positive and negative microvita, they might seem very different. In principle they are the same,' the only difference between the two is their focus. Negative microvita focus on the material, while positive microvita concentrate their attention on a continuing increase of deep insight.

# **Notes and references**

- 1. The closing sentence of his book 'Metaphysics" that, for fear of persecution, was published after his death.
- 2. Fifty years later, the rage of superficial dogmatists was still so great, that a pastor published this text. <a href="https://www.filosofie.nl/shop/spinoza/120784170/kopen.html">https://www.filosofie.nl/shop/spinoza/120784170/kopen.html</a> Accessed 8-1-18.
- 3. Kenny A. 2012. A New History of Western Philosophy. Oxford University Press, Oxford.
- 4. Unfortunately for the reasoning, there is no 'beyond eternity.'
- 5. Russell, B. 1975. Geschiedenis der Westerse Filosofie. Den Haag: Servire.
- 6. Kenny A. 2012. A New History of Western Philosophy. Oxford: Oxford University Press. P 79.
- 7. The word 'metaphysical' suggests that two realities exist or at least could exist, a physical world and a world beyond the physical. The suggestion is that the two have no connection. That supposed separation is blind speculation and acceptable within ontology but needs confirmation in other fields of knowledge. The existence of 'life' -whatever its precise definition- in the universe is an indication, to say the least, that a relation between the two certainly is a possibility. Expressions like abstract and gross reality, as well as 'subtle' and 'gross' reality, leave the possibility of a relation between the two open.
- 8. <a href="http://www.iep.utm.edu/substance">http://www.iep.utm.edu/substance</a> Accessed 8-1-18
- 9. Descartes R. 1596-1650 Meditations translated by Clark D. 2010. London: Penguin Books.
- 10. i.e., two years before he was expelled from the Jewish community in Amsterdam.
- 11. Newton wrote Philosophiae Naturalis Principia Mathematica in 1687, ten years after Spinoza passed away.
- 12. Russell B. Geschiedenis der Westerse Filosofie. 1975. Den Haag: Servire B.V. Uitgevers Wassenaar. Quoted text is a translation by author: English-Dutch-English. The translated text may slightly differ from the original text.
- 13.Ibid. Russell himself writes "However, I admit that certain simple events belong exclusively to material groups, while others to both categories and therefore both mental and material. Translation by author: English-Dutch-English.
- 14. Hydrogen is an exception; it contains only one proton and one electron.
- 15. Here 'Classical' means the view that accepts the Vedas and Upanishads.
- 16. Sinha J. 2006. Indian philosophy. Vol. II. Banarsidass Publishers Private Limited, Kolkata.
- 17. Unless, of course, the match is a competition in the skill of observation.
- 18. Sarkar PR. 1967. Ananda Sutram: Chapters 1-1,2 EE7.5, 2009: AMPS.
- 19. Ibid.
- 20. Ibid. "There is an aura of thought-waves revolving around the Cosmic Nucleus, as the result of which energy particles are created."
- 21. Sarkar PR. 1967. Vibration, form and colour-Phálgunii Púrnìimá 1956 DMC. EE7.5, 2009: AMPS.
- 22. <a href="https://www.merriam-webster.com/dictionary/object">https://www.merriam-webster.com/dictionary/object</a> Accessed 13-1-18.
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- 30.v = 0.99995c (that is, 99.995% of the speed of light) <a href="https://www.quora.com/What-is-the-speed-of-quarks-in-proton">https://www.quora.com/What-is-the-speed-of-quarks-in-proton</a> Accessed 11-1-18.
- 31. Some examples. The atom C12 is composed of (6 protons+6 neutrons) and 6 electrons. I call this internally homogeneous. C13 is composed of (6 protons+7 neutrons) and e.g. 6 electrons, is an isotope and heterogeneous. If C12 has (6 protons+6 neutrons) and 4 electrons it is called an ion and also heterogeneous. Elements are collections of one or more identical atoms or di- or triatomic molecules. Almost all hydrogen in the universe exists as diatomic molecules. If those atoms are of the same composition, the element they are part of is homogeneous. If they are not of the same composition, the element they are part of is homogeneous collections of the same molecules.
- 32. In Sanskrit, Cittanu.
- 33. These are the first levels of what is called 'the biological hierarchy.'
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# City Beautification - A Modern Threat to Biodiversity Vartika Jain\* and Kiran Tak

Department of Botany, Govt. Meera Girls' College, Udaipur-313001, Rajasthan, India. E-mail: <a href="mailto:vartikajain31@gmail.com">vartikajain31@gmail.com</a>

# **Abstract**

Biodiversity includes every living entity on the Earth and plants are integral part of it. A survey was done to identify the plant species growing naturally on the rocky area situated opposite to Lake *Fatehsagar* in Udaipur city during July-September. The area was found to be rich in 28 indigenous medicinal plant species *e.g. Ceropegia bulbosa, Anogeissus latifolia, Crateva nurvala, Andrographis paniculata, Corallocarpus epigaeus, Sarcostemma acidum* etc. Species like *Commiphora wightii* coming under Critically Endangered A2cd category by IUCN Red Data list was also observed.

However, in mid of September all those plant species were removed and replaced with ornamental plant species such as *Nerium indicum*, *Thevetia peruviana*, *Bougainvillea spectabilis*, *Plumeria* spp., Clerodendron etc. Later, it was observed that this practice of beautification was being practiced at various natural places of the city as unorganized wild plant species were not appealing aesthetically. This was leading to removal of medicinally important local flora of the city and disastrous for many bird and animal species which were dependent for food and shelter on wild flora. The present study reveals that unplanned city beautification is becoming a modern threat to biodiversity and it is highly recommended that all municipal bodies governing plantations should have Botanical Advisory Committee in order to get knowledge about appropriate plantation suitable for a locality to promote sustainable aesthetics, environment and tourism in future.

# Introduction

Biodiversity refers to all living beings on the earth including microbes, plants, animals and human beings. Each and every species has its own existential significance and none could be considered as unimportant or unworthy. Besides, their valuable role in food chain and food web, some of the species also possess medicinal, commercial, cultural or aesthetic values and due to all this, conservation of biodiversity is important even to protect our own species *i.e. Homo sapiens*. Wild or native species of any area are custodians of many characters and properties which are not found anywhere else and most suitable for that particular region. These species are often part of various customs and traditions of communities and many of these reflect a hidden message for conservation of biodiversity<sup>1,2</sup>.

Nowadays, there is a trend of designing smart, well-organized, beautiful cities mainly for creating better transportation, aesthetics and tourism which in fact is a good initiative. But unplanned beautification is damaging native biodiversity which comes under least concern.

Udaipur known as the City of Lakes in Rajasthan is one of the picturesque city surrounded by Aravalli hills and recently been in the race of Smart cities. Lake *Fatehsagar* with a total area of 20.7 Km² is one of the most famous lakes of Udaipur, situated in North-west region of the city. It is always hustled with a crowd of tourists and natives of Udaipur. Looking to this, many efforts were being made by local administration around lake area to make it more pictorial and tourist-prone. The present paper is an attempt to assess the impact of beautification steps carried out around *Fatehsagar* Lake on local ethnomedicinal plant biodiversity.

# **Materials and Methods**

Survey was done in the areas situated opposite to Lake *Fatehsagar* in Udaipur city during months of July to September and for this purpose, visits were made every week to identify the plant species growing naturally in the area. Plants were photographed, specimens collected and preserved at Herbarium, Dept. of Botany, Govt. Meera Girls College, Udaipur. Specimens were identified with help of Flora<sup>3,4</sup> and several other experts. Botanical names and families were checked with the website (www.theplantlist.org). Ethnomedicinal importance of plants was assessed with the help of *Compendium of Indian Folk Medicine and Ethnobotany*<sup>5</sup>. An alphabetical list of some of the major plant species by their botanical names is given in Table 1. Few plants could not be identified up to the species level such as *Cyanotis* and some *Grewia* species. A visit to the study site was made in mid of September and to our astonishment, all these listed plant species were removed and replaced with ornamental plant species.

Table 1: List of some important ethnomedicinal plant species observed around Lake Fathesagar, Udaipur

S.No.	Botanical Name	Family	Habit
1.	Acacia leucophloea (Roxb.) Willd	Mimosaceae	T
2.	Acacia senegal (L.) Willd.	Mimosaceae	T
3.	Alternanthera sessilis (L.) R.Br. ex DC.	Amaranthaceae	Н
4.	Andrographis paniculata (Burm.f.) Wall. ex Nees	Acanthaceae	Н
5.	Anogeissus latifolia (Roxb. ex DC.) Wall. ex Guillem & Perr.	Combretaceae	Т
6.	Blepharis maderaspatensis (L.) B.Heyne ex Roth.	Acanthaceae	Н
7.	Barleria cristata L.	Acanthaceae	Н
8.	Boerhavia diffusa L.	Nyctaginaceae	Н
9.	Cardiospermum helicacabum L.	Sapindaceae	Н
10.	Canavalia rosea (Sw.) DC.	Fabaceae	С
11.	Capparis sepiaria L.	Capparaceae	T
12.	Ceropegia bulbosa Roxb.	Apocynaceae	Н
13.	Cleome viscosa L.	Cleomaceae	Н
14.	Commiphora wightii (Arn.) Bhandari	Burseraceae	S
15.	Corallocarpus epigaeus (Rottler) Hook.f.	Cucurbitaceae	С
16.	Crateva nurvala BuchHam.	Capparaceae	T
17.	Cyanotis spp.	Commelinaceae	Н
18.	Dregea volubilis (L.f.) Benth. ex Hook f.	Asclepiadaceae	С
19.	Dyerophytum indicum (Gibbs ex Wight) Kuntze	Plumbaginaceae	S
20.	Eclipta prostrata (L.) L.	Asteraceae	Н
21.	Flueggea leucopyrus Willd.	Euphorbiaceae	S
22.	Gymnosporia emarginata (Willd.) Thwaites	Celastraceae	Т
23.	Grewia flavescens Juss.	Tiliaceae	T
24.	Hibiscus micranthus L.f.	Malvaceae	Н
25.	Pergularia daemia (Forssk.) Chiov	Asclepiadaceae	С
26.	Sarcostemma acidum (Roxb.) Voigt	Asclepiadaceae	S
27.	Tephrosia villosa (L.) Pers.	Fabaceae	Н
28.	Verbascum chinense (L.) Santapau	Scrophulariaceae	Н

<sup>\*</sup> H-Herb, S- Shrub, T- Tree, C- Climber

# **Results and Discussion**

Surveys during the months of July and August resulted in documentation of 28 ethnomedicinally important plant species growing around the Lake *Fatehsagar* (Table 1). Out of these 28 plant species, habit of 13 species was Herb, four Shrubs, seven trees and rest of the four were found to be climbers. Some of these plants are considered important in ethnomedicine<sup>5</sup> as well as other indigenous systems of medicine such as *Ayurveda*<sup>6</sup> for e.g. *Andrographis paniculata*, *Anogeissus latifolia*, *Boerhavia diffusa*, *Eclipta prostrata*, *Ceropegia bulbosa*, *Commiphora wightii*, *Crateva nurvala* and *Sarcostemma acidum*.

A visit to the study site in mid of September was disheartening as all those plant species observed during July-August were removed and replaced by ornamental plant species such as *Nerium indicum*, *Thevetia peruviana*, *Bougainvillea spectabilis*, *Plumeria* spp., Clerodendron etc. Some of these species were directly planted in the soil and some were kept in big decorative pots for the sake of beautification.

As the incongruous and unorganized naturally growing wild flora was not appealing aesthetically, this medicinally important flora was removed by local administration but their replacement with poisonous plant species such as *Nerium* was not at all suitable for many insect and bird species which were dependent on wild flora growing there. This practice of beautification is being followed at various natural places of the city and it is disastrous for food chain by striking the food and shelter resources of many animal and bird species which are other major components of biodiversity. Not only this, but mono-/bi-/triculture practices of planting only particular plant species also create threat for many faunal species and in some cases, removal of a host plant from the area leads to even extinction of other species dependent on it as observed in Maradvally forest area in Western Ghats<sup>7</sup> and in Assam<sup>8</sup>. Moreover, removal of species like *Commiphora wightii* which is considered under Critically Endangered A2cd category as per IUCN Red Data list<sup>9</sup> was another major loss to biodiversity.

It is important to mention that loss of any single biological species may be detrimental to existence of so many other species dependent on it 10. Hence, biodiversity should be conserved through every means. The present study shows that unplanned city beautification has really become a modern threat to biodiversity. Incoherent beautification with plantation of exotic ornamental plant species is leading to destruction of many important native medicinal plant species. Therefore, it is highly recommended that all Municipal bodies governing the plantation in cities must take prior advice and approval of Local Botanical Advisory Committee with regard to appropriate plantation suitable to particular locality while conserving the local wild plant species.

# Acknowledgement

Authors extend their thanks to Indian Flora group, Prof. S.S. Katewa, Dr. Farhat Banu and Dr. Rekha Bhati for helping in identification of some of the plants.

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# **SMRIM ACTIVITIES - 2018**

# Semal Conservation Mission

Society for Microvita Research and Integrated Medicine (SMRIM), Udaipur is working for conservation of Semal tree since last 11 years through various approaches. For this purpose, awareness talk on conservation of this Folk Medicinal tree - Semal was given by Dr. Vartika Jain, Secretary, SMRIM to Volunteers of special National Social Service (NSS) Camp at Rajasthan College of Agriculture, Udaipur on 26th February, 2018

Eco-friendly, cost-effective and durable iron poles are being burnt on Holika-dahan without using any wood since 2011. This neo-humanist approach to save Silk Cotton tree is being implemented at Chitrakoot Nagar, Panchwati, Ram Singh ji ki Baari, Udaipur along with few places at Bhinder and Kanore. The iron-pole is wrapped with dry grass and hay material and burnt without using any fire-crackers. In this way, pollution less Holika-dahan is observed with the help of Inder Singh Rathore, Anju, Taponistha, Rahul, Girdhari lal Soni, Om Vyas, Dinesh Sharma, Kailash Choudhary, Gopal Soni, Lalit Prajapat and many others who are working hard for successful celebration of this neo-humanistic event so that Red Silk Cotton trees could be saved. Besides, SMRIM has also done massive plantation of Semal saplings in and around various places of Udaipur city.

# Solar Cooker Recipe Contest

SMRIM organized Udaipur's First Solar Cooker Recipe Contest on the occasion of World Earth Day on 22<sup>nd</sup> April, 2018 at Sunderwas, Udaipur. Secretary, Dr. Vartika Jain told that this novel initiative was undertaken to motivate people to adopt more and more Solar energy in their daily lives. In this event. contestants who were daily using Solar cooker at their homes, brought their recipes cooked in Solar cooker along with evidences. Out of them recipe of Bengal Gram prepared by Mrs. Sulekha Shrivastava was chosen best by Judges and she was felicitated by Society President Dr S.K. Verma by giving a prize. Mrs. Shrivastava is cooking different items in Solar cooker such as Daal-Bati, Kadi-Chawal, Dalia, Idli-Khaman, Besan ki Chakki, etc. and doing new experiments like preparing Amla oil in Solar cooker etc.

SMRIM president Dr Verma told that Solar energy is renewable and unlimited while energy generated from water and nuclear sources in limiting in nature. India, a country with full of sunlight most of the year, should adopt solar power and we all must utilize this energy through any of the solar equipment like geiser, cooker or electricity and participate in increasing life of mother earth.

# "Traditions and Modernization"

A meeting on the topic "Traditions and Modernization" was jointly organized by Society for Microvita Research and Integrated Medicine (SMRIM) and Renaissance Universal Club (RU), Udaipur on Thursday, 14th June, 2018 at Hotel Vishnupriya, Udaipur. Program was inaugurated by garlanding the picture of Shrii P.R. Sarkar, Founder president of RU as well as Propounder of Microvita and lightening the lamp. A Prabhat Samgiit 'Maanush Sabaai Aapan..' was sung by Taponistha Rathore and after that President of RU & SMRIM, Dr. S.K. Verma welcomed the intellectuals present in the meeting and gave a brief introduction to RU. Secretary, SMRIM Dr. Vartika Jain highlighted the historical activities of Society since its inception in 2008.

Keynote speaker and Guest of Honor of the program Shrii Harananda, Retd. Principal Chief Security Commissioner, gave his talk about role of eminent personalities such as Shiva, Krishna, Buddha, Mahavir, Kabir, Karl Marx etc. in development of various cults such as Shaivism, Saurism, Vedic era and discussed about concept of Neo-humanism and Prout given by Shrii P.R. Sarkar and their relevance in present time. He told that a dogma free society is ideal for holistic development of this planet and for that a spirituality based lifestyle should be followed. Chief guest of the program Shrii G.L. Verma, Retd. Dept. Director, NIRD, Govt. of India told that a proper understanding of historical events and to take everybody together towards a common objective is must to remove various anomalies of society.

Shrii Harananda was felicitated by honorary life membership of SMRIM by executive members of SMRIM Dr. S. K. Verma, Dr. Vartika Jain and Shrii Dinesh Sharma. In the end, after the question-answer session, Shrii O.L. Sharma, Secretary, RU gave thanks to all the participants and guests of the program.







Bulletin on Microvita Research and Integrated Medicine started in March, 2009 is an official Journal of Society for Microvita Research and Integrated Medicine (SMRIM), Udaipur, Rajasthan. It is a peer reviewed Journal publishes three issues in a year having original research, reviews, short notes, case studies in the field of microvita and integrated medicine in both hard and soft copies. Book reviews are published after approval by Editor. The Journal does not levy any Article Processing Charges or Article Submission Charges. Previous issues are available online at:

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The style of references should be:

# Research Papers

1. Verma SK. 2016. Microvitopathy. Bull. Microvita Res. Integr. Med. 8(1-3):3.

# Books

- Sarkar PR. 1987. Microvita in a Nutshell. p.56. AMPS Publ., Tiljala, Kolkata.
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