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THE EMERGENCE OF HOLOGRAPHIC PERSPECTIVE : TOWARD A CONVERGENCE OF SCIENTIFIC AND RELIGIOUS WORLDVIEWS

Introduction

This study presents the holographic perspective of the world as proposed by David Bohm and the holographic model of the Brain as proposed by Karl Pribram. It also points out some of the similarities between this emerging world view in science and that held by eastern religions.

The Hologram

The hologram is one of the truly remarkable inventions of modern physics. It is a kind of three-dimensional "picture" produced by holography or what is known in common parlance as lensless photography. Holography is a way of recording and then reconstructing waves. The waves may be of any kind, light, sound, or X-ray.

The word "holography" originates from the Greek word "holos", meaning "the whole". By using this word, the inventor of holography wanted to stress that it records complete information about a wave-both its amplitude and its phase. In conventional photography only the distribution of the amplitude is recorded in a two-dimensional projection of an object onto the plane of the photograph. A hologram, on the contrary, regenerates not a two-dimensional image of an object, but the field of the wave which it scatters.

The physical foundation of holography is the science of waves, their interference and refraction. The purest kind of light available to us is produced by a laser, which sends out a beam in which all the waves are of one frequency. When two laser beams touch they produce an interference pattern of light and dark waves that can be recorded on a photographic plate. If one of the beams, intead of coming directly from the laser, is first reflected off an object such as a human face, the resulting record will be a hologram of the face. The images observed when a wave front is reconstructed from

a hologram astonish one by their reality - they exhibit such properties as parallax, stereoscopicity and the possibility of obtaining coloured images.[1]

A hologram has certain unique properties. If we break the hologram into many pieces, each piece is capable of reconstructing an image of the entire object. This means to say that the recording of a hologram is non-linear. If, on other hand, a part of the photographic negative is cut off the print will show a truncated image. In the negative of the original hologram bright spots remain bright and dark ones dark. The real image is pseudoscopic, that is, the right hand part of the object with respect to the observer are seen as righthand ones and the lefthand parts as lefthand ones. Only the relief of the object is reversed.

The Brain as a Hologram

Karl Pribram, neuroanatomist, worked with Karl Lashley on engrams, the site of the substance of the memory. He was intrigued by the finding that memory was not stored in anyone part of the brain but was distributed throughout. He saw the hologram as an exciting model of how the brain might store memory. If memory is distributed rather than localized, he suggested that it is holographic.[2] He further pointed out that the abstract principles of the hologram might explain the brain's most elusive properties. The diffuse hologram makes no more common sense than the brain. The whole code exists at every point in the medium. Hardness or redness or smell are only frequencies when the brain encounters them. The brain performs complex calculations on the data it receives in order to see and know.

The Holographic Perspective of the World

David Bohm, theoretical physicist and a protegé of Einstein, described a holographic universe. He proposed a world that is neither made up of an infinity of discrete, subatomic particles, nor is it a gigantic machine made up of parts. In his conception the world is an indivisible unit and its parts are interwoven into each other. What appears to be a stable, tangible, visible, and audible world is an illusion. It is dynamic and kaleidoscopic-not really "there". He makes a distinction between the "explicate-implicate" order of things. What we normally see is the explicate or unfolded order,

1. Cfr. Yu. I. Ostrovsky, *Holography and Its Application*, (Moscow: Mir Publishers, 1977).
2. Cfr. M. Ferguson, *The Aquarian Conspiracy*, (California : J.P. Tarcher, 1980).

rather like watching a movie. There is an underlying, more primary order that is father to this second generation reality. He calls this order implicate or enfolded. The enfolded order harbours our reality, much as the DNA in the nucleus of the cell harbours potential life and directs the nature of its unfolding. Bohm explains these two orders with a simple example. Droping an insoluble droplet of ink into a vessel containing glycerine and stirring the content slowly by a mechanical device so that there is no diffusion, the droplet is eventually drawn into a fine thread that is distributed throughout the whole system in such a way that it is no longer visible to the eye. If the mechanical device is then reversed, the thread will slowly gather together until it suddenly coalesces again into a visible droplet. Before this coalescence take place, the droplet can be said to be "folded into" the viscous fluid, while afterward it is unfolded again.

The problem is that we cannot read reality out of its enfolded order. It may be that the brain's neural interference patterns and mathematical processes are identical to this primary state of the universe. But the mathematics performed by our brains makes objects out of frequencies. The brain's objectifying alters that which we hope to see. This is to say, we are participants in reality, observes who affect what we observe. Pribram[3] has pointed out that transcendental experiences may allow us occasional direct access to that realm. When we bypass our normal, constructing perceptual mode, we may be attuned to the source or matrix of reality. Subjective reports from mystical states often sound like descriptions of quantum reality in physics.[4]

Towards a Convergence of Science and Religion

Just as metaphysics was an attempt to conceive the world as a whole by means of thought through a union of two different human impulses, the one urging man towards mysticism and the other towards science[5] the holographic perspective may be a break through theory in modern science that integrates science and religion and ancient intuitions about the nature of reality.

Pribram has said that if bythe nature of reality is holographic and the brain operates holographical the world, as eastern religions have described it, is "maya" – its concreteness is an illusion.

3. Cfr. Yu. I. Ostrovsky, *op. cit.*
4. Cfr. F. Capra, *The Tao of Physics*, (London : Bantham Books, 1976).
5. Cfr. B.A. Russel, *Free Man's Worship*, (Londan : George Allen and Unwin Ltd., 1976).

Quantum theory has revealed the universe not as a collection of objects but rather a complicated web of relations between the various parts of a unified whole. The universal interconnectedness of things and events seems to be the fundamental characteristic of the atomic reality. According to Niels Bohr isolated material particles are abstractions and their properties are definable and observable only through their interaction with other systems.

One is struck by the parallel descriptions of reality that one finds in mystic literature. In the Hindu mystical experience of the world, the Brahman is the unifying thread in the cosmic web, the ultimate ground of being, the reality without, which is identical to the Atman, the reality within. Chardin[6] echoed the same idea when he said that everything has a "within" and a "without". In the Avatasaka Sutra of Mahayana Buddhism the world is described as a perfect network of mutual relations where all things and events interact with each other in an infinitely complicated way. The following description of a holographic reality is found in a Hindu Sutra:

> In the heaven of Indra there is said to be a network of pearls so arranged that if you look at one you see all the others reflected in it. In the same way, each object in the world is not merely itself, but involves every other object.[7]

Again, Leibnitz seemed to be reflecting a holographic perspective when he talked about a universe of monads, units that incorporate the information of the whole.

What accounts for such ancient wisdom about the nature of reality? Science seems to be only discovering now what the mystics had intuited centuries ago. The source of such intuitions seems to lie in the deeper states of consciousness attained by the mystics. Such states of consciousness are more nearly attuned to the primary level of reality a dimension of order and harmony.

Implications of the Holographic Perspective

The holographic view of reality compels us to revise the very data-base on which we have formed our assumptions and built our institutions and

6. Cfr. T. Chardin, *The Phenomenon af Man,* (New York: Harper and Brothers, 1969).
7. Cfr. M. Ferguson, *op. cit.*, p. 185.

lives. It reveals a rich, creative and interconnected reality. It affirms more fully man's place in the universe.

Because we have not understood the brain's "objectifying" nature, that is, making objects out of what it observes, we have come to believe that the world is independent of us and set ourselves against everyone and everything else. It has given rise to competitions and rivalry on the level of individuals and nations, and indiscriminate exploitation of natural resources. The one leads to mutual destruction and the threat of nuclear anhilation is the extreme of that. The other leads to disturbance in the world's ecosystem with consequent drastic changes in climatic conditions, threatening human life in another way. As against this, the holographic view reveals reality as a web of interconnections and relations. Seeing our interrelatedness with everything else in the universe may lead us to espouse a broader perspective of a "you and me world" of cooperation, in place of a "you or me world" of competition.[8] The challenge before mankind today is to match our lives to our new knowledge.

Conclusion

The holographic perspective in science may be the paradoxical, borderless paradigm that science had been looking for. It integrates science, mathematics, brain researches, philosophy, psychology and mysticism to bring about a startling new worldview. The reality that it describes is similar to the mystical intuitions described in eastern religions. The holographic perspective takes scienee closer to the ancient religious intuitions.

8. E. Werner, *"A Shot Heard Around the World"*. An Educational Film. (California: Werner Erhard and Associates, 1981).