

The Harmonizer

Science, Philosophy, Religion and Art are all branches
of the same tree of knowledge

The Harmonizer

www.mahaprabhu.net/harmonizer

Published Monthly

Editorial Board

EDITOR IN CHIEF

Sripad Bhakti Madhava Puri Maharaja, Ph.D.

Editors

Purshottama Jagannatha Das, Ph.D.

Sushen Krishna Das, Ph.D.

Designer

Pradyumna Singh, B.E.

Join us for our Weekly

Online Sadhu Sanga Skype Conference Call

www.mahaprabhu.net/OnlineClass

www.mahaprabhu.net/onlineclass
editors@scienceandscientist.org
sadhusanga@mahaprabhu.net

[Subscribe to our mailing list](#)

Submit your article for review via email at

editors@scienceandscientist.org

For comments and questions write to

editors@scienceandscientist.org

[Science and Scientist](#)

[Sadhu Sanga](#)

JIVATMA (SOUL) AND PARAMATMA (SUPER-SOUL)

by

Srila Bhakti Sundar Govinda Dev-Goswami Maharaja



One Form of the Lord is *Paramatma*. *Paramatma* resides within all *jiva*-souls. All the souls act in various ways in this world, and the *Paramatma* is always with them as the Witness. The individual souls by nature are implicated by their actions, but the Lord, with His Transcendental Nature, remains unaffected. Remaining ever-present within the souls, the Lord as *Paramatma* observes the activities of the souls, or *jivatmas*. Furthermore, He is also present in every atom of existence; so it is said in the Scriptures that there is no place in creation where the Lord does not preside. When the

souls try to enjoy the illusory energy of the Lord—*Maya*—they abandon their natural inner tendency for service and adopt the nature of an enjoyer. Still, the Lord desires to take even those fallen souls back home to His Divine Abode, known as *Paravyomadhama*, *Vaikuntha*, or *Goloka*.

The souls belong to the *tatasthasakti*, or Marginal Potency of the Lord. They are not born, but they are manifest by the Will of the Lord. This is accepted in all the Scriptures. When they are thus manifest, they appear in many forms. Whatever religious forms appear in the world, whether Christian, Buddhist, Muslim or Hindu, all are one with each other in that the aim of all is to reveal the same objective. The cause of the manifestation of this material world seen from various angles and distances of perception is the reason for different religious conceptions being preached in the world. But the Vedic Religion, or the Teachings given by the *Vedas*, show us that all souls are manifest from the Marginal Potency of the Lord; and from their manifestation, the potencies of thinking, feeling and willing remain with them. Since they possess these potencies, they are therefore units of life, units of consciousness.

It is also shown in this scientific age of exploration of atoms, neutrons and protons, etc., that everything in existence is in a state of movement. Every atom has a certain measurement of other bodies revolving around it. Similarly, in the Vedic Teachings we see that life is present everywhere. With their modern research and studies, the scientists are teaching us these things, but from thousands and thousands of years ago the Vedic Teachings tell us that what ever exists in the world—everything is *cetana*. It is all conscious, living.

Even a cement and brick building is *cetana*. Although at present we do not perceive any movement of the building, in a few hundred years we shall notice that a pillar or other part of the building has dissolved or undergone a reformation. Actually nothing has dissolved, but the internal action of the object has finally made itself visible to us. The state of *cetana*—consciousness or life—is present everywhere in two basic forms: *sthavara* and *jangama*, or stationary and moving. A tree is considered *sthavara*, or stationary, yet there is life present in the tree. This has been discovered by a Bengali scientist, and it has been demonstrated with scientific instruments that a tree experiences pleasure and pain. So life is present everywhere, and life is called *atma*, or soul. In our body millions of life-forms, or souls, are present, but one principle soul guides the entire body as the master of the body, and he is called *dehi* or *atma*. In this way, life is present everywhere, and when it shows movement it is called *jangama*, otherwise it is called *sthavara*. When a soul leaves the body what happens? Within two or three days the body noticeably decays. The body can no longer move—although there is still movement in it by way of its decaying. After only a month or so only bones remain, and they too will later become fossilised. The Observer or Witness of all the actions of the moving souls is the *Paramatma*. *Paramatma* is present within everything in existence. This is the Nature of the Form of *Paramatma*.

LIFE IS BEYOND PHYSICAL CHARACTERISTICS

by

Srila Bhaktisvarupa Damodara Maharaja (T. D. Singh, Ph.D.)

B. Weiss and C.C. Richardson had isolated DNA ligase (1966), an enzyme that could be used to 'ligate' or paste together two strands of DNA.¹ Thus researchers could now attach two or more DNA molecules or break it into fragments. In 1972, Paul Berg used restriction enzyme to cut DNA, and then a ligase to paste two DNA strands together to form hybrid circular molecule – this was the first 'recombinant' DNA.² This ushered in a new era of genetic manipulation what has come to be known as the world of biotechnology -where profitable commercial uses of recombinant DNA became more and more feasible and multiplied.³



The advent of molecular techniques for manipulating and editing sequences of a DNA molecule necessitated a need for a way to determine the correct order of the As, Ts, Gs, Cs that make up a unique sequence of DNA (This is called sequencing)?⁴ Molecular biologists could not yet read any natural DNA sequences – not even the sequence of a single gene out of the thousands present within a cell. They lacked the text on which to practice their newfound deciphering skills. Thus they needed some kind of translator for their toolbox in order to read the specific sequences of the genes they were working on.

In 1975, Frederick Sanger and Alan Coulson developed the first method for sequencing DNA.⁵ Two years later, Walter Gilbert and Allan Maxam devised a method for sequencing DNA using chemicals rather than enzymes.⁶ These two strategies made it possible to determine the sequences of DNA fragments a few hundred bases long. Thus, sequencing technology advanced rapidly.

In 1985, Kary Mullis discovered polymerase chain reaction (PCR) – an efficient method for generating a huge number of copies of any segment of DNA.⁷ In PCR, two short single-stranded pieces of chemically synthesized DNA, called primers, are added to the double stranded DNA sample of interest. Upon raising the temperature of the mixture to 95°C, the double-stranded DNA sample divides into two single stranded DNA, and the two primers attach to each strand. Enzymes which are added into the mixture then enable the short primers to lengthen and form a complementary strand, thus doubling the number of initial samples.

Like so many great scientific discoveries, the ideas for PCR came as a sudden inspiration. While driving from Berkeley to Mendocino one evening (1984), Mullis got the insight and inspiration to develop PCR. "I was just driving and thinking about ideas and suddenly I saw it," Mullis recalls. "I saw the polymerase chain reaction as clear as if it were up on a blackboard in my head, so I pulled over and started "nibbling." A chemist friend of his was asleep in the car, and, as Mullis described in a special edition of Scientific American: "Jennifer objected groggily to the delay and the light, but I exclaimed I had discovered something fantastic. Unimpressed, she went back to sleep." Mullis kept scribbling calculations, right there in the car, until the formula for DNA amplification was complete.⁸ Upon arriving at the cabin, Mullis spent the entire night working out the sequence for copying DNA that would

become PCR. Mullis received the Nobel Prize in 1993 for this discovery.

The discovery of PCR was a major step in the advancement of molecular biology. Another landmark in the development of molecular biology was cloning. In the newspapers we see a growing interest in the field, even among the common people. In 1997, cloning topped the charts of scientific and social discourse when Ian Wilmut and his colleagues at the Roslin Institute in Edinburgh, Scotland, cloned a sheep named Dolly. Dolly was the first cloned mammal.⁹ Cloning is the process of making a genetically identical



Dolly

organism. It has been used for many years to produce plants (even growing a plant from a cutting is a type of cloning). Animal cloning has been the subject of scientific experiments for years, but garnered little attention until the birth of Dolly.

Nature has been cloning organisms for billions of years. For example, when a strawberry plant sends out a runner (a form of modified stem), a new plant grows where the runner takes root. That new plant is a clone. When we take a leaf cutting from a plant and grow it into a new plant (vegetative propagation), we are cloning the original plant because the new plant has the same genetic makeup as the donor plant.

Since Dolly, several university laboratories and companies have used various modifications of the nuclear transfer technique to produce cloned mammals, including cows, pigs, monkeys, mice and so on. However, cloning has an inherent limitation as far as the understanding of life is concerned. Many people think that by cloning we can have a kind of biological Xeroxing. But we have all witnessed that identical twins, who possess all most identical physical forms (genetic makeup), are actually completely different persons in their talents, interests, levels of intelligence and performance. One could be a scientist and the other an artist.

Suppose today, if, by biotechnology, it were possible to produce a person of the same size and shape as Einstein, will such a person possess the same intelligence and personality of Einstein? The answer is no. Biotechnology cannot copy the spiritual nature of a person. Thus, the idea that life could be mechanistically recreated by incorporating existing DNA into an already existing natural process does not seem to be a correct one and further indicates that life is beyond physical characteristics.

References:

1. Weiss, B. and Richardson, CC (1967) *Proc. Natl Acad. Sci. USA*, 57, 1021-1028.
2. Paul Berg, along with Walter Gilbert and Frederick Sanger, received the 1980 Nobel Prize in chemistry. Paul Berg firstly constructed the recombinant-DNA molecule. Gilbert and Sanger independently developed separate methods for the determination of the exact sequence of the building blocks in DNA.
3. website: www.cccu.org/resourcecenter/resID.850,parentCatID.246/rc_detail.asp
4. Sequencing and Mapping: Sequencing is the process of deter-

mining the order of the nucleotides, or base pairs, in a DNA molecule. It is in the grouping and sequencing of the three million nucleotides that the coding for innumerable proteins occurs. Mapping is the process of determining the position and spacing of genes, or other genetic landmarks, on the chromosomes relative to one another. See J. Robert Nelson, *On the New Frontiers of Genetics and Religion*, 1994, Michigan, p. 10.

5. Sanger, F. & Coulson, A.R., "A rapid method for determining sequences in DNA by primed synthesis with DNA polymerase," *J. Mol. Biol.*, 94(3):441-448, May 1975.

6. Maxam, A.M. & Gilbert, W., "A new method for sequencing DNA," *Prac. Natl. Acad. Sci. USA*, 74(2):560-564, February 1977.

7. PCR allows scientists to synthesize millions of copies of a DNA strand in a short time. This is much faster than cloning recombinant DNA, which can take days or weeks. PCR is a test-tube reaction that mimics the replication of DNA in cells that are undergoing division. To perform the reaction, all that is needed is a piece of DNA to be copied, spare nucleotides to build the copies, and the enzyme DNA polymerase, which reads one strand of DNA and builds a complementary strand using the spare nucleotides. PCR is now widely used in many fields. Molecular biologists rely

on it to find the specific genes they are looking for in many different species and to make many copies of a piece of DNA they want to investigate. Forensic technicians use it to help identify suspects and victims based on the amplification patterns of their DNA. It is also used in disease diagnosis, evolutionary genetics, and genome sequencing.

8. Interview with Dr. Kary Mullis by Celia Farber, *Spin Magazine*, July 1994. Refer website http://www.posh-uk.org.uk/gmh/kmullis_article2.html

9. Ian Wilmut and his colleagues transplanted a nucleus from a mammary gland cell of a Finn Dorsett sheep into the enucleated egg of a Scottish blackface ewe. The nucleus-egg combination was stimulated with electricity to fuse the two and to stimulate cell division. The new cell divided and was placed in the uterus of a blackface ewe to develop. After few months Dolly was born. Refer Wilmut I., Schnieke A. E., McWhir J., Kind A. J., Campbell K. H., "Viable offspring derived from fetal and adult mammalian cells," *Nature* 385:810 (1997). For general details about cloning refer *Science - Pathways of Discovery*, edited by Ivan Amato, New York, 2002, pp. 109-125. Also refer <http://science.howstuffworks.com/cloning.htm>

THE CONCEPT — Part 2 (of 3)

by

Sripad Bhakti Madhava Puri Maharaja, Ph.D.

THE PERSPECTIVE OF SUBJECTIVE CONSCIOUSNESS

Thus far the object has both objective and subjective aspects. The diversity of elements is considered the objective side, while the unity of the diverse elements is the subjective aspect. On the other hand, from the perspective of subjective consciousness, where the Concept is presumed to be subjective, i.e. outside of and opposed to the object, we have a complete reversal, such that the diverse elements are considered subjective while the unity of the object is the objective — this unity in Kantian philosophy takes the form of the thing-in-itself, which is no less the objectivity of the abstract "I" or "unity of apperception" - this latter being the implicit Idea or Concept of the object. Let us now try to analyze this situation.



In the perspective in which knowing is presumed to be part of objective reality, which we are calling the perspective of the object, the Concept is the essence of the object. In the perspective of consciousness the Concept is considered abstractly or subjectively, i.e. outside of and opposed to the object. This dramatic change in perspective that occurs historically in Western culture and philosophy has its turning point, according to Hegel, in Descartes, although this point is reached only after a gradual development that can be traced back through Socrates, Christianity, and Luther. This is a subject for study in the history of philosophy.

When we consider an object, i.e. that which is objective to consciousness, in its first instance or immediacy, it is merely an indeterminate object external to consciousness. "It" is used to refer to an object that is completely undefined or indeterminate. All that consciousness knows of the object is that it is, i.e. its being is the sole truth for consciousness - its only knowledge of the immediate object. However, being is a purely indeterminate determina-

tion because it reveals nothing distinct about the object, since every object is. It is the nature of an object, because of its being an object, to be for consciousness as well as being opposed to it.

We want to especially note that the term "object" is used here in the sense of "that which is objective to consciousness." This corresponds to the German word "*Gegenstand*." In a more technical sense the German word "*Objekt*" would correspond to the more scientific sense of "Object" as determined in the *Science of Logic*. But for our present purposes we use "object" in a more generic way rather than in its specifically technical significance. Unfortunately, English does not seem to have different words for "*Gegenstand*" and "*Objekt*." To "posit" is another term we will be using, and this means to think of something as being there, present to thought.

With this understanding of object, let us consider the following example.

If we enter a room and are only able to apprehend objects at the level of being - all that can be determined at that level is that they are there. In order to understand what those objects are, we require a higher level of comprehension than mere being. Objects become things (objects with determinate properties) when something more than mere being is apprehended - this "more" we may call their determinations, or determinate properties. Ordinary thinking does not separate a thing's being - as a single thing - from the being of its multiple properties. However, this distinction will prove to be a vital in what follows.

Properties belong to the object (define the object, are constituent of it) but are, at the same time, different from the object. For example, a blue object is not the same as the color "blue." What does this difference of properties from their object imply? The answer is forthcoming when we consider where these determinations come from — they come from us, or from consciousness, i.e. they come from a percipient subject. We say that the object is "white" or the object is "sweet," etc. It is the subject that deter-

mines the object to be flat, a table, something to eat upon, etc. Therefore, these properties are not determinations of the object in itself, which is first determined as merely being. Rather they are appended to objective being by consciousness and then assumed to belong to the object itself. Consciousness knows only the appearances of the object, and the sole knowledge it has of the object initially is that it is. This is also the conclusion of Kant's analysis of the perspective of subjective consciousness, but in the case presented here even the being of the object is known or posited by consciousness, while Kant erroneously considered the nascent being of things to be beyond knowing.

This means that we cannot refer to anything in the world without also referring to the thoughts or determinations of consciousness that have been posited (or deposited) as those things. We may note that this is tantamount to denying that there are any things-in-themselves that are independent of knowing (consciousness). Nonetheless, ordinary consciousness does assume that such things-in-themselves do exist independently of knowing, and shortly we will explain exactly what this implies.

At the level of objects (as mere being opposed to consciousness), we do not connect any of the properties to the object that determine that object as a distinct thing. Thus this stage corresponds to mere sensuous consciousness without any higher perception. By itself, this pure sensuous mode of apprehension might belong to a sub-human consciousness. Yet it is the essential beginning of all higher forms of consciousness. Generally, when we refer to sensuousness we think of sense perception. However, sense perception is a higher stage of consciousness where sensuousness is mixed with perception. Pure sensuousness refers merely to the detection or feeling of a stimulus to the senses without any interpretation of the quality of that stimulus. The specific way we are using 'sensuousness' as the abstract feeling of being is contrary to the popular use of the term, which corresponds to sense perception, so we want to be especially mindful of this distinction. Many, if not most, commentators on Hegel fail to make this distinction. Even Hegel, himself, confesses (*Encyclopedia* § 418) to prematurely having introduced spatio-temporal determinations ('Here' and 'Now') at the level of sense-certainty in his *Phenomenology of Spirit*. This does not affect the development presented in that book, but it does warn us about the difficulty of maintaining the purely abstract nature of being as the only determination of sensuousness.

Words like "per-ception" or "con-ception" contain the Latin root *capere*, which means, "to seize; to grasp." If we use "grasp" in the sense of "comprehension" then perception becomes a pre-grasping, or pre-comprehension of what will later become a conception, or integral comprehension, while sensuousness corresponds to mere apprehension — a detection of uninterpreted, undigested, raw data. It is only when the subject grasps the object as consisting of certain determinations that the object is no longer merely an object but becomes a thing with properties. In other words, there is a distinction between the experience (1) that an object is, and (2) what an object is.

Thus the actuality of a thing (as thing and not as generic object) has two aspects: its being and its determinations. The latter are the determinations by a subject of an object - thus the determinations are related to the subjective aspect of the thing, while its being is the objective aspect. Empirical consciousness conflates

these two aspects and presumes that the thing is given in its objective totality to consciousness without acknowledging that the determinations of the thing are subjective features posited as objective.

Whenever we refer to something in the universe, it is already existing in and therefore determined by consciousness before we ever refer to it, yet we do refer to it as existing there in objective form as if it were never touched by thought. Whatever determinations it has, it has as a result of interaction with the senses and thoughts of a rational consciousness. Only then can we speak of it as a particular thing. This is also the case with what are called "facts." The English word "fact" comes from the Latin "*factum*" that refers to "something done; a deed." We may call it an objective act. Thus a manufactured item is something "made" by hand (L. "*manu*"), or by machine, rather than by nature. The point is that a "fact" implies something made or done — by whom? A subjective agent is implied.



Hegel

A similar relation holds between the English words "thing" and "think." Hegel pointed out the same similarity between the German words "Ding" and "Denken." The point is that objects may not be considered as being entirely devoid of thinking subjectivity. A subjective element exists along with the objective aspect in a conflated unity, or an apparent *a priori* synthetic unity. This unity is the Concept in implicit form, and the task of scientific

philosophy is to make it explicit to consciousness.

Empiricism is quick to assert, *Nihil est in intellectu quod non fuerit in sensu* — there is nothing in intellect (or thought) which has not been in sense experience. But if that is the case then the converse, *Nihil est in sensu quod non fuerit in intellectu* cannot be denied. What we conclude from all of this is that a subject-object unity is really involved in what we may less thoughtfully consider merely an object.

We have shown that there are two basic stages involved in the consciousness or knowing of things: a preliminary object stage characterized as mere being, and a determined objective stage called the actual thing. To put this into Aristotelian terminology these two stages may be respectively referred to as *dunamis* (potentiality) and *energia* (actuality). The preliminary stage of object-consciousness or immediate sensuous-consciousness is the potentiality (*dunamis*) of what later becomes thing-consciousness, or the actuality (*energia*) of the object. Thus we arrive here at the same conclusion that derived from the previous perspective of the object.

In his *History of Philosophy*, in the section on Aristotle, Hegel states that *energia* is "subjectivity." We can see the connection between actuality and subjectivity in the above, since the actual thing becomes known to be what it is only by the active determination of a subjective agent. Understanding the contribution of subjectivity in the formation of reality may also lead us to better grasp what Hegel means by "the rational is the actual, and the actual is the rational" or that absolute truth is essentially substance that is Subject.