A Quantum Mechanical Interpretation of Observation

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ABSTRACT

Is observation a dimensionless force acting on artists and scientists? The author discusses various theories and experiments designed to study the relationship between observation and creativity. Research involving parapsychology, quantum theory and animal experiments is discussed.

THE FORCE OF OBSERVATION

Is observation a dimensionless force acting on artists and scientists? Is creativity affected by observation? At one time or another, most of us have felt that we were being observed. Without thought, we have turned suddenly to discover someone looking at us. Usually this is annoying, although sometimes we smile if we recognize the observer. We accept this effect without understanding it, like a knee-jerk reaction.

OBSERVING YAWNS

Observation of a yawn often causes the observer to yawn involuntarily. One day I was taking photographs of animals at the London Zoo without much success. I yawned in front of the lion cage, and the lion rewarded me with a magnificent yawn in return. Robert Provine has studied the yawns of animals who seem to be yawning at each other [1]. This may be an effect caused by observation that is closely related to what Arthur Koestler calls 'perceptual learning by imprinting'. Koestler describes the 'follow-the-leader' response of a gosling just hatched from an egg. Through the phenomenon of imprinting, it will follow any moving creature for awhile. Later, there is perceptual learning, whereby the gosling comes to distinguish the shape of the leader from all other shapes. This example illustrates the twin phenomena in all learning: generalization and discrimination [2]. Fritz Zwicky describes a morphological field that he says led to outstanding discoveries in cosmology [3]. In *Wholeness and the Implicate Order,* David Bohm says, "The atom is seen to behave as much like a wave as a particle. It can best be regarded as a poorly defined cloud, dependent for its particular form on the whole environment, including the observing instrument. Thus one can no longer maintain division between the observer and the observed. Rather, both observer and observed are merging and interpreting aspects of the whole reality, which is indivisible and unanalyzable" [4].

QUANTUM THEORY

Every definable property in the world can be described in terms of quantitative laws of probability that fit into a general scenario of physics and mathematics. This idea follows the usual interpretation of quantum theory, adjusted for the notion that the fundamental theory is probabilistic, not deterministic, in form. De Broglie proposed alternate interpretations that led Bohm to a causal interpretation of quantum physics [5].

Chance can be defined as those contingencies outside causal laws. The laws of chance are just as necessary as the causal laws; the random character seems unpredictable within the context under discussion. There may be still newer contingencies coming from still broader contexts that may reveal a new world. A new force of observation can be documented, which may reveal how long it takes to be felt under different conditions. Thus, one of the effects of chance is to help 'stir things up', which initiates qualitatively new lines of development. The idea of chance comes at each stage in the progression of knowledge, when we are at the brink of discovering a deeper level of reality.

EFFECTS OF OBSERVING ARTISTS AT WORK

In the artistic world, is creativity affected by observation? I have noted that in directors' rooms of many financial institutions, portraits painted from photographs of deceased directors lack the expression of the portraits painted from life [6]. Catastrophe theory [7] describes a 'butterfly surface' of reality on which observation and stress result in the catastrophe of a work of art: a melody, a portrait, a sculpture. In her article on painting reality, Linda Heywood describes how a photograph of a person can never have intensity because it is too "symmetrical in the eyes" [8]. The portraits painted from life often have some imperfection that makes them alive and breathing, unlike a photograph. As Hiley pointed out, "The classical system of separate parts whose relationships are independent of the state of the whole is no longer valid. The parts are subjected to a new field which is the source of a force which acts on them through a quantum potential" [9].

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Observation May Be an Extrasensory Perception

Sheldrake's 'morphic resonance' is part of a multidimensional system of which we become aware when our time-axis intersects another's time-axis via extra sensory perception (ESP). Morphic resonance is a process whereby the forms of previous systems influence the morphogenesis of subsequent similar systems. Shapes take on vibrations in the same way that a tight string takes on the vibrations of another string. Electronic spin resonance and nuclear magnetic resonance are selectivities to particular frequencies. Sheldrake dismisses ESP as an elusive phenomenon that makes progress in parapsychology very slow and reinforces the tendency of mechanistic biologists to ignore and even deny the existence of evidence that documents parapsychological phenomena [10].

ESP Among Insects

At one time, I tried an experiment with honeybees, using heated honey as a bait both behind glass and behind an infrared transparent KRS5 filter. The bees avoided the glass but came to the infrared signals of honey in front of the KRS5 filter. They evidently detected the one-micron wavelength signal of heated honey [11]. Later, when I was a statistician in New York City, I spent my spare time at the Museum of Natural History under the direction of Heinrich Schneirla, attempting to decipher the communication of ants who can detect the death of their queen at a long distance from the nest. I was not able to discern even preliminary clues about how they communicate this information. Is it an example of ESP? Some claim that it is necessary to have a personal experience with ESP to be both convinced of and baffled by the phenomenon. I can identify callers on my telephone before they speak. Is that ability related to a telephone wire? I have found many people who claim to be able to identify long-lost friends in this way.

Artistic Creation Is Influenced by Observation

How can we design experiments that illuminate the relation between observation and creativity from a quantum physics point of view? Bohm has replied, "It implies a certain general mathematical and physical scheme which does not seem to lend itself to the notion that matter has new kinds of properties connected with the inner structure of elementary particles. There are definite alternate lines of research that are likely to lead to the correct direction" [12]. Surely this research is not one of the dangerous doors of perception through which we pass via hard drugs, no flashing lights near the alpha rhythm of 8 cycles per sec that often causes schizophrenia, no electrodes in our brain, which Wilder Penfield stimulated to cause songs and speeches after his brain surgery [13]. Observe artists at work: All artists occasionally need a 'big bang' to release their best efforts, such as Archimedes with his 'Eureka' event in his bath and George Sand's loving observation of Chopin composing preludes at his cold piano in Majorca. Creativity seems to come without effort under certain conditions of the neocortex [14]. "Are we not in Wonderland", wrote René Thom, "when we are in a discontinuous condition of transition that occurs when a system can have more than one stable state?" [15].

Great Musicians Perform Better Before Audiences

A great pianist rewards the audience with an interpretation of music that would not be possible if performed in an empty desert. At Carnegie Hall, I have heard Dmitri Sgouros (who Arthur Rubinstein claimed was the greatest pianist that he ever heard) play Rachmaninoff's Concerto No. 3 with his audience in rapture, experiencing a performance never to be forgotten. This communication between audience and performer perhaps exemplifies the power of observation on artistic creativity. The compact disc recording of his performance does not convey the spontaneous electricity of a live performance, in spite of the pianist's superb playing [16].

Conclusion

Whether or not we accept certain evidence of parapsychological phenomena, there are forms of ESP that affect the creative activity of artists and scientists. One such form of communication is obvious to artists. Something is communicated by the audience to a performing pianist, for example. Perhaps the slightest mistake in a loud forte fortissimo passage is part of the pleasure that the live audience cannot receive from a recording. Perhaps that is why music lovers bring their children to concerts. The power of observation is mutually rewarding.

References and Notes

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