

# Magick and Physics

by Dave Lee (from *Chaotopia: Magick and Ecstasy in the PandaemonAeon, Attractor 1997*)

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Chaos Magick emerged at the end of an era whose Grand Narrative was Science and Progress. However, the 'weird science' narrative of Quantum Mechanics has opened the door to phenomena that would previously have been rejected. Chaos Magick has, from its inception, been coloured by this micro-Aeon of postmodernist science. How much use to the sorcerer is this science?

## THE SCIENCE-MAGICK INTERFACE

In the past twenty years, mystics and magicians with a theoretical bent have drawn increasingly on the physical sciences for models of their experience. Fritjof Capra's 'The Tao of Physics' and Gary Zukav's 'The Dancing Wu Li Masters' started the ball rolling by developing the mystical implications of the observer-dependent universe; Robert Anton Wilson suggested how quantum physics is compatible with magick in 'Illuminati Papers'. More recently, Peter J. Carroll has constructed a full-blown quantum-based theory of magick, Chaos Magick Theory (in *Liber Kaos*).

The peculiar features of quantum theory are:-

1. *The wave property of matter and energy*: Any object which obeys quantum theory (e.g. a particle such as an electron) can be in more than one place at once. Its position is 'smeared out' into a *probability function*, which tells us the probability of finding it in any given place when we measure its position;
2. *The particle property of energy and matter*: when we measure the position of a quantum object, we pin it down, as it were, to a particle-like state - i.e. , previous to our measurement, the object wasn't really anywhere in ordinary space-time; it only had a probabilistic wave nature; after we measure its position, it gets a real position in ordinary space-time. This is called '*collapsing the probability function*' or '*collapsing the wavefunction*'. What happens is that our observation causes its properties to manifest.

3. *The observer-dependent universe*: The fact that our observation creates the particular manifestation of the reality we are observing, as in point (2).
4. *The quantum jump*: quantum objects have the property of disappearing from one place and reappearing in another *without crossing the intervening distance*. An electron moving from one orbital in an atom to another does it in this way.
5. *Indeterminacy*: The Heisenberg Uncertainty Principle states that we cannot measure with arbitrary accuracy the position and the momentum of any quantum object at the same time. The more accurately we measure the position of an electron, the less accurately must we measure its momentum. Position and momentum are a *conjugate pair* of variables, and Heisenberg's equation also shows that there are other conjugate pairs of variables, like *energy and time*.
6. *Non-locality*: The collapse of the probability function caused by our observation implies that the observer-dependency is non-local in space; this non-locality is further born out by the experiments of Alain Aspect, and John Bell's interpretation of them. In these experiments it was demonstrated that if two photons are fired out from the same source in opposite directions, and we polarize one of them, the other gets polarized too. Somehow, they remain connected, even though they are traveling apart at the speed of light.

These features of quantum theory sounded the death-knell of the old monolithic scientific materialism, which was strongly dependent on the notion of an 'objective' universe out there. The observer-dependency of phenomena makes it very likely that it is the observer consciousness itself that collapses the wavefunction. This makes magick a far more likely option than it was in the Newton-Descartes clockwork universe, in which consciousness was a 'ghost in the machine'. Magick-friendliness is increased by non-locality too: if objects that have been in contact with each other remain in contact non-locally, then we have a kind of magickal link.

Pete Carroll makes use of these features and others in his Chaos Magick Theory (CMT). He also makes some quantum-based predictions about magickal reality. For instance, CMT states that the information about an event or object only continues to be emitted as long as that event or object continues to exist. There are no echoes of an event surviving into its future, no Akashic Records.

A profounder feature of the emerging quantum metaphysics is that it's proponents takes seriously the peculiar quantity called the *wavefunction*. One of the pioneers of quantum theory, Erwin Schrodinger, devised a mathematical description of waves around an atom - the Schrodinger equation - which defined mathematically the wavefunction. This quantity is turned into the *probability-function* by squaring it. The probability function is the quantity that enables us to calculate the probable positions of electron orbitals around atoms. Its square root, the wavefunction, has previously been considered to have no physical reality, even though it is the basis of the equation; most physicists and chemists are accustomed to regarding it as a mere mathematical convenience with no physical or metaphysical counterpart. More recently, both Carroll and the physicist Amit Goswami (in *The Self-Aware Universe*) have postulated that the wavefunction *does* have a reality. Goswami develops a theory of idealist metaphysics in which the underlying reality is

seen as a non-local mind that collapses the wave. He regards the probability waves as *potentia*, possible states of a physical system existing in a kind of metaphysical Platonic realm. He writes:-

*monistic idealism takes off from where the Copenhagen interpretation becomes fuzzy; it declares explicitly that the quantum waves are real but exist in a transcendent domain that is beyond and in addition to material reality.*

*I propose that the universe exists as formless potentia in myriad possible branches in the transcendent domain and becomes manifest only when observed by conscious beings*

This is clearly similar to Jung's position on synchronicity, familiar ground to most magicians:-

*Synchronistic phenomena prove the simultaneous occurrence of meaningful equivalences in causally unrelated processes; in other words, they prove that a content perceived by an observer can, at the same time, be represented by an outside event, without any causal connection. From this it follows either that the psyche cannot be localized in time, or that space is relative to the psyche.*

Carroll develops the notion of wavefunctions as metaphysical-magickal realities:-

*The CMT paradigm states that the wave functions are actually a mathematical description of etheric patterns and that this ether can be considered as a form of information exchange between material events*

*quantum wave functions do not directly describe the actual behaviour of classical events. They describe the probabilistic effects of ether patterns, which can be considered as a kind of shadow substance, upon the progress of material events. - Liber Kaos*

The spirit-matter dualism is rejected by both Goswami and Carroll. Carroll writes of :

*that chaos from which matter and ether co-evolve Matter and ether are just two of the properties that the ever-mysterious stuff of the universe exhibits to our perception- ibid.*

Returning to Jung, we find the same conclusion:-

*it is not only possible, but fairly probable, even, that psyche and matter are two different aspects of one and the same thing*

There seems to be a consensus emerging that ideas based in dualism, as well as in materialist monism, are hopelessly flawed, and that quantum physics needs taking seriously as a theory that embraces the experiences of both matter and consciousness.

## THE PHYSICS OF CONSCIOUSNESS

The quantum-based magickal theories propounded so far all relate to the universe at large, and say virtually nothing about the physics of consciousness. The physical nature of the processes which link the events in consciousness with the events in the "outer" world has never been precisely identified; the schism has remained from Cartesian dualism, a link missing, a gulf between consciousness and matter. The observer/actor has been integrated into the equations, but as an unknown, a black box, a fiddle factor; none of the current theories of consciousness are at all satisfactory with regard to a link between magick and physics.

How do we get from the quantum macrocosm to the microcosm of neural processes in our skulls? On the one hand we have a universe well suited to magick - information is delocalized in space, making the basic acts of divination and enchantment possible. On the other, we have a couple of kilos of warm, wet

micro-circuitry which science has told us is limited in its effects to the (partial) control of a few dozen kilos of assorted tissues. The two halves of the process do not match; the nervous system seems simply too *classical* in its physics to be doing anything interesting to Our Lady of the Quantum Vacuum. Our physical image of consciousness is arrested at the level of the *soft machine*. The phrase implies mechanical causality, an essentially 19th century notion. This mechanistic image comes readily to mind when one considers the model of consciousness as epiphenomena of events in neural wiring layouts.

This model of circuits, this disentangled subway map of the brain's electrical pathways, seeks to contain the phenomena of consciousness. The circuitry model is analogous to switching and memory retrieval systems in computers, but it does not provide a convincing picture of what it is that is doing the retrieving and

decision making. So what criteria would a magickal quantum theory of consciousness satisfy?

1. Identity, or at least convincing similarity of type, between the physics of the stuff "in here", in the body mind, and the stuff "out there" in the universe that surrounds it.
2. Subjective credibility, to the extent that the theory collapses the mind/matter dualism. As long as physics leaves credibility gaps which do not satisfy the subjective dimensions of consciousness, transcendentalist theories will fill them.

The theory should also generate new magickal perspectives.

## CONSCIOUSNESS AS A BOSE-EINSTEIN CONDENSATE

The theory of consciousness as a *Bose-Einstein condensate* was originated by Dana Zohar in *The Quantum Self*. The theory makes the connection between a widespread type of quantum structure called a *condensed phase* and the known properties of nervous

tissue. A condensed phase is a system within which all the units making it up do the same thing at the same time - the system has achieved alignment or *phase coherence*. Examples are *lasers*, within which all the photons are in phase, *magnetized materials*, where all the magnetic domains are polarized in the same direction, *superfluids* and *superconductors*. The special properties of all these systems are due to their condensed phase.

The search for a condensed phase mechanism in living systems as a quantum basis for consciousness turned up the *Frohlich pumped system*. Vibrating dipolar molecules in cell walls emit short range "*virtual*" photons. Above a certain level of energy, Frohlich showed that any additional energy pumped into the system causes all these similar molecules to vibrate in unison. Further input of energy results in further increase in coherence, until all the molecules achieve the most ordered form of condensed phase - a *Bose-Einstein condensate*.

The distinguishing feature of a Bose-Einstein condensate is its extreme coherence. Zohar says;

*the many parts which go to make up an ordered system not only behave as a whole, but they become whole - their identities merge or overlap in such a way that they lose their individuality entirely*

The author of that paragraph is not being excessively mystical by the standards of quantum mechanics; she is describing the familiar notion of *the indistinguishability of overlapping electron states*, identical wavefunctions. This gives us a picture of short range virtual photons cohering over enormous numbers of nerve cells, resulting in a large (macroscopic) volume of nervous tissue being permeated with a unified oscillation. We have here the basis of our consciousness model: Consciousness is the subjective experience of this coherent system, of a sizeable chunk of quantum coherence in neural tissue. There is increasing physical evidence for quantum coherence in the brain: meditation researchers have studied brain waves from different brain areas, looking for phase coherence. The similarities in brain waves in different parts of the skull were found to exist, and this work has been confirmed by other researchers. What is more:-

*the degree of coherence is found to be directly proportional to the degree of pure awareness that the meditator reports - Goswami, reporting the work of Orme-Johnson and Hayes, 1981*

The passage of electrical currents within neuronal circuits - the classical brain-mind - is no doubt connected with the phenomena of memory storage and retrieval, but the experience of actually being conscious, with all the non-local, quantum properties of consciousness is mediated by the brain from a macroscopic quantum coherence, a Bose-Einstein condensate. Thus the brain operates a two-tier system: the 'quantum mind' gives a physical underpinning to mystical experiences, the experience of the higher neural Circuits, and to the experiences of magickal gnosis; the 'classical mind' describes the experiences of memory, personal history and therefore personal identity.

## CONSEQUENCES OF THE THEORY

The Bose-Einstein condensate (BEC) theory actually predicts a similarity between the behaviour of fundamental wave/particles and that of brains - because the one is rooted in the other. The way human consciousness physically works is a more complex version of the way things like photons and electrons behave, things we don't generally consider conscious (unless we've been overdoing the sacraments). Zohar suggests that the process of making decisions actually works like the collapsing of the wavefunction into a single value - a particular thought or state of mind. Thus the wave/particle complementarity of quantum physics has analogies with consciousness states. We could say that the "wave-like" state of consciousness is the condition before a decision is made, various "virtual realities" or alternative possibilities existing in the mind. The mind has a "wave-like" openness to possibilities. Making the decision collapses all these virtual realities except one, and the mind becomes singular, and "particle-like". What is more, the achievement of that particle-like singular state corresponds precisely to the observer who does the collapsing of the wave function when a measurement is made. The 'classical mind' is the measurer, the observer, in quantum physics experiments.

So, does the BEC model satisfy our criteria?

1. It restores the identity in kind between the stuff in our skulls and the fertile chaos of the quantum macrocosm. The BEC of the human mind has the ability to collapse the wavefunctions of potential realities in the universe, because that is the way it operates upon itself. Our consciousness is seen as a property of overlapping bosons. Bosons are the particles of connection and coherence between phenomena - photons, gluons, gravitons and other more exotic particles. Zohar suggests that this overlapping of bosons into states of greater complexity and coherence is at the root of the evolution which produced our consciousness. "As above, so below" is reinstated.

In terms of subjective experience of consciousness, the theory is very attractive, because of the concept of thoughts as quite large patterns of waves in an even larger substrate. I've never been at all comfortable with the idea that thoughts are microscopic electrical impulses traveling round in the "wiring" of neurons and synapses. Consciousness simply doesn't *feel* like that. To adopt an off-the-peg concept from yoga, careful introspection has at times revealed a sense of the mind stuff, *chittam*, the basic background "field" out of which everything else in the realm of mind is shaped. This begs to be identified with the 'quantum mind'. Experience of the quantum mind begins at the 5<sup>th</sup> Circuit, and reaches its fullest extent in the 8<sup>th</sup>

In general, this model makes our magickal models work better. It is simpler to understand how divination and enchantment can operate when we consider the quantum nature both of the mind and of the rest of the universe. Two examples of magickal thinking using this theory are:

## **1. CONSCIOUSNESS OVERLAP**

What would it be like if human consciousnesses could literally, physically overlap? Maybe this happens in ecstatic sex. Maybe it also happens in group magickal work. Goswami claims that there are no individual quantum minds in any case - just the one, unitary consciousness, and that individuality is generated by the 'classical mind'. The formation of a group egregore would be modeled as the awareness of the quantum mind within a group, and a downloading into 'classical' divided consciousness of that collective process. Clearly, the key to this event would be intense sympathy of purpose, a degree of motivational intimacy predicated upon a trust strong enough to allow extreme abandonment of self at the gnostic peak. The resultant "egregore wavefunction" is formed at the limits of our concept of self, where the fear of dissolution which held us back from intensity is itself added as fuel to the fire. Something like this is sometimes noted in highly successful ritual work.

Such ecstasis should correspond to an extraordinary gnostic state, even if we still consider the gnosis from the point of view of the individual wizard in the group. An alternative possibility is to consider the gnosis from the viewpoint of the egregore itself: that it is the collective awareness of the quantum consciousness that is actually doing the magick. The consequences of such a paradigm shift are difficult to evaluate at present, largely because of our poor knowledge of the nature of egregore formation. Research into the detailed kinetics and cybernetics of these processes is still in its infancy.

## **2. THE PHYSICS OF EVOCATION**

In evocation, we begin the formation of servitors by imagining a sub-personality, a mere set of automatic mechanisms with a job. The first stage, of making decisions about the servitor's function and structure, would correspond to the collapsing of all the potential forms under consideration into a single idea in the classical mind. The next stage - that of externalizing or launching the servitor - presents interesting challenges to any materialistic theory of magick. Cybernetically speaking, a servitor is a package of information. If we accept the CMT view that information is local in time, and only persists whilst something physical emits it, this leaves us with the problem that for a servitor to continue to act, it must be attached to, or rather emitted by, some material base, which could include the human brain. Three models of servitor launching are considered here:

1. The servitor's base is located in the human brain. Instructions are embedded in the brain, unconsciously present until the external conditions trigger the servitor to run its program. This is probably the simplest model for the talisman or amulet type of servitor, which exists to protect the wearer, or to take advantages of opportunities to perform its function. It is possible that the instructions are only emitted when the sorcerer looks at his talisman, or alternatively, that a "loop" of instructions plays constantly or intermittently in the subconscious recesses of the sorcerer's brain. On this model, a multi-purpose servitor without an external physical base would correspond to a resource of power with a flexible programming facility located in the magician's brain. Such a servitor could be

seen as a kind of tame elemental on the inner levels, or, in a more reductionist paradigm, as a kind of sleight of mind which is performed to give the wizard "permission" to launch what amounts to a new servitor at a moment's notice. This is essentially a 'classical mind' model, up to the point when the servitor runs its program. Then it collapses some wavefunction in the world corresponding to the willed outcome.

2. The servitor's base is in an external physical phenomenon. Such a phenomenon would be required to process energy independently in order to keep itself coherent. It would also have to have the property of being able to contain and carry out all of its instructions without the intermediary of the human BEC. The first of these conditions indicates that the launch would consist of the generation of a localized, coherent pattern of energy. The entity in this paradigm would be seen as a kind of self sustaining *dissipative system* in the sense that Ilya Prigogine writes about. (For some fascinating speculation on this type of structure I am indebted to "Chaos Invocation" by Charles Brewster). Examples in everyday life would be a smoke ring, or a vortex in your bathwater. Such entities consist of systems that maintain their coherence within larger chaotic systems by taking in energy and patterning it in accordance with their existing pattern. The entity seen as a dissipative structure actually takes energy in and lets it out again, in such a way that it sustains its cybernetic integrity.

3. There are no such things as servitors. On this model, we reduce all "servitor" activity to the action of various spells residing in the magician's mind. The theory of servitor action is identical to that of sigil action: the information for doing the task is located in and emitted from some subset of the wizard's neural wiring, 'classical mind'. The magician comes to believe that the same spell can be triggered again and again without the repetition of the enchantment procedure. It is performed simply by having a word with the relevant "entity". Again, sleight of mind has given the magician permission to believe in a short cut. This is a 'classical mind' model to the same extent as (1).

This third theory is destructive of the subjective experience of evocation at the levels of sorcery, ritual magick and shamanism. In these paradigms, you actually talk to the entity, and treat it as an independent consciousness. The servitor paradigm is of far too much practical use to magicians to collapse it summarily into another paradigm which is in itself only partly understood. This is an example of the danger of reductionism in vitiating useful magickal ideas.

Theory 2 is attractive; the notion that such an entity could perform its function without the human sorcerer actually projecting the information is an interesting one. According to CMT, a sigil scribed on a piece of leather will emit information about its shape and materials only, not about its purpose. Its function, the information it requires to do its job, exists in and is emitted by the sorcerer's brain alone. For the dissipative system to fit our theory, all the information required for the job in hand would have to be physically encoded in the energy patterns of the system itself. Such an entity would probably have to be a lot more complex than a smoke ring to contain sufficient bits of information for the average spell. There is little evidence at present for the independent physical existence of dissipative systems sufficiently complex to do spells automatically. Furthermore, could

such an entity have the ability to collapse wavefunctions in the world? It would need to have a quantum mind-type of nature as well as its 'classical' structure.

The first theory suffers from neither of these drawbacks, but is not necessarily to be preferred over Theory 2 solely for that reason. Further developments in physics will no doubt give us more information on what dissipative systems in magick might be like, and whether they would be capable of quantum mind-like action.

## **CONCLUSION: SORCERY, METAPHYSICS AND SCIENCE**

In our current scientific mythos, we can confidently identify non-local consciousness as:-

1. The 'quantum mind' that collapses wavefunctions by making observations on them, giving rise to the 'classical' universe of ordinary sense-perception;
2. The 'greater mind' that actually makes magick possible, and is the source of psychic effects such as telepathy;
3. The physical basis of all gnosis, especially:-
4. the transpersonal ecstasy of the core mystical experience, in which identification with the 'classical mind' ceases.

As research progresses in this area, we shall see how well the model continues to fit. But we also need to consider how useful scientific models are to magicians in any case. Chaos Magick has always had at its core a profound respect for technical excellence in sorcery, and a profound impatience with metaphysics. When assessing a belief, the criterion is (or should be): Does it help the magick work? Sorcery should thus be absolutely ruthless with metaphysics: what matters is not how consistent the belief is with the rest of one's beliefs, but whether one can believe it long enough to do the sorcery. For instance, to deny pseudosciences such as astrology adds absolutely nothing to sorcery, so why do it? I am reminded of the old joke at the expense of theoretical physics: confronted with an astonishing experiment, the theoretician says: That's all very well in practice, but how would it work in theory...? This position can add only to some kind of Grand Narrative; in this instance, the religion aspect of Science. We are not assisted in any way in our magick by the rejection of non-scientistic belief modes, *unless this position has an agenda of a return to Science as a religion*, the Religion of the 4<sup>th</sup> Aeon. In that case, such a belief will help us only if we cannot move outside of a single-model approach, a profoundly Modernist limitation.

There is of course nothing 'wrong' or reprehensible in using Scientism as the sole metaphysical basis for your magick, but such an approach is not really saleable as Chaos Magick, unless it admits that this position is a purely personal self-restriction of belief. In other words, the very fact that there are successful magicians out there using all sorts of exotic or goofy belief systems to make their sorcery work just fine, in itself invalidates such spurious universalism. Only to believe in magick if it is backed up theoretically by the present state of physics is fine, but it has the same lack of universal validity in the Chaos Magick metaparadigm as a Rabbinical wizard claiming that Qabalah is the one and only true system of magick. Are everyone's beliefs, ecstasies and hopes to be found

enciphered in the mathematical cryptographies of advanced physics? I doubt it, and to say that they are restricts the growth and development of the Chaos Magick current. In any case, totally tidy theoretical closure is probably impossible, and almost certainly inadvisable. After all, great sorcery, like great sex, is usually messy.

Every era has its scientific-occult metaphors. Whether we talk of ‘vibrations’ the ‘aether’, or quantum indeterminacy, what matters is the power of the metaphor to facilitate magick. Magicians are at their most effective when utilizing the paradigm that works best for their own sleight of mind. Sorcerers with a scientific background are likely to get the ‘Wow! Effect’ from such speculations; others will miss the Wow! and therefore view the insights of the model as being over-valued. That is precisely how useful scientific theory is for us as sorcerers.

### **Further Reading**

Charles Brewster - Chaos Invocation, Nuit Isis magazine, issue 9.

Rupert Sheldrake - A New Science of Life; pub. Paladin, 1983.

Danah Zohar - The Quantum Self; pub. Fontana 1991.

Amit Goswami - The Self-Aware Universe; pub. Simon & Schuster, 1993.