

Space-Time-Mind Continuum

From Einstein to Ouspensky

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Chapter 1: The Anthropic Principle

THE ORIGIN OF LIFE

The human mind did not originate with the beginning of biological time. Qualities of mind must have existed before that or life itself could not have evolved. Some theorize that had the universe unfolded in even a slightly different fashion, the human mind would not have evolved. For astronomer John Barrow, his co-author, mathematician Frank Tipler, and the writer of their forward, theoretical physicist John Wheeler, in their text *The Anthropic Cosmological Principle*, “that is the central point,” namely that “a life-giving factor lies at the center of the whole machinery and design of the world.”

According to the anthropic principle which links mathematical fundamental constants to both quantum physics and cosmology, there is an underlying causal principle, what Aristotle called $\tau\epsilon\lambda\omicron\varsigma$ (TELOS), purposeful action, animating the universe. Early theoreticians Johannes Kepler (1571-1630), Robert Boyle (1627-91) and Richard Bentley (1662-1742), argued that the elegant mathematical basis of the movement of the planets was proof in and of itself of a design maker. Isaac Newton (1642-1727), in discussing his discovery of the gravitational constant (which derived from Kepler’s law of planetary motion), wrote, “Whence arises this uniformity in all their outward shapes, but from the counsel and contrivance of an Author.”

In the beginning there was, most likely, an incredible explosion of a unified mass, and the universe was born. Clusters of matter, bound by gravity interwove and formed galaxies. These galaxies gave birth to smaller subwholes known as solar systems, our arrangement consisting of nine planets circling the sun in roughly the same plane, many of which have one or more moons.

The entire universe is a hierarchical structure always in motion. Subunits are delineated by their various levels of organization and one particular level gave birth to life here on earth. As part of the hierarchy, the earth is comprised of smaller units called atoms. Made up of elementary particles, (the electron, proton and neutron and their subatomic precursors), the various arrangement of these atoms form the elements, the building blocks of matter and life. The structure, composition and position of the earth were prerequisites for life. Each of these coordinates is just as important as the other in understanding biological emergence.

This theory suggests that volitional activity inherent in the structure of matter eventually evolved into amino acids, DNA and one-celled organisms. Lightning striking the primordial soup has been linked to the creation of such precursors of life. Consciousness evolved with the increase of volitional developments in the nervous system. This occurred in the paramecium when it moved towards the sun to obtain warmth, in insects, fish, reptiles and mammals when adaptive instincts emerged and in

man when he became a tool-maker, and when language developed. Since we are a product of the universe, this paper will describe the intentional aspects of our components, most notably, the purposeful interaction of elementary particles and the self-direction inherent in DNA and the zygote. These lawful processes evolved into self-awareness and consciousness as we know it.

THE ANTHROPIC PRINCIPLE

The word “anthropic” in the dictionary, refers to man. The anthropic principle is a complex idea derived from Carl Jung’s term “synchronicity” or meaningful coincidence. Jung noticed that if two events were not causally related, but connected by *meaning*, it therefore established that a human mind was needed to see the connection. In physics there are key numerical coincidences linking the microcosmic world to the macrocosmic world. For instance, Sommerfeld’s number 137 shows up in the spin of the electron and in the expansion rate of the universe. There is no known intrinsic reason for linking these two seemingly unrelated realms. However, if the two situations are in fact related, this would suggest an overarching design pattern to the structure of the cosmos. Further, if the expansion rate of the universe was even slightly different, life on earth could not have evolved. The anthropic principle suggests that there is a link between the overall design of the universe and the human mind which can recognize the design and further, exists because of it.

CONSCIOUSNESS

A complex term encompassing the following:

Awake

Awareness... of an external event or internal physical or psychological state

Sensitivity

Knowing, perceiving, apprehending, remembering

Involving rational abilities

CAPABLE OF:

Decision making

Thought

Perception

Volition

Planning

Will

Purpose

Design

Organization

Discrimination

Sensation

Emotion

Empathy

Sympathy

Ideation

Communication

Reflection

Self-observation

Negentropy

Teleology

Entelechy

Mind in the broadest sense.

The totality in psychology of sensations, perceptions, ideas, attitudes and feelings.

Encompassing conscious, preconscious, unconscious and collective unconscious states.

Dreaming as a separate state of consciousness involves its own attributes, e.g., primary process language, separate and distinct from the waking state of consciousness.

SOME QUESTIONS REGARDING OUR EXISTENCE

A comprehensive theory of consciousness should lay a foundation for coming to terms with the following questions:

1. How can the psyche infuse itself into the brain?
2. What is the relationship of consciousness to the four physical forces of the universe: gravity, electromagnetism, strong and weak nuclear forces?
3. Can consciousness be considered a fifth force, or is it an outgrowth of the other four?
4. Can matter by definition be conscious, or can components of consciousness be inherent in matter?

CONSCIOUSNESS

In order to begin to tackle these questions, it is best that we define the term consciousness. In looking through various dictionaries and in discussing the word in a number of college classes on metaphysics, I have come to the realization that act of becoming conscious is a complex process which has many attributes to it. Clearly, the act of becoming conscious involves a whole host of variables (see boxed chart). Therefore, we can state that man is the most conscious animal because his powers of perception, thought, intention, etc., are more highly developed than lower forms of life.

Breaking down the term into its components, we see that even the first one-celled organism that moved itself into the warmth of the sun was to some degree conscious. Certainly perception, purpose, awareness and decision-making are evident in this instance even if the one-celled fellow reacted “automatically” or instinctively. Something inside that organism was conscious (or programmed by conscious forces) to some extent. This “something”, which Freud would call the unconscious, “thinks”.

Consciousness is not an either/or concept. The act of becoming conscious lies on a continuum starting with simple awareness and ending with advanced thinking and volitional activity. Herbert Read and Jean Piaget hypothesize that man’s evolution from lower animals developed because of his intentional movements.

Man has not reached his present superior status in the evolution of the species by force alone, or even by adjustment to changes in the environment. He has reached it by the development of consciousness, thus enabling him to discriminate the quality of things.

Read goes on in stating that Piaget links intelligence to the organism’s initial reaction to the environment:

Intention is the essential characteristic of intelligence.... Piaget shows that intentional adaption begins as soon as the child transcends the level of simple corporal

activities such as sucking itself, listening, looking and grasping and acts upon things and use the interrelationships of things.

Stepping back into the realm of biophysics, we can state with certainty that DNA's ability to direct the metabolism of the cell, produce the proper enzymes and amino acids, replicate itself and also ultimately orchestrate the development of the fertilized egg into a fully developed organism is a conscious display of the highest order. Memory, intent, organization, awareness, design and purpose are each fully developed in this instance. The motive force inherent in DNA is a form of intelligence. Consciousness is imbued within its structure although the nature of its consciousness is different in many qualitative ways from the psyche of our brains; and yet, it is DNA that directs the development of man's psyche. Thus, it may be considered a more primary form of consciousness.

MIT Professor of Computer Sciences, and self-made millionaire Ed Fredkin views DNA as "a good example of digitally encoded information." It is Fredkin's hypothesis that information is even more primary than matter and energy. Sub-atomic particles, according to this view, can be seen as "bits of information" just like those found inside "a personal computer or pocket calculator.... The behavior of those bits, and thus, the entire universe," Fredkin says, "are governed by a single programming rule." Through eternal recapitulation and incremental transformations, the "pervasive complexity" that we see as life emerges.

David Chalmers, in a recent article on consciousness in Scientific American, echoes this idea by stating that "The laws of physics might ultimately be cast in informational terms.... It may even be that a theory of physics and a theory of consciousness could eventually be consolidated into a single grander theory of information."

In the early 1950's, Crick and Watson uncovered the basic structure of DNA. They discovered the double helix, a spiral structured tetragramatic molecule containing phosphorus, oxygen, carbon, hydrogen and nitrogen. The particular arrangement of its four molecular bases: Thiamine, Adenine, Guanine and Cytosine, codes for every plant and animal from virus to man. It is simply the sequencing of the two base pairs AT or TA and GC or CG along the sugar phosphate backbone that contains the program for the construction of the particular life form in question. Seen as a complex binary program, TA being one unit and GC being the other, we can see that the only difference between the zygote of a human and that of a pterodactyl is the base sequence of these four molecules!

Man's uncovering of the structure of DNA has brought the concept of consciousness down to the level of the atom, for it is the particular arrangement of specific atoms that codes for all forms of life.

Further proof that atoms are involved in processing conscious information can be found in the field of neurophysiology. For instance, Holger Hyden has discovered that when learning takes place, messenger RNA (mRNA) changes its base count in neural and glial cells of the brain. mRNA is the liaison from the DNA molecules within the nucleus to the various components within the cell body. After a period of time, Hyden discovered, the mRNA directs the production of protein chains on the ends of the dendrites to house the new encoded memory trace. It is this author's belief that this transference occurs in mammals during the REM stage of sleep.

Other neurological research establishes that different types of cognitive processes are encoded in, or triggered by, specialized molecules called neurotransmitters. For instance, when an animal is in a fearful situation, adrenaline is pumped into the brain. When a human dreams, serotonin and melatonin, produced from the pineal gland, are involved. The psychotropic drug, LSD, has a molecular structure known as the indole ring, a combination of a carbon ring, and a pentagon-shaped ring with nitrogen at its apex, which is also found in serotonin and melatonin. Just as with the basic components of DNA, the neurotransmitters are made from just a few basic elements: Oxygen, Hydrogen, Nitrogen and Carbon. Fifty millionths of a gram of LSD is enough to alter one's consciousness in dramatic and awe-inspiring ways. Our state of consciousness is based upon a fragile neurochemical equilibrium.

Man's search for his "mind" has taken him to the basic structure of matter. Going back to our definition, we can see that elementary particles, atoms, elements and molecules contain components of consciousness, not only because they can be utilized to program cognitive processes, but also because they house within their structure the capacity for the following attributes:

- Basic Awareness
- Organization
- Lawful Design
- Discrimination

and even, perhaps, intention, purpose, memory and communication.

Surely the interaction of electrons with photons, protons and neutrons is a highly ordered procedure. Somehow, within the structure of the electron, it "knows" that it must repel other electrons and be attracted to positively charged protons. Decision-making occurs at the level of the electron whether or not the electron itself "thinks". One way or another, it is programmed to respond in a predictable and lawful way. There is a basic awareness inherent within the construction of the electron, for if this were not true, there would be no order to the structure of matter. The very fact that the periodic table of elements exists is proof of conscious design, purpose, order and intent in the creation of the elements. By definition, since we see components of consciousness within the structure of matter, we can therefore conclude that aspects of consciousness are inherent there as well.

COSMIC LAW

Our entire quest for scientific truths is based upon the tacit assumption that the Universe operates lawfully. The very fact that the planets circle the sun in prescribed paths equivalent to Kepler's harmonic law P^2/D^3 is proof for conscious design within the structure of the Universe. Lawful interactions presuppose conscious design. Neatly sidestepped by neo-Darwinian paradigms which suggest that the emergence of life is a chance process, this self-evident truth was known by most, if not all, of the great scientists of the past. Attributes of consciousness are evident not only in lower forms of life, but also on cosmological levels.

FOUR + ONE

Physics has uncovered four forces to the Universe:

1. ELECTROMAGNETISM: The force that holds molecules together: the sharing of photons by elementary particles.
2. GRAVITY: The force that holds the planets together.
3. STRONG NUCLEAR FORCE: The force that holds the nucleus together.
4. WEAK NUCLEAR FORCE: The force that holds the neutron together.

Is CONSCIOUSNESS a fifth force?

It is stated by the physicists that all known physical properties can be reduced to these four forces. However, there is one basic component to the Universe that is neglected by these forces, and that is the motive power behind it, animating it.

As the earth circles the sun at 20 miles/sec, the sun traverses the galaxy at 200 miles/sec. In turn, the galaxy is also moving through the cosmos at approximately 100 miles/sec. This complex helical movement not only allows for the properties of space and time, but also for evolution on our planet. Note curiously the similarity of form in the spiral movement of time to the spiral form of DNA. Whether or not the primary attribute of spirality is a coincidence or part of the anthropic principle is for the reader to judge. In Wilhelm Reich's text *Cosmic Superimposition*, he points out the obvious similarity of the structure of hurricanes to that of spiral galaxies. They are both a product of similar unifying forces which he sees as related to the 90° intersection of two vectors of energy.

Consciousness as a fifth force may be looked at as the backdrop of an intentional lawful cosmic mosaic that corresponds to the élan vital of Bergson; it is the motive force which drives the universe. It is also the purposeful or thoughtful power which not only gives rise to space/time and the four physical forces, but also to the emergence of life.

From the above discussion we can see that consciousness as a force or attribute of the cosmos did not suddenly appear with the dawn of man; nor did it begin with the first one-celled organism. It was there from the start. Not only are biological organisms "intelligent", the structure of matter and the motion of the planets are also evidence for psychical design. In that sense we can see that evolution is also a form of devolution, as the highest principles of consciousness must have been present from the start.

From this point of view, equations and inventions are not so much created by humans, but rather, discovered by them. The airplane and flight to the moon happened because man looked out at the world and saw that other animals could fly. A human could not run a 4-minute mile or design a computer, unless the respective ability was already inherent as a distinct possibility from the outset.

HIERARCHY OF MIND

Having established a relationship between the mind of man and the structure of matter, we can now turn our attention to the qualitative differences between the inherent

attributes of consciousness in humans as compared to atoms. Any attempt at modeling the psyche must certainly address itself to the question of the various levels of mind. The human brain can be separated into three basic levels:

I. THE PHYSICAL LEVEL: The physical atoms (and subatomic and elementary particles) from which the brain is made up of; the realm of physics, the four known forces of the universe.

II. THE BIOLOGICAL LEVEL: Biophysics, the realm of life; the development of amino acids, DNA, the structure of the cell, etc., including the development of neurotransmitters and a neuronal network in higher animals. We could also include here the primary instincts and automatisms.

III. THE PSYCHOSPIRITUAL LEVEL: This level involves the realm of psychology as defined by such writers as Freud and Jung, Pavlov, and Skinner; the area of higher states of consciousness as delineated by Ouspensky, Gurdjieff and Steiner; and also realms discussed by religious doctrine.

If we take into account evolution, the expansion rate of the universe and chronology, we could add a fourth component:

IV. MAN'S HIERARCHICAL TIME & PLACE IN THE COSMOS: This realm would include specific factors such as the position, structure, temperature and other attributes of the earth, and also the particular teleological chain of events which led to the development of life, and the emergence of humans at this point in time. The animating principle of the universe, i.e., first cause, falls into this category, as would our place in the intelligence hierarchy. There may be other entities in inner space or on other planets who are ahead of us on the chain.

Each level of mind would be arranged hierarchically, and each would have its own organizing principles. Relationships between levels would be anti-symmetric. As one moves down the hierarchy components become more detailed and specific (e.g., the chemical structure of neurotransmitters would be a more primitive form of consciousness, but more advanced than the processes involved with the interaction of elementary particles). A movement up the hierarchy is more holistic, e.g., atoms, molecules, DNA, brain. Threshold values would separate one realm from another. In the case of the three basic levels mentioned above, physical, biological and psychospiritual, bioelectric forces seem to be specifically utilized as a medium of communication between each strata. When thoughts become physical actions, the transfer of electrons (during a nervous impulse) carries the message from the mind (software) to the brain (hardware) and then to the body. Interestingly, the psychological concept known as the will can be seen as a liaison between mental and physical domains.

I. PHYSICAL LEVEL

At the level of the atom, there is very little, if any “free will,” although there is some aspect of randomness or indeterminacy. This realm involves the laws of physics, and in terms of the concept of consciousness, would involve its most fundamental feature, e.g., basic awareness or sensitivity. Other primary components of consciousness would include discrimination, organization and intentionality of some sort. For example, opposite poles of magnets attract each other and same poles repel. Magnets create highly ordered fields, and elementary particles can aggregate into the highly ordered periodic table of elements.

II. BIOLOGICAL LEVEL

This realm involves goal-directed (negentropic) behavior and thus a more complex “conscious” mechanism. The processes of growth, propagation, evolution and intention exist at the level of DNA. In fact, all life processes can be seen as teleological as they purposefully take into account future needs.

Although the appearance of life is quite different than the relatively simple interaction of elementary particles, there are also basic similarities between, for instance, the laws of chemistry and photosynthesis. The level of biophysics, although more sophisticated than simple chemical interactions, is similar in that prescribed patterns of atomic interactions follow lawful procedures. The inventor Nikola Tesla points out that the growth of crystals contains within precursors for a life-forming principle. The major difference between Level One and Level Two is one of increased volitional ability and the accompanying so-called “spark of life,” the “*élan vital*” of Bergson. DNA has more of its own say in its destiny than do the elementary particles (yet DNA is a hierarchical construction of these particles).

III. PSYCHOSPIRITUAL LEVEL

The cyberspace of the psyche as delineated by such mind psychologists as Freud and Jung describes processes of our existence that seem to bear little connection to the so-called physical world. Nevertheless, Jung states that by its nature, the self arises and connects the inner mental realm to the outer physical. Behavior psychologists such as Pavlov and Skinner would argue that internal processes such as thinking and dreaming are based upon reflex action and associative mechanisms only, but ultimately, this view essentially ignores the mind and the unconscious and simply focuses on outward behavior.

In a sense, Gurdjieff and Ouspensky combine mind and behavior psychologies. Concerning behaviorism, they essentially agree with Pavlov and Skinner in stating that much of man’s thought processes are basically mechanical. Most of our actions are due to automatic responses to stimuli. Gurdjieff and Ouspensky state that we are asleep and spend most, if not all our life, in an automatic pilot existence which they call “waking-sleep”. This mechanical state is quite similar to the behavior of inorganic or organic chemical reactions in that no real “thought” is claimed to be involved. The man/machine simply moves in a prescribed stimulus-response path. “But there is a possibility of

ceasing to be a machine,” Gurdjieff states. “It is this we must think of and not about the different kinds of machines that exist.” Gurdjieff tells us that highest states of consciousness are equated with self-evolution/transformation and acts of one’s own will power. The more a person directs his or her fate, the higher the state of consciousness.

THE LAW OF WILL

According to Gurdjieffian philosophy, all of life is ruled by the Law of Will. This law, delineating the various levels of consciousness (of objective consciousness, waking state, waking sleep and deep sleep), has three aspects to it:

GOD’S WILL: The mystery of existence, controlling cosmic forces, destiny and fate, factors affecting life and death.

“BIG BROTHER’S” WILL: Other more powerful people’s will or social, political or economic structures that control us such as our boss, government, AT&T, Microsoft or Exxon, the media and society’s perceived demands. When living in a mechanical existence, one tends to be ruled by other people’s will. This is a lower state of consciousness which is basically in accord with the behavioral model.

ONE’S OWN WILL: Only through super efforts and intentional suffering can one begin to go against the grain, and thus utilize one’s own will. Changing oneself for the better and directing one’s own fate involves the very highest states of consciousness, for it involves knowledge of the self and teleological action.

The difference for Chalmers between information encoded in atoms and as compared to brains is the “experiential” or “subjective” aspect. The “hard question” for Chalmers is “how physical processes in the brain give rise to subjective experience.” Rudolf Steiner’s thinking comes into play here. Steiner discusses in his writings the language of the soul and the relationship of one’s sense of self-identity to the motive power that runs the universe. With the realization of THE SELF comes direct knowledge of our connection to the source. We are made in God’s image; As above, so below.

In the whole range of language there is only one name that, through its very nature, distinguishes itself from every other name. That name is “I”....The “I” as designation for a being has meaning only when this being applies it to itself.

Steiner outlines the ancient’s teachings regarding the realization of man’s connection to the Godhead by exploring the Biblical name for God given to Moses during his meeting with the burning bush: the “I AM THAT I AM”. Unable to say “I” for another:

I am an “I” to myself only. The true nature of the “I” is independent of all that is external.... Those religious denominations that have consciously maintained their relationship with supersensible perception designate the “I” as the “Ineffable name of God”.... Nothing of an external nature has access to that part of the soul with which we are concerned here.

The understanding of the meaning of “I” involves one’s own connection to the internal world of the psyche. Not only is it an identification with the totality, it is realization of this identification. We are linked to cosmic consciousness through knowledge of our selfhood. This is the highest state of consciousness not present in lower realms. Using the symbol of the mandala, God lies in the center, and each of us are spokes on the wheel. All are connected through identification with the source. Access to the source can be achieved through meditation, dream interpretation and teleological action.

The act of becoming conscious is a complex process, and consciousness as a concept is not one “thing”. Man may be the most “conscious” being on the planet, however, principles of his consciousness are also imbued into the atoms that comprise his being and into the very fabric of the ordered universe that he inhabits.

BIBLIOGRAPHY

- Barnett, Lincoln. *The Universe and Dr. Einstein*. New York, NY: Time Inc, 1962.
- Barrow, John, & Tipler, Frank. *The Anthropic Cosmological Principle*. Oxford, England: Clarendon Press, 1986.
- Boheme, Kate. *Realization Made Easy*. Holoke, MA: Elizabeth Towne Company, 1917.
- Chalmers, David. The Puzzle of Conscious Experience. *Scientific American*, December, 1995, pp. 80-86.
- Freud, Sigmund. *Collected Works*. New York, NY. Modern Library, Random House, 1938.
- Gora, Edwin. Pythagorean Trends in Modern Physics, Part II. Kingston, RI: *MetaScience Publications*, 1985 (unpublished).
- Hyden, Holger. RNA: A Functional Characteristic of the Neuron and its Glia. In Mary Brazier (Ed.), *Brain Functions*. Berkeley, CA: University of California Press, 1964.
- Jung, Carl. *Portable Jung*. New York, NY: Viking Press, 1971.
- Ouspensky, P.D. *In Search of the Miraculous*. New York, NY: Harcourt & Brace, 1960.
- Read, Herbert. *Origin of Form in Art*. New York, NY: Horizon Press, 1965.
- Reich, Wilhelm. *Cosmic Superimposition*. Rangeley, ME: Orgone Institute Press, 1953.
- Rothman, Milton. *The Laws of Physics*. Greenwich, CT: Facett Publ., 1963.

Seifer, Marc. *Levels of Mind*. [Masters Thesis.] Chicago, IL: University of Chicago, 1974.

Seifer, Marc. *A Psychophysiological Model of Mind*. Kingston, RI: 1975 (unpublished).

Steiner, Rudolf. *An Outline of Occult Science*. New York, NY: Anthroposophic Press, 1972.

Whyte, L, et. al., (Ed's). *Hierarchical Structures*. New York, NY: Elsevier Publ., 1969.

Wright, Robert. *Three Scientists & Their Gods: Looking for Meaning in an Age of Information*. New York, NY: Times Books, 1988.