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SchwartzReport

Science slowly accepts the matrix of consciousness☆

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For most of the Judaea-Christian epoch of history the view of most Western societies was that we, humanity, were separate from the rest of creation and had dominion over the earth, as if it were an exploitable bank account left us by a rich uncle. As the Bible frames it, "And God said, Let us make man in our image, after our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth."[1] And in a sense we have had dominion and done a very poor job of it, as the impending collapse of the ecosystems of earth, air, and water make clear.

French philosopher Rene´ Descartes in 1637, writing, "Cogito ergo sum. ("I think, therefore I am.")[2] set the tone of science when he said that only people can think; and this prevailed until Jane Goodall published her discoveries about chimpanzees in the Gombe Stream Reserve in Tanzania. It is worth noting that Goodall was so intimidated by the then conviction of science that only humans were capable of thought that she held back from publishing some of her insights for almost 20 years. She feared that she would be accused of anthropomorphizing the chimpanzees behavior and derided for being unscientific.[3]

But slowly this is changing as science discovers that all the beings of earth are conscious and that we live in a matrix of consciousness in which all beings in the domain of consciousness are interconnected and interdependent. It is the more modern equivalent of a Copernican revolution.

You may already know about the late Koko, a female gorilla whose IQ was estimated to be between 75-95 (the average IQ in the United States is 98, with 34% of Americans between 98 and 85). Koko's anatomy did not allow her to speak, monkeys and apes lack the neural control over their vocal tract muscles to properly form words, but she learned sign language and had a vocabulary of 1,000 words, and could understand 2,000 words of human speech.[4]

Or Bunny, a dog who learned to push buttons representing words and had a vocabulary of 92 words.[5] Or another dog, named Stella. And there are supposedly now other dogs who have learned to push an arrangement of buttons on the floor known as an alternative and augmentative communication (AAC) device, the same as used to help nonverbal children to communicate without speaking.[6] Using the buttons they can create sentences requesting something or commenting on their feelings.

What surprises many who still talk of "dumb" animals is that this new line of research extends far beyond mammals like gorillas and dogs.

Whether it is the cephalopods of the oceans – cuttlefish, octopuses, and squids[7] – or the bees that are so essential to our own survival, we are beginning to realize that we are surrounded by beings of consciousness.

When I was a younger man, on one of my archaeological expeditions, this one in the Bahamas, at night we often moored Seaview, the 125 foot research vessel that was our homebase, just east of Riding Rock, a low limestone sliver of land with a single tree. Over the weeks I would dive down to the seafloor and sit next to the reef where an octopus lived tucked away in a space under some rocks. When I realized the octopus was there, I started out holding a fishing spear with a piece of fish on the end to tempt it to come out. Over time I held the spear closer to the tip until in the end I just held the fish. The octopus, who I called George, although I never really knew if it was a male or a female, never bit me, but would come down over my hand and arm, and with one of its arms gently hold my arm. I will never forget the sense of its suckers on my wet suit and hand. George would not come out for any other diver, and clearly recognized me, although we all wore the same blue and grey wetsuits and dive masks. Roland Anderson, a biologist at the Seattle Aquarium, formally tested this ability of octopuses to recognize and distinguish between humans. He dressed two humans in the blue aquarium staff uniforms. Just as I had, one person consistently fed the octopuses in the aquarium tank, while the other touched it with a "bristly stick." Anderson reported that within a week without touching the two humans, looking at them through the water, most of the octopuses moved toward the feeder human and away from the irritator as soon as they came into view.[8]

Who knew that bees with their tiny brains could memorize flowers and also human faces, solve problems of arithmetic, and learn to use tools.[9] Until the last few years it was thought that social insects were governed only by instinct. It was all nothing more than innate behaviors. But recent research tells us something very different. As Princeton Professor Lars Chittka explains, "Much of the workings of the bee's mind can be understood only when one considers the natural challenges of the constantly changing market economy in which it must operate. The pressures of operating in this setting are often expressed in terms of physical performance. For example, a bee can carry its own body weight in nectar and or pollen; it may need to visit 1,000 flowers and fly 10 kilometers to fill its honey stomach only once; and 100 such trips may be

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required to generate a teaspoon of honey. Less appreciated are the mental efforts required along the way: in visiting 1,000 flowers, the bee has to work 1,000 floral 'puzzle boxes' whose mechanics can be as complicated as operating a lock and no two flowers species are quite alike in the mechanics that have to learned to gain access."[6]

Similarly, Monarch butterflies with brains the size of the head of a straight pin somehow in their annual 2,500 mile migration from the U.S. and Canada to the forests of central Mexico where they hibernate, fly day by day from the same tree their parents flew to the next tree their parents stopped for the night. And if that tree falls or is cut down, the next generation will pick a new tree and their progeny will stop there as well.[10] How can they possibly even know which direction to fly, let alone identify one tree from another as they travel?

But if those examples of consciousness seem strange, and hard to believe, consider this: plants think and remember. In the burgeoning field of plant neurobiology, a field that almost by definition seems unbelievably improbable, a theory known as the Cellular Basis of Consciousness (CBC theory) postulates that consciousness evolved with the very first cells, and all cellular life is endowed with consciousness.[11] One of the leading researchers in this work is Dr. Frantisek Baluska at the University of Bonn (Germany) department of plant cell biology. In response to a query from Salon.com Baluska wrote, "There are numerous definitions but the most simple and relevant is this: Consciousness is a feature of living systems allowing them awareness of their external and internal conditions."[12]

Professor Stanislaw Karpinski from the Warsaw University of Life Sciences in Poland, led a team that explored the idea of plant consciousness and found plants "transmit information about light intensity and quality from leaf to leaf in a very similar way to our own nervous systems. These 'electro-chemical signals' are carried by cells that act as 'nerves' of the plants." In the experiments Karpinski carried out his team showed that light shone on to one leaf caused the whole plant to respond. And the response, which took the form of light-induced chemical reactions in the leaves, continued in the dark.[13] This showed, they said, that the plant "remembered" the information encoded in light. "We shone the light only on the bottom of the plant and we observed changes in the upper part," Karpinski told the BBC in an interview.[14]

This sort of story of consciousness being a reality for beings other than humans gets lost in the news because these reports are rarely placed in their proper context. If they were, perhaps people would recognize how important and powerful such research findings are. Why do I say this? Because these stories collectively are telling us we need to radically and fundamentally change our view of reality. All of this research is showing us we live in a matrix of consciousness, and that all life is interconnected and interdependent. Once one's mind opens to that view it becomes clear why new technologies must be developed that don't pollute, that cutting down the Amazon forest, for instance, has implications that affect the wellbeing of every creature on earth, including ourselves, and that all social policies must be designed with this matrix in mind. It is so simple to say, yet so profound in its implications.

This research also is changing the minds of scientists about what we mean by consciousness, and whether it is entirely physiologically based. How can a bee with a brain of less than two cubic millimeters,[15] learn to count or recognize a human face, and yet we know they can.[16] How can a Monarch butterfly whose brain has only a million neurons – the human brain has around 86 billion neurons – possibly know about, let alone fly to, a specific tree? And yet Monarchs that have been tagged and tracked show they can and do.

As naturalist Dana Wilde points out, "Conventional depictions of cognitive capacity used to involve the physical size of a brain and the number of neurons in it. Neurons make up the biochemical circuitry of the mind. Each one is a treelike structure that moves sensory and other kinds of information around the nervous system. It receives information through its root, or dendrite, and sends it electrochemically up through its trunk, or axon, to twigs and branches that pass on the signals through synapses to other neurons…. But some researchers are starting to think that brain size, and specifically the number of neurons, doesn't exactly correlate to cognitive ability. Bees, it has been discovered, can learn to distinguish between images of human faces. Adult moths remember pain experienced as caterpillars. Individuals of some species of spiders show distinct personality types, including a kind of cobweb spider whose more aggressive females "participate more in colony defense and prey capture, while others are docile and engage more in brood care," according to arachnologists Lena Grinsted and Jonathan Bacon. Butterflies — and all kinds of spiders and bugs, really — practice intricate mating behaviors involving odors we can't smell, wavelengths of light we can't see, and who knows what else that's invisible to us."[17]

Perhaps most significantly of all it is becoming clearer and clearer that intelligence is not just physiologically based, that the matrix of consciousness is nonlocal.

In 1968, research physician Jean Barry of l'Institut Metapsychique in France carried out an experiment using Violet Tooth fungus cultures which had been cultivated under optimal conditions: ten petrie dishes with the culture for each participant, in all a total of 195 dishes. Of that total, 151 of the cultures in the dishes showed inhibited growth. There were 10 participants, each of whom carried out nine session expressing therapeutic intention. Their task was to inhibit the growth of fungus cultures. To do this they concentrated for 15 min from a distance of about four feet (1.2 m) away, never touching the cultures.[18]

What makes this study particularly interesting is that whilst most Therapeutic Intention studies are focused on improving the health of the organism that is the target of the therapeutic intention, this early Barry study already recognized a very important distinction: therapeutic intention works both ways. Perhaps because it is something you could never formally test in humans, although it has a strong religious history involving curses, hexes, and "evil eyes", it is not widely considered nor often discussed today, but a number of these simple organism studies have confirmed this two-way effect."[36] I pick the Barry study for that reason and because it is one of the first of what has become an entire body of research, and I will mention two others to emphasize this bi-directional point.

Carroll Nash of St. Joseph's College, Philadelphia carried out a particularly compelling study because it was so explicit in this regard. Nash's study involved bacterial colonies, cultured in common, and then split into three independent subpopulations.[19] His purpose was to replicate earlier studies by nun and biochemist Sister Justa Smith[20] and nursing pioneer Dolores Krieger who along with Dora Kunz would later develop the nonsectarian approach to therapeutic intent known as Therapeutic Touch.[21] Smith's studies had shown significant differences between treated and controls measuring changes in hemoglobin and enzyme activity, which were the focus of the expressed intention. But Nash had a second question. He asked, 'Could intention alone not merely affect the cell colonies, but could it do so both positively and negatively when compared to controls?' The results showed that it could, although positive intention produced a more significant result than negative intention."[19]

This matrix of consciousness nonlocal linkage was shown particularly dramatically in a study carried out by English biologist Rupert Sheldrake and Aimee Morgana. Morgana had an African Grey parrot, N'kisi who had a vocabulary, and she noticed that the parrot often seemed to respond to what she was thinking by vocalizing something in her thoughts. She approached Sheldrake about this, and they designed "a series of trials to test whether this apparent nonlocal linkage ability would be expressed in formal tests in which Aimée and the parrot were in different rooms, on different floors, under conditions in which the parrot could receive no sensory information from Aimée or from anyone else.

"During these trials, Aimée and the parrot were both videotaped continuously. At the beginning of each trial, Aimée opened a numbered sealed envelope containing a photograph, and then looked at it for two minutes. These photographs corresponded to a pre-specified list of key

words in N'kisi's vocabulary, and were selected and randomized in advance by a third party. We conducted a total of 147 two-minute trials. The recordings of N'kisi during these trials were transcribed blind by three independent transcribers. Their transcripts were generally in good agreement. Using a majority scoring method, in which at least two of the three transcribers were in agreement, N'kisi said one or more of the key words in 71 trials. He scored 23 hits: the key words he said corresponded to the target pictures. In a Randomized Permutation Analysis (RPA), there were as many or more hits than N'kisi actually scored in only 5 out of 20,000 random permutations, giving a p value of 5/20,000 or 0.00025. In a Bootstrap Resampling Analysis (BRA), only 4 out of 20,000 permutations equaled or exceeded N'kisi's actual score (pˆ0.0002). Both by the RPA and BRA, the mean number of hits expected by chance was 12, with a standard deviation of 3. N'kisi repeated key words more when they were hits than when they were misses. These findings are consistent with the hypothesis that N'kisi was reacting (through nonlocal linkage) to Aimée's mental activity."[22]

These studies and experiments spread across many disciplines, using different protocols, are often dismissed by physicalists who find the very idea of nonlocal consciousness, to quote American psychologists and physicalists James Alcock and Arthur Reber, to be "impossible."[23] And yet this position, when the research is closely examined, is seen as a statement of ideology or belief, not a statement of science. What this research is telling us, I think, is that the comfortable materialism that has dominated science for many years, is slowly giving way to an acceptance of the matrix of consciousness, the recognition that not all aspects of consciousness are physiological, and that Max Planck was right when he said in 1931: "I regard consciousness as fundamental. I regard matter as derivative from consciousness. We cannot get behind consciousness. Everything that we talk about, everything that we regard as existing, postulates consciousness."[24]

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