



# SCIENCE & SPIRITUAL QUEST

BHAKTIVEDANTA INSTITUTE

STUDENTS' EZINE

Nov-Dec 2020, Issue No.48

आ नौ भद्राः कर्तव्यो यन्तु विश्वतोऽदृग्बासो अपर्रीतास उद्भिदः । (RgVeda) *Let noble thoughts come to us from every side*

## Science-Spirituality Dialogue Mystery — The Inconceivable Attributes of Reality



**A Discussion with  
Sir Roger Penrose** (right),  
*Nobel Laureate in Physics* and  
**Dr. T. D. Singh** (left),  
*Physical Organic Chemist,  
Founding-Director of Bhaktivedanta Institute*

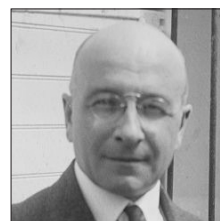
**Dr. T. D. Singh:** I would like to quote you: "Mathematics seems to in full control of the physical world. This relationship is a deep mystery" [laughs]. In a way the whole universe, including life, is a total mystery.

**Sir Roger Penrose:** Most of these things you find are contentious in nature [laughs]. ...I think that if you study modern physics, it is not just the precision; there is extraordinary and incredible precision in the way mathematics controls the physical world. ... You also see this in quantum mechanics (QM). There is extraordinary precision but that does not mean that it is completely right. I am saying that there are discrepancies even when the precision is remarkable. This precision is one of the reasons why I say it is a mystery. There is another aspect of this, in the sophistication of mathematics. Somehow the ideas are not just calculational ideas or something. They are very sophisticated mathematical notions and very beautiful ideas too. Why should they be beautiful? Why should they be sophisticated? That is where I think the mystery lies, that somehow or other, we suddenly find that mathematics has a role.

One of the very important ones, which is actually quite elementary but which has impressed me a great deal, is the role of complex numbers. ...It has many different kinds of roles, which are completely miraculous. It almost looks like magic, you see. For a long time people called this "Mathematical Magic" because we don't see complex numbers in the real world. They simply don't exist in reality. When we measure distances we use real numbers, not imaginary ones. Then QM comes along and suddenly you see that they have a universal role to play in the behavior of the world at the quantum level. They are out there in the real world. Some parts of that are in the mental world or the Platonic world and suddenly, we see

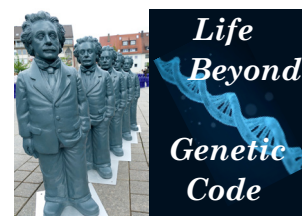
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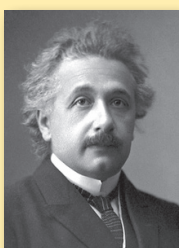


► **NEWS BIRDS**



**Announcements**

*Webinar Series on  
"Science and Spirituality"*



*"Strange is our situation here upon earth. Each of us comes for a short visit, not knowing why, yet sometimes seeming to a divine purpose."*

— Albert Einstein  
Nobel Laureate in Physics

**To Know about Life, Matter, and their Interactions is called Knowledge**

they are in the physical world. This is the part of the mystery I am talking about. How is it that these things which have to do with mentality or maybe with some Platonic absolute notions, suddenly manifest in the physical world?

**Dr. T. D. Singh:** In the Vedic tradition there is a notion, which in Sanskrit is called as *acintya*. It means something very mysterious, inconceivable and beyond our ability to comprehend or think [*cinta* - thoughtfulness, *cintya* - that which can be thought about; *acintya* - which cannot be thought about]. In this ancient tradition, this word *acintya* is an attribute given to God. God has innumerable inconceivable attributes, *acintya-guna-svarupam*. These attributes are visible everywhere in quantum physics and in biological sciences. In fact, the long road to reality will be segments of mysteries. Hence, we can say that there are not only mathematical mysteries but there are also cosmological mysteries, artistic mysteries and so on. The small part that we can understand or comprehend will be extremely insignificant compared with the vast ocean of unknown things. Newton was right when he said that the vast ocean of knowledge lies beyond.

[Excerpt from the book, *Savijnanam* vol-3-4— *Scientific Exploration for a Spiritual Paradigm*, Bhaktivedanta Institute, Kolkata]

### On the Shoulder of Giants

Alexis Carrel

(*Medicine, Science, and Faith*)

Alexis Carrel was a French surgeon and biologist, best known for his pioneering work on vascular anastomosis (the suturing of blood vessels) and organ transplantation. These contributions in medicine earned him Noble Prize (in Physiology or Medicine) in 1912. Thus, at the age of thirty-nine, Alexis became the youngest scientist to receive such high recognition. Alexis was also widely remembered for his services during the First World War. Along with the English biochemist Henry Dakin, he developed a disinfectant solution, known as Carrel–Dakin antiseptic solution that saved many lives.

Alexis Carrel was born in Lyon, France in 1873. Having lost his father at an early age of five, Carrel was educated at home by his mother Anne Ricard and then at St. Joseph School, Lyons. In 1889, he obtained the degree of Bachelor of Letters at the University of Lyons and the following year received the degree of Bachelor of Science. In 1900, Carrel became a doctor of medicine from the same University. He then continued his medical work at the Lyons Hospital and taught Anatomy and Operative Surgery at the University. In 1906, Dr. Carrel became attached to the Rockefeller Institute of Medical Research in New York, where he carried out most of the investigations on tissue culture and organ transplant.

The inspiration for his work in vascular repair has been traced to French president Sadi Carnot's assassination in 1894. Due to lack of efficient methods of suturing blood vessels, Carnot bled to death from a laceration of the portal vein. Growing up watching his mother, a professional embroiderer, Dr. Carrel realized the suture method might be made vastly more precise through the use of tiny needles and very fine thread. He also received lessons from one of the finest embroiderers in Lyons, France. Thus, Dr. Carrel came up with a technique for the surgical combination of different blood vessels by using a special triangulated suture. In scientific literature, this



Alexis Carrel (1873 -1944)

technique is still known as the Carrel suture. In 1910, Dr. Carrel also helped to make significant advances in cardiovascular surgery, describing procedures for mitral valvulotomy, annuloplasty, and coronary artery bypass graft. In 1935, he along with aviator and engineer Charles A. Lindbergh—helped create the first pump-oxygenator for organ perfusion, thus laying the groundwork for future heart-lung machines. With such perfusion pumps, Dr. Carrel was able to keep organs alive outside the human body and thus was praised as a kind of medical magician.

In his writings and lectures, Dr. Carrel often expressed the need for a broader medical research that includes the study of mental activity of life. He opined that, the ultimate goal of medical science should be the study of man (physical mental and spiritual). He held psychology (mind and consciousness) as the supreme science, above the science of human physiology. In his book *Man, the Unknown*, Dr. Carrel states that, "the enormous advance gained by the sciences of inanimate matter over those of living things is one of the greatest catastrophes ever suffered by humanity. ...The only possible remedy for this evil is a much more profound knowledge of ourselves."

Furthermore, Dr. Carrel's experiences as a surgeon, as a doctor, as a physiologist, and the studies in the laboratory enabled him to firmly believe in the curative effects of prayer. He saw prayer as a force as real as terrestrial gravity. Summing up of innumerable observations gathered during a long career among the most diverse people, Dr. Carrel, wrote an interesting article on prayer. He firmly believed that, one should not leave such powers unused, that helps our physical and mental well being. He concludes the article, with this important message to humanity: 'Man needs God as he needs water and oxygen. Joined to intuition, to the moral sense, to the sense of the beautiful, and to the light of intelligence, the sense of the holy gives to the personality its full flowering. There is no doubt that the fulfillment of life demands the integral development of each of our activities, physiological, intellectual, affective, and spiritual. ... We must therefore love the beauty of science and also the beauty of God.'

## Vedanta & Science

### Life Beyond Genetic Code

From the second half of the 20th century, there have been astounding breakthroughs in the fields of genetics, genetic engineering and biotechnology. 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. Cloning is the process of making a genetically identical 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 gathered 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 almost 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. The Vedantic texts confirm this statement. Furthermore, Vedanta emphasizes that life is beyond DNA. In other words, one cannot clone a soul or personality. Hence genetic modifications, mapping of human genes and cloning etc., are simply attempts to modify



*If ... 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. ... In other words, one cannot clone a soul or personality.*

the external features of a person and do not enhance our understanding about the inner aspects of life.

Genes are the coded instructions to make organisms' bodily structures, and the genome is the library of these instructions. But even an entire genome by itself is not alive. Life is much more than the genome. Werner Arber, the Nobel Laureate microbiologist from the University of Basel, Switzerland remarked, "I think that life could be beyond the assembly of biomolecules." Dr. W. French Anderson," one of the leading geneticists in the world and the father of Gene Therapy, also expressed, "Can we alter our humanness by this kind of manipulation? Can we alter what is uniquely important to us as a human race by engineering our genetic machinery?" He felt that it is not possible to change one's humanness by genetic engineering because of the presence of "that non-qualifiable, spiritual part of us that makes us uniquely human." "We do have a religious, a spiritual aspect to our being. This would be difficult to quantitate, but it exists."

According to Vedanta,

Human Person ≠ Human Body or Human Genome

but,

Human Person = Human Body + Mind, Intelligence + Spiriton & false ego  
(Gross Body) (Subtle Body) (Life Particle)

Excerpt from the book, *Vedanta and Biotechnology*, Bhaktivedanta Institute, Kolkata]

## BOOK

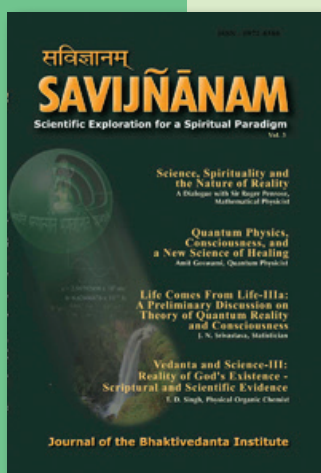
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## Savijñānam (Vol-3-4) Scientific Exploration for a Spiritual Paradigm

Journal of the  
Bhaktivedanta Institute

Softbound: Rs. 200;  
Bhaktivedanta Institute, Kolkata



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Reality of God's Existence: — Scriptural  
and Scientific Evidence

Dr. T. D. Singh, Founder-Director,  
Bhaktivedanta Institute, Kolkata, India



**Exploring the DNA of Leadership:  
Worldview and Character**

**Speaker: Aristotle Motii Nandy**  
President, SPIRITON Renaissance International  
**Zoom Id: 84513533984 Passcode: 939951**  
**Date: 2<sup>nd</sup> January 2021**  
**Time: 5:30 pm -7:00 pm**

**The Science of Ayurveda**

**Speaker: His Holiness Bhaktisvarupa Brihaspati Swami**  
**Zoom Id: 84513533984 (passcode: 939951)**  
**Date: 16<sup>th</sup> January 2021**  
**Time: 5:30 pm -7:00 pm**



**Reading  
Dr. T. D. Singh  
Books**

**Online Classes  
Every Saturday 7:30 pm - 8:30 pm**

**Zoom Id: 409 300 4814**  
**Passcode: 108108**

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Regd: RC-8, Raghunathpur, VIP Road  
Kolkata 700 059, WB, INDIA  
[www.binstitute.org](http://www.binstitute.org)

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