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Location: [Mothership](#) -> [People](#) -> [B](#) -> [Boylan](#) -> [Dispatch](#) -> **Connections to the Universe Discovered**

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[Dispatches from Richard Boylan](#)

Connections to the Universe Discovered

From: "Richard J. Boylan, Ph.D."
Subject: Connections to the Universe Discovered
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> RECENT DEVELOPMENTS IN QUANTUM PHYSICS HAVE PROFOUND IMPLICATIONS
FOR OUR > UNDERSTANDING OF CONSCIOUSNESS: > >

In 1982 a remarkable event took place. At the University of Paris a > research team led by physicist Alain Aspect performed what may turn out to > be one of the most important experiments of the 20th century. Aspect and > his team discovered that under certain circumstances subatomic particles > such as electrons are able to instantaneously communicate with each other > regardless of the distance separating them. It doesn't matter whether they > are 10 feet or 10 billion miles apart. Somehow each particle always seems > to know what the other is doing. This meant that either Einstein's ban > against faster-than-light communication was being violated or the two > sub-atomic particles were nonlocally connected.

> Because most physicists are opposed to the idea of faster-than-light > processes into physics, Aspect's experiment is generally viewed as a virtual > proof that the > connection between sub-atomic particles is "nonlocal". > > University of London physicist (Late) David Bohm, for example, believed > Aspect's findings imply that objective reality does not exist,

> that despite its apparent solidity the universe is at heart a phantasm, a > gigantic and > splendidly detailed hologram. To understand why Bohm made that startling > assertion, one must first understand a little about holograms. A hologram > is a three-dimensional photograph made with the aid of a laser. To make a > hologram, the object to be photographed is first bathed in the light of a > laser beam. Then a second laser beam is bounced off the reflected light of > the first and the resulting interference pattern (the area where the two > laser beams commingle) is captured on film. When the film is developed, it > looks like a meaningless swirl of light and dark lines. But as soon as the > developed film is illuminated by another laser beam, a three-dimensional > image of the original object appears. > > The three-dimensionality of such images is not the only remarkable > characteristic of holograms. If a hologram of a rose is cut in half and > then illuminated by a laser, each half will still be found to contain the > entire image of the rose. Indeed, even if the halves are divided again, > each snippet of film will always be found to contain a smaller but intact > version of

the original image. Unlike normal photographs, every part of a > hologram contains all the information possessed by the whole. The "whole > in every part" nature of a hologram provides us with an entirely new way of > understanding organization and order. For most of its history, Western > science has labored under the bias that the best way to understand a > physical phenomenon, whether a frog or an atom, is to dissect it and study > its respective parts. A hologram teaches us that some things in the > universe may not lend themselves to this approach. If we try to take apart > something constructed holographically, we will not get the pieces of which > it is made, we will only get smaller wholes. > > This insight suggested to Bohm another way of understanding Aspect's > discovery. Bohm believed the reason subatomic particles are able to remain > in contact with one another regardless of the distance separating them is > not because they are sending some sort of mysterious signal back and forth, > but because their separateness is an illusion. He argued that at some > deeper level of reality such particles are not individual entities, but are > actually extensions of the same fundamental something.

> To enable people to better visualize what he means, Bohm offered the > following illustration. Imagine an aquarium containing a fish.

Imagine also > that you are unable to > see the aquarium directly and your knowledge about it and what it contains > comes from two television cameras, one directed at the aquarium's front and > the other directed at its side. As you stare at the two television > monitors, you might assume that the fish on each of the screens are > separate entities. After all, because the cameras are set at different > angles, each of the images will be slightly different. But as you continue > to watch the two fish, you will eventually become aware that there is a > certain relationship between them. When one turns, the other also makes a > slightly different but corresponding turn; when one faces the front, the > other always faces toward the side. If you remain unaware of the full scope > of the situation, you might even conclude that the fish must be > instantaneously communicating with one another, but this is clearly not the > case. > > This,

according to Bohm, was precisely what was going on between the > subatomic particles in Aspect's experiment. According to Bohm, the apparent > "nonlocal" connection between subatomic particles was really telling > us that there is a deeper level of reality we are not privy to, a more > complex dimension beyond our own that is analogous to the aquarium. And, he > adds, we view objects such as subatomic particles as separate from one > another because we are seeing only a portion of their reality. Such > particles are not separate "parts", but facets of a deeper and more > underlying unity that is ultimately as holographic and indivisible as the > previously mentioned rose. And since everything in physical reality is > comprised of these

"eidolons", the universe is itself a projection, a > hologram. In addition to its phantomlike nature, such a universe would > possess other rather startling features. > > If the apparent separateness of subatomic particles is illusory, it means > that at a deeper level of reality all things in the universe are infinitely > interconnected.

The electrons in a carbon atom in the human brain are > connected to the subatomic particles that comprise every salmon that swims, > every heart that beats, and every star that shimmers in the sky. Everything > interpenetrates everything, and although human nature may seek to >

categorize and pigeonhole and subdivide, the various phenomena of the > universe, all apportionments are of necessity artificial and all of nature > is ultimately a seamless web. In a holographic universe, even time and > space could no longer be viewed as fundamentals. Because concepts such as > location break down in a universe in which nothing is truly separate from > anything else, time and three-dimensional space, like the images of the > fish on the TV monitors, would also have to be viewed as projections of > this deeper order. > > At its deeper level reality is a sort of superhologram in which the past, >

present, and the future all exist simultaneously. This suggests that given > the proper tools it might even be possible to someday reach into the > superholographic level of reality and pluck out scenes from the > long-forgotten past. What else the superhologram contains is an open-ended > question. Allowing, for the sake of argument, that the superhologram is at > the very least it contains every subatomic particle that has been or will > be-- every configuration of matter and energy that is possible, from > snowflakes to quasars, from blue whales to gamma rays. It must be seen as a > sort of cosmic storehouse of "All That Is." > > Although Bohm conceded that we have no way of knowing what else might lie > hidden in the superhologram, he did venture to say that we have no reason > to assume it does not contain more. Or as he put it, perhaps the > superholographic level of reality is a "mere stage" beyond which lies "an > infinity of further development". > > Because the term hologram usually refers to an image that is static and > does not convey the dynamic and ever active nature of our universe, Bohm > preferred to describe the universe not

as a hologram, but as a > "holomovement". The existence of a deeper and holographically organised > order also explains why reality becomes non-local at the subquantum level. > When something is organised holographically, all semblance of location > breaks down. Saying that every part of a piece of a holographic film > contains all the information possessed by the whole is really just another > of > saying that the information is distributed non-locally. Hence, if the > universe is > organised according to holographic principles, it too, would be expected to > have non-local properties. Every particle that exists in the Universe, > contains > the image of the whole which is characteristic of a hologram. If this is a > True, then all of manifested life emanates from a single source of > causation that would include all particles existing in the Universe. It > means that everything from sub atomic particles to giant galaxies > and everything in between contains information of the whole. > > Working independently in the field of brain research, Stanford > neurophysiologist Karl Pribram has also become persuaded of the holographic > nature of reality. Pribram was drawn to the holographic model by the > puzzle of how and where memories are stored in the brain. For decades > numerous studies have shown that rather than being confined to a specific > location, memories are dispersed throughout the brain. In a series of > landmark experiments in the 1920s, brain scientist Karl Lashley found that > no matter what portion of a rat's brain he removed he was unable to > eradicate its memory of how to perform complex tasks it had learned prior > to surgery. The only problem was that no one was able to come up with a > mechanism that might explain this curious "whole in every part" nature of > memory storage. > > Then in the 1960s Pribram encountered the concept of holography and > realized he had found the explanation brain scientists had been looking > for. Pribram believes memories are encoded not in neurons, or small > groupings of neurons, but in patterns of nerve impulses that crisscross the > entire brain in the same way that patterns of laser light interference > crisscross the entire area of a piece of film containing a holographic > image. In other words, Pribram believes the brain is itself a hologram. > Pribram's theory also explains how the human brain can store so many > memories in so little space. It has been estimated that the human brain has > the capacity to memorize something on the order of 10 billion bits of > information during the average human lifetime (or roughly the same amount > of information contained in five sets of the Encyclopedia Britannica). > > Similarly, it has been discovered that in addition to their other > capabilities, holograms possess an astounding capacity for information > storage simply by changing the angle at which the two lasers strike a > piece of photographic film, it is possible to record many different images > on the same surface. It has been demonstrated that one cubic centimeter of > film can hold as many as 10 billion bits of information. Our uncanny > ability to quickly retrieve whatever information we need from the enormous > store of our memories becomes more understandable if the brain functions > according to holographic principles. If a friend asks you to tell him what > comes to mind when he says the word "zebra", you do not have to clumsily > sort back through some gigantic and cerebral alphabetic file to arrive at > an answer. Instead, associations like "striped", "horselike", and "animal > native to Africa" all pop into your head instantly. Indeed, one of the > most amazing things about the human thinking process is that every piece of > information seems instantly cross-correlated with every other piece of > information; another feature intrinsic to the hologram. Because every > portion of a hologram is infinitely interconnected with every other portion, > it is perhaps nature's supreme example of a cross-correlated system. > > The storage of memory is not the only neurophysiological puzzle that > becomes more tractable in light of Pribram's holographic model of the > brain. Another is how the brain is able to translate the avalanche of > frequencies it receives via the senses (light frequencies, sound > frequencies, and so on) into the concrete world of our perceptions. > Encoding and decoding frequencies is precisely what a hologram does best. > Just as a hologram functions as a sort of lens, a translating device able > to convert an apparently meaningless blur of frequencies into a coherent > image, Pribram believes the brain also comprises a lens and uses > holographic principles to mathematically convert the frequencies it > receives through the senses into the inner world of our perceptions. > > An impressive body of evidence suggests that the brain uses holographic > principles to perform its operations. Pribram's theory, in fact, has gained > increasing support among neurophysiologists. Argentinian-Italian > researcher Hugo Zucarelli recently extended the holographic model into the > world of acoustic phenomena. Puzzled by the fact that humans can locate the > source of sounds without moving their heads, even if they only possess > hearing in one ear, Zucarelli discovered that holographic principles can > explain this ability. > > It has been found that each of our senses is sensitive to a much broader > range of frequencies than was

previously suspected. Researchers have > discovered, for instance, that our visual systems are sensitive to sound > frequencies, that our sense of smell is in part dependent on what are now > called "osmic frequencies", and that even the cells in our bodies are > sensitive to a broad range of frequencies. Such findings suggest that it is > only in the holographic domain of consciousness that such frequencies are > sorted out and divided up into conventional perceptions. But the most > **mind-boggling aspect of Pribram's holographic model of the brain is** what > happens when it is put together with Bohm's theory. For if the concreteness > of the world is but a secondary reality and what is "there" is actually a > holographic blur of frequencies, and if the brain is also a hologram and > only selects some of the frequencies out of this blur and mathematically > transforms them into sensory perceptions, what > becomes of objective > reality? Put quite simply, it ceases to exist. > > As the religions of the East have long upheld, the material world is an > illusion, and although we may think we are physical beings moving through a > physical world, this too is an illusion. We are really "receivers" floating > through a kaleidoscopic sea of frequency, and what we extract from this sea > and transmogrify into physical reality is but one channel from many > extracted out of the superhologram. This striking new picture of reality, > the synthesis of Bohm and Pribram's views, has come to be called the > holographic paradigm, and although many scientists have greeted it with > skepticism, it has galvanized others. A small but growing group of > researchers believe it may be the most accurate model of reality science > has arrived at thus far. > > In a universe in which individual brains are actually indivisible portions > of the greater hologram and everything is infinitely interconnected, > "altered state of consciousness experiences" may merely be the accessing > of the holographic level. If the mind is actually part of a continuum, a > labyrinth that is connected not only to every other mind that exists or has > existed, but to every atom, organism, and region in the vastness of space > and time itself, the fact that it is able to occasionally make forays into > the labyrinth and have transpersonal experiences no longer seems so > strange. > > The holographic paradigm also has implications for so-called hard sciences > like biology. Keith Floyd, a psychologist at Virginia Intermont College, > has pointed out that if the concreteness of reality is but a holographic > illusion, it would no longer be true to say the brain produces > consciousness. Rather, it is consciousness that creates the appearance of > the brain as well as the body and everything else around us we interpret as > physical. Such a turnabout in the way we view biological structures has > caused researchers to point out that medicine and our understanding of the > healing process could also be transformed by the holographic paradigm. If > the apparent physical structure of the body is but a holographic projection > of consciousness, it becomes clear that each of us is much more responsible > for our health than current medical wisdom allows. What we now view as > miraculous remissions of disease may actually be due to changes in > consciousness which in turn effect changes in the hologram of the body. > Similarly, controversial new healing techniques such as visualization may > work so well because in the holographic domain of thought images are > ultimately as real as "reality". Even visions and experiences involving > "non-ordinary" reality become explainable under the holographic paradigm. > In his book "Gifts of Unknown Things," biologist Lyall Watson describes his > encounter with an Indonesian shaman woman who, by performing a ritual > **dance, was able to make an entire grove of trees instantly vanish** into thin > air. Watson relates that as he an- d another astonished onlooker continued > to watch the woman, she caused the trees to reappear, then "click" off > again and on again several times in succession. > > Although current scientific understanding is incapable of explaining such > events, experiences like this become more tenable if "hard" reality is only > a holographic projection. Perhaps we agree on what is "there" or "not > there" because what we call consensus reality is formulated and ratified at > the level of the human unconscious at which all minds are infinitely > interconnected. If this is true, it is the most profound implication of the > holographic paradigm of all, for it means that experiences such as Watson's > are not commonplace only because we have not programmed our minds with the > **beliefs that would make them so. In a holographic universe there are** no > limits to the extent to which we can alter the fabric of reality. What we > perceive as reality is only a canvas waiting for us to draw upon it any > picture we want. Anything is possible, from bending spoons with the power > of the mind to the phantasmagoric events experienced by Castaneda during > his encounters with the Yaqui brujo don Juan, no more or less miraculous > than our ability to compute the reality we want when we are in our dreams. > > Indeed, even our most fundamental notions about reality become suspect, for > in a holographic universe, as Pribram has pointed out, even random events > would have to be seen as based on holographic principles and therefore

determined

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