

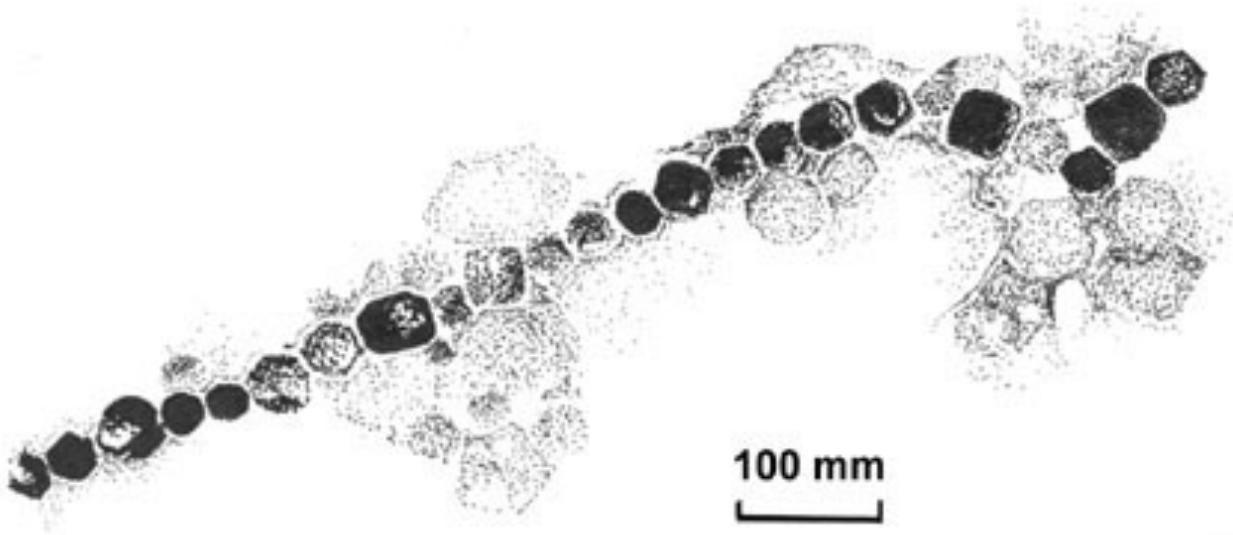
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Magnetite in the Human Brain

EM FIELDS & CONSCIOUSNESS



This is Your Brain on Magnetite

Magnetic Parameters of Subjective Awareness

Biomagnetism is more than our internal GPS. . .more than following one's nose.

<http://anthropology.net/2006/11/21/the-tiny-magnetite-compass-in-the-human-nose/>

(<http://anthropology.net/2006/11/21/the-tiny-magnetite-compass-in-the-human-nose/>)

There is a large amount of evidence that perception itself - even perception which carries apparently veridical content - is always inherently hallucinatory. Interestingly enough, this body of evidence emerges from converging insights and data produced by disciplines as diverse as cognitive neuroscience and so-called Eastern religions such as Buddhism.

Empirical evidence supports the representative theory of perception over the theory of direct realism. In many cases, it involves complete replacement of the perceptual field with a hallucinatory one, even in cases where only a constituent element is definitely unrealistic. They are phenomenologically indistinguishable from normal perception. Hallucinatory

images and normal perceptual images lie on a continuum rather than forming two qualitatively distinct classes. Both sorts of perceptual or quasi-perceptual image can be more or less closely determined by sensory input.

The human *brain* acts like an electrical circuit called a *phase-locked loop*. Low frequency electric and magnetic fields induce weak electric currents in humans and animals. Biological Systems detect and respond to external ULF/ELF signals using their built-in receiving and decoding systems (cell-to-cell communication).

Brains and cells use oscillating ion currents for the control of release of neurotransmitters and in the cell to cell communication systems,(EEG). They use frequency encoders and decoders and phase-locked loop circuits to tune into external signals of a slightly different frequency. The *magnetic* oscillations may create propagating spin waves and associative memory arrays. Multiple fluctuating dipole moments in multiple phase locked loops constitutes a self-organizing chaotic field. *Brain* tubulin structure and assembly are affected by *magnetite* nanoparticles in viscous fluid behaving as liquid crystals under interaction of dipoles. Quantum dipole oscillations may couple to zero-point fluctuations of the quantum vacuum.

Several theorists have proposed that consciousness can be understood as an electromagnetic phenomenon. Their theories differ in how they relate consciousness to electromagnetism. For example, electromagnetic *field* theories (or "EM field theories") of consciousness propose that consciousness results when a brain produces an electromagnetic field with features that meet certain criteria; Susan Pockett and Johnjoe McFadden have proposed EM field theories; William Uttal has criticized McFadden's and other field theories.

Some electromagnetic theories are also quantum mind theories of consciousness; examples include quantum brain dynamics (QBD) approaches of Mari Jibu and Kunio Yasue[6]

(http://en.wikipedia.org/wiki/Electromagnetic_theories_of_consciousness#cite_note-6) and of Giuseppe Vitiello.[7] (http://en.wikipedia.org/wiki/Electromagnetic_theories_of_consciousness#cite_note-7) In general, however, quantum mind theories other than these QBD approaches do not treat consciousness as an electromagnetic phenomenon. Also related are E. Roy John's work and Andrew and Alexander Fingelkurt's theory "Operational Architectonics framework of brain-mind functioning"

All our senses function essentially as filters of electromagnetic input. Sensory processing includes all central acts of information processing, which link the initial stages of sensory reception with the creation of a subjective sensory precept. Sensation is the neuronal activity resulting from the transduction of stimulus energy into electrical activity (also Sensory processing). A sensory cue is a statistic or signal from sensory input that measures the state of some property of the world that the perceiver is interested in. Somatic input is amplified by simultaneous imaginal input, fantasy overlays and mythic narratives interpreting what is happening.

Other sorts of empirical evidence include perceptual "filling-in" and Pareidolia (/ (http://en.wikipedia.org/wiki/Help:IPA_for_English)p (http://en.wikipedia.org/wiki/Help:IPA_for_English#Key)æri (http://en.wikipedia.org/wiki/Help:IPA_for_English#Key)' (http://en.wikipedia.org/wiki/Help:IPA_for_English#Key)do (http://en.wikipedia.org/wiki/Help:IPA_for_English#Key)l (http://en.wikipedia.org/wiki/Help:IPA_for_English#Key)i (http://en.wikipedia.org/wiki/Help:IPA_for_English#Key)ə (http://en.wikipedia.org/wiki/Help:IPA_for_English#Key)/ (http://en.wikipedia.org/wiki/Help:IPA_for_English) *parr-i-DOH-lee-ə*), a psychological phenomenon involving a vague and random stimulus (often an image or sound) being perceived as significant, a form of apophenia. Common examples include seeing images of animals or faces in clouds, the man in the moon or the Moon rabbit, and hearing hidden messages on records when played in reverse. The word comes from the Greek words *para* (παρά, "beside, alongside, instead") in this context meaning something faulty, wrong, instead of; and the noun *eidōlon* (εἶδωλον "image, form, shape") the diminutive of *eidōs*. Pareidolia is a type of apophenia, seeing patterns in random data.

The immediate content of consciousness in both perception and hallucination is something distinct from anything in the outer world, and made of the same 'substance' in both cases. There is no qualitative distinction to be made between the 'ideas' present to consciousness in the two cases, perception and hallucination, on the philosophical level. The whole context of dreams is hallucinatory, though certain features in it may ultimately originate in specific sensory stimuli from within or without the dreamer's body.

<http://www.celiagreen.com/charlesmcreery/perception.pdf> (<http://www.celiagreen.com/charlesmcreery/perception.pdf>)

Research has also shown the presence of crystals of biogenic magnetite, with minimum estimates between 5 and 100 million single-domain crystals per gram, in many tissues of the human brain. Magnetic particle extracts from solubilized tissues were examined with high-resolution transmission electron microscopy (TEM) and electron diffraction, which identified minerals in the magnetite-maghemite solid solution, with many crystal morphologies and structures resembling those precipitated by some bacteria and fishes.²⁹⁶ The magnetite compound has been found dispersed in *all* structures of the human brain.²⁹⁷

This knowledge opens wide new doors to research. For example, the antitumor effects of magnetite nanoparticles have been observed in cat mammary adenocarcinoma.²⁹⁸

Where else were they found? In the meninges, this system of protective membranes filled with cerebrospinal fluid that envelops the central nervous system and connects with the extracellular matrix, and where the vagus nerve ends. One of these membranes, just under the bone, the dura mater, surrounds and supports the large venous channels (dural sinuses) that carry blood from the brain to the heart.

Isis Code: Revelations from Brain Research and Systems Science on the Search ...

A Ferromagnetic Transduction Mechanism for Radio Frequency Bioeffects

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There is currently a scientific controversy dealing with a growing body of evidence both supporting and refuting possible harmful health effects due to radio frequency (RF) radiation exposure from cellular telephones and transmitter towers. The question of transduction mechanism, i.e. how these relatively weak magnetic electromagnetic emissions can be transduced by the human body, is arguably one of the most important. One theoretically sound mechanism is ferromagnetic transduction, i.e. the transduction of weak electromagnetic fields by endogenous biogenic magnetite (Fe₃O₄) and maghemite (γ-Fe₂O₃) present in the human brain. Both of these materials are ferrimagnetic and transduction can be accomplished either by mechanical forces [1,2] or ferromagnetic resonance [3].

*Magnetic and electron microscopic analysis of magnetic extracts from human brain tissue by our group [4] and Kirschvink's group [5] have revealed that biogenic magnetite in human brain tissue occurs in clusters - probably within specific cells - and is similar to that produced by the magnetotactic bacterium *M. magnetotacticum*.*

The two primary mechanisms by which electromagnetic fields generated by cell phones can interact with biogenic magnetite in the human brain are through ferromagnetic resonance and mechanical ferromagnetic transduction. The theory of ferromagnetic resonance is described by Kirschvink [3]. It is primarily a consequence of the resonance of the magnetization vectors of an ensemble of particles which may be present in the human brain tissue. The resonance of the magnetization excites phonons in the crystal lattice, causing acoustical vibrations which deposit energy in the tissue surround the particles. Resonance in the particles is dependent upon particle size, shape, orientation and the frequency of the applied field. Kirschvink has shown theoretically that RF emissions from cell phones fulfil these conditions in certain circumstances.

Mechanical ferromagnetic transduction of cell phone emissions by biogenic magnetite depends largely on the presence of magnetically blocked particles of magnetite and/or maghemite. Particles are magnetically blocked when they are of sufficient volume to possess a stable magnetization vector. This depends on the magnetic energy of the particle overcoming thermal agitation which acts to flip the magnetization vector in single magnetic domain particles very rapidly between parallel and antiparallel easy axes of magnetization.

The importance of the presence of blocked, biogenic magnetite in brain tissue is that these particles can mechanically transduce magnetic fields when the applied field is at an angle to the particle's magnetization vector. In this case, the particle will experience a torque. . . Disruption of the normal functioning of the ion channels could lead to physiological consequences such as osmotic shock or artificially induced neuronal discharges. In the case of cell phones, the magnetic field pulses could result from low frequency battery current bursts which transmit to the base station when

the user is not speaking.

<https://www.youtube.com/watch?v=7FItStGMY4> (<https://www.youtube.com/watch?v=7FItStGMY4>)

Magnetite in Human Tissues: A Mechanism for the Biological Effects of Weak ELF Magnetic Fields

Magnetite biomineralization in the human brain.

J L Kirschvink (<http://www.ncbi.nlm.nih.gov/pubmed/?term=Kirschvink%20JL%5Bauth%5D>), A Kobayashi-Kirschvink (<http://www.ncbi.nlm.nih.gov/pubmed/?term=Kobayashi-Kirschvink%20A%5Bauth%5D>), and B J Woodford (<http://www.ncbi.nlm.nih.gov/pubmed/?term=Woodford%20BJ%5Bauth%5D>)

Abstract - Although the mineral magnetite (Fe₃O₄) is precipitated biochemically by bacteria, protists, and a variety of animals, it has not been documented previously in human tissue. Using an ultrasensitive superconducting magnetometer in a clean-lab environment, we have detected the presence of ferromagnetic material in a variety of tissues from the human brain. Magnetic particle extracts from solubilized brain tissues examined with high-resolution transmission electron microscopy, electron diffraction, and elemental analyses identify minerals in the magnetite-maghemite family, with many of the crystal morphologies and structures resembling strongly those precipitated by magnetotactic bacteria and fish. These magnetic and high-resolution transmission electron microscopy measurements imply the presence of a minimum of 5 million single-domain crystals per gram for most tissues in the brain and greater than 100 million crystals per gram for pia and dura. Magnetic property data indicate the crystals are in clumps of between 50 and 100 particles. Biogenic magnetite in the human brain may account for high-field saturation effects observed in the T1 and T2 values of magnetic resonance imaging and, perhaps, for a variety of biological effects of low-frequency magnetic fields. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC49775/>

Studies Suggest Magnetite in Human Brain Linked to Telepathy

<http://alexansary.tv/studies-suggest-magnetite-in-human-brain-linked-to-telepathy/>

There are microscopic particles in the human brain that modern science discovered only recently and has since become a subject of increased study and discovery. It's called magnetite and it's the most magnetic substance known to man. It exists in the cerebral cortex, cerebellum, and in the lining surrounding the brain and spinal cord and consists of five million magnetite crystals in each gram of brain tissue. Here's how its created: (<http://www.affs.org/html/biomagnetism.html>) In magnetite-containing bacteria, magnetite crystals turn the bacteria into swimming needles that orient with respect to the earth's magnetic fields.

In fact, our brains seem to have an entire magnetic system built into them. They were discovered in 1992, and so far, scientists have yet to understand their function, but one possibility is that they provide a basis for magnetic broadcasting of our brain's information, in addition to whatever other functions they may have. To explain how the jumble of electrical activity, with all of its frequencies, pulses, bursts, 'trains' and even bits of random noise can be turned into meaningful information in another brain, we invoke the theory of holographic memory. This theory, though not universally accepted among scientists, has acquired acceptance in many fields. It says that our memories rely on holograms. Information packages in which each part contains all the information present in the whole system.

The holographic theory of memory says that our memories, and even our experience of conscious awareness, consists of holograms existing in our minds. Each perception, each memory, each thought, each emotion, involves a whole, and cannot really be broken up into its parts. When we see the pattern of neural activation for one of the technologies that creates images of our brains activities (like PET, CAT, EEG, MRI), we are only seeing one of the parts. Like the brain, a holograph can store an enormous amount of information in a very small space.

The earth's magnetic field provides a medium for the transmission of information between brains. It's not just that each brain can broadcast information about itself, it's that all brains exist in one magnetic field. This can explain how information is transmitted between two brains, but not how people can sometimes get information from the future – precognition. For that, we need to indulge in some serious speculation, and to take note that this is where we leave the laboratory studies behind.

What is magnetite doing in the human brain? In magnetite-containing bacteria, the answer is simple: Magnetite crystals turn the bacteria into swimming needles that orient with respect to the earth's magnetic fields. Magnetite has also been

found in animals that navigate by compass direction, such as bees, birds, and fish, but scientists do not know why the magnetite is present in humans, only that it is there.

We have also seen in research done in the late 1980s that proteins, DNA, and transforming DNA function as piezoelectric crystal lattice structures in nature. The piezoelectric effect refers to that property of matter which may convert electromagnetic oscillations to mechanical vibrations and vice versa. Studies with exogenously administered electromagnetic fields have shown that both transcription (RNA synthesis) and translation (protein synthesis) can be induced by electromagnetic fields and furthermore that direct current in bone will produce osteochondrogenesis (bone formation) and bacteriostasis, as well as affect adenosine triphosphate (ATP) generation, protein synthesis and membrane transport."

[link to www.affs.org (<http://www.godlikeproductions.com/external?http%3A%2F%2Fwww.affs.org%2Fhtml%2Fbiomagnetism.html>)]

Microwave absorption by magnetite: A possible mechanism for coupling nonthermal levels of radiation to biological systems

Abstract = The presence of trace amounts of biogenic magnetite (Fe₃O₄) in animal and human tissues and the observation that ferromagnetic particles are ubiquitous in laboratory materials (including tissue culture media) provide a physical mechanism through which microwave radiation might produce or appear to produce biological effects.

Magnetite is an excellent absorber of microwave radiation at frequencies between 0.5 and 10.0 GHz through the process of ferromagnetic resonance, where the magnetic vector of the incident field causes precession of Bohr magnetons around the internal demagnetizing field of the crystal. Energy absorbed by this process is first transduced into acoustic vibrations at the microwave carrier frequency within the crystal lattice via the magnetoacoustic effect; then, the energy should be dissipated in cellular structures in close proximity to the magnetite crystals. Several possible methods for testing this hypothesis experimentally are discussed. Studies of microwave dosimetry at the cellular level should consider effects of biogenic magnetite.

[link to www3.interscience.wiley.com (<http://www.godlikeproductions.com/external?http%3A%2F%2Fwww3.interscience.wiley.com%2Fcgi-bin%2Fabstract%2F66447%2FABSTRACT%3FCRETRY%3D1%26SRETRY%3D0>)]

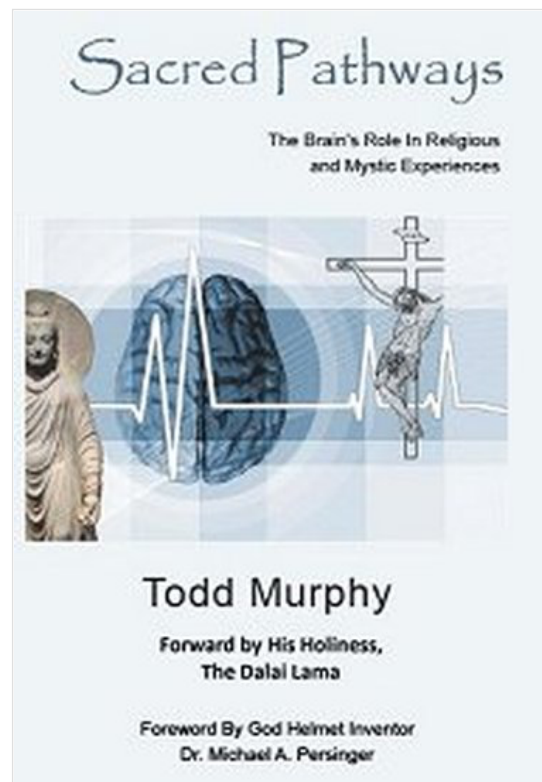
Magnetite is an excellent absorber of microwave radiation at frequencies between 0.5 and 10.0 GHz through the process of ferromagnetic resonance, where the magnetic vector of the incident field causes precession of Bohr magnetons around the internal demagnetizing field of the crystal. Energy absorbed by this process is first transduced into acoustic vibrations at the microwave carrier frequency within the crystal lattice via the magnetoacoustic effect; then, the energy should be dissipated in cellular structures in close proximity to the magnetite crystals. Several possible methods for testing this hypothesis experimentally are discussed. Studies of microwave dosimetry at the cellular level should consider effects of biogenic magnetite.

[link to www3.interscience.wiley.com (<http://www.godlikeproductions.com/external?http%3A%2F%2Fwww3.interscience.wiley.com%2Fcgi-bin%2Fabstract%2F66447%2FABSTRACT%3FCRETRY%3D1%26SRETRY%3D0>)]

Neuromagnetic Signals as the Basis for States of Consciousness

In what could turn out to be one of the most important discoveries in cognitive studies of our decade, it has been found that there are five million magnetite crystals per gram in the human brain (1). Interestingly, The meninges, (the membrane that envelops the brain), has twenty times that number. These 'biomagnetite' crystals demonstrate two interesting features. The first is that their shapes do not occur in nature, suggesting that they were formed in the tissue, rather than being absorbed from outside. The other is that these crystals appear to be oriented so as to maximize their magnetic moment, which tends to give groups of these crystals the capacity to act as a system. The brain has also been found to emit very low intensity magnetic fields, a phenomenon that forms the basis of a whole diagnostic field, Magnetoencephalography(2). Continued... [link to www.shaktitechnology.com (<http://www.godlikeproductions.com/external?http%3A%2F%2Fwww.shaktitechnology.com%2Fconsciousness.htm>)]





http://www.amazon.com/Sacred-Pathways-Brains-Religious-Experiences-ebook/dp/B007Y3TVSS/ref=sr_1_2?ie=UTF8&qid=1399399071&sr=8-2&keywords=sacred+pathway (http://www.amazon.com/Sacred-Pathways-Brains-Religious-Experiences-ebook/dp/B007Y3TVSS/ref=sr_1_2?ie=UTF8&qid=1399399071&sr=8-2&keywords=sacred+pathway)

ACTIVITAS NERVOSA SUPERIOR	<i>Activitas Nervosa Superior 2009;51:3,120-123</i>	HYPOTHESES
<h2>THE PRODUCTION OF CONSCIOUSNESS OUT OF STATES OF CONSCIOUSNESS</h2>		
<p>Todd Murphy*</p> <p><i>Neuroscience Research Group, Laurentian University, Sudbury, Canada</i> Received March 10, 2009; accepted April 2, 2009</p>		
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Abstract		
<p>It has been found that there are five million magnetite crystals per gram in the human brain. Interestingly, the meninges, has twenty times that number. These 'biomagnetite' crystals demonstrate two interesting features. The first is that their shapes do not occur in nature, suggesting that they were formed in the tissue, rather than being absorbed from outside. The other is that these crystals appear to be oriented so as to maximize their magnetic moment, which tends to give groups of these crystals the capacity to act as a system. We hypothesize that the entire set of modalities, cognitive and sensory, may be heuristically compared to a sound mixing board. In this metaphor, all the various modalities are represented as vertical rheostats with enhanced functioning increasing towards the top, and suppressed function increasing towards the bottom. Further, the act of becoming conscious of phenomena in any given modality involves the adjustment of that modality's 'rheostat'.</p>		
<p><i>Key words: Magnetoencephalography; Consciousness; Subjective Awareness</i></p>		

Full Article at

Murphy, Todd "The production of consciousness out of states of consciousness" *Activitas Nervosa Superior*, Vol 51, No 3 (2009)

<http://www.activitas.org/index.php/nervosa/article/view/75/94>

(<http://www.activitas.org/index.php/nervosa/article/view/75/94>)

CONSCIOUSNESS AS A FEEDBACK INTER-FACE OF SENSORY AND COGNITIVE MODALITIES

<http://www.shaktitechnology.com/consciousness.htm>

([http://The%20Production%20of%20Consciousness%20out%20of%20States%20of%20Consciousness%20%20%20%20C2%A9%201999%20%20Todd%20Murphy%20%20%20E-](http://The%20Production%20of%20Consciousness%20out%20of%20States%20of%20Consciousness%20%20%20C2%A9%201999%20%20Todd%20Murphy%20%20%20E-mail:%20Brainsci@jps.net%20%20Return%20Home%20%20%20Neuromagnetic%20Signals%20as%20the%20Basis%20for%20States%20of%20Consciousness%20%20%20In%20what%20could%20turn%20out%20to%20be%20one%20of%20the%20most%20important%20discoveries%20in%20cognitive%20studies%20of%20our%20decade,%20it%20has%20been%20found%20that%20there%20are%20five%20million%20magnetite%20crystals%20per%20gram%20in%20the%20human%20brain%20%281%29.%20Interestingly,%20The%20meninges,%20%28the%20membrane%20that%20envelops%20the%20brain%29,%20has%20twenty%20times%20that%20number.%20These%20%28E2%80%98biomagnetite%27%20crystals%20demonstrate%20two%20interesting%20features.%20The%20first%20is%20that%20their%20shapes%20do%20not%20occur%20in%20nature,%20suggesting%20that%20they%20were%20formed%20in%20the%20tissue,%20rather%20than%20being%20absorbed%20from%20outside.%20The%20other%20is%20that%20these%20crystals%20appear%20to%20be%20oriented%20so%20as%20to%20maximize%20their%20magnetic%20moment,%20which%20tends%20to%20give%20groups%20of%20these%20crystals%20the%20capacity%20to%20act%20as%20a%20system.%20The%20brain%20has%20also%20been%20found%20to%20emit%20very%20low%20intensity%20magnetic%20fields,%20a%20phenomenon%20that%20forms%20the%20basis%20of%20a%20whole%20diagnostic%20field,%20Magnetoencephalography%282%29.%20%20Unfortunately%20for%20the%20present%20discussion,%20there%20is%20no%20way%20to%20%28E2%80%98read%27%20any%20signals%20that%20might%20be%20carried%20by%20the%20brain%20magnetic%20emissions%20at%20present.%20We%20expect%20that%20subtle%20enough%20means%20of%20detecting%20such%20signals%20will%20eventually%20appear,%20as%20there%20is%20compelling%20evidence%20that%20they%20do%20exist,%20and%20constitute%20a%20means%20whereby%20communication%20happens%20between%20various%20parts%20of%20the%20brain.%20This%20system,%20we%20speculate,%20is%20what%20makes%20the%20selection%20of%20which%20neural%20areas%20)

mail:%20Brainsci@jps.net%20%20Return%20Home%20%20%20Neuromagnetic%20Signals%20as%20the%20Basis%20for%20States%20of%20Consciousness%20%20%20%20In%20what%20could%20turn%20out%20to%20be%20one%20of%20the%20most%20important%20discoveries%20in%20cognitive%20studies%20of%20our%20decade,%20it%20has%20been%20found%20that%20there%20are%20five%20million%20magnetite%20crystals%20per%20gram%20in%20the%20human%20brain%20%281%29.%20Interestingly,%20The%20meninges,%20%28the%20membrane%20that%20envelops%20the%20brain%29,%20has%20twenty%20times%20that%20number.%20These%20%28E2%80%98biomagnetite%27%20crystals%20demonstrate%20two%20interesting%20features.%20The%20first%20is%20that%20their%20shapes%20do%20not%20occur%20in%20nature,%20suggesting%20that%20they%20were%20formed%20in%20the%20tissue,%20rather%20than%20being%20absorbed%20from%20outside.%20The%20other%20is%20that%20these%20crystals%20appear%20to%20be%20oriented%20so%20as%20to%20maximize%20their%20magnetic%20moment,%20which%20tends%20to%20give%20groups%20of%20these%20crystals%20the%20capacity%20to%20act%20as%20a%20system.%20The%20brain%20has%20also%20been%20found%20to%20emit%20very%20low%20intensity%20magnetic%20fields,%20a%20phenomenon%20that%20forms%20the%20basis%20of%20a%20whole%20diagnostic%20field,%20Magnetoencephalography%282%29.%20%20Unfortunately%20for%20the%20present%20discussion,%20there%20is%20no%20way%20to%20%28E2%80%98read%27%20any%20signals%20that%20might%20be%20carried%20by%20the%20brain%20magnetic%20emissions%20at%20present.%20We%20expect%20that%20subtle%20enough%20means%20of%20detecting%20such%20signals%20will%20eventually%20appear,%20as%20there%20is%20compelling%20evidence%20that%20they%20do%20exist,%20and%20constitute%20a%20means%20whereby%20communication%20happens%20between%20various%20parts%20of%20the%20brain.%20This%20system,%20we%20speculate,%20is%20what%20makes%20the%20selection%20of%20which%20neural%20areas%20

to recruit, so that States of consciousness can elicit the appropriate phenomenological, behavioral, and affective responses. While there have been many studies that have examined the effects of magnetic fields on human consciousness, none have yielded findings more germane to understanding the role of neuromagnetic signaling than the work of the Laurentian University Behavioral Neurosciences group. They have pursued a course of experiments that rely on stimulating the brain, especially the temporal lobes, with complex low intensity magnetic signals. It turns out that different signals produce different phenomena. One example of such phenomenon is vestibular sensation, in which one's normal sense of balance is replaced by illusions of motion similar to the feelings of levitation reported in spiritual literature as well as the sensation of vertigo. Transient E2%80%98visions, whose content includes motifs that also appear in near-death experiences and alien abduction scenarios have also appeared. Positive affectual parasthesias like electric-like buzzes in the body have occurred. Another experience that has been elicited neuromagnetically is bursts of emotion, most commonly fear and joy. Although the content of these experiences can be quite striking, the way they present themselves is much more ordinary. It approximates the E2%80%98twilight state between waking and sleep called hypnogogia. This can produce brief, fleeting visions, feelings that the bed is moving, rocking, floating or sinking. Electric-buzz like somatic sensations and hearing an inner voice call one's name can also occur in hypnogogia. The range of experiences it can produce is quite broad. If all signals produced the same phenomena, then it would be difficult to conclude that these magnetic signals approximate the postulated

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20in%20State.%20In%20fact,%20the%20former%20produce%20a%20wide%20v
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0did%20not%20seem%20to%20affect%20the%20monkeys%20at%20all.%20The
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that suggest that cognitive modalities such as memory, affect, ideation and attention may be seen as analogs to sensory modalities. We hypothesize that the entire set of modalities, cognitive and sensory, may be heuristically compared to a sound mixing board. In this metaphor, all the various modalities are represented as vertical rheostats with enhanced functioning increasing towards the top, and suppressed function increasing towards the bottom. Further, the act of becoming conscious of phenomena in any given modality involves the adjustment of that modality's rheostat. Sensory input from any modality can alter one's state. The sight of a sexy person, the smell of fire, the unexpected sensation of movement against one's skin in there's a bug on me, a sudden bitter taste experienced while eating ice cream, or the sound of one's child screaming in pain; all of these phenomena can induce alterations in State. Although the phrase altered states has come to be associated with dramatic, otherworldly experiences, alterations in state, as we will be using the phrase, refers primarily to those alterations that take us from one normal state to another. Alterations in state can create changes within the various sensory and cognitive modalities. An increase in arousal following the sight of a predator will typically suppress the sense of smell very few are able to stop and smell the roses while a jaguar is chasing them, suppress introspection nobody wants to know who am I really?

while an anaconda is wrapping itself around them, suppress sexual arousal, and alter vision so that the center of the visual field is better attended than one's peripheral vision allowing one to see the predator's movement better. The sight of a predator will also introduce a host of ot

her changes, all of which reflect the State. In the Hindu epic, the Mahabharata, there is a dialog between the legendary warrior, Arjuna, and his archery teacher. Arjuna was told by his teacher to train his bow on a straw bird used as a target. Arjuna was asked to describe the bird. He answered, "I can't." "Why not?" "I can only see it with my eye," he answered. "Release your arrow," commanded the teacher. Arjuna did, and hit the target in the eye. "I'll make you the finest archer in the world," said his teacher. "In this story, attention to peripheral vision had ceased so completely that only the very center of his visual field received any. Our model of states would be constrained to interpret Arjuna's mythical feat as a behavior specific to a state. The unique combination of sensory enhancement, heightened attention, and sufficient suppression of emotion, ideation, and introspection that support such an act suggests specific settings for our metaphorical rheostats. Changes in state make changes in sensory and cognitive modalities, and they in turn, trigger changes in state. We can reasonably conclude that there is a feedback mechanism whereby each modality is connected to the others. States also create tendencies to behave in specific ways in specific circumstances, maximizing the adaptivity of behavior in those circumstances; behavior that tends to meet our needs and respond to threats to our ability to meet those needs. Each circumstance adjusts each modalities' setting, tending to maximize that modality's contribution to adaptive behavior in that circumstance. The mechanism may function by using both learned and inherited default settings for each circumstance and then repeating those settings in similar circumstances later on. Sadly, this often makes states maladaptive. An habituated alteration

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<PLEASE READ ON THE ORIGINAL PAGE>

The Production of Consciousness out of States of Consciousness,

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Neuromagnetic Signals as the Basis for States of Consciousness

In what could turn out to be one of the most important discoveries in cognitive studies of our decade, it has been found that there are five million magnetite crystals per gram in the human brain (1). Interestingly, The meninges, (the membrane that envelops the brain), has twenty times that number. These 'biomagnetite' crystals demonstrate two interesting features. The first is that their shapes do not occur in nature, suggesting that they were formed in the tissue, rather than being absorbed from outside. The other is that these crystals appear to be oriented so as to maximize their magnetic moment, which tends to give groups of these crystals the capacity to act as a system. The brain has also been found to emit very low intensity magnetic fields, a phenomenon that forms the basis of a whole diagnostic field, Magnetoencephalography(2).

Unfortunately for the present discussion, there is no way to 'read' any signals that might be carried by the brains magnetic emissions at present. We expect that subtle enough means of detecting such signals will eventually appear, as there is compelling evidence that they do exist, and constitute a means whereby communication happens between various parts of the brain. This system, we speculate, is what makes the selection of which neural areas to recruit, so that States (of consciousness) can elicit the appropriate phenomenological, behavioral, and affective responses.

While there have been many studies that have examined the effects of magnetic fields on human consciousness, none have yielded findings more germane to understanding the role of neuromagnetic signaling than the work of the Laurentian University Behavioral Neurosciences group. They have pursued a course of experiments that rely on stimulating the brain, especially the temporal lobes, with complex low intensity magnetic signals (3). It turns out that different signals produce different phenomena.

One example of such phenomenon is vestibular sensation, in which one's normal sense of balance is replaced by illusions of motion similar to the feelings of levitation reported in spiritual literature as well as the sensation of vertigo. Transient 'visions', whose content includes motifs that also appear in near-death experiences and alien abduction scenarios have also appeared (4). Positive affectual parasthesias (electric-like buzzes in the body) have occurred. Another experience that has been elicited neuromagnetically is bursts of emotion, most commonly fear and joy. Although the content of these experiences can be quite striking, the way they present themselves is much more ordinary. It approximates the 'twilight state' between waking and sleep called hypnogogia. This can produce brief, fleeting visions, feelings that the bed is moving, rocking, floating or sinking. Electric-buzz like somatic sensations and hearing an inner voice call one's name can also occur in hypnogogia. The range of experiences it can produce is quite broad. If all signals produced the same phenomena, then it would be difficult to conclude that these magnetic signals approximate the postulated endogenous neuromagnetic signals that create alterations in State. In fact, the former produce a wide variety of phenomena. One such signal makes some women apprehensive, another doesn't (5). One signal creates such strong vestibular sensations that one can't stand up. Another doesn't.

The temporal lobes are the parts of the brain that mediate states of consciousness. EEG readouts from the temporal lobes are markedly different when a person is asleep, having a hallucinogenic seizure, or on LSD. Siezural disorders confined to the temporal lobes (complex partial seizures) have been characterized as impairments of consciousness

(6). There was also a study done in which monkeys were given LSD after having various parts of their brains removed
(7). The monkeys continued to 'trip' no matter what part or parts of their brains were missing until both temporal lobes were taken out. In these cases, the substance did not seem to affect the monkeys at all. The conclusion seems unavoidable. In addition to all their other functions (aspects of memory, language, music, etc.), the temporal lobes mediate states of consciousness.

If exposing the temporal lobes to magnetic signals can induce alterations in States, then it seems reasonable to suppose that States find part of their neural basis in our postulated neuromagnetic signals, arising out of the temporal lobes.

Hallucinations are known to be the phenomenological correlates of altered States. Alterations in state of consciousness leads, following input, and phenomena, whether hallucinatory or not, follows in response. We can offer two reasons for drawing this conclusion.

The first is one of the results obtained by a study of hallucinations caused by electrical stimulation deep in the brain
(8). In this study, the content of the hallucinations was found to be related to the circumstances in which they occurred, so that the same stimulations could produce different hallucinations. The conclusion was that the stimulation induced altered states, and the states facilitated the hallucinations.

The second has to do with the relative speeds of the operant neural processes.

Neurochemical response times are limited by the time required for their transmission across the synaptic gap, .5 to 2msec (9).

By comparison, the propagation of action potentials is much faster. For example, an action potential can travel a full centimeter (a couple of orders of magnitude larger than a synaptic gap) in about 1.3 msec. The brain's electrical responses, therefore, happen orders of magnitude more quickly than do it's chemical ones (10).

Magnetic signals are propagated with much greater speeds than those of action potentials moving through neurons. Contemporary physics requires that magnetic signals be propagated at a significant fraction of the velocity of light, so that the entire brain could be exposed to a neuromagnetic signal in vanishingly small amounts of time.

It seems possible that neuromagnetic signals arise from structures which mediate our various sensory and cognitive modalities. These signals then recruit those functions (primarily in the limbic system) that adjust the changes in state. These temporal lobe signals, we speculate, then initiate signals to structures that mediate modalities that are enhanced or suppressed as the state changes.

Consciousness as a Feedback Interface of Sensory and Cognitive Modalities

The problem of defining the phrase 'state of consciousness' has plagued the field of cognitive studies for some time.

Without going into the history of studies in the area, we would like to outline an hypothesis concerning states of consciousness in which the management of states gives rise to the phenomenon of consciousness.

There are theories that suggest that cognitive modalities (such as memory, affect, ideation and attention) may be seen as analogs to sensory modalities.

We hypothesize that the entire set of modalities, cognitive and sensory, may be heuristically compared to a sound mixing board. In this metaphor, all the various modalities are represented as vertical rheostats with enhanced functioning increasing towards the top, and suppressed function increasing towards the bottom. Further, the act of becoming conscious of phenomena in any given modality involves the adjustment of that modality's 'rheostat'.

Sensory input from any modality can alter one's state. The sight of a sexy person, the smell of fire, the unexpected sensation of movement against one's skin (there's a bug on me!), a sudden bitter taste experienced while eating ice cream, or the sound of one's child screaming in pain; all of these phenomena can induce alterations in State. Although the phrase 'altered states' has come to be associated with dramatic, otherworldly experiences, alterations in state, as we will be using the phrase, refers primarily to those alterations that take us from one normal state to another.

Alterations in state can create changes within the various sensory and cognitive modalities. An increase in arousal following the sight of a predator will typically suppress the sense of smell (very few are able to stop and 'smell the roses' while a jaguar is chasing them), suppress introspection (nobody wants to know 'who am I really?' while an anaconda is wrapping itself around them), suppress sexual arousal, and alter vision so that the center of the visual field is better attended than one's peripheral vision allowing one to see the predator's movement better. The sight of a predator will also introduce a host of other changes, all of which reflect the State.

In the Hindu epic, the Mahabharata, there is a dialog between the legendary warrior, Arjuna, and his archery teacher. Arjuna was told by his teacher to train his bow on a straw bird used as a target. Arjuna was asked to describe the bird.

He answered 'I can't'. 'Why not?', asked his teacher. 'I can only see its eye', he answered. 'Release your arrow', commanded the teacher. Arjuna did, and hit the target in the eye. 'I'll make you the finest archer in the world', said his teacher.

In this story, attention to peripheral vision had ceased so completely that only the very center of his visual field received any. Our model of states would be constrained to interpret Arjuna's (mythical) feat as a behavior specific to a state. The unique combination of sensory enhancement, heightened attention, and sufficient suppression of emotion, ideation, and introspection that support such an act suggests specific settings for our metaphorical rheostats.

Changes in state make changes in sensory and cognitive modalities, and they in turn, trigger changes in state. We can reasonably conclude that there is a feedback mechanism whereby each modality is connected to the others.

States also create tendencies to behave in specific ways in specific circumstances, maximizing the adaptivity of behavior in those circumstances; behavior that tends to meet our needs and respond to threats to our ability to meet those needs.

Each circumstance adjusts each modalities' setting, tending to maximize that modality's contribution to adaptive behavior in that circumstance. The mechanism may function by using both learned and inherited default settings for each circumstance and then repeating those settings in similar circumstances later on. Sadly, this often makes states maladaptive. An habituated alteration in State, in response to threats from an abusive parent, for example, can make for self-defeating responses to stress in other circumstances, where these same responses are no longer advantageous (10).

Because different States are going to be dominated by specific combinations of modalities, it stands to reason that a possible strategy for aligning the rheostats (making alterations in state) is to move them in tandem, so that after a person associates the sound of a scream to the concept of a threat, that sound, with its unique auditory signature, will cause all the affected modalities (most likely most of them in most cases) to take the positions they had at the time the association was made.

When we say changing states, we are referring to much more than the dramatic states created by LSD, isolation tanks, REM sleep, etc. We are also including normal states of consciousness, which we can imagine as kindled 'default settings' of our various modalities. When any one of these settings returns to one of its default settings, it will, we conjecture, tend to entrain all the other modalities to the settings they habitually take in that state.

To accomplish this, we must suggest that each modality is connected to every other one. A sight, a smell, a sound, or a tactile feeling can all inspire fear. Fear can motivate ideation. Ideation can inspire arousal. Changes in affect can initiate alterations in introspection. Introspection alters affect. State specific settings of individual modalities could initiate settings for other modalities.

Our main hypothesis here is that all these intermodal connections, operating as a single system, has a single phenomenological correlate. The phenomena of subjective awareness.

We proposed in our first section that the alteration of consciousness involves having a modality receive input that triggers a change in State. The structure associated with that modality then broadcasts a neuromagnetic signal to the temporal lobes, which then produces signals that then recruits various structures throughout the brain. Specifically, those structures whose associated modalities' values must be changed in order to accomplish the appropriate alteration in state. In the second section, we found the possibility that states are settings for the variable aspects of

cognitive and sensory modalities. We also offered the suggestion that consciousness is the phenomenological correlate of the feedback between the management of states on the one hand, and the various cognitive and sensory modalities, on the other. If all of these conclusions were to stand up to testing, we could conclude that the content of the brain's hypothesized endogenous magnetic signals might consist of a set of values for adjusting each sensory and cognitive rheostat. We might also conclude that neuromagnetic signaling is the context in which consciousness occurs.

The specific mechanism whereby subjectivity is generated is out of the reach of this work. Nevertheless, we can say that the fact that multiple modalities are experienced simultaneously, together with our model's implication that they are 'reset,' all at once, with each alteration in state suggests that our postulated neuromagnetic signals may come in pairs, with the two signals running slightly out of phase with one another. In this way, neuromagnetic signals, like the two laser beams used to produce a hologram, might be able to store information in a similar way, as has already been explored by Karl Pibhram. The speeds at which neuromagnetic signals are propagated, together with their capacity to recruit/alter multiple modalities suggests that the underlying mechanism has been selected to make instant choices on which specific portions to recruit in order to facilitate the behaviors acted out of the State, and to do so quickly.

In this way, the onset time for the initiation of States is kept to a minimum, and with it, the times needed to make the initial, cognitive response to stimuli. When it comes to response to threats, or sighting prey, the evolutionary advantages are obvious.

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Article

Magnetic Stimulation of the Temporal Cortex: A Partial "God Helmet" Replication Study

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Abstract

The effects of magnetic stimulation of the brain in comparison with suggestibility and expectation are studied. Eight magnetic coils were embedded in a helmet, placing four over the temporal lobes on each side of the head. These produced 0.0001 Tesla (10 mG) magnetic fields (MF). "Spiritual experiences" were reported by some of the 20 volunteers who received magnetic stimulation of the temporal lobes. These "spiritual experiences" included sensing the presence of "spiritual beings." Stimulation durations and field strengths were within the limits used by Dr. M. A. Persinger in similar ("God Helmet") experiments (20 minutes, 10 mG). Questionnaires were applied before, during, and after the experimental sessions. Analysis of the subjects' verbal reports, using Whissel's Dictionary of Affect in Language, revealed significant differences between subjects and controls, as well as less robust effects for suggestion and expectation.

Keywords: God Helmet, magnetic stimulation, temporal cortex, Michael Persinger, spiritual experience.

Magnetic Stimulation of the Temporal Cortex:

A Partial "God Helmet" Replication Study

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Full Article: <http://jcer.com/index.php/jcj/article/view/361/386>

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The God Helmet (Koren Helmet) stimulates the temporal neo-cortex and mesio-basal portions of the temporal lobes with complex magnetic fields. The God Helmet places four magnetic coils on each side of the head, above the temporal lobes. Some subjects exposed to these fields reported having "spiritual experiences" during our tests. These subjects included atheists, as well as religious believers. In one media interview (BBC, 2003), Persinger stated that 80% of the subjects reported the "presence" of "nonphysical beings" in the room where the experiments were conducted, including the "presence of God" in a small number of subjects.

Antecedent Studies

Other researchers have explored the effects of magnetic fields on the human brain, including Sandyk (1997, 1999), who reported therapeutic effects from the magnetic field on patients with Parkinson's disease and multiple sclerosis. Hirata et al. (2011) reported eliciting phosphenes using weak magnetic fields. Martiny K, Lunde M, Beach P (2010) reported antidepressant effects from low-intensity magnetic fields. Robertson (2010) reported changes in pain processing following low-intensity magnetic pulses.

Mystic experiences have been reported from all countries throughout history. Mystic experiences have been defined as "altered states of consciousness accompanied by positive affect" (Murphy, 2011). Dr. Andrew Newberg (2001) has shown that religious experiences affect the temporal lobes of those who experience them. Dr. Persinger (2010) has demonstrated that when the temporal lobes are activated in specific ways, the subjects have religious experiences. These two lines of research both implicate the temporal lobes as crucial in mystic experiences.

M. A. Persinger (2001) has reported religious and mystic experiences in laboratory settings using low-intensity magnetic signals, most notably the elicitation of the "sensed presence" experience and (much more rarely) visions of God. Persinger and colleagues have suggested that specific classes of subjective experiences are related to subtle changes in brain activity, influenced by fluctuations in global geomagnetic activity (Persinger, 1988). Persinger AM, Roll WG, Tiller SG, Koren SA, Cook CM (2002) reported neurophysiological correlates of experiences reported by Sean Harribance, a remote viewer. Low-intensity complex magnetic signals were applied over his right parietal-temporal lobe, causing him to sense presences on his left side. These results suggest that the paranormal phenomenon Harribance reported was quantitatively correlated with morphological and functional abnormalities involved in the right pario-temporal cortex and the hippocampal formation (Persinger, MA, Roll, WG, Tiller, SG, Koren SA, Cook CM 2002). Beuregard and Paquette (2006) did an experiment with Carmelite nuns who reported moments of union with God. Magnetic resonance images (fMRI) were taken from them while they were in this state. Their experiences were found to correlate with changes in the medial orbitofrontal cortex, inferior and superior parietal lobes, medial pre-frontal cortex, left anterior cingulate cortex, and left insula. The results suggest that mystical experiences are mediated by several brain regions and systems. These include the temporal lobes, the region we focus on in the present study.

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Groundbreaking Results in Consciousness, Quantum Brain & Nonlocality Research by Michael Persinger's Group

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patients between 48 and 88 years of age. Out of a total of 48 patients, 4 were suspected to have Alzheimer disease. Kirschvink et al. (1992) initially measured the emitted magnetic field using SQUID (superconducting quantum interference device), a magnetometer able to detect very weak magnetic fields. Brain tissue was sampled either by frozen fracture or dissection and put in a sterile vessel. Kirschvink and his team found that all the samples presented remnant isothermal magnetization (IRMs), saturating at about 300 mT, i.e., the characteristic value for magnetite. They estimated an equivalent of 4 ng of magnetite per gram of tissue, while the average values for the meninges from three of the sampled brains were 20 times higher. No significant differences were found between "normal brain" tissue and tissue from patients with suspected or confirmed Alzheimer disease. Using IRM (isothermal remnant magnetization), they found that magnetite particles were concentrated in small areas. Magnetite crystals were found in human brain tissue extracts from the cerebral cortex, cerebellum, and meninges (membranes surrounding the brain and spinal cord). Using high-resolution transmission electron microscopy (TEM) and electron diffraction, they indentified the presence of magnetite-maghemite crystals with an average size of 30 nm.

Medical Geochemistry: Geological Materials and Health By Paolo Censi, Thomas Darrah, Yigal Erel

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Biophysics

Magnetite biomineralization in the human brain

(iron/extremely low frequency magnetic fields)

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ABSTRACT Although the mineral magnetite (Fe₃O₄) is precipitated biochemically by bacteria, protists, and a variety of animals, it has not been documented previously in human tissue. Using an ultrasensitive superconducting magnetometer in a clean-lab environment, we have detected the presence of ferromagnetic material in a variety of tissues from the human brain. Magnetic particle extracts from solubilized brain tissues examined with high-resolution transmission electron microscopy, electron diffraction, and elemental analyses identify minerals in the magnetitemaghemite family, with many of the crystal morphologies and structures resembling strongly those precipitated by magnetotactic bacteria and fish. These magnetic and high-resolution transmission electron microscopy measurements imply the presence of a minimum of 5 million single-domain crystals per gram for most tissues in the brain and >100 million crystals per gram for pia and dura. Magnetic property data indicate the crystals are in clumps of between 50 and 100 particles. Biogenic magnetite in the human brain may account for high-field saturation effects observed in the T₁ and T₂ values of magnetic resonance imaging and, perhaps, for a variety of biological effects of low-frequency magnetic fields.

http://link.springer.com/chapter/10.1007/978-94-007-4372-4_6#page-1 (http://link.springer.com/chapter/10.1007/978-94-007-4372-4_6#page-1)

MAGNETITE MINERALS IN THE HUMAN BRAIN: WHAT IS THEIR ROLE?

ZUDDAS, ET AL

Abstract Although it has long been known that magnetite (Fe_3O_4) can be formed biochemically by bacteria, protists, and a variety of living organisms, it is only in the past 20 years that magnetite has discovered to be present in the human brain. Researchers have documented the presence of magnetite nanocrystals in the human brain using magnetometric methods and transmission electron microscopy.

To understand the mechanism behind the formation of magnetite nanocrystals in the human brain, we have chosen to take a transdisciplinary approach associating studies of magnetite biomineralization in other species and geochemical research.

Although the exact role of magnetite nanocrystals on human cerebral physiology has yet to be determined, we suspect that it plays a significant role in the nervous system.

Keywords Brain magnetic nanominerals • Human nervous system • Biomagnetite

<http://www.affs.org/html/biomagnetism.html> (<http://www.affs.org/html/biomagnetism.html>)

Biomagnetism and Bio-Electromagnetism:

The Foundation of Life by H. Coetzee, Ph.D.

[Originally published in *Future History*, Volume 8]

Throughout the past 30 years, scientists have been extensively researching organisms that have the ability to produce the ferromagnetic mineral magnetite. Magnetite is a black mineral form of iron oxide that crystallizes in the cubic or isometric system, namely all crystals which have their crystallographic axes of equal length at 90 degrees to each other. It is a mixed Iron (II) Iron (III) oxide, Fe_3O_4 , and is one of the major ores of iron that is strongly magnetic. Some varieties, known as lodestone, are natural magnets; these were used as compasses in the ancient world.

The discovery of a biogenic material (that is, one formed by a biological organism) with ferromagnetic properties and found to be magnetite was the first breakthrough toward an understanding as to why some animals have the ability to detect the earth's magnetic field. Searches for biogenic magnetite in human tissues had not been conclusive until the beginning of the 1990's when work with high-resolution transmission electron microscopy and electron diffraction on human brain tissue extracts of the cerebral cortex, cerebellum, and meninges (membranes surrounding the brain and spinal cord) identified magnetite-maghemite crystals.

Magnetite Crystals under Low Magnification

These magnetite crystals were found to be organized into linear, membrane-bound chains a few micrometers in length, with up to 80 crystals per chain. Furthermore individual crystals have their {111} aligned along the length of the chain axes (the "easy" direction of magnetization). The {111} crystal alignment has been interpreted as a biological mechanism for maximizing the magnetic moment per particle, as the {111} direction yields approximately 3% higher saturation magnetization than do other directions. This prismatic particle shape is also uncommon in geological magnetite crystals of this size, which are usually octahedra. The crystal morphology was found to be cubo-octahedral with the {111} faces of adjacent crystals lying perpendicular to the chain axis.

All the magnetite crystals that have been examined to date are single magnetic domains, which means that they are uniformly and stably magnetized and have the maximum magnetic moment per unit volume possible for magnetite. Elemental analysis, by energy-dispersive X-ray analysis, electron diffraction patterns, and high resolution transmission electron microscopy lattice images, showed that many of the particles were structurally well-ordered and crystallographically single-domain magnetite. This means that the production of this biomineral must be under precise biological control.

Ferromagnetic crystals interact more than a million times more strongly with external magnetic fields than do diamagnetic or paramagnetic materials (deoxyhemoglobin, ferritin, and hemosiderin). With this finding researchers were posed with a fundamental question for biology, namely: What is the mechanism through which the weak geomagnetic fields are perceived by organisms that are able to precipitate crystals of a ferromagnetic mineral such as magnetite (Fe_3O_4)? Could these crystals use their motion in a variety of ways to transduce the geomagnetic field into signals that can be processed by the nervous system?

The presence of membrane-bound biomineral magnetite, which has been shown to have a biological origin, and the implication that some kind of mechanical coupling must take place between each compass magnetite particle and a mechanoreceptor, or at least a functionally equivalent mechanism allowing the position of the particle to be monitored by a sensory organelle in the body, is unique. Research has also found that the magnetite is produced by the cells of the organism when needed. Forms of advanced physical intelligence can directly tap into this information if they have a crystalline network within their brain cavity.

Scientists are now asking the fundamental question: What is magnetite doing in the human brain? In magnetite-containing bacteria, the answer is simple: Magnetite crystals turn the bacteria into swimming needles that orient with respect to the earth's magnetic fields. Magnetite has also been found in animals that navigate by compass direction, such as bees, birds, and fish, but scientists do not know why the magnetite is present in humans, only that it is there.

We have also seen in research done in the late 1980s that proteins, DNA, and transforming DNA function as piezoelectric crystal lattice structures in nature. The piezoelectric effect refers to that property of matter which may convert electromagnetic oscillations to mechanical vibrations and vice versa. Studies with exogenously administered electromagnetic fields have shown that both transcription (RNA synthesis) and translation (protein synthesis) can be induced by electromagnetic fields and furthermore that direct current in bone will produce osteochondrogenesis (bone formation) and bacteriostasis, as well as affect adenosine triphosphate (ATP) generation, protein synthesis and membrane transport.

Single Magnetite Crystal in the Human Brain

In the human brain, pyramidal cells are present and arranged in layers in the cortex of the two cerebra. The pyramidal cells act as electro-crystal cells immersed in extra-cellular tissue fluids, and seem to operate in the fashion of a liquid crystal oscillator in response to different light commands, or light pulses which, in turn, change the orientation of every molecule and atom within the body. Biogravitational encoded switches present in the brain allow a type of liquid network to release ions that induce currents to the surrounding coiled dendrites. Electron impulses from a neuron, on reaching the dendrite coil of the abutted cell, generate a micro amperage magnetic field, causing the ultra thin crystal, or liquid crystal in the pyramidal cell to be activated --- in a very unusual way. On flexing, this ultra thin crystal becomes a piezoelectric oscillator, producing a circular polarized light pulse that travels throughout the body, or travels as a transverse photonic bundle of energy.

According to Einstein, matter is to be regarded itself as part, in fact the principle part, of the electromagnetic field, and electric energy is therefore the fundamental origin of our entire physical world. Consequently, in work published by The Academy For Future Science it has been cited that "under present biological conditions, evolutionary development in living bodies from earliest inception follows unicellular semiconductivity, as a living piezoelectric matrix, through stages which permit primitive basic tissues (glia, satellite and Schwann cells) to be supportive to the neurons in the human system where the primary source is electrical. This has been especially shown in bone growth response to mechanical stress and to fractures which have been demonstrated to have characteristics of control systems using electricity."

Ongoing research has shown that bone has electrical properties. The bone matrix is a biphasic (two-part) semiconductor, i.e. a crystalline solid with an electrical conductivity. The collagen component of bone matrix is an N-type semiconductor and the apatite component a P-type. When tested for piezoelectricity, collagen turns out to be a piezoelectric generator while apatite is not. These function as two semiconductors, one an N-type, the other a P-type forming a PN-junction, which sets up a potential barrier and acts as an efficient rectifier, i.e. a semiconductor diode.

Mechanical stress on the bone thus produces a piezoelectrical signal from the collagen. The signal is biphasic, switching polarity with each stress-and-release. The signal is rectified by the PN-junction between apatite and

collagen. The strength of the signal tells the bone cells how strong the stress is, and its polarity tells them what direction it comes from. Osteogenic (bone forming) cells, which have been shown to have a negative potential, would be stimulated to grow more bone, while those in the positive area would stop production of matrix and be resorbed when needed. If bone growth and resorption are part of one process, the electrical signal acts as an analog code to transfer information about stress to the cells and trigger the right response. Hence, stress is converted into an electrical signal.

An interesting property of PN-junctions of semiconductor diodes may be observed when current is run through the diode in forward bias, i.e. when there is a good current flow across the barrier. Some of the energy is turned into light and emitted from the surface and are therefore known as light-emitting diodes (LEDs). Researchers found that bone was an LED that required an outside source of light before an electric current would make it release its own light, and the light it emitted was at an infrared frequency invisible to us, but consistent.

With the use of an applied current of a few microamperes regeneration of the spinal cord, optic nerve and bone has been demonstrated and naturally generated electric currents have been linked to changes in developing embryos and in regenerating limbs.

During the past decades a great increase has taken place in research on the effects of non-ionizing electromagnetic radiation on biological systems. Much has been revealed about the human organisms on all levels but the question still being asked by scientists is: What electromagnetic signal might tune to a magnetic resonant energy which would alter the metabolic genetic regulation to bring about growth and repair? It has been considered by this author that tRNA molecules may play a central role to cause cells to alter their normal properties which will then receive the original genetic transmission, given through a 'spin point' to a cell. These transmissions at the spin points, as discussed through research at The Academy For Future Science, may provide regenerating instruction for the manufacture of enzymes and proteins which are the building blocks for the 'new tissue' or the 'new organ form' which is regenerated on the physical plane. Projecting energy into the spin point allows for the formation of a blastema (mass of primitive type cells) that gives rise to the regenerated tissue. Thus, through the spin point, cells become the tissue responsible for the generation and transmission of direct current signals used in regeneration processes.

<http://alexansary.tv/studies-suggest-magnetite-in-human-brain-linked-to-telepathy/> (<http://alexansary.tv/studies-suggest-magnetite-in-human-brain-linked-to-telepathy/>)

Studies Suggest Magnetite in Human Brain Linked to Telepathy

Alex Ansary

November 1, 2012

There are microscopic particles in the human brain that modern science discovered only recently and has since become a subject of increased study and discovery. It's called magnetite and it's the most magnetic substance known to man. It exists in the cerebral cortex, cerebellum, and in the lining surrounding the brain and spinal cord and consists of five million magnetite crystals in each gram of brain tissue.

Here's how it's created: (<http://www.affs.org/html/biomagnetism.html>) In magnetite-containing bacteria, magnetite crystals turn the bacteria into swimming needles that orient with respect to the earth's magnetic fields.

Magnetite in Humans a Recent Discovery

In 1992 it was discovered by Dr. Joseph Kirschvink (<http://www.nytimes.com/1992/05/12/science/magnetic-crystals-guides-for-animals-found-in-humans.html?pagewanted=all&src=pm>), a geologist and professor at the California Institute of Technology who said at the time that the discovery was sure to astound most scientists but what it's doing there remains a mystery. Joseph encountered a number of funding obstacles from The National Institutes of Health but the research continued and has spawned deeper studies.

For years scientists have been studying how birds and fish are able to navigate by using the earth's magnetic field. Live Science (<http://www.livescience.com/21473-source-animal-magnetic-sense.html>) reports that researchers discovered magnetite in the noses of rainbow trout. They believe that this may explain these and many other animals'

incredible ability to navigate across vast distances.

The strength of the crystals' magnetic response, and their firm attachment to the surrounding cell membranes, lent strong support for what scientists have long suspected: That these crystals lean back and forth like a sail in response to Earth's weak magnetic field, and that the cells they are embedded in somehow convey their swaying movements to the brain. This is believed to confer trout and other migratory animals with a "magnetic sense (<http://www.livescience.com/13173-shark-navigation-target-magnetic-travel.html>)" by which to judge direction.

Also in a Yahoo News column: (<http://voices.yahoo.com/does-magnetite-increase-psychic-ability-3018879.html>)

Some scientists are speculating that magnetic brain tissues in animals provide animals with some of their psychic abilities.

Since the discovery of magnetite in the human brain and in other animals, some scientists are speculating that magnetic brain tissues in animals provide animals with some of their psychic abilities.

For example, it is common for animals to behave abnormally just before a major earthquake, or disaster. Could the magnetite in their brains be responsible for the perception of subtle changes in the earth's geomagnetic field?

How might this relate to human behavior and perception?

According to Einstein, matter is to be regarded itself as part, in fact the principle part, of the electromagnetic field, and electric energy is therefore the fundamental origin of our entire physical world.

According to Kambiz Kamrani in a blog on Anthropology.net (<http://anthropology.net/2006/11/21/the-tiny-magnetite-compass-in-the-human-nose/>):

Magnetite no doubtingly helps migratory species migrate successfully by allowing them to draw upon the earth's magnetic fields. When it comes to humans, magnetite makes the ethmoid bone sensitive to the earth's magnetic field and helps one's sense of direction. Some have even suggested that this "compass" was helpful in human evolution as it made migration and hunting easier.

Shiva Neural of shaktitechnology.com (http://www.shaktitechnology.com/shiva/understanding_psychic_skills.htm) theorizes on the link between magnetite and telepathy:

In fact, our brains seem to have an entire magnetic system built into them. They were discovered in 1992, and so far, scientists have yet to understand their function, but one possibility is that they provide a basis for magnetic broadcasting of our brain's information, in addition to whatever other functions they may have.

To explain how the jumble of electrical activity, with all of its frequencies, pulses, bursts, 'trains' and even bits of random noise can be turned into meaningful information in another brain, we invoke the theory of holographic memory. This theory, though not universally accepted among scientists, has acquired acceptance in many fields. It says that our memories rely on holograms. Information packages in which each part contains all the information present in the whole system.

The holographic theory of memory says that our memories, and even our experience of conscious awareness, consists of holograms existing in our minds. Each perception, each memory, each thought, each emotion, involves a whole, and cannot really be broken up into its parts. When we see the pattern of neural activation for one of the technologies that creates images of our brains activities (like PET, CAT, EEG, MRI), we are only seeing one of the parts. Like the brain, a hologram can store an enormous amount of information in a very small space.

The earth's magnetic field provides a medium for the transmission of information between brains. It's not just that each brain can broadcast information about itself, it's that all brains exist in one magnetic field. This can explain how information is transmitted between two brains, but not how people can sometimes get information from the future – precognition. For that, we need to indulge in some serious speculation, and to take note that this is where we leave the laboratory studies behind.

The 5 Dimensional Times (<http://ourworldis5dnw.blogspot.com/2012/06/magnetite-great-pyramid-and-order-of.html>) blog writes that:

The pineal gland, which is located roughly at the center of your head, has an abundance of magnetite crystals. This glandular structure is believed to be the receiving point of the higher mind and has been revered in subtle ways throughout history. Are we preparing to make a quantum shift as a species? Remember, the word quanta is defined as a discrete quantity of electromagnetic or light energy.

Magnetite is also believed to be a Healing Crystal

Crystalvibrations.org (<http://www.Crystalvibrations.org>) writes that:

Magnetite, healing crystals as the name implies have magnetic properties although sometimes you will get crystals that are not magnetic. It is a good crystal to use for magnetic therapy. Because of its magnetic properties it is also known as a Lodestone.

It helps you to focus on your goals and is a crystal of stability, as Magnetite is naturally magnetic it helps to balance the intellect with the inner emotions and brings about stability in ones life. It connects the Base Chakra with the Earth Chakra, and helps you stay grounded.

Magnetite healing crystals align the Chakras and Meridans temporarily. help with confidence, concentration, balance male/female energies and also balance the left/right brain. It attracts the good things into your life. Aids with telepathy, mediation and visualization.

Ailments that can be assisted in healing are Asthma, Blood, circulatory system, skin, nose bleeds, bone structure disorders, hair, muscle strains, cramps and it is an anti-inflammatory.

<http://www.measurement.sk/2011/Strbak.pdf> (<http://www.measurement.sk/2011/Strbak.pdf>)

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Biogenic Magnetite in Humans and New Magnetic Resonance

Hazard Questions

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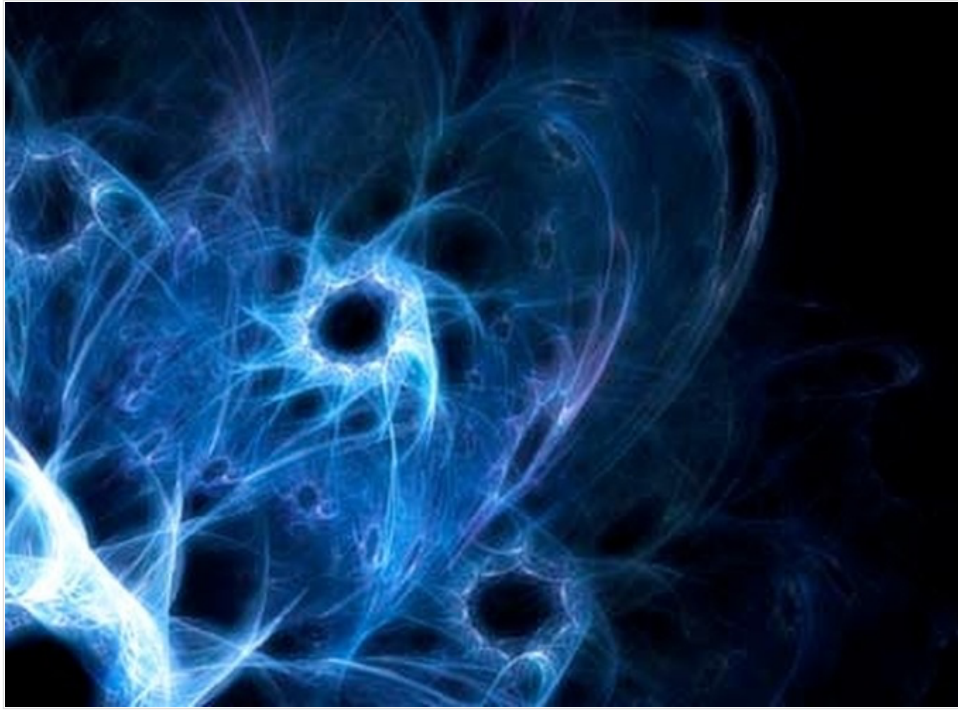
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The widespread use of magnetic resonance (MR) techniques in clinical practice, and recent discovery of biogenic ferrimagnetic substances in human tissue, open new questions regarding health hazards and MR. Current studies are restricted just to the induction of Faraday currents and consequent thermal effects, or 'inoffensive' interaction with static magnetic field. We outlined that magnetic energies associated with interaction of ferrimagnetic particles and MR magnetic fields can be dangerous for sensitive tissues like the human brain is. To simulate the interaction mechanism we use our 'Cube' model approach, which allows more realistic calculation of the particle's magnetic moments.

Biogenic magnetite nanoparticles face during MR examination three principal fields: (i) main B₀ field, (ii) gradient field, and (iii) B₁ field. Interaction energy of biogenic magnetite nanoparticle with static magnetic field B₀ exceeds the covalent bond energy 5 times for particles from 4 nm up to 150 nm. Translation energy in gradient field exceeds biochemical bond energy for particles bigger than 50 nm. Biochemical bond disruption and particle release to the tissue environment, in the presence of all MR fields, are the most critical points of this interaction. And together with relaxation processes after application of RF pulses, they make biogenic magnetite nanoparticles a potential MR health hazard issue.

Keywords: Biogenic magnetite, 'Cube' model, magnetic resonance, health hazard

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