

Richard Richardson

The Microvita Revolution

Microvita and the Origin of Species

Towards a new Science of Matter
Life and Mind

Microvita Research Institute

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P. R. Sarkar's Theory Of Microvita

Energy, Bombs and Rockets in the Microvita Age

By AC. RATNESH BRC.

P. R. Sarkar's latest ideas about microvita have the potential for bringing revolutionary changes in our understanding and application of fundamental principles of biology, chemistry and physics as well as many other fields of scientific and practical endeavour. A previous article, "Microvita and the Origin of Species" has examined the impact of his ideas about microvita on several important areas of biology. The present article will explore some of the possible implications of his ideas on the physical sciences, specifically energy supply, bombs and rockets. It will be seen that these applications cannot be neatly separated from biological applications, as 'the concept of microvita is a unifying factor in these various fields.

Energy

P. R. Sarkar indicates in "Neo-Ethics of Multilateral Salvation" that protoplasmic cells will be a source of tremendous amounts of energy in the future. "If the nuclei of protoplasmic cells are split up, they release innumerable times more energy than the nuclear explosion does. Obviously, living bodies, being composed of countless protoplasmic cells, possess

huge proportions of energy - something that is beyond ordinary comprehension".

Sarkar has indicated that when the theory of microvita is better understood, elements in short supply will be created through the application of microvita to other materials. Petroleum will be synthesised artificially. More powerful explosives will be developed. These changes to chemicals modify their internal structures, resulting in qualitative changes in the chemicals.

To change one element into another element requires a change in the nuclei of the atoms of a particular element. Each atom of an element has a certain number of positively charged protons in its nucleus, and that number determines to which element the atom belongs, such as hydrogen, tin or gold. There are also uncharged particles called neutrons in the nucleus which add to the weight and determine whether the atom is radioactive or not. The number of neutrons in the atom determines which isotope of an element a particular atom belongs to, such as U235 and U238, two different isotopes of uranium. U235 is radioactive, while U238 is stable. The numbers 235 and 238 refer to the total number of protons plus neutrons in the atom, and so give a relative indication of the atomic weight of the two different isotopes of uranium.

The mass of any atom is concentrated in its nucleus, with the surrounding negative electrons contributing very little to the atom's total mass. So if any new energy source is to be found in protoplasmic nuclei, which contain the genetic information of a cell, it is likely that the energy will be obtained from the nuclei of the atoms composing the protoplasmic nucleus. P. R. Sarkar indicates that this energy will be available from the atoms composing the protoplasmic nucleus, and not atomic nuclei in the isolated elements themselves.

What could be a new source of energy from the atomic nuclei of a protoplasmic nucleus of a cell? Already there are two well known sources of energy from atomic nuclei. The first is nuclear fission. It gives energy when radioactive heavy atoms like U235 split into two or more less mas-

sive atoms and some free neutrons. The difference between the mass of the U235 atom and the mass of the resultant particles is converted to energy in accordance with Einstein's famous formula $E = Mc^2$. M is the change in the mass during the nuclear reaction and c is the speed of light, 3×10^8 meters per second. Nuclear power plants and atomic bombs generate energy through this means.

The second source of nuclear energy is from nuclear fusion. Here the nuclei of two smaller atoms fuse or unite to form the nucleus of a heavier atom. Hydrogen is converted into helium as a result of such a fusion reaction. The total number of protons plus neutrons remains constant during a fusion reaction. The mass difference between the original atoms and the produced atoms from a fusion reaction is converted into energy according to Einstein's formula. Fusion reactions give more energy than fission reactions. The energy of a fission bomb is measured in kilotons (thousands of tons) equivalent of TNT. While the energy of a fusion bomb is measured in megatons (millions of tons) of TNT. Fusion reactions are the main source of energy of the sun and stars. Attempts are being made to develop a controlled fusion reaction so that a nuclear fusion reactor can be made practicable.

Is there any other source of energy from nuclear reactions that would be much more powerful than either a fission or fusion reaction? And if so what is preventing us from tapping this source?

In the fission and fusion reactions it is important to see that the energy is obtained from the difference between the mass of the original reacting nuclei and the mass of the product nuclei. The nuclei are not themselves converted into energy. The mass difference between the reactant and product nuclei is much less than the mass of the reactant nuclei themselves, So only a small fraction of the mass of an atomic nucleus is actually converted into energy through $E=Mc^2$. Neutrons and protons themselves are not converted into energy because a particular physical "law" is obeyed, called the conservation of baryon number. A baryon is a heavy nuclear particle like a proton or neutron.

The baryon conservation law states that the total number of baryons

is unchanged in a nuclear reaction. This implies that the sum of protons and neutrons in the reacting nuclei must equal the sum of protons and neutrons in the product nuclei. No violation of the baryon conservation law has been observed experimentally in nuclear reactions so far.

However, it is possible for a proton and an anti-proton or a neutron and an anti-neutron, to annihilate each other, because they have baryon numbers of 1 and -1, respectively, which add to zero. But anti-protons and anti-neutrons are both forms of antimatter which are not found in a stable form near ordinary matter. They can be created in high energy physics accelerators for a very short time. Antimatter is also thought to have been created in large amounts at a very early stage of the Big Bang that created our universe. But it all was annihilated by the matter that was also created in a slightly larger amount. The remaining matter, which composes our present universe, exists as a result of an "asymmetry" in physical laws that allowed the creation of slightly more matter than antimatter in the Big Bang. This asymmetry implies a breakdown of the law of conservation of baryon number at the very beginning of our present universe. Such an asymmetry may continue to exist today.

What P. R. Sarkar may be hinting in his statement about obtaining vast amounts of energy from protoplasmic nuclei is that it is possible by using microvita and protoplasmic nuclei to achieve another breakdown of the conservation law for baryon-number. Such a breakdown would allow atomic nuclei in the protoplasm to completely annihilate themselves into pure energy, while releasing the billions of microvita of which the atomic nuclei are composed. If this is true, then a source of energy will become available that is approximately 1000 times as powerful as the energy from the fusion reaction of the hydrogen bomb.

It is interesting to note that there already exists an asymmetry in biological systems that may be important in obtaining energy from protoplasmic nuclei. The spiralling double helix of DNA molecules that carry genetic information in a protoplasmic cell's nucleus are "right-handed", always coiling in the same spiral direction. Many other biologically active molecules are similarly right-handed. The left-handed mirror image mole-

cules are not biologically active to the same extent as the right handed ones. The left-handed molecules, which are just as possible from a physical point of view, are not so active in biological systems. Why this asymmetry exists in biological systems has not been explained by scientists.

There is one breakdown of symmetry in physical laws that has been observed in the laboratory. This symmetry principle, called parity, was found in 1957 to be violated in certain nuclear reactions. The breakdown of parity shook the faith of many physicists at that time in the idea of a perfectly symmetrical set of physical laws governing the universe. But it seems that without a violation of the symmetry of physical laws, our present universe of matter would not even exist. So it may be that with the help of microvita and protoplasmic nuclei, the law of conservation of baryon number will be the next major physical law to be violated in an experimental setting.

Let us see what would be the consequence in energy terms of nuclear annihilation as a third possible source of energy from nuclear reactions. This source would result from the use of microvita on protoplasmic nuclei to achieve a local violation of the conservation of baryon number, thus allowing atomic nuclei to completely be annihilated, releasing all their bottled up energy stored in their mass.

How much energy would be released by the complete annihilation of 1 kg of protoplasmic nuclei? According to Einstein's formula, the amount of energy released would be 9×10^{16} joules. When translated into more meaningful terms, this is the amount of energy that would be generated by a 100 Megawatt electric power station in continuous operation for 28.5 years, more than the lifetime of a present day nuclear power plant. Clearly, if such a new power source were to become available safely and on a commercial basis, it would likely replace both fission reactors as an energy source, as well as fusion reactors, if they are ever developed as a commercial power source.

Bombs

P. R. Sarkar indicated recently that through an understanding of mi-

crovita, highly powerful bombs will be produced. One way this can come about is through research on the variation in explosive power of firecrackers manufactured by different companies. The number and type of microvita present in nitrite chemicals influences their explosive power. Such research could lead to the development of more powerful TNT, a powerful nitrite explosive.

But it is also possible that a bomb much more powerful than a hydrogen bomb can be created by using the process of nuclear annihilation of nuclear matter in protoplasm as described earlier. If the same 1 kg of protoplasmic matter that could run a 100 Megawatt power generator for 28.5 years was exploded all at once, it would yield the same energy output of 9×10^{18} joules in an instant. This is approximately the energy equivalent of a 1000 Megaton hydrogen bomb (1 megaton is the explosive power of one million tons of TNT). Increasing or reducing the one kg bio-mass would alter the strength of the bomb proportionately. The largest hydrogen bombs that have been tested so far are about 50 megatons. The city of Hiroshima was destroyed in 1945 by an atomic fission bomb whose energy was less than 20 kilotons, 50,000 times less than the energy from a 1 kg biomass Microvita bomb.

Why should more powerful bombs be constructed? P. R. Sarkar said in one discourse "**Can Atom Bombs Destroy Human Civilization?**" that more powerful weapons are needed to protect humanity from the evil people presently controlling the use of atomic weapons. He said that moralists should develop more powerful weapons for the benefit of humanity. And in his recent Renaissance Universal discourse, "Renaissance in all the Strata of Life", he indicated that there is a need for weapons, not to strengthen the hand of warmongers, but to protect "good ideas, good thoughts and good people." So spiritualists should not shy away from the idea of developing more powerful weapons. These powerful bombs would be put under the control of a benevolent world government, guided by moralists and spiritually developed persons.

Obviously, with the existence of microvita bombs, the less powerful atomic and hydrogen bombs would become obsolete as weapons. Ways

may even be found to render existing stocks of nuclear weapons harmless, by transforming the critical materials from which they are composed into different elements.

Whether the energy of atomic nuclei is released through nuclear annihilation in a controlled way or in an explosive way, tremendous numbers of microvita will be released in the process. P. R. Sarkar said that one carbon atom is created by the solidification of billions of microvita, and that all atoms are created from microvita. Microvita would also be released in nuclear fission and fusion reactions, but in lesser numbers. These released microvita would continue to inhabit etheric space. They are microvita that occupy the subtlest layer of the physical sphere. Even the most violent explosion of matter cannot transform matter back into subtler levels of the Cosmic Mind from which matter is projected, as this would reverse the normal evolutionary flow of creation, according to P. R. Sarkar.

The microvita released by nuclear or chemical reactions in matter could then play a role in the development of life as well as the creation of individual minds, in ways that must still be discovered through further research on microvita.

Rockets

P. R. Sarkar indicated that research into microvita and pyrotechnology will "influence the very nature and mode of speed of rockets." How will this come about?

When microvita energy from nuclear annihilation reactions is harnessed in a controlled way, it will provide a tremendously powerful energy supply for rocket ships that will travel within our solar system to different planets, moons, etc. It will also be a sufficient power supply for visiting nearby stars in a reasonable time as well. Let us consider a few examples.

If the mass of protoplasmic nuclei can be efficiently converted to energy according to Einstein's formula, then a very small amount of mass can give energy to rockets to allow them to move through the solar system at high speeds. How much energy is required to put a 100 ton rocket into orbit

1000 km above the Earth? A short calculation shows that less than a tenth of a gram of mass, if completely converted into energy and given to the rocket, will be sufficient. If the rocket works by jet propulsion, some energy will also be lost in the mass that is ejected from the rear of the rocket. That energy is equivalent to another small fraction of a gram of mass, converted into energy.

From this example it is clear that the energy requirement for rocket travel within the solar system can easily be met with bio-mass powered rockets. By continuously accelerating or decelerating a bio-mass powered rocket with an acceleration of 1 g (so that people would feel their normal Earth weight on the rocket), a trip to Mars could be made in a few days, not the couple of years required with present chemically powered rockets. Larger accelerations could shorten the time further.

P. R. Sarkar indicated in another Renaissance Universal discourse, "The Poles Shift Their Respective Positions", that a new ice age created by a coming pole shift of the Earth might require the Earth's population to be shifted to another planet in order to find better environmental conditions during this ice age on the Earth. The author's research (Has a Pole Shift Begun?) supported P. R. Sarkar's claim that a shift in the North and South geographic poles of the Earth has already begun. So it is clear that research to develop suitable bio-mass powered rockets should move quickly if humanity is to be prepared for the catastrophic effects of the coming pole shift. Contingency planning should be started for moving the Earth's population efficiently to another planet in the solar system in large, bio-mass powered rockets that may perhaps each carry a few million people at a time.

To travel by rocket to nearby stars will require much greater velocities that are currently available from chemically powered rockets. The nearest stars are five to ten light years from the Earth. Travelling at 25,000 miles per hour, a space ship would require 25,000 years just to travel one light year, the distance light travels in one year. Obviously it is not practical to travel in this way. But by using a bio-mass powered rocket, the speed of the rocket can be brought near to the speed of light. And so the time required to travel to a nearby star will be much reduced. A simple calculation using Einstein's equations shows that a rocket can reach a speed of over half the

speed of light in a bio-mass powered rocket ship which converts one-fourth of the mass of the racket into energy to power the rocket to its maximum velocity. And since distances are apparently contracted when a rocket travels at near the speed of light the time required to travel one light year, moving at about half the speed of light, is less than 1.5 years.

So interstellar travel comes well within reach of space travellers using rockets powered from bio-mass conversion of protoplasmic nuclei by means of microvita. The above few calculations are only meant to suggest the feasibility of interplanetary and interstellar travel by bio-mass powered rockets. More detailed calculations will give further insights into the energy requirements for this type of space travel.

We have seen that microvita may make it possible to obtain a tremendous new source of energy from the nuclear annihilation of the atomic nuclei in the protoplasmic nuclei of living cells. This new energy source will open up a wide range of possibilities for the use of this energy for the benefit of humanity. So it is very urgent that research into tapping this new source of energy should proceed without further delay. Greater understanding of the theory of microvita will facilitate this research. So research into the nature of microvita should also proceed at full speed, in research centres and by interested individual researchers around the world.

Microvita and the Origin of Species

Part 1

by AC. RATNESH BRC.

In the May 30th Renaissance Universal presidential address at the *Dharma Maha Cakra* in *Ananda Nagar*, District Purulia, West Bengal, Shrii P. R. Sarkar presented some revolutionary ideas on the origin of species. The ideas pose a direct challenge to the theory of the origin of species originated by Charles Darwin as accepted almost universally by biologists. If proven correct, Shrii Sarkar's ideas will have a profound effect not only on our understanding of the origin of species but on the origin of life itself. There are practical implications, as well, for genetic engineers already creating new forms of life to alleviate medical, agricultural and environmental problems facing humanity.

The discourse is entitled "Four Dimensions of Micro-psyhic Longings", In it, Shrii Sarkar indicates that a group of living beings may metamorphose their physical structures to bring a desired change in their instinctive, or psycho-physical longings, for physical objects. What this means is that a species of animals or plants, as well as human beings, may transform itself into another genetic variation or even a different species if the group collectively doesn't like the way its present instinctive longings are expressed. Shrii Sarkar indicates that this change is initiated by the collective self-controlling faculties of the species.

The discourse does not describe precisely how such a self induced metamorphosis takes place. But even in a general way, this new explanation for the origin of species clearly opposes the explanation offered by Darwin's

evolutionary theory. According to that theory, species evolve due to competitive advantage gained from many small, essentially random modifications in their individual structures due to genetic mutations over very long periods of time.

In this article I will outline a more specific theory of the origin of species that integrates the ideas expressed by Shrii Sarkar above, with other ideas he expressed recently on the subject of "microvita" in his previous Renaissance Universal discourse "*Microvita - The Mysterious Emanation of Cosmic Factor*" and a subsequent lecture, "*Neo-Ethics of Multilateral Salvation*".

Microvita, according to Shrii Sarkar, are tiny, subtle forms of living creatures currently unknown to science. They are, he says, the root cause of life, as opposed to carbon atoms. Billions of microvita (plural of microvita) can solidify to form a single carbon atom. Yet certain collective structures of microvita provide the psychological cause for negative social phenomena such as imperialism. A microvita is a truly an amazing creature.

Our more specific theory for the origin of species also includes some ideas about species changes caused by viruses from outer space, described in a book "*Evolution from Space*" by the noted astronomer, Prof. Fred Hoyle. His provocative book shows that species could not have evolved from random mutations in their DNA, the genetic molecules within every living cell. The differences in DNA between even two closely related species are too large to have come about purely by chance, even over extremely long periods of evolutionary history. So Prof. Hoyle suggests that super-intelligent entities in outer space may be monitoring evolutionary processes on Earth and sending the necessary additional genetic material to create new species. This could be done, he suggests, by viruses which travel to Earth and transmit the genetic information in their RNA, designed by the super-intelligent entities, to the appropriate animals and plants.

In a nutshell, our more detailed proposed theory for the origin of species accepts that viruses carrying precise genetic information can "infect" a group of animals or plants and cause them to be genetically metamorphosed into a different species. But these viruses come, not from super-intelligent entities in outer space, as Prof. Hoyle suggests, but rather, as Shrii Sarkar

claims, from the action of the self-controlling faculties of the species members themselves, modifying their physical structures to express their instincts differently. These viruses are the creations of microvita, drawn either from outer space or the Cosmic Factor, to the cakras of living beings as a result of the action of these cakras. According to the philosophy of yoga, cakras are control centres in living beings that guide the expression of instincts or propensities, and according to Shrii Sarkar microvita are sent by the Supreme Cognitive Faculty to the cakras of living beings to aid their spiritual development.

The Self-controlling Faculties

According to Shrii Sarkar, "In each and every physical and psychic structure, there remain self-controlling faculties". This is also true of instinctive or psycho-physical longings for physical objects. These instincts may be either inborn or developed later on". And in case of collective structures regarding these psychophysical longings, if it is seen that the collective body of a particular nature of living beings or expressions don't like it, then the controlling faculty creates a sort of change and metamorphosis in the physical structure and as a result of which the nature of longing also changes."

In the case of individuals, the efforts of the self-controlling faculties to advance are limited by the vital principles of the physical structure. Attempts to surpass these limits result in the decomposition of the physical structure. "But in the case of collective body or collective structure there may be a change and that change may not go against the characteristics of physical structure if there remains a constant endeavour for such a change, rather for such a metamorphosis. And in the collective body, the collective controlling faculty may create a sort of change in the physical structure if such a change is supported by macrocosmic conation, otherwise not."

Primordial instincts and self-controlling faculties exist in both living and non-living structures, according to Shrii Sarkar. The self-controlling faculties of a structure goad it to express these instinctive longings, within the constraints of the fundamental principles of the structure. In living be-

ings, Shrii Sarkar indicates that only a collective body, that is a group, of animals or plants can collectively change their structures through collective endeavour, not individual animals or plants. When the change takes place, it occurs in the whole group. As a result, a new species, or a genetic variant of the former species, is created.

We can infer from Shrii Sarkar's discourse that for each instinct in an animate and inanimate structure, there is a corresponding self-controlling faculty. That faculty goads or guides the structure, whether human, animal, plant or inanimate object, in its expression of that instinct. In addition to instincts, which are of two types - either inborn or developing later on, there are also micro-psychic longings for psychic pabula, or objects, This is the third dimension of micro-psychic longing. Finally there is apexed psychology or pinnacled psychology. Here the mental faculties as well as the controlling faculties move upward and are pointed, finally merging into the macrocosm or the supra-cognitive entity. This is the fourth and final dimension of micro-psychic longing.

One way to view a species is as a structural category physically objectifying the complete collection of micropsychic longings possible for that species. In order to significantly change the expression of instinctive longings in a species, some members of that species must be metamorphosed into a new species, or at least a new genetic variety of the old species. The collective controlling faculties monitor the expression of particular longings. When dissatisfaction is continuously and collectively expressed by some members of a species about their instinctive longings, and there is a constant endeavour for change, the collective controlling faculties transform these members into either a new species or a genetic variant of the old species, with a new set of expressions of micro-psychic longings.

The physical structure of a species is encoded in the genetic information in the chromosomes of each member of the species. DNA is the double helix molecule that encodes this structural information precisely, according to the genetic code. So DNA encodes in a molecule the physical base for the expression of the micro-psychic potentialities of a species. To change the instinctive expressions of a group of living beings of one species, the DNA encoding the physical structure of those expressions must also be

changed. The collective controlling faculties must be able to change the DNA in order to transform a group from one species into another.

What are these self-controlling faculties that can cause a group of living beings to metamorphose from one species to another? Clearly they are something beyond the range of current biological understanding. According to Yoga philosophy, in higher animals and plants and in human beings, the first five cakras¹ control the five fundamental physical factors in the body—solid, liquid, luminous, aerial and etheric. They also control the expression of instincts associated with each chakra, arising from the glands and organs associated with the cakras.

The sixth chakra in human beings is the controller of almost 450 propensities, according to Shrii Sarkar. The seventh chakra is the seat in the human structure of Supreme Consciousness, the ultimate controller of all the micro-psychic longings of the human being. So it seems that, at least for human beings and for higher animals and plants, the cakras are the self-controlling faculties referred to recently by Shrii Sarkar. If this is so, it means that the cakras, acting collectively, have powers of species transformation that were not previously suspected, even by yogis. It is little wonder that the actual mechanism of the origin of species has remained unknown to biologists until today.

Where do microvita come into the process of species transformation? According to Shrii Sarkar, microvita are emanations of the Supreme Guru, who guides the spiritual development of living beings. Of course, physical and psychic development are necessary for spiritual development, so they will also be affected by microvita. The Supreme Guru or macrocosmic conation directs these microvita to the cakras to enhance positive and negative propensities, or to reduce them.

So cakras are the controlling faculties of living beings, and microvita are the means of the macrocosmic conation to help these faculties. But the cakras are also self-controlling faculties, they have a degree of autonomy to guide the expression of micro-psychic longings. They monitor the level of satisfaction of the members of a species and initiate structural changes to adopt

¹ *Cakras: centri di controllo psichico, corrispondenti come zona ai plessi nervosi. Vedi appendice A.*

to the longings expressed. These structural changes, producing species transformation, must have the support of macrocosmic conation. This ensures that the changes will benefit not only the members of the species, but the collective well-being of all animals and plants.

How do the cakras attract the microvita necessary for the structural transformation of a species? And how do the micro vita, once attracted, carry out this transformation? To the first question we can propose one possible answer. As mentioned before, there must be a very close connection between the instinctive longings of a species, and the DNA code for its physical structure. If this code between instinctive longings and DNA is universal for all species, then a requirement by the cakras for a change in instinctive longings, and the corresponding structural changes in the species, can be translated into a particular change in the DNA. Microvita carrying that specific genetic information would be attracted to the cakras requiring it. These cakras would then utilise this genetic information to change the DNA of the species members. This brings us to the second question -how is this transformation brought about by the microvita?

Viruses and Species Transformation

When Shrii Sarkar discussed the crudest type of microvita, which he said can be seen in a very powerful microscope, he said that "virus" is a vague term, and that a better term would be "microvita". Microvita, he said, can both create and destroy bodies and minds. Viruses are known for their ability to cause diseases in animals, plants and human beings. Why is "virus" a vague term? Because viruses must be able to do more than cause diseases. They must have another role to play in life processes, perhaps a more important role, even their main role that of creating life and transforming species. If viruses are one expression of microvita, then viruses should play a crucial role in the origin of species. What can that role be?

The basic ways viruses effect both the creation of life and the origin of species may well be the same. Since viruses carry genetic information in the form of DNA or RNA, they could add genetic information to structures where none exists. This would permit the creation of living cells from non-

living structures.

Or viruses could add genetic information to living structures where there is already genetic information in the form of DNA. This could create a new species. First we will discuss viruses and species transformation, keeping the related question of the origin of life for later.

The main idea is that, by a biologically feasible process, a particular virus could "infect" animals or plants of a single species and transform them into a new species. How could this happen?

According to our theory, the cakras-collective self-controlling faculties of a species, may change the physical structures of the species, creating a desired change in the instinctive longings. Somehow microvita carrying the necessary genetic information are attracted to the cakras. What do these microvita do? They become viruses whose RNA (enclosed genetic information) corresponds to the change in the DNA that is necessary to metamorphose the species into a new one.

A virus is a tiny structure that contains some DNA or RNA and perhaps some associated enzymes, surrounded by a coat of protein molecules. It is known from recent research that certain viruses may enter a living cell and by a process called reverse transcription, cause the viral RNA to be transformed into DNA. This DNA is then inserted into the DNA of the infected cell. The DNA produced by the virus is then an integral part of the DNA of the cell. With the AIDS virus, this process is known to occur. After an AIDS virus has acted on a cell, a later infection will stimulate the cell to make copies of the virus. Most of the cells infected by AIDS are killed in this process. This is what reduces a person's immune response. It is mostly cells of the body's immune system which are infected by the AIDS virus.

But there is no reason why viruses have to kill cells when they reproduce. Many viruses do not. A virus could insert DNA in a cell's DNA. The cell would then make copies of the virus, which would infect other cells and change their DNA also. The viruses could then leave all the cells, which would continue to function with modified DNA.

The difference between one species and another closely related species stems only from a difference in their DNA. A particular virus could carry RNA that, by reverse transcription, would make the DNA of one spe-

cies identical to that of another. When this modified DNA started functioning, a member of the first species would metamorphose into the second species if the second species had not existed before, a new species would have been created. This then is the proposed mechanism for the origin of species.

The general rule for the transformation of species is: Species 1 + Virus 2-1 ----> Species 2. Virus 2-1 carries the genetic material to transform species 1 into species 2. This transformation could perhaps be carried out by a single virus. Otherwise two or more viruses acting in succession on a member of species 1 could produce the required changes. The general rule of transformation of species by viruses remains the same. If more than one virus is necessary to transform a species, then the animals or plants acted upon by the first and later viruses would produce transitional forms between species 1 and 2.

Of course, the metamorphosis in structure required by the collective controlling faculties of a group of animals or plants may not necessitate a completely new species. A smaller genetic variation might bring about a minor change in the expression of an instinct.

In cases of animal or plant or human evolution, where transitional organisms have not been observed in the fossil record, a complete metamorphosis from one species to another may have come from a single virus. In this case no intermediate variations would have been created. Such single-virus transformations would explain the observed gap in the invertebrate fossil record which contradicts Darwinian theory. Viruses may eventually be found in fossils, which were responsible for the species transformation.

An old and discredited, but still somewhat appealing, doctrine of evolutionary theory called Lamarckism, 'the inheritance of acquired characteristics', comes into a new light in our present theory of the origin of species. According to Lamarckism, characteristics of a non-genetic origin, such as a slight increase in the length of a giraffe's neck as it stretched for the leaves of tall trees, could be passed to its offspring. They would thus be born with a slightly longer neck.

All attempts to prove Lamarckism failed, since a genetic change is required for characteristics to be transmitted to offspring. But with virus-induced species transformation, a genetic change takes place in the organ-

isms themselves, which are actually transformed physically into a new species. Their offspring will automatically be members of the new species too, having acquired their characteristics by genetic inheritance from the parents.

According to our theory a group of pre-giraffes, finding themselves in a new environment with taller trees, could have been frustrated with their inability to reach their favourite leaves. A prolonged desire to reach the leaves could have caused their collective controlling faculties, their cakras, to attract appropriate microvita. The microvita would become viruses which would 'infect' the pre-giraffes. DNA would be produced in their bodies, which would encode a change in the pre-giraffe structure, giving them, for example, a longer neck and longer legs. These new characteristics would be passed genetically to their offspring.

Many cases of animals and plants, as well as human beings, transforming their physical structures to adapt to new environments, could be explained in the same way. The main proof of this theory would be finding the viruses responsible for such transformations, or establishing similar transformations of species experimentally with viruses today. A complete proof would use both approaches.

We have seen that a virus could be the means of transforming one species into another. In a similar manner, viruses could be responsible for the creation of the first living cells from inanimate matter.

The creation of the first living cells

According to Shrii Sarkar, even inanimate or non-living objects have primordial instinctive longings for physical pabula or objects. These longings are expressed, for example, by an increase or decrease in intermolecular and inter atomic spaces.

In non-living structures there are self-controlling faculties as well, according to Shrii Sarkar. These self-controlling faculties goad the objects to express their instinctive longings. One way for inanimate structures to increase their ability to express these longings is to transform themselves into animate structures, that is, living cells.

How will this metamorphosis come about? This is of course one of the

great unsolved problems of biology. If we apply our rule for the transformation of one species to another by means of a virus. we get, when the first species is an inanimate structure:

Inanimate structure + Virus = Living Cell

According to our theory, RNA-carrying viruses may transform an inanimate structure into a living cell. In this case, the collective controlling faculties of the inanimate structure attract the appropriate microvita to create the first living cell. The microvita then becomes the necessary virus, which does the work of creating the cell.

Of course, as in the case of transformation of species, it may require several viruses acting in succession to complete the transformation of the inanimate structure into a fully functioning living cell. In this case, each virus would add a bit of DNA to the inanimate structure, until there was enough DNA for the creation of a living cell. If the environment of the inanimate structure is suitable, the DNA will find the amino acids and other chemicals necessary for the manufacturing of a living cell. Since the viruses would be reproducing themselves in the process, many living cells would be created. Here we see why Shrii Sarkar said that "microvita" is a more precise word than "virus". The microvita - "little life" - is a seed for the creation of the first living cells in a proper physical and chemical environment.

So microvita seem to be the means by which life is created in all its variety, in order to fully express the four dimensions of micro-psychic longings, in created beings. Research on microvita should continue in order to understand more fully the importance of microvita for human life and the rest of the creation.

Microvita and the Origin of Species Part 2

by AC. RATNESH BRC.

The recent Renaissance Universal discourse by P.R. Sarkar, "The Four Dimensions of Micro-Psychic Longings", offers several new insights into the process of evolution. It is safe to say that when these insights have been more fully explored, and integrated with P.R. Sarkar's ideas about microvita, they will create a revolution in our understanding of the process of biological evolution. There are important social implications of these ideas as well.

Historical Background

In the last century, Charles Darwin created a revolution in people's thinking about the origin of species. His theory stated that humans, animals and plants evolved over extremely long periods of time through a process of variation and natural selection. - Certain religious doctrines which supported the idea of divine creation of species in their present forms without any evolutionary process were fundamentally challenged.

Darwin's ideas contributed fuel to the conflict that was already well developed between people supporting religious faith in scriptures and people supporting the idea that truth is gained by the use of one's rational faculties and the evidence of the senses. This conflict between faith and reason

over the origin of species has come down to the present day.

While most biologists accept Darwin's theory of evolution as fact, a few consider it to be still only a theory which should not be given anymore weight than any other theory about the origin of life. For example, scientific creationism, a non-evolutionary theory of creation, is basically one scriptural version of creation expressed in scientific terminology. The intellectual battle continues, especially in the USA, where supporters of scientific creationism have political and financial influence over the educational system in some parts of the country.

Evolution theorists supporting Darwin's views almost unanimously agree that evolution is caused by natural selection among organisms whose differences are the result of mutations created by random errors in their genetic material¹. Such errors could be the result of processes internal to the organism, such as DNA copying errors, or external processes, such as radioactivity. Although most mutations are acknowledged to have unfavourable effects on the organism, a few, according to this view, may be favourable and be selected in the process of natural selection. This would lead to a gradual evolution of a species, particularly in a changed environment where previously unfavourable mutations could become favourable, and thus be selected.

Anti-evolution theorists have disputed this view, saying that animals and plants that are extremely well adapted to their environment just could not be the result of random processes. Therefore, according to some of these theorists, divine power must have created the animals, plants and human beings in their present forms.

P.R. Sarkar's recent statements about the evolution of living organisms do not challenge the idea that the evolution of species takes place in a natural way. But they fundamentally challenge the presently accepted hypothesis about the means by which evolution takes place.

According to his Renaissance Universal discourse, "Four Dimensions of Micro-Psychic Longings", all organisms have *self controlling faculties* that control the expression of their psycho-physical urges or instincts. If the collective body of a group of humans, animals or plants of one species is dissatisfied with any of its instinctive expressions and makes continuous ef-

forts to change them, the collective self-controlling faculties may act to bring about a metamorphosis in their physical structures. Their instinctive expressions would be correspondingly modified. But such a metamorphosis must have the support of the cosmic conation, or cosmological order, to take place.

In P.R. Sarkar's book '*Varna Vicitra*' under the subject of "us'ak" (porpoise) he gives an example of such a metamorphosis (Summarised in *Bodhi Kalpa*, *Ananda Purnima* issue 1987, p. 45). "There are certain fish which although aquatic have been trying for hundreds of thousands of years to become terrestrial. There have been certain changes in their physical structure. We call these fish, i.e. anabas, catfish, etc., jiol fish. If they survive they may become terrestrial in a few hundreds of thousands of years."

It is clear from this passage that these fishes are being gradually transformed into a new species of animal as a result of their continuous efforts for transformation, and not as a result of random mutations in their genes. This process occurs in successive stages over a period of hundreds of thousands of years, in this case.

The idea that catfish, or any other organisms except perhaps human beings for that matter, can evolve into a different species as a result of their own efforts may seem strange to most biologists. They are accustomed to thinking that evolution is caused by random processes where the efforts of most organisms are related only to the struggle for existence.

If P.R. Sarkar's ideas about evolution are correct, it is still necessary to show the means by which, as a result of their desires and efforts, organisms are metamorphosed into different species. If random mutations and natural selection in organisms are not the mechanisms for their evolution, then what is it?

P.R. Sarkar has hinted that 'microvita' play a crucial role in the evolution of life. In one recent discourse he stated the following: "Microvita is a very subtle being. It is of three types. The crudest type were instrumental for the emanation of life from the Cosmos. They created a stir within the physical structure. In the subsequent stage, through clash and cohesion, enormous changes in the physical structure occurred leading to the emergence of the dinosaurs, the mammals, and finally the human beings."

Later, he posed and answered the question, "How does the theory of microvita affect biochemistry?" He replied, "The internal protoplasmic formula will change. Nuclei can also be affected by microvita. And protoplasm will be affected by bringing a change in the nucleus with the help of microvita. Displacement of the nucleus can be brought about with the help of microvita, which will bring a qualitative change in the internal structure. It will internally affect the hormone and thus externally, the corporal structure."

In the previous article, I proposed that microvita, attracted to a group of organisms of one species by the self-controlling faculties of these organisms, could bring necessary genetic information to the organisms in the form of viruses. These viruses would insert new DNA into the DNA of the organisms. This new DNA would cause a metamorphosis in the organisms, so that their instinctive expressions would be modified according to their desires and efforts. As a result new species or sub-species would be evolved.

Elaborating the New Theory of Evolution

Two assumptions can now be added to the above proposal that will make our theory more accessible to scientific investigation.

First, we assume that in an evolving organism when new DNA is added by a virus to the DNA in the nucleus of a cell, the DNA is always added in a linear, sequential fashion. at one endpoint of the organism's DNA. This will create a "DNA stack" of genetic material in every organism over evolutionary time. The evolutionarily older DNA will be at the bottom of the stack and the newer DNA will be at the top of the stack

Second, when a new organism grows from a single cell or a fertilised egg, the DNA in the stack is activated in the same sequential order in which it was originally formed. The organism develops under the control of only the activated portion of its DNA.

Several important consequences follow from the above two assumptions:

1. The genetic changes that cause the evolution of species are not ran-

dom changes which damage the genetic material to create mutations in organisms. Rather, the genetic changes are precise and directed towards the psychophysical metamorphosis desired by the organism

2. In a developing embryo, the activation of DNA in the same sequence that occurred in the organism's evolutionary history causes the embryo to pass through its complete genetic history before attaining the structure of its present species, This is exactly the well-established biological principle of "ontogeny recapitulates phylogeny" - the development of the embryo follows the evolutionary development of the species. It is interesting to note that the principle of "ontogeny recapitulates phylogeny", which is based on much observational evidence, is often cited as proof of the evolution of the species. But the rule at the same time seems to contradict the principle of species evolution by random mutation of genetic material, This is because a random mutation, created by a genetic copying error, radioactivity or other means, destroys or damages a part of the original genetic material, The original pre-mutated form is no longer correctly encoded by the mutated genetic material. But if a developing embryo recapitulates its phylogenetic history it means that this history of previous forms is preserved in the organism's genetic material. How can earlier forms be retained during embryological development when the genetic material for those forms was randomly mutated to produce new forms ? So there is a contradiction.
3. It follows from our two assumptions that essentially the entire species ancestry of a human being, animal or plant is contained in its present genetic material, All of these ancestral species can therefore in principle be recreated by selective permanent inactivation of evolutionarily more recent DNA in a developing embryo or organism. This means that previously extinct species of animals or plants, or even human beings, may be produced from the genetic material of their living descendants. Obviously, many ethical considerations would apply to such research.
4. The genetic difference between one species and its immediate ancestors or descendant can in principle be determined by isolating the ge-

netic material in the DNA stack that transforms one species into another. So the genetic difference between the present species of human beings and its immediate genetic ancestor is due to the DNA at the top of the present human species' DNA stack.

5. Further evolutionary changes in human beings will be attained when microvita add new DNA onto the present DNA stack of human beings. This is also true for animals and plants. In the future human beings may learn to control microvita to accomplish this. Already, new species of animals and plants are being created by genetic engineering techniques that modify an organism's DNA.
6. Defective activation of an embryo's DNA stack can lead to the birth of evolutionary throwbacks with some characteristics of the organism's ancestors. These occurrences are not mutations but expressions of evolutionarily earlier portions of the parents' DNA stack.

According to our theory, the microvita-induced genetic change that metamorphoses an organism into a new species occurs in a fully formed organism, one which has already fully activated its own DNA stack. The new DNA is added to the top of the organism's DNA stack and causes the required metamorphosis of the organism. The embryological development of the organism's offspring then proceeds by linear activation of the embryo's DNA stack, including at the end the most recently added DNA that transformed the parents. All of the structural specifications and developmental control mechanisms for an organism's entire evolutionary history are still contained on its DNA. So when an embryo is growing, its DNA stack is being activated in a linear, sequential order from bottom to top. The embryo's development is thus being directed by the same DNA that it gained during its evolutionary history, and in the same order in which the DNA was gained. The embryo develops its cells, tissues and glands under the genetic control of a continuously increasing portion of its DNA.

At the earliest stages, only the evolutionarily oldest DNA is activated. At later stages, evolutionarily more recent DNA is also activated, modifying the cells and tissues developed under the control of the oldest DNA. DNA activation continues until the evolutionarily mature organism is finally

formed. So the development of an embryo follows closely the evolutionary history of the organism, not only structurally but in the process controlling the transformation of the embryo as well. So our theory is seen to be consistent with the biological principle of "ontogeny recapitulates phylogeny" as mentioned previously.

The Evolution of Specialized Cells, Glands and Organs

Until now we have been assuming that the DNA brought by certain viruses to an organism causes the organism to be metamorphosed into a new species that makes possible a better expression of the organism's psycho-physical longings. But we have not enquired in detail about how such a metamorphosis actually takes place. What does the virus and its genetic information do to create this metamorphosis?

According to P. R. Sarkar, it is the organism's instinctive expressions that are being transformed in a desired way during the process of evolution. What controls the physical expression of instincts in an organism? It is the glands and the hormones, or their structural and chemical counterparts in less developed organisms. So the evolution of glands in an organism will play a critical role on the evolution of the whole organism. The secretion of an hormone by a gland affects many target cells elsewhere in the organism, and modulates the expression of the organism's instinctive behaviour. For example, P. R. Sarkar once said that a change in, the lymph glands during human evolution caused the early human beings to have less body hair and to lose their previously large jumping ability. The evolution of new glands with new hormones will thus produce major changes in the expression of instincts and add new instincts to the species as well.

Where will these new glands and hormones come from? If a cell gains the ability to secrete a hormone, then that cell becomes a gland cell. A group of cells that gains this ability then becomes a gland. But where does the new hormone come from? And how does the cell get its capacity to secrete the hormone? What is a hormone? It is a specialized protein molecule requiring a specialized enzyme (also a kind of protein) for its manufacture. The way an organism gets protein molecules is by manufacturing them as

directed by its DNA, where the code for the building of proteins from amino acids is stored. According to our theory, the only way an organism's DNA can acquire the code for a new protein is from the genetic material brought by a virus. The virus adds new DNA to the organism's DNA. So when an organism requires a new hormone to modify its instinctive expressions, it will get the capacity to manufacture the hormone and its corresponding enzyme from a virus. The structural changes in a cell that will allow it to secrete the hormone must also come with a virus, which can bring the RNA for structural proteins as well as hormones and enzymes.

Looked at in one way, a protein such as a hormone, enzyme or structural protein, can be seen as a molecular structure whose function is to help in some way to modify the psycho-physical longings or instincts of an organism. An organism itself is a structure, permitting the expression of a particular range of instincts, or, more generally, micro-psychic longings, in P. R. Sarkar's terminology. And the DNA of an organism is both the complete physical record of the modified instinctive expressions that went into the evolution of the organism's species and a blueprint for the physical development of that organism from a single cell or fertilised egg.

A virus when it enters an organism does not affect every cell equally. It has very specific target cells. That specificity is determined by the proteins forming the coat of the virus. Certain sites on the virus' protein coat interact with certain molecules on the surface of the target cells. The virus attaches itself to the target cell. Then the virus empties its DNA or RNA contents into the target cell, where new copies of the virus can then be generated and leave the cell.

Suppose a virus comes in contact with an organism as a result of the efforts of a group of organisms of that species to modify some instinctive expression. That virus will also target only a particular kind or kinds of cells, depending on the proteins in the virus coat. The genetic material dumped into the cell by the virus then adds new DNA to the top of the DNA stack in the cell. After some time the new DNA starts generating copies of the proteins forming the virus, and new copies of the virus are assembled in the cell. But other copies of the new proteins will have some specific action on the cell itself. The cell may start manufacturing and secreting a new

hormone, which will then have transforming effects on other cells in the organism. A single virus may act on several different kinds of target cells, having different effects on different cells as a result of the differing chemical environment in the different cells. The result will be some structural and function metamorphosis of the organism, at least temporarily, so that the organism expresses particular instincts differently than before, or develops a new instinct. The copying of the virus in the cell ensures that the maximum number of target cells will be affected by the virus. The metamorphosis of the organism will be to the liking of the organism since its new instinctive expressions are more in accordance with its desires.

Even though the metamorphosis of the organism is liked by the organism, the metamorphosis has not yet become hereditary.

This is because the DNA from the virus has not yet entered the reproductive cells of the organism and added new DNA there. Since the effects of the virus was initiated by the self-controlling faculties of the organism, these faculties would then cause the immune system to be switched off. So the metamorphosis of the organism created by the virus would remain. The target cells would continue to manufacture new copies of the virus. The virus could even pass from parents to offspring, transforming the offspring in the same ways as the parents. The virus would spread from mother to the developing embryo and affect its target cells in the same way as it did the parents' target cells. The metamorphosis of the embryo would occur at the end of the embryo's phylogenetic development. This is because the virus' DNA would be added to the top of the DNA stack in the target cells of the embryo and thus would be inactive until all of the embryo's own DNA lower in its DNA stack in the target cells had been first activated. But the metamorphosis is not yet hereditary because the DNA changes are not yet in the organism's reproductive cells. At some later time the virus would enter the organism's reproductive cells as well, transferring the new DNA to these cells and finally making the metamorphosis genetically inherited. A new species or sub-species has now been evolved.

If a virus came which had a negative effect on the organism, such as polio and other disease viruses, the normal immune response of the organism would occur in order to try to destroy the virus. The virus could have a

temporary or permanent transforming effect in a negative sense on the organism and perhaps on its offspring as well, as the virus could infect a growing embryo. But the effect would not become hereditary because the transformation was not desired by the organism.

The Embryological Development of Specialized Cells, Glands, and Organs

We have seen how a virus, or microvita, may have the capacity to evolve specialized cells, glands and organs in an organism. The virus brings the capacity to manufacture specialized hormone molecules, enzyme molecules and structural protein molecules to certain target cells responsive to the proteins in the virus coat. In this way, step by step, a more complex organism is evolved from a simpler one. Those cells which are not target cells for the virus, remain untransformed by the virus. This is still true at a later stage, when the virus spreads to the organism's reproductive cells, making its species transforming effects hereditary.

When an embryo of a species is developing, we have assumed that the DNA stack in its cells is activated in the same order that it was formed during evolution. And therefore the development of the embryo follows the same pattern as the evolution of the species. But how can we be sure that the two patterns will be the same? In the case of evolution of the species, the physical metamorphosis was created by the action of viruses on target cells of the organism. But as the embryo develops, the DNA provided by old viruses to the organism's DNA is activated sequentially from within the cells. This is not the same thing. How can we be sure that newly activated DNA in a developing embryo will transform the embryo in the same way as the newly activated DNA's corresponding virus transformed the species in the past?

When a virus added new DNA during the evolutionary history of an organism, the effect was to start the manufacture of copies of the virus in the cell. These virus copies then transformed the target cells of the organism. The virus DNA that was added to the organism's DNA stack during evolution, retains its ability to manufacture virus copies, even when further

new DNA is added to the organism's DNA stack by later viruses as a result of further evolutionary changes in the organism. This means that an organism's entire DNA stack has the capacity to manufacture exact copies of all the viruses in its evolutionary history that contributed DNA to its present DNA stack.

The simplest way to ensure that the development of the embryo exactly follows the pattern of evolution of the species, then, is to assume that a portion of the embryo's DNA, when it has been activated sequentially, starts generating virus copies corresponding to the activated DNA. The same viruses are now generated that caused the organism to be metamorphosed during evolution, and which stored their DNA in the organism's DNA stack, now being activated. These new virus copies leave the cells and find the target cells, which are also the same as during evolution. Those target cells are then metamorphosed during embryological development in the same way they were during evolution, causing the embryo to develop along its evolutionary pattern. But during embryological development, the new virus copies do not add their DNA to the top of the DNA stack, as happened during evolution, as the DNA stack already contains the DNA for these viruses.

So, according to our theory, viruses, or microvita, manufacture an embryo in the same way, and in the same order, as the organism's species was manufactured during the course of evolution. In the evolutionary case, the viruses originated from outside the organism, as a result of a group of species member's desires and efforts to change their instinctive expressions. In the development of the embryo, the virus is originate from the embryo's DNA that was constructed by the viruses during the course of evolution.

What determines the rate of activation of the DNA stack in the developing embryo? DNA higher in the DNA stack must not be activated to create new viruses until the transformation effects of viruses from DNA lower in the stack have been sufficiently accomplished. This condition will be met if the genetically controlled targeting of cells on the embryo for further evolutionary development is dependent on the degree of development that the cells of the embryo has previously achieved. Cells will not be targeted for further transformation until certain preconditions of earlier development

are met.

In this way the cells, tissues and organs of a developing embryo go smoothly through a sequence of evolutionary transformations while the organs and tissues themselves are still immature at any evolutionary stage. Scales will not develop on a human embryo even though the embryo develops through a phase where cells for the production of scales have been produced. The cells are transformed into skin cells, for example, before they have got the chance to produce scales. An organ of an ancestral species will start to develop and then become transformed into an evolutionary more advanced organ, perhaps a completely different organ for different purpose.

Flexibility of the Organism's Developmental Pattern

Although an organism's DNA stack is activated sequentially during embryological development, the process is somewhat flexible. Later phylogenetic development is conditional on earlier phylogenetic development. Certain cells may develop into a different kind of cell than they normally would, if grafted onto a different type of cell tissue than that which they normally grow next to. So a phylogenetically undeveloped or less developed cell is not programmed for a specific path of development into a specific final cell type. Its path of development depends on how it is targeted for transformation during development, and that targeting depends on the cells around it.

The ability of certain organisms to regenerate limbs that have been lost, shows the high degree of flexibility that exists in the genetic expression of particular cells of these organism. When the cellular environment of a particular cells is radically altered by loss of a limb, the DNA at the top portion of the DNA stack in these cells becomes inactivated. The sequential activation process for the DNA stack is restarted somewhere in the middle of the stack, as determined by the genetic targeting mechanisms in the altered cellular environment. Viruses would be generated by phylogenetically order DNA in the middle of the stack. as compared to the DNA at the top of the stack. So a new limb will be grown from cells that have been switched back into a more primordial stage of development. The limb grows as the DNA

in the cells is again sequentially activated in the normal way.

The flexibility of sequential activation of the DNA stack of an organism is also demonstrated in the growth of identical twins from a single fertilized egg. When the egg first divides, the two daughter cells become detached from each other. Each daughter cell then develops into a complete organism. This is true for multiple daughter cells as well, as long as they are physically separated. The separation of the daughter cells prevents the cells targeting mechanism from being activated, so further activation of the DNA cannot occur. As long as the daughter cells remain as single cells, further phylogenetic development of the cells is delayed. When conditions that permit the targeting of the cells for further development are fulfilled after further cell division with new daughter cells remaining in contact, the sequential activation of the DNA stack in the cells resumes. Since the level of DNA activation in the separated daughter cell is the same as that of the original fertilized egg (due to the delay of further activation caused by separation), each daughter cell now develops into a complete individual. The two twins that develop in this way are genetically identical, since they both came from the same fertilized egg.

In the case of Siamese twins, a partial separation has occurred between two groups of cells in a developing embryo. The cells that are most separated between the two parts had their DNA activation delayed because the proper environment necessary for timely targeting of cells for further development was delayed. So these cells develop into parts of two identical organisms. The cells in the region where partly separated cell groups are joined together do not get their DNA activation delayed and so grow as a single organism. The result is that two organisms develop with some section of their body that is shared between them. (Technically it is really a single organism as long as the two twins are still physically connected). These are Siamese twins.

In the case of evolutionary throwbacks, the sequential activation mechanism fails after a particular phylogenetic level of development of certain parts of an embryo is reached. Those parts of the embryo continue to mature but their further phylogenetic development is blocked. This results in the development to maturity of tissues or organs of an evolutionary ear-

lier ancestor of the organism.

Cancer may also be a kind of evolutionary throwback to the production of evolutionarily earlier cells or tissues that grow and spread in the body. It may be caused by environmentally induced damage to a cell's DNA, which inactivates the DNA above a particular point in the cell's DNA stack, resulting in cells that continue to divide uncontrolled by the cell's more evolutionarily recent DNA. Viruses also cause some types of cancer.

What is a Gene?

Until now we have not tried to relate the genetic information brought to an organism by a virus to the basic genetic unit called a gene. But there is obviously some relationship.

A gene is a particular sequence of DNA that creates the structural trait in an organism and gives some particular physiological capacity. In terms of molecular biology, a gene may be defined as the amount of DNA that encodes a single protein molecule. Genes are the functional genetic units. They are inherited as complete units. They may be dominant or recessive in higher organisms. A particular trait in a higher organism is usually carried not by a single gene but a group of genes called a 'gene complex'.

The DNA or RNA carried by a virus also encodes several proteins - the proteins making up the gene's coat as well as others. In our theory, a single virus, or microvita, can create a desired metamorphosis in an organism by acting on certain target cells. The genetic material of a virus would have to function as a unit in order to transform target cells a particular way, structurally and functionally. It is a known fact that the DNA carried by a virus, or the DNA that a virus can create in a cell from its RNA, is in the form of genes that encode specific protein molecules. *Our theory claims that viruses, or microvita, are the source of all the genes in an organism's DNA.* These viruses can again be recreated from the organism's DNA during embryological development. Perhaps it is a gene complex that is carried to an organism by a single virus. This gene complex would give a particular new trait to the organism, thus giving the organism a wider range of expression of its psycho-physical longings.

Now genetic engineers have learned how to insert additional genes into certain viruses in order to transfer these genes to an organism to give the organism immunity to certain diseases or to create some new physiological function in the organism. Our theory states that nature was using the process of evolution through genetic transformation from outside sources long before it was developed by genetic engineers.

So, our theory predicts that the gene, the functional unit of genetics, is a creation of microvita.

A gene encodes information for the construction of hormones, enzymes, structural proteins and other molecules that provide the physical base for a species of organism to expand its range of expression of particular psycho-physical longings. This is the real purpose of the gene. Organisms evolve physically by attracting and incorporating those genes, through the medium of microvita, that facilitate desired increases in their range of expressions of psycho-physical longings. This is the essence of biological evolution.

One can object that the known function of viruses is to cause disease, while genes in an organism's DNA control the normal growth of organisms. Of course, the correctness of our proposed relationship of genes to viruses depends on the correctness of P. R. Sarkar's ideas about evolution and microvita. While his ideas are more general than the virus-to-gene hypothesis and do not imply the hypothesis, the correctness of the hypothesis would provide strong support for his ideas. P. R. Sarkar has said that viruses are improperly named and that a better name would be microvita. Microvita can be both positive and negative. This seems to imply that viruses can be positive as well. P. R. Sarkar says that microvita can create bodies and minds, and can also destroy bodies and minds. The idea that microvita create bodies corresponds closely to our idea that viruses carry genes to cause organisms to evolve physically.

One could argue that an organism's genes are the original source of viruses and not vice versa. But then one would have to explain how the proteins encoded in the organism's genes are able to create the protein coat and assemble the virus. And the origin of genes in the organism's DNA would still be unexplained.

The Origin of Genetic Varieties

Now that we have identified genes as the units of DNA added to an organism's DNA stack by a virus, it is convenient to refer to an organism's DNA stack as its gene stack. The key feature of a gene stack is that the genes are stacked in evolutionary order, with evolutionarily earlier genes near the bottom and later genes higher up, with the most recent genes at the top of the stack.

Animals that reproduce sexually have their genetic material stored in pairs of chromosomes. Each chromosome consists of a single strand of DNA containing many genes. Human beings have 23 pairs of chromosomes in each body cell. In each pair of chromosomes, corresponding genes are also paired. The two genes in each pair may be the same gene or different genes, each specifying a particular value for a particular trait, such as eye colour. If the two genes are different, one will be dominant, determining the expression of that trait for that organism. The other gene will be recessive.

When the organisms reproduce, the offspring receive one gene from each pair of chromosomes from the male and one gene from each pair from the female. So the offspring will also have 23 pairs of chromosomes, in humans, and will express a mixture of traits corresponding to the gene mixture received from the parents.

According to our theory, each chromosome would be a separate gene stack. A pair of chromosomes has pairs of genes running from older to newer up two parallel gene stacks. 23 pairs of chromosomes means 23 pairs of such gene stacks. There are two possibilities for how the genes are arranged evolutionarily in the 23 pairs of gene stacks. It could be that one pair of gene stacks (pair of chromosomes) contains all the oldest genes, for example, chromosome pair 1, with the genes in this chromosome pair stacked by evolutionary age. Then chromosome pair 2 would contain newer genes, starting where chromosome pair 1 left off. This would continue up to chromosome pair 23, which would contain the evolutionarily most recent genes, also in evolutionary order. This could be called the series arrangement of gene stacks. Alternatively, some of the oldest and some of the newest genes could be found in each pair of chromosomes, arranged in chronological or-

der. Which of the two possibilities is correct? Since different organisms may have different numbers of chromosomes, and the number of chromosomes generally increases with evolutionary development, it would seem that certain chromosomes would contain newer genes than others. This indicates that the first, or series, model of the gene stack described above is correct. The 23 pairs of chromosomes in humans are functionally equivalent to two long gene stacks composed of all the genes in the chromosomes being laid end to end in two long rows, from oldest to newest genes. Pairs of corresponding genes are side by side in these two parallel gene stacks.

So according to our theory, new genes brought by viruses would only be added on to a single chromosome pair - the evolutionarily youngest pair. And since each organism that gets new genes from a virus has been trying to get a specific modification of its instincts, the same gene will be added to both chromosomes in the evolutionarily newest chromosome pair. Males and females will both get two copies of the same genes. In this way the offspring will all get two copies of the same new genes from their parents. The new trait will "breed true" in all the offspring of these parents.

But not all members of a species that is evolving want the same new traits. When there is geographical separation of groups of animals or plants of the same species, and therefore different environments, different groups of animals or plants of originally the same species will evolve in different ways.

One group will get one type of new gene from a virus. Another group will get different genes from a different virus. But an animals in a group trying to get the same instinctive change will get the same new genes. This will be true for each desired new trait or instinctual expression of a group of organisms. The result will be that different varieties or sub-species will evolve from a common ancestor species. When the evolutionary process continues and the different sub-species remain separate and don't interbreed, .then each sub-species will evolve into a separate new species.

As long as the sub-species do not interbreed, each sub species will retain its genetic uniformity in its newly acquired genes. When two sub-species begin to interbreed, their offspring will gain a mixture of new genes from the different sub-species according to the laws of heredity.

So according to our theory, a new sub-species or species may be produced by adding new genes (by means of viruses or by other means such as gene splicing) to the proper attachment points at the top of the gene stack or stacks in the organism.

For sexually reproducing organisms, two identical genes would be added to the two parallel gene stacks of both males and females in order for the offspring to "breed true",

A Critique of the Random Mutation Hypothesis

We have seen how P. R. Sarkar's recent ideas about microvita and species evolution, when combined with certain assumptions about the relationship between viruses and the DNA of an organism, have led to a new theory of the origin of species. This new theory has very broad and practical implications for our understanding of the evolutionary and developmental processes of organisms. The theory explicitly rejects the currently generally accepted hypothesis that random errors occurring in an organism's genetic material are the source of mutations that lead to the evolution of new species.

It is a fact that random genetic mutations do occur from a variety of sources. Such random mutations may be inherited and are a source of genetic variation in organisms. But our theory asserts that these mutations do not lead to the evolution of new species. Rather, species evolve, according to our theory, as a result of the desires and efforts of species members that, through their self-controlling faculties, mobilise microvita from the cosmic conation. Microvita bring the necessary genetic information through viruses to cause the metamorphosis of the organisms into a new species.

Now that a testable alternative theory of species evolution is available, we can more clearly see how weak the random mutation hypothesis actually is. The random mutation hypothesis was not introduced by Darwin, but came after his theory of evolution was introduced. Darwin was unfamiliar with genetics and the concept of the gene. But he was well acquainted with breeding practices that generate new species varieties, though not new species. The random mutation hypothesis for species evolution was introduced

later to suggest a mechanism that would generate genetic varieties in nature. These naturally occurring varieties could then be subjected to the principle of natural selection in order to establish new species over time.

But the more that is learned about random genetic mutations, the weaker this hypothesis becomes as a source of variations for species selection. First of all, as is generally agreed, the vast majority of genetic mutations caused by random mutation are harmful to the organism, either mildly or severely, as they interfere with the delicate ecological balance between an organism and its environment. Second, recent research in DNA repair mechanisms has shown several different means by which DNA can repair, either fully or partially, some kinds of damage to itself caused by a variety of environmental or replication induced errors in the DNA.

These repair mechanisms, that work to ensure the integrity of the genetic material, surely seem to militate against the hypothesis of random mutations as a driving force for species evolution.

Supporters of the random mutation hypothesis argue that a random mutation that is disadvantageous in one environment could be advantageous in a changed environment brought about by change in climate, etc. Though having some appeal at the level of discussion, this argument is little more than wishful thinking, and is unsupported by historical facts about species evolution. In fact, not a single case of the naturally occurring origin of a new plant or animal species as a result of random mutation of its genetic material has ever been scientifically documented.

There are several other biological as well as social means by which the potentially harmful effects of random mutations in organisms are reduced. Organisms with significant genetic defects may not live long enough to reproduce because of impaired physical or mental functioning. So animals and plants with genetic defects would have a reduced chance of survival in the struggle for existence. Darwin's principle of natural selection would tend to maintain the existence of organisms with fewer or more minor genetic defects caused by random mutations. Natural selection is thus a conservative force rather than an evolutionary force, preserving the existence of animals and plants whose genes have fewer random mutations. The genes supplied to organisms by microvita have the effect of improving the

organism's instinctive expressions and would facilitate evolutionary progress. But random mutations of these genes have a counterproductive effect on plants and animals, as well as human beings.

Even when randomly mutated genes survive in an organism's genetic material, these mutated genes are generally recessive genes, in relationship to unmutated genes. So unless both male and female parents have the same genetic defect, the defective gene won't be expressed in the offspring, through it may be transferred to the offspring's genetic material. So if the defective genes can't be removed through natural selection, at least the damage they do to organisms is minimised by their recessive genetic nature. Supporters of evolution by random mutation talk of the potential benefit of a large gene pool of defective or mutated genes for coping with major environmental changes by a species. Again, this is more wishful thinking than established fact. Genetic variety or diversity in a species, caused by different genes brought by different microvita to different groups of organisms within the same species, should not be confused with genetic diversity caused by random genetic mutations in a species. The first type of variation is beneficial, while the second is harmful to a species of animals or plants.

Certain animal groups as well as most human groups have social restrictions on inbreeding among closely related family members. Such inbreeding increases the chance of the expression of genetic defects that are otherwise recessive in animals and human beings. And now there are scientific tests to determine whether growing fetuses have or would be likely to have birth defects caused by random genetic damage.

So it is quite clear that unwanted or undesirable genetic changes caused by random mutations have little or no chance to lead to the creation of new species. Desired changes are a completely different story. In our present theory, microvita cause a metamorphosis that is desired and accepted by the organisms. The new genes brought by friendly viruses are incorporated into the genetic material under highly favourable biological conditions which ensure that new species or sub-species will survive. So, the present theory, if basically correct, is a much more powerful method of generating new species than the method of evolution through random genetic mutation and natural selection

The Origin of Life

P. R. Sarkar has indicated, as we have seen, that life originates from microvita. What can our theory of the origin of species add to this?

When species evolve, according to our theory, it is because viruses produced from microvita add new genes to the gene stack of a species. This implies that some genes of all genetic ancestors of a particular species will still be present in the gene stack of an existing organism. Some of these genes will have been altered by random mutations in certain members of the present species, but corresponding genes in other members of the species should still be basically intact, since random mutation is not the cause of species evolution. Some damaged genes may be carried by some members of a species during the process of evolution by microvita.

This means that if we go to the bottom of an organism's gene stack, we will find the first gene of the organism's first ancestor. This is the gene brought by the microvita that started the process of evolution of life for that organism. The next genes in the organism's gene stack are genes that were added later in the process of evolving a living cell that would be the organism's first protozoic ancestor.

It follows that if these genes at the bottom of an organism's gene stack can be identified and copied or manufactured in a laboratory, then a living cell can be built up by adding the genes one by one to the first gene. There must be a proper chemical environment containing necessary amino acids so that the genes can start manufacturing proteins in order to construct a functioning cell. The manufacture of cells in this way should give us a very clear picture of how life evolved on Earth. Since the creation and evolution of life through microvita is a general process, we would expect life to evolve in a similar manner on some other planets.

Life on Other Planets

A good understanding of the processes of evolution of life on Earth is important in helping us to understand how life forms might evolve on other

planets in the universe. According to both our theory and the random mutation theory of evolution, we would expect some form of life to evolve on at least some planets where the environment could support biological processes. But the random mutation theory predicts that life forms and even life processes would be very different on other Earth-like planets as compared to the Earth. This is because according to that theory, life evolves out of a series of individual random events that are highly unlikely to be repeated elsewhere in the same order. So the life forms on every planet would be completely unique.

But according to P. R. Sarkar, organisms initiate their own physical evolution, with the support of cosmic conation. And even non-living matter, where mind is dormant, still has instincts. So life evolves in a way that allows both non-living and living structures to increase the scope of expression of their instincts or psycho-physical longings. Chance plays a negligible role in the mechanism for the evolution of life and of species. So we would expect similar classes of life forms to evolve in similar environments. At least on some Earth-like planets we would certainly expect the main categories of Earth life to evolve, such as plants, animals and human beings. Of course, these life forms would vary in their details from life forms on Earth. We would also expect the different instincts in living beings on other Earth-like planets to be similar to those on Earth, since expression of instincts is determined to a large extent by the nature of the physical environment. And since we expect microvita to be the source of life on other planets as well as on Earth, it is likely that the processes of species evolution with the help of microvita would be similar on other planets as on Earth. P. R. Sarkar's description of the four dimensions of micro-psyche longings is likely to apply throughout the universe. These dimensions are the fundamental stages in the evolution of life and mind from the crudest matter to the subtlest mind and beyond, to the realm of spirituality.

So while the random mutation theory of evolution predicts that human beings on Earth are basically unique and alone in the universe, our theory, based on P. R. Sarkar's ideas, predicts the evolution of human beings at least on other Earth-like planets in the universe, with general psycho-physical resemblances to us. This theory therefore provides a much "friendlier", and

less alienating picture of the inhabited universe that provided by the random mutation theory of evolution of life.

The Future Evolution of Humanity

P. R. Sarkar's ideas about the evolution of life apply not only to animals and plants, but to human being as well as past, present and future. What do his ideas imply for the future evolution of human beings?

Everything in this world is subject to change, So the present human species will also evolve into a new human species in the future. According to P. R. Sarkar, the evolution of species is the result of the dissatisfaction of some members of a species with the expression of their instincts, or psycho-physical longings. If members of a species, such as human beings, collectively make continuous efforts to modify their instincts, then their collective self-controlling faculties will initiate actions which will, with the support of cosmic conation, lead to the physical metamorphosis of the members of the species into a new species.

The metamorphosis of human beings into a new species may already be underway. It is even possible that not only a single new human species but several new human species are already in the process of emerging through the collective efforts of different groups of human beings.

What human instincts could benefit from being modified?

According to P. R. Sarkar, one of the main causes of unnatural divisions and exploitation in human society is what he calls "*atma sukha tattva*", the principle of selfish pleasure. It leads to all sorts of neglect and exploitation of human beings, animals and plants by persons whose minds are dominated by this tendency. *Atma sukha tattva* can also lead to harm as well for the person whose mind is dominated by it. According to P. R. Sarkar, this principle needs to be replaced by "*sama 'samaj tattva*", the principle of 'social equality'. Then all human beings will be able to move together towards their common goal of life.

For such a change of instinct to take place on the individual level, in-

tensive spiritual efforts must be made along 'Neo-humanistic' lines. If similar continuous efforts are made on a collective level by enough people, this should lead to the evolution of a new species of human being that will more naturally follow the principle of social equality. If so, it will be easier to create and maintain a new society free from all sorts of exploitation, where there is balanced individual and collective progress in every sphere of life. The creation of such a balanced state of existence among human beings would, according to P. R. Sarkar, facilitate the collective evolution of the whole universe. Since intensive efforts are already being made in this direction by many Neo-humanistic individuals, it will not be surprising if these collective efforts create some physical transformation in these persons themselves, setting the stage for the emergence of a new human species more able to live happily as a single family in this universe of ours.

Evolution, Microvita and Society

Darwin's theory of evolution of species has had a tremendous impact on human intellectual and social thought. Humanity's view of itself and its natural origins was fundamentally altered by this theory and the evidence for the natural evolution of species. Inquiry into the origin of life was moved from the realm of pure speculation, mythology and scriptural edict to the realm of natural science and rational investigation.

Darwin's theory fit nicely into the rationalistic and materialistic trend of thought that had been developing in Europe for several centuries. Social theorists drew implications for society from Darwin's theory. A view called Social Darwinism grew up which supported a competitive survival-of-the-fittest, dog-eat-dog view of society. The wealthy and powerful used this doctrine to justify their domination and exploitation of the society, This view still finds support though sometimes in more subtly expressed forms, among powerful political and economic groups in the world today.

P. R. Sarkar's ideas on evolution and microvita present a completely different view of the evolution of life that has very different implications for society. According to him, life emerges and evolves in a movement to establish a state of '*prama*', a balanced combination of dynamic equilibrium

and equipoise in individuals and society, on the physical, psychic and spiritual levels of existence. While struggle is a necessary part of life, rather the essence of life, the struggle to maintain physical existence is not the only driving force behind evolution. There are also psychic and spiritual driving forces as well. Organisms strive to achieve greater harmony between their micro-psychic longings and their environment. Their physical bodies evolve as a result of these efforts. Species evolve through a long series of psycho-physical metamorphoses in a collective effort to find greater harmony on all levels of existence.

The cosmic conation supports these collective efforts by emanating microvita carrying necessary genetic information to produce physical metamorphoses of organisms and their descendants. The subtler collective forms of microvita may help humans progress psychically and spiritually, though some have harmful effects. Microvita, as direct emanations from the cosmic conation, provide timely interventions, both positive and negative, in the lives of organisms on their long evolutionary journey towards the goal of life.

So P. R. Sarkar has added several new dimensions to our understanding of the evolution of life through his recent ideas on microvita and micro-psychic longings, as well as his earlier philosophical and scientific writings on the subject of evolution. When these ideas have been understood more completely and more widely, they are certain to have a profound effect on the way humanity views the evolutionary process as well as humanity's role in this process. Evolutionary theory will no longer be able to be used as means of justifying the domination and exploitation of the weak by the powerful, or the poor by the rich, or the simple by the shrewd. Instead, the new evolutionary ideas will aid in the creation of a balanced, progressively evolving society. All forms of exploitation will be kept in check by the society, and neo-humanistic values of life will come into full bloom.

Evolution: As You Think, So You Become

P. R. Sarkar's new ideas on the evolution of species can be seen as an extension to a new field of the old saying, "As you think, so you become", It

is the dissatisfaction of a group of organisms of one species with some instinctive expression or expressions, and their continuous efforts to change them, that initiates a metamorphosis from one species to another. The catfish in P. R. Sarkar's example has been making efforts to become a terrestrial animal, and some changes in its structure in that direction have already taken place. This means that an organism must have some idea, however primitive, of what change it wants in order for change in that direction to take place. Even then, for catfish, the complete transformation would require several hundred thousand years

So evolution of species is oriented towards the achievement of collective goals or desires of groups of organisms of a species. The simpler the organisms and the smaller their range of instincts, the simpler their goals would be. But without desired goals and efforts to achieve them, the evolution of organisms, it seems, would not occur. This raises the interesting possibility that organisms may even get ideas for change from a subtler form of microvita than P. R. Sarkar has described. These microvita transmit ideas, and move through a medium of ideas as well. So a subtler form of microvita could bring an idea of change to a group of organisms, and then a cruder form of microvita could bring the necessary genetic information to the organisms to implement the change by means of viruses. Organisms below the level of human being do not have sufficiently developed minds to act independently, so their activities are guided or directed by, the cosmic will. The desire for change must also come to them from the activity of the cosmic will also, perhaps carried by subtler microvita.

Acting to achieve a goal is not a new concept in biology, But in recent years it was not considered respectable for materialist thinkers to attribute goals to biological systems. But in the 1950's cybernetics was introduced. It gave an engineering approach to goal-seeking behaviour in self-regulating mechanisms. It was applied to both machines and living systems. Soon materialistic thinkers in biology also accepted the validity of the concept of goal-seeking behaviour in biological systems, even while downplaying the role of psychic factors in goal seeking.

But P. R. Sarkar has emphasized the importance of the subjective component of goal seeking in the evolution of species. Instincts have been

described by him as psycho-physical longings. Organisms must dislike some instinctive expression before acting to change it. Liking and disliking are mental actions which of course have their objective expressions as well. Many biologists still give little importance to mind in studying the behaviour of organisms. The idea that the desires of organisms could influence their evolution is excluded from current evolutionary thinking.

In P. R. Sarkar's broad theory of cosmic evolution, *Brahmacakra* (the cycle of the Great Creation), mind is expressed in even the simplest organisms, and exists in a dormant condition in nonliving matter as well. Mind becomes more developed and expressed as organisms evolve to higher degrees of complexity. Where there is mind there will be instincts and their expressions. The idea of a desired goal or object can be there as well. As a result of desires, efforts are made to achieve the object or goal desired. When this basic psycho-physical process is applied to organisms to change an instinctive expression itself, then the possibility for species metamorphosis arises. The efforts of the organisms to attain their goal initiates physical metamorphosis of the organisms, leading to the creation of new species.

There is a large and growing body of scientific evidence showing a close relationship between the functioning of the mind and the body. The dramatic medical evidence that mental imagery processes by a cancer patient can help cure this disease, strongly refutes materialist claims that mental activity has no effect on the physical body.

"The power of positive thinking" has been used to advantage by millions of people to help improve the objective conditions of their lives. The list of examples of mental phenomena stimulating changes in objective circumstances is a long one. Why should this be restricted to human beings? P. R. Sarkar with his new ideas about evolution and microvita has radically broadened our understanding of the breadth of application of the concept "as you think, so you become" to include the whole range of life. And his recent statement in a *Renaissance Universal* discourse that even non-living matter has self-controlling faculties that can implement structural metamorphosis, means that the non-living world, where mind is merely dormant, is not excluded from his new approach to evolutionary psycho-physical transformation.

P. R. Sarkar has indicated that certain microvita have a crucial role in the transformation of feelings into action. Depending on the mental thought wave of a person, positive or negative microvita are attracted to a person's mind, and reinforce or amplify the particular feeling. He says that the attraction of negative microvita by selfish thoughts in a person's mind is the psychological origin of imperialism in its different expressions in social life. So while negative microvita can increase mental desires to exploit others, positive microvita can support positive mental desires for improvement in the subjective and objective conditions of one's life.

Such effects of microvita could apply not only to human beings but to plants and animals as well. Subtler forms of microvita could reinforce as well as transmit ideas about change in an organism that would give the organism a more balanced and wider range of expression of its psychophysical longings in relationship to its environment. And then a less subtle form of microvita would supply the physical means for transforming the organism's genetic structure in order to implement the necessary changes in the organism's physical structure.

God, Evolution and Dogma

We have seen that Darwin's theory of the origin of species created a big controversy between supporters of religious scripture and supporters of natural observation and scientific research.

The basic religious view was that God created the universe and then personally intervened in His creation to make plants, animals and human beings in their present forms without their passing through intermediate stages. The basic evolutionary view was that the universe evolved to its present state in a natural way, without divine intervention, and that the present plants, animals and human beings evolved from ancestral life forms by a process of random variation and natural selection. And in the popular mind, the idea that human beings were evolved from monkey-like ancestors did not have the same emotional appeal as the idea that the first human beings were crafted directly by the hand of God.

P. R. Sarkar has clearly shown in his earlier philosophical writings

(see particularly "*Ananda Sutram*" and "*Idea and Ideology*") that there is no necessary logical contradiction between the idea that God created the universe as a thought projection in His mind, and the idea that the universe evolved and is evolving as a natural process by natural laws. In his view, nature is merely the style of operation of God's creative power. P. R. Sarkar's theory of *Brahmacakra* describes the evolution of the universe, life and mind from an original state of Supreme Consciousness, and the return of the highly evolved human mind to that original state. One of his fundamental philosophical ideas is that the proof of God's existence is to be found in the evolutionary process of the universe (*Ananda Sutram*, Chapter 1, Sutra 3).

But if a religious theory of creation contains an established irrational idea, or dogma, and an evolutionary theory contains a contradictory dogma, then there is sure to be a clash between the two theories. In fact there were such dogmas underlying the historical creation-versus-evolution controversy.

The religious dogma was the refusal to consider the scientific evidence for the evolution of human beings from lower primate ancestors, and the insistence on the literal truth of a creation myth about human beings in one of the scriptures. The effect of this dogma was to close the mind to the evidence of the senses and rational thought, and to advocate blind acceptance of ecclesiastical authority.

The dogma of the evolutionary theory was the implicit or explicit denial that divine intervention may have a role in the evolution of plants, animals and human beings. The effect of this dogma was to close the mind to the possibility that some form of divine intervention in the evolutionary process could exist, and to steer scientific thinking away from evolutionary theories based on this possibility. One outcome of this dogma was the belief that random, chance events among physical atoms and structures can completely account for the evolution of life and human beings. The random mutation hypothesis for the evolution of genes is one embodiment of this idea. This belief became a kind of scientific faith. Such random occurrences are believed to occur within a framework of physical laws which are discoverable through observation and reason. Concerning the sources of these

physical laws, the less said the better. When the famous mathematician and cosmologist Laplace was asked by Napoleon why Laplace's monumental work on cosmology made no reference to God, Laplace replied, "*Je n'avais pas besoin de cette hypothese*". ("I had no need of this hypothesis.")

In historical terms we can say that the evolutionary view "won" over the religious view on the issue of the evolution of species, at least as far as science and society was concerned. But this may have been due more to the increasingly materialistic intellectual and social trends of the times and the declining hold of the church on the popular mind, than to any inherent superiority of a materialistic doctrine over a religious doctrine. But the issue was by no means fully resolved. Many reasonable people declined to accept the idea that life and human beings are just the result of chance occurrences in an indifferent universe, and that morality and ethics are purely a relative phenomenon created by human beings and getting no support from an Absolute source. Religion and science both make powerful appeals to the human mind, but the saying "Where science ends, religion begins" does not satisfy many inquiring minds. The ethical vacuum created by the scientific faith was not filled by the claims of some scientists that the scientific search for truth is itself a source of values. For scientific dogmas can just as surely block the progress of the mind and the development of human society as religious dogmas.

The ethical vacuum or materialistic evolutionary thought was - exploited by selfish social groups whose desire for social and economic domination gained support from the ethically neutral, survival-of-the-fittest implications that they derived from Darwin's theory. The scientific enterprise itself has in recent years become a hostage of selfish economic and political interests. They use the results of scientific research to increase their economic and political power at the expense of the welfare of the society as a whole.

Now P. R. Sarkar is in the process of rescuing present evolutionary theory from its materialistic doldrums and exploitive implications. His ideas about microvita have introduced a novel approach to the idea of divine intervention into the process of the origin of species. Microvita are direct emanations from the cosmic factor, that is, the cosmic entity, or God. Ac-

According to P. R. Sarkar, life originates from microvita, and not from interactions with carbon atoms. Carbon atoms themselves are formed from the solidification of billions of microvita.

According to our present theory, microvita also guide the evolution of species by providing new genetic information to organisms that causes their physical metamorphosis into new species. Microvita may also carry ideas about instinctive changes to organisms as well, to stimulate their efforts for transformation. We have seen how the biological understanding of the processes of evolution and the origin of life can be greatly expanded if our theory of gene transfer to organisms from microvita is basically correct.

It is significant the P. R. Sarkar has, along with his new ideas about microvita, proposed a new ethical framework called Neo-Ethics, which is compatible with his ideas about microvita and evolution. Neo-Ethics goes to the root cause of all sorts of exploitation caused by human beings, and shows how to eliminate it by establishing a society based on the principles of 'prama' and neo-humanism.

So according to our theory, based on P. R. Sarkar's ideas, a form of divine intervention does occur as a natural part of the evolutionary process of plants, animals and human beings. Microvita, a direct emanation from cosmic factor, shape the evolutionary progress of the bodies and minds of animals and plants as well as human beings. If a theory of evolution of species on microvita can be scientifically established, it will mean that God can no longer be seen as standing outside of and aloof from the evolutionary process. This process will no longer be seen as a machine that may have been set in motion by a kind of divine mechanic, who afterwards keeps His hands off the machine. Rather, God will be seen from a scientific view as a supremely intelligent entity who lovingly guides, shapes and approves the evolutionary progress of all organisms at every step.

Unlike Laplace, we might reply to a present day Napoleon, "*Maintenant nous avons besoin de cette hypothese*". ("Now we need this hypothesis." - of a divine creator intervening in his creation.)

So it is very clear that P. R. Sarkar's ideas on microvita, evolution, Neo-Ethics and prama' can have a revolutionary impact on science and so-

ciety. With an increase in our understanding of and control of microvita, many of society's problems will be solved in a nice way, according to P. R. Sarkar. Research on microvita will develop so that these results can materialise quickly.

P. R. Sarkar's Theory of Microvita

Michael Towsy

Inanimate and Animate Matter

Sarkar's theory of Microvita will undoubtedly revolutionise physics and chemistry. Not only has he postulated the existence of a fundamental quantum particle whose properties determine the behaviour of atoms and molecules, but he also says that one of those properties is 'mind'; not Cosmic Mind but a primitive kind of unit mind known as 'micro-psyhic conation'. If life is the result of an inter-relation between matter and mind then we are forced to conclude that atoms are in some way living. And by extension all structures that are composed of atoms, such as stones, the inert gases, meteorites, stars and so on, all these are living. In fact Sarkar has always referred to stars and galaxies as "living celestial bodies" but this was interpreted by the author in some metaphorical sense. The theory of Microvita says explicitly that all atomic structures are living.

"Every structure of carbonic origin in this universe, whether animate or inanimate, has a mind. That is, a mind is associated with every structure either in manifested form or in dormant form. Where the mind is not expressed there is no endoplasmic coverage, and where the mind is expressed endoplasmic coverage shall be there".

Sarkar appears to use the term 'carbonic' in reference to atomic matter. Inanimate atomic matter has mind and must therefore be considered a primordial form of life. But its mind is unmanifest or dormant. However with animate matter (the most primitive animate creatures we know of are the bacteria), mind is manifest due to the presence of a mental covering known

as *endoplasm*. Sarkar has said little else about endoplasm but presumably he will expand on the topic in the future.

According to the theory of Microvita as it now stands, the evolution of life (*Prati-Saincara*) begins with Microvita. A single microvita is a quantum particle from which emanates a primitive or proto-mind field known as "micro-psyche conation". Many Microvita condense to form atoms and the atoms condense to form molecules and macromolecules. The macromolecules condense to form viruses and although the gap is large, viruses in some way combine to give the simplest living creatures: bacteria. According to biologists, primitive bacteria combined to give protoplasmic cells and protoplasmic cells combined to give multi cellular forms of life. Clearly the evolution of life is a synthetic process in which Microvita coagulate in larger and larger numbers to generate more complex and subtle structures. What we previously believed to be dead or inert matter must now be considered as one end of the spectrum of life. The boundary between inanimate life and animate life is somewhere in the vicinity of a virus. We can imagine that as more and more Microvita coagulate there comes a stage where a synergistic reaction takes place. The sum of the parts produces something more than the parts themselves. Perhaps we may liken it to a phase transition where many Microvita suddenly coordinate their activities so as to produce a unit mind sufficiently advanced that we call it a living organism in the ordinary sense.

But it cannot just be large numbers of Microvita that are required to produce living creatures since in that case a star would be far more intelligent than a human being. The important factor is more likely to be the degree of close coordination between individual Microvita. This brings us to another question about Microvita. What is their relationship to Prana or vital energy.

Microvita and Pranah

Within every physical structure there is a clash of interial and external forces. The interial forces attempt to keep the structure together while the external forces attempt to break the structure into numerous smaller pieces. These interial and external forces include the four forces of nature in their attractive and repulsive modes but probably also include other physical drives such as inertia and entropy. Life only develops in stable physical structures where the sum of the interial forces is greater than the sum of the external forces. The excess of interial forces over external forces is called Pranah or Life

Force and is a measure of how well the structure is knit together and how well it is able to withstand the vicissitudes of its environment. Where Pranah exists, the structure also has a nucleus upon which the interial and external forces are focused. Not just protoplasmic cells but also nuclei, atoms, stars and galaxies all represent structures of this sort. However with animate structures, the interial and external forces become very closely coordinated and are controlled from a common nucleus.

Sarkar describes the interplay of external and interial forces as chemical clash and it is only when this chemical clash is sufficiently intense (that is, when the interial and external forces are very closely coordinated) that some portion of the physical structure is powdered down to form mind stuff, *Citta* or ectoplasm. Once ectoplasm is formed the process tends to be self-reinforcing because ectoplasm acts as a template to create more physical structure which gives rise to more ectoplasm. The greater the chemical clash or coordination of interial and external forces, the greater the production of ectoplasm. To sum up, the boundary between inanimate and animate physical structures depends not on the presence or absence of mind but upon the amount of mind (ectoplasm) which is in turn dependent upon the degree of chemical clash (Pranah) within the structure.

The phrase "*tactical presence of Macropsychic conation*" is being a metamorphosis. The sum of a number of small metamorphoses becomes an "evolutionary jump". Sarkar asks whether the metamorphosis of any living structure "*is of inherent or exherent nature*"; that is, whether the evolution

of living structures into more subtle or complex forms finds its inspiration from within the structure of life itself or whether some outside agency is involved. This question is hotly debated by biologists. He answers the question by saying that the inspiration is partly inherent and partly exherent and not purely one or the other. Where the inspiration is inherent, the change is known as transmutation and where the inspiration is exherent, the change is known as metamorphosis. The exherent or outside factor involved in metamorphosis is "*tactual presence of Macro-psychic conation*". Macro-psychic conation in this context refers to the desire of Cosmic Mind. In other words the evolution of life into more complex forms is partly inspired, motivated and directed by the impulse of Cosmic Mind.

The evolution of life takes place in small steps, each step highly significant because 'tactuality' is a synonym Sarkar sometimes uses for the sense of 'touch' which is associated with aerial Factor and with Pranah. Remember that Pranah or life force is a collection of ten subtle energies or vital airs which emerge out of the clash between interial and external forces and which coordinate the living structure. In other words, Cosmic Mind directs the evolution of life by manipulating the interial and external forces that maintain the living physical structure.

Pranah is the link between the Cosmic Mind and physical structure of life.

We now have a picture of the evolution of living structures in which two processes are occurring simultaneously. There is increasing coordination of the physical structure by Pranah which results in increased chemical clash and there is increased numbers of and cooperation among Microvita. Both these processes serve to increase the quantity and quality of mind. There is surely a connection between the two parallel processes but what it might be we cannot say for the present time. Perhaps Microvita also have the capacity to manipulate Pranah and thereby direct the evolution of living structures inherently. In terms of modern physics this is equivalent to saying that Microvita are intimately associated with the action of the four forces of nature. It may well turn out to be that a Unified Theory of the four forces

will devolve around a mathematical description of Microvita.

Microvita and Disease

Sarkar's theory of Microvita not only stands to revolutionise the physical and life sciences. It also has tremendous practical importance in the field of medicine. According to modern medical theory many forms of illness are the result of infections by viruses or bacteria. Sarkar rejects the term virus as "vague" and prefers to redefine the causal agent of such diseases as Microvita. Not all Microvita cause disease and in this regard Sarkar classifies them in three groups; 'positive' i.e, conducive to human welfare, 'negative' i.e. harmful to human welfare or disease-forming and 'neutral' i.e. having neither good nor bad effect.

An interesting feature of Microvita is their mobility. Sarkar says "they travel from planet to planet and between solar systems, spreading different forms of life". In other words, life did not evolve *de novo* on earth. Rather the earth was infected with the seeds of life in the form of Microvita. (Presumably Sarkar mean' special aggregations of Microvita or perhaps he is referring to organic molecules and viruses which are now believed to pervade space.) Sarkar also implies that the arrival of a new kind of negative Microvita on earth from an extraterrestrial source can cause a disease epidemic. The well known scientist Fred Hoyle and his associate *Chandra Wikramasinghe* have recently made newspaper headlines around the world by claiming that 'killer viruses' carried by comet dust and other space particles have the potential to wipe out human life on earth. They say that viral epidemics such as influenza, measles, whooping cough and AIDS arrived on earth by this means. "As far as the facts are concerned", says Wikramasinghe, "the theory is in good shape and proven beyond a shadow of a doubt. It would be possible for one of these viruses to kill off mankind. AIDS is a killer virus and a threat to our species." Hoyle's theory has some parallels with Sarkar's theory of Microvita. It is perhaps because of the increased possibility of Microvita diseases coming from extraterrestrial sources in the near future, that Sarkar urges immediate research into Microvita. He has given many demonstrations of Microvita diseases and de-

scribed some cures.

Piece by piece we are building up a picture of the evolution of life from a single Microvitum to the protoplasmic cell. The jigsaw puzzle is far from complete but at least some crude outline of structure and process is now apparent. Admittedly our picture depends primarily upon the images and language of Brahmachakra but some connections can be made with 'western' scientific knowledge. This article has been solely concerned with the theory of Microvita since the author has no experience at all with the practicalities of Microvita.

But it does not take much imagination to understand what the practical consequences of a Microvitum technology might be. Sarkar's numerous demonstrations of Microvita clearly establish that they can be controlled by power of human mind. If the fundamental particle of creation can be brought under human control, then the entire physical universe is within our grasp. Perhaps we have here the clue to various feats of psycho-kinesis that defy comprehension by traditional science.

But we are already too far into speculation and here I must end. The need of the day is "extensive research" into these most mysterious creatures - the Microvita.