WHEN ILLUSION IS TRANSCENDENCE

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INTRODUCTION

It is well known that the mind plays tricks, but the truth is much deeper than this. The mind, it seems, is itself a trick, perhaps the biggest trick in nature. The mind is both real and an illusion. To be more precise, the mind is real but can only be understood as an illusion. Therein lies the beauty and transcendence of the mind.

The scholarship on the mind is confusing. There is the mind, the psyche, the self, the soul and the spirit, which are conflated, associated, differentiated or claimed not to exist in every combination imaginable. Then there is consciousness, the unconscious mind, the collective unconscious, the id, the ego and the superego to contend with. Nevertheless, because consciousness, the mind, the self and the soul are so entangled in the literature on the mind, it is useful to give examples which use these concepts in an effort to understand how the mind can be a real phenomenon that can only be understood as an illusion.

Our first example is based on Buddhist teaching. The idea that the self or mind is an illusion appears to be central to the Buddhist way of thinking. For example, in his highly regarded book, *The Art of Living*, his holiness the XIV Dalai Lama states that, "the doctrine of no-self or *anatman* is common to all schools of Buddhist thought...(and) is understood in terms of the denial of an independent and permanent self or soul."[1] He goes on to say that the Buddhist teacher Nagarjuna in his foremost philosophical work, *The Fundamental Treatise on the Middle Way*, explains that the self is an illusion we create, "...as a result of grasping at our aggregates: our body, mind and mental functions."[2] Nagarjuna's student Aryadeva believed that our "ignorant conception of consciousness" is the reason we fail to recognize the illusion of self.[3] The well-known Zen master Shunryu Suzuki is more blunt. "You think the mind is like a pond that you throw things in, and they sink to the bottom like old shoes, and later they rise to the surface," he said, "But actually there is no such thing as the mind."[4]

Doctrines that there is no individual self or mind predate classical Greek philosophy; were embraced by leading Greek philosophers such as Parmenides and Zeno; and have been espoused by some of the most brilliant thinkers in history. Moreover, their arguments remain as powerful today as those of their contemporaries who believed otherwise. Furthermore, the tradition is not dated. There is a lively, erudite cadre of thinkers in the intellectual community that hold similar or equally non-standard views about consciousness and about the mind.

The science writer Tor Norretranders claims that, "consciousness is a fraud."[5] Susan Blackmore, a psychologist, writer and lecturer based in Bristol suggests that, "Instead of asking how neural impulses turn into conscious experiences, we must ask how the grand illusion (of consciousness) gets constructed."[6] Another perspective is presented in *The Mysterious Flame*, a seminal work on conscious minds written by the philosopher Colin McGinn. Consciousness is real, McGinn claims, but it will never be understood. He argues that consciousness is, "a deep mystery, a phenomenon of nature", that the human brain is incapable of demystifying.[7] Roger Penrose, a prominent mathematician and cosmologist believes that consciousness arises out of quantum mechanical effects that occur in the brain.[8] Quantum mechanical effects have been referred to as weird, strange and spooky by physicists, many of whom claim that nobody truly understands quantum physics. It is simply used to derive the right results in experiments and technology.

THE ILLUSION/TRANSCENDENCE PHENOMENON

Perhaps the best example of the illusion/transcendence phenomenon is motion. The Greek philosopher Zeno proposed that motion is an illusion. The moving arrow never moves Zeno said. In a sense Zeno was both right and wrong. Motion is a product of the space-time continuum. Understanding it requires the differential calculus which is based on the continuum, a mathematical entity that is at least one order of infinity greater than the Natural Numbers. The Natural Numbers is the infinite set comprised of the numbers: 0, 1, 2, 3,...

The brain is finite. It is finite in mass, neuronal connections and duration, and its synapses fire in finite sequences. Therefore the brain cannot truly perceive motion. Consequently, the motion we perceive is an illusion. It is the same illusion that enables us to perceive motion on a movie screen or on television. In both the movies and on television the moving arrow never moves, the motion is simulated by a finite sequence of still photographs of the arrow. The brain creates the illusion of motion. The creation of this illusion is the transcendence that enables the mind to explore the continuum; an infinite set that cannot be perceived or apprehended by a finite brain.

The idea that the brain creates illusions that enable the mind to believe that it is experiencing something that is transcendent makes sense from a human development point of view. In the case of motion, the illusion led to the development of the calculus, classical physics, General Relativity and quantum physics. The intellectual fall-out created the scientific and technological infrastructure on which the modern world is based.

There is practical value in the brain's ability to create illusions that enable the mind to experience things that transcend the brains's capability as a finite computer. How the brain creates these illusions is a mystery. The brain is logically equivalent to a finite computer, yet it is also capable of creating meaning or semantics that transcends the computing power of the syntax computers process. We know that meaning transcends the words and symbols we use to describe things because of the Gödel Incompleteness Theorem. In proving this theorem, the logician Kurt Gödel demonstrated that any consistent, finitely generated symbolic language that is powerful enough to prove the obvious theorems in arithmetic cannnot capture the true meaning of something as obvious as the whole numbers we use when we add, subtract, multiply or divide. No finite combination of the symbols or words we use to represent things or ideas can encompass the true meaning of those things or ideas. Our finite brains cannot process the meaning of the things we say or write. Therefore, meaning must also be an illusion the brain creates in the mind.

The benefits of meaning to human development also seem to be beyond equivocation. Nevertheless, meaning seems to be a more difficult illusion to understand than motion. Motion is understood in terms of the calculus. Granted it took over 2000 years after Zeno for Newton and Leibnitz to create the calculus and another 200 years to plug the logical holes. Nevertheless, today the calculus connects the finite sequence of still pictures of the moving arrow that never moves very well with the moving arrow that is always moving. To date there is no generally accepted thesis that connects words and sentences to their meaning.

MEANING AND INFINITY

Many scholars connect meaning with the mind's ability to recognize the infinite and understand some of its properties. For example, the proof of the Gödel Incompleteness Theorem mentioned earlier requires the use of properties the Natural Numbers possess because

they comprise an infinite set, and the stipulation of possible worlds in the semantics of the philosopher Saul Kripke opens up seemingly infinite possibilities for meaning in a given discourse.[9]

The phenomenologists and post-modern philosophers focus much of their attention on the tension that exists between the finiteness of language as it is spoken or written, and the infinite potential for using language, past, present and future, and, subsequently, the infinite potential for ascribing meaning in interpreting the most simple and seemingly straightforward texts. According to Peter Dews in his book *Logics of Disintegration*, Jacques Derrida's use of the terms difference "suggests the impossibility of closing off the differing and deferral of meaning in language", and builds on Ferdinand de Saussure's "insight into the differential structure of language, according to which the meaning of each term depends on its contrast with all others."[10] "This entanglement of texts, the necessary deferral of meaning, and the fundamental unclosability of the horizon of meaning" have bedeviled Derrida and other hermeneutic scholars in their struggles to develop a coherent theory of meaning.[11] But as was mentioned before, no generally accepted coherent theory of meaning has been achieved by them or anyone else.

Our final thought on the possible link between meaning and the infinite comes from Alan Watts and Jiddu Krishnamurti. Watts, a Zen scholar and author, believed that knowledge and meaning are both grounded in the infinite and the conscious self. He states in his book, *The Supreme Identity* that, "The conscious Self... transcends the various objects of its knowledge as the infinite transcends the finite." He states further that "the very notion of Self having knowledge of itself is actually quite meaningless – one of those concepts that comes into being as a result of playing with Words. From the viewpoint of metaphysic, objective knowledge of the Self is not only impossible, but unnecessary." The connection between consciousness, meaning and infinity is summed up in his statement, "We shall see that in metaphysic there is the closest connection, something more than mere analogical resemblance, between the Self, as the irreducible ground of knowledge and the infinite."[12]

The Indian mystic Jiddu Krishnamurti's perspective on the mind, consciousness, thought, knowledge, space, time and the infinite, reflects the age-old paradigm that places materialism and spiritualism in opposition to each other. He claims that "Thought is material and its activity, outer or inner is materialistic." As a result, "consciousness is matter", as are memory, experience and knowledge.[13] According to Krishnamurti's metaphysics, the mind transcends the conscious self. It is a vast immeasurable space that lies outside the measure of thought and meaning.[14] Consciousness, thought, knowledge, time and space are material. The mind, the infinite and all things immeasurable are spiritual. This is his version of the dual nature of reality.

It should now seem evident that many well respected scholars have been convinced that a crucial number of ideas with which the mind is commonly engaged such as the infinite and the idea of the mind itself transcend the creative capability of the finite brain. Yet these ideas are created by the brain in a manner that defies explanation except, perhaps, by illusion.

THE QUALIA ILLUSION

The most obvious mental illusion, but also the most difficult to understand is the illusion

of qualia, the sensations we experience that we associate with our five senses. The redness of the color red is a quale. So is the saltiness of the taste of salt. Most people experience qualia in their dreams or in other altered states of consciousness without the presence of the natural stimuli ordinarily associated with the sensations. Additionally, qualia are experienced by artificially stimulating the brain. Qualia must therefore be an illusion.

There is no physical theory that comes anywhere close to explaining qualia. Even the most ardent supporters of the view that the mind and consciousness will eventually be explained in terms of the brain processing finite inputs in computer-like fashion, acknowledge that currently qualia seems beyond the pale of human understanding. Oliver Sacks reflects on this situation succinctly in, "In the River of Consciousness", *New York Review of Books*, January 15, 2004.

> Something beyond our understanding occurs in the genesis of qualia, the transformations of an objective cerebral computation to a subjective experience. Philosophers argue endlessly over how these transformations occur, and whether we will ever be capable of understanding them. Neuroscientists, by and large, are content for the moment to accept that they do occur, and to devote themselves to finding the underlying basis or "neural correlates" of consciousness,...

Clearly there is a need for an organizing principle that provides a basis for a better understanding of the illusions of motion, meaning, mind and qualia that all seem to transcend the finite computing capabilities of the brain. In the next section we shall introduce a number of ideas taken from theoretical physics that suggest how these illusions could possibly emerge, without providing any specific understanding of the emergence of these illusions as physical phenomena.

EMERGENT UNIVERSAL PHENOMENA

The ideas in this section are taken from R.B. Laughlin's article, "The Cup of the Hand", *Science*, 5 March, 2004. Laughlin analyzes collective organizational phenomena in terms of *insensitivity to microscopics, phases, phase transitions* and *emergent universality*.

The principle of *insensitivity to microscopic detail* applies to collective organizational phenomena that cannot be predicted from the detail at the microscopic level. A *phase* is any of many ways in which a thing or entity of varying modes or conditions can be observed, sensed or experimentally characterized. Solid, liquid and gas are three phases of matter. A *phase transition* is a transition from one phase of a given thing to another, say the transition from water to ice. *Emergent universality* is the emergence of universal phenomena in collective entities, particularly self-organizing collective entities that cannot be deduced from microscopic detail or first principles. These emergent universal phenomena are believed to result from a collective effect that emerges at a phase transition. They are insensitive to microscopic detail.

The brain is obviously a self-organizing collective entity, and consciousness with its five senses and attendant qualia is a case of universal phenomena that emerges in the collective entity that the brain is. Even a strong advocate of strong artificial intelligence (AI) such as Nobel Laureate Francis Crick admits that consciousness emerges at sometime in the development of the brain, "perhaps something that doesn't begin at birth, but gradually emerges."[15] Also, the emergence of qualia seems impossible to deduce from the microscopics

of the brain.

Gerald Edelman, another prominent neuroscientist and Nobel Laureate believes strongly that the conscious mind works in accordance with the principle of insensitivity to microscopic detail. He states that "To reduce a theory of individual behavior to a theory of molecular interactions is simply silly, a point made clear when one considers how many different levels of physical, biological and social interactions, must be put in place before higher order consciousness emerges."[16] The generation of qualia, the perception of motion, the illusions of the infinite and of meaning may be examples of the occurrence of emergent universal phenomena arising in the brain that is insensitive to microscopic detail. This could explain why these phenomena are such a universal aspect of human experience; nevertheless, seem impossible to understand or to be derived from microscopic detail or first principles in physics, biology, psychology or neuroscience.

The idea that self-organizing collectives such as the brain exist in different phases and undergo phase transitions that result in the manifestation of different qualities and characteristics appears to be obvious. It is certainly the case that altered states of consciousness emerge as a result of changes in the brain induced by sleep, meditation, injuries to the brain, drugs, etc. It is easy to interpret these changes as phase transitions.

Emergent universality opens up many interesting possibilities regarding theories of the mind and consciousness. For example, both the collective unconscious and specie-specific archetypes can be explained as emergent universal phenomena that exist but cannot be deduced from the interactions of single minds. Furthermore, there may be endless hierarchies of collective entities that are conscious, or other phenomena with truly incredible properties growing out of the consciousness of the mind, that satisfy the principle of emergent universality and are therefore insensitive to the workings of our individual conscious minds. In other words, we may contribute to the consciousness of other entities but are totally unaware of our contributions. Oddly enough, this is exactly what mystics and near-death experiencers (NDE) say about reality.

NOT SIMPLY COMPLEXITY FROM SIMPLICITY

Emergence is often used to refer to complex phenomena that derive from simple rules. It is well known that a number of startlingly complicated properties and characteristics can arise in systems that are governed by a set of simple rules. Perhaps this point of view is most forcefully exposited by Stephen Wolfram in *A New Kind of Science*, his revolutionary book in which he claims that the entire workings of the universe "can be embodied in simple computer programs."[17]

This principle of complexity arising from simple rules or programs must be taken very seriously. It is powerful, persuasive and applicable to almost everything we study. So pervasive is this principle that what has to prove itself is the idea of emergent universal phenomena in collectives that cannot be explained in terms of rules that apply to their parts. Fortunately, we have already given the example of the subjective experiences of the senses as an excellent example of emergent universal phenomena that seemingly can be deduced from neither microscopics nor first principles. It is important to keep in mind how complexity deriving from simplicity differs from emergent universality. Complexity arising from simplicity is a reductionist concept, whereas emergent universality is not reductionist in nature.

In a sense both complexity deriving from simplicity and emergent universality have analogs in mathematics. Mathematicians use rules of deductive inference to prove complex statements called theorems from a finitely generated set of simpler statements called axioms. Therefore, theorems may be considered as an example of complexity deriving from simplicity. On the other hand, because of the work of Kurt Gödel, we know that there are an infinite number of true statements about structures defined by finitely generated axioms that are beyond the pale of proof. The true statements that cannot be deduced from finitely generated axioms are excellent examples of emergent universality. Gödel's results also enabled the logician Alonzo Church to demonstrate that no algorithm or computer program can determine if a statement in mathematics can or cannot be proved. Then Alan Turing, a founding father of computer science, showed that there is no way to determine if an arbitrary computer program will halt or compute indefinitely. Mathematicians considered these discoveries to be a boon. It meant that the study of mathematics would continue without end, requiring more and more innovative and creative methods to achieve progress. Emergent universality confirmed mathematics as a creative discipline, a work of art so to speak. Mathematicians were elated to find out that computer programs could not replace them.

However, there is a downside. Gödel also proved that it is impossible to show that structures in mathematics such as the Natural Numbers are internally consistent without using principles that are both more powerful and more speculative than the principles embodied in the axioms used to define the structures. In other words, Gödel proved that mathematics may be just an illusion. My bet is that mathematics is as real as are motion, meaning, the infinite, and qualia.

TESTS FOR EMERGENT UNIVERSALITY

Emergent universality may help in explaining why the mind is able to experience transcendence in ways that can be explained only as illusions. It could also explain why the mind is fooled so easily by trickery into believing it is experiencing transcendence. It is therefore desirable to develop tests that are able to determine whether emergent universality is real when a phenomenon is suspected of manifesting this property. If emergent universality were demonstrated to be a general feature of reality, it would be a blessing for science as it has been for mathematics. The fundamental principles of science would be endless, with no theory of everything ever occurring. Scientists could search forever for new cases of emergent universality in the laboratory and the cosmos.

The first true case of emergent universality in science occurred with the development of quantum physics about 80 years ago. Early on in quantum physics, which takes place on the scale of atoms, it appeared to be the case that particles had no specific positions or any specific velocities at a given time. This was very different to everyday or "classical" physics where things are always in specific locations and move with specific velocities at a given time. Quantum physics seemed weird and not every physicist agreed with its principles. Albert Einstein believed that quantum physics was wrong, that it was an unfinished theory where all uncertainties were based on ignorance, and that in the future this ignorance would be dispelled and the world of quantum physics would be understood to behave in the same way as the world of classical physics, where his brilliant General Theory of Relativity ruled supreme. There was much heated discussion on the subject. Perhaps the best response to Einstein's objection was given by the physicist Wolfgang Pauli who is reported to have said, "One should no more rack one's brain about the problem of whether something one cannot know anything about exists all the same, than about the ancient question of how many angels are able to sit on the point of a

needle."[18]

The beginning of the end of the debate occurred in 1964 when physicist John Bell discovered a test that could be used to determine if the uncertainties in quantum physics were real and not just a product of ignorance.[19] Experiments in the 1970s and 1980s used Bell's test to confirm that the uncertainties were real and that Einstein was wrong. The surprising thing about the reality of quantum physics as confirmed by Bell's test, is that it is the physical properties of the ordinary world in which we live that are emergent universal properties and are therefore strange. This strangeness is still not understood by scientists. At a recent retreat where physicists, philosophers and historians of science gathered to discuss the odd implications of quantum physics, Gerard Milburn, a physicist at the University of Queensland in Australia exclaimed, "In fact, no one knows how our boring old 'classical world', in which a thing can be in only one place at a time arises from the weirdness of quantum theory. The fundamental question remains, why do we have classical behavior in a quantum world?"[20]

Paraphrasing Milburn with a twist, we can assert that no one knows how our minds arise from our boring old "classical" world, and the fundamental question remains, why do we have conscious minds in a physical world? A test that could be used to confirm that conscious minds are emergent universal phenomena that cannot be explained in terms of the physics, chemistry or neurology of the brain would contribute much to settling the debate on whether or not the mind is simply a sum of parts that comprise the brain.

Not surprisingly, Gödel is claimed to have suggested such a test. According to the mathematical logician Hao Wang, Gödel suggested that it may be possible to demonstrate scientifically that "there aren't enough nerve cells (in the brain) to perform the observable operations of the mind."[21] But as Wang observed, this test is problematic.[22] The number of neurons in the brain is so large, estimated to be perhaps one trillion, and the number of connections between the neurons is much larger. The sheer number of possible neural correlates that could give rise to operations of the mind is therefore of staggering proportions. Additionally, we have a *very* limited understanding of how the enormous scale of neural activity taking place in the brain relates to the operations of the mind. Finally, we have no idea how to count the operations of the mind. Nevertheless, as more is learned about how brain activity correlates with mental activity, it may be possible to develop a realizable test based on Gödel's idea.

CONCLUSION

We have demonstrated that a number of common, everyday things that the mind perceives or understands seem beyond the processing capabilities of a finite computer, which the brain clearly appears to be. The motion we see, the meaning we ascribe to things, the colors, sounds, tastes we experience, and the mathematics we use are in a very real sense illusions. This does not mean that these things are not real. It means only that the finiteness of the brain suggests they can only be understood as illusions. The capacity to perceive or understand these (and many other) things *transcends* the computing power of a finite computer. This is why we say that these illusions are really transcendence.

We have suggested emergent universality as a hypothesis that may contribute to a better understanding of how the brain can create a mind that seems able to transcend the brain's computing capabilities. Emergent universality is the emergence in collective entities of

universal phenomena that cannot be inferred from first principles or microscopic detail. Finally, we believe that a concerted effort should be made to develop a test that could determine if the creation of the mind is the result of emergent universal phenomena occurring in the brain. The reverberations from the successful application of such a test would have a seismic impact in every sphere of human activity.

NOTES

[1] His Holiness The XIV Dalai Lama, *The Art of Living*, Thorsons, London, 2001, pg 149.

[2] Ibid, pg 150.

[3] Ibid, pg 153.

[4] *To Shine One Corner of the World*, edited by David Chadwick, Broadway Books, New York, 2001, Pg 72.

[5] This is taken from George Johnson's review in the May 3, 1998, *New York Times Book Review* of Tor Norrestrander's book, *The User Illusion, Cutting Conscious Down to Size*.

[6] Blackmore, Susan, "The Grand Illusion," *New Scientist*, 22 June 2002.

[7] McGinn, Colin, The Mysterious Flame: *Conscious Minds In A Material World*, Basic Books, New York, N.Y., 1999, pg xi.

[8] Penrose, Roger, "Must mathematical physics be reductions?", *Nature's Imagination*, Oxford University Press, new York, 1995, pg 21.

[9] Soames, Scott, *The Age of Meaning: Philosophical Analysis in the Twentieth Century*, Princeton University Press, Princeton, New Jersey, 2003, pp 336, 354-356.

[10] Dews, Peter, *Logics of Disintegration*, Verso, London, 1987, pg 11.

[11] Dews give a good exposition of these struggles in Chapter 1 of *Logics of Disintegration*. The quote is from page 12 of the paperback edition.

[12] Watts, Alan, *The Supreme Identity*, Vintage Books, New York, 1972, pp. 47, 48.

[13] Krishnamurti, Jiddu, *Krishnamurti's Journal*, Harper San Francisco, New York, 1982, pg. 78.

[14] Ibid, pp 72, 73.

[15] Wertheim, Margaret, "After the Double Helix: Unraveling the Mysteries of the State of Being", *New York Times*, April 13, 2004, D3.

[16] Edelman, Gerald M., "Memory and the individual soul: against silly reductionism", *Nature's Imagination*, Oxford U. Press, N.Y., 1995, pg 201.

[17] Wolfram, Stephens, *A New Kind of Science*, Wolfram Inc, Champaign, Il, 2002, pg 1.

[18] Greene, Brian, *The Fabric of the Cosmos*, Alfred A. Knopf, Random House, Inc, New York, 2004, pg 103.

[19] Ibid, pp 103-115.

[20] Cho, Adrian, "Elite Retreat takes the Measure of a Weirdly Ordinary World", *Science*, 25, June 2004, pp 1896, 1897.

[21] Wang, H. "On 'computabilism' and physicalism: some subproblems", *Nature's Imagination*, edited by John Cornwell, Oxford University Press, New York, 1995, pp. 164., 165.

[22] Ibid, pg 165.