

# Fatima Marian Apparition And TGD Inspired Theory Of Consciousness

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## Abstract

A TGD (Topological Geometrodynamics) based model for the Fatima Marian apparition (FMA) as UFO-like phenomenon is discussed. The notion of many-sheeted space-time predicts mechanisms making possible macroscopic and even astrophysical quantum systems. TGD inspired theory of consciousness leads to a general model of remote mental interactions based on quantum entanglement inducing telepathic fusion and sharing of mental images, and self-organization induced by photons, in particular microwave photons. Even sensory representations, realized in TGD universe on the so called magnetic body rather than inbrain, involve in an essential manner the sharing of mental images and remote self-organization.

The model explains UFO and ET experiences as telepathic experiences, in which primitive plasmoid like lifeforms (UFOs) using microwaves as their “food” serve as mediums entangling the experiencer with extraterrestrial or magnetospheric conscious entities. In case of FMA the well-documented effects, in particular the strange buzzing sounds heard by the witnesses and explainable in terms of microwave hearing, lead to a rather detailed model in which “Maria” can be identified as a magnetospheric or extraterrestrial conscious entity. One can understand why tectonic activity and perturbations of the Earth’s magnetic field correlate with UFO and ET experiences. The same conceptual framework provides models of homeostasis, homeopathy, endogenous realization of intentions, and remote mental interactions such as psychokinesis. The basic mechanism explains also many anomalous phenomena claimed by freeenergy researchers.

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# 1 Introduction

Fatima Marian Apparition (FMA) is one of the best documented anomalous phenomena and has strong resemblances with UFO and ET experiences. Personally I learned about this phenomenon from Joaquim Fernandes, who together with Fina d'Armada has written three books on the subject [5]. There is also a book by Vallee [7] about Fatima apparition phenomenon. The very common “buzzing” sounds heard by several witnesses at Fatima spot near the oak contact only when the Lady, according to Lucia, was speaking with her. This is the most hard clue ever depicted for a case of an hypothetic geomagnetic influence tested in lab. by Michael Persinger and his team in Laurentian University [J1].

Three children, Lucia, Francisco, and Jacinta met a brilliantly effulgent lady whom they identified as the Virgin Mary. This occurred six times at 13th of each month. The so called Sun miracle was witnessed by people in a large area measured about 20-30 miles (it is estimated that about 70.000 people congregated in the vicinity of Cova de Ira to witness the predicted miracle!).

The witnesses reported a light tunnel and little image of Mary at its center. Also reported were heat waves with sudden drying of clothes, healings, fall of white filaments (“hair angle”), and a strange auditory sensation defined by some witnesses as a “buzzing of bees within a vase”. This sound was heard *only* when the seer Lucia told that “the Lady was talking to her *without* moving the lips”. Also glowing globe-shaped vehicle appeared suggesting a similarity with UFO experiences.

In this article I summarize briefly the speculative picture provided by Topological Geometrodynamics (TGD) and TGD inspired theory of consciousness about biosystems using Fatima apparition as an example of an exotic phenomenon of consciousness having no obvious explanation in the standard neuroscience framework.

## 1.1 Basic notions of TGD inspired theory of consciousness

In nutshell the basic elements of the TGD inspired theory of consciousness are following. The identification of quantum jump between quantum histories as a moment of consciousness reduces quantum measurement theory to fundamental physics. Quantum entanglement is the central quantum notion and Schrödinger cat able to be living and dead simultaneously is the classical manner to “illustrate” the notion (illustration) The identification of self as a subsystem able to remain un-entangled in subsequent quantum jumps provides a quantum theory of observer and one can identify self also as a fundamental statistical ensemble.

The entanglement of sub-selves of same or of two separate selves means fusion of mental images to a more complex shared mental image (illustration). The sharing of mental images crucial, not

only for remotemental interactions, but also for genuine communications. For the notions of self, self hierarchy, and sharing and fusion of mental images by quantum entanglement, the reader is encouraged to consult [?] in particular the chapter “Matter, Mind, Quantum”. ( [20].

## 1.2 The new view about space-time and sensory representations

The notion of many-sheeted space-time (illustration) allows to understand how bio-systems manage to be macroscopic quantum systems. Topological field quantization implies that also classical fields have particle like aspects: these particle like aspects are crucial for the models of sensory qualia, sensory representations and long term memory as well as for the general model of control and coordination in living matter. One can fairly say that any living system has besides the ordinary physical body also a field body (illustration), as a matter fact a hierarchy of field bodies.

A further generalization of the space-time concept involves the introduction of p-adic topologies besides the real topology (illustration). p-Adic space-time regions are identified as cognitive representations for the real regions and thus correspond to the “mindstuff” of Descartes. The transformation of intention to action corresponds to a quantum jump in which p-adic space-time region is replaced with a real one.

The realization of the sensory representations at the field body outside the brain represents the most radical departure from the views of standard neuroscience and a rather detailed theory for both “personal” sensory representations and magnetospheric sensory representations presumably responsible for the third person aspects of consciousness emerges. For the notion of sensory representations, see the chapters “Quantum model for sensory representations” [?] of [?] and the chapters [?] (containing a discussion of taos hum) and [?] (including a model of UFO experiences) of [?]. For TGD based model of remote mental interactions see the chapter “Quantum model for paranormal phenomena” [?] of [?].

## 1.3 TGD based model for Fatima Apparition

The TGD based model for FMA relies on the notion of self hierarchy allowing identify the entity “Maria” as a collective higher level self, a real conscious field entity receiving information from human brains by TGD counter parts of EEG waves, realized perhaps in magnetosphere. The visions and also some experiences of witnesses could involve in an essential manner quantum entanglement with “Maria” allowing sharing and fusion of mental images: classical communication is not necessary. Quantum entanglement is the basic mechanism of remote mental interactions and remote healing: the occurrence of healings during Fatima apparitions were indeed reported. The interpretation of the buzzing sounds heard by the witnesses in terms of microwave audition [8] (proposed by Joaquim Fernandez [1]) led to a model of Fatima apparition and also to a more detailed model of remote mental interactions and of bio-control. The topological quanta of electromagnetic radiation (“massless extremals” or briefly MEs, see illustration) are the basic element of the model.

E(xtremely) L(ow) Frequency MEs serve as electromagnetic bridges entangling distant systems. Microwave MEs propagate like massless particles along these field bridges and induce self-organization at the end of the receiver and serve effectively as “food” providing metabolic energy. Plasmoid structures, primitive lifeforms utilizing microwave MEs as their “food”, can serve as relay stations entangling seer with the entity “Maria”, and generate light at visible and infrared frequencies and thus induce effects like heating and drying. Also some UFOs could be identified as plasmoid structures entangling the observer with life-forms, which could be even extraterrestrial and thus induce telepathic encounters of ETs.

There are several candidates for the source of microwaves. Conformational transitions of proteins and DNA molecules and rotational transitions of water molecules and clusters of them generate microwaves. Microwave static, known to have biological origin and to strongly correlate with taos hum phenomenon [9], involves sometimes also buzzing sounds. Even the brains of witnesses might have generated microwave MEs. Tectonic activity can induce microwaves (quartz crystals generate microwaves). ELF MEs are associated with magnetic flux tube structures of Earth’s magnetic field and of the magnetic fields associated with human brain and induced by cyclotron transitions of superconducting ions at the magnetic flux tubes. ELF MEs are generated resonantly by several mechanisms. For instance, TGD counterparts of Alfvén waves and cavity resonances, in

particular Schumann resonances accompanying tectonic activity, generate them (see the chapter “Magnetic sensory canvas hypothesis” [?] of [?]).

## 2 TGD in nutshell

The reader can probably skip this section in the first reading if she/he feels it too technical and start directly from the section devoted to the general theory of consciousness which I have tried to formulate with minimal reference to TGD based physics.

### 2.1 Space-times as a 4-D surfaces in 8-D imbedding space

The size of  $CP_2$ , which is about Planck lengths replaces Planck length as a fundamental length scale in TGD Universe. For details about  $CP_2$  see the appendix of [4]. The identification of the space-times as sub-manifolds of  $H = M^4 \times CP_2$  leads to Poincare (translations, rotations, Lorentz transformations) invariance broken only in cosmological scales and solves the conceptual difficulties related to the definition of the energy-momentum in General Relativity. Even more, sub-manifold geometry, being considerably richer in structure than the abstract manifold geometry behind General Relativity, leads to a geometrization of all basic interactions and elementary particle quantum numbers. In particular, classical electroweak gauge fields are obtained by inducing the spinor curvature of  $CP_2$  to the space-time surface. One can say, that the mere hypothesis that space-times are representable as 4-surfaces in  $H = M^4 \times CP_2$  realizes Einstein’s great dream in a very elegant and economical manner: very concisely, sub-manifold geometry brings in the notion of shape besides the notions of distance, angle, and curvature.

### 2.2 The notion of many-sheeted space-time

TGD approach forces a generalization of the conventional space-time concept to what might be called many-sheeted space-time. The topologically trivial 3-space of General Relativity is replaced with a many-sheeted space-time containing matter as particle like 3-surfaces “glued” to the topologically trivial background space-time sheet by extremely tiny connected sum (wormhole) contacts having  $CP_2$  size connecting the space-time sheets. Space-time sheets can be connected to each other also by join along boundaries bonds (illustration).

Space-time sheets have outer boundaries and form a hierarchical structure. Macroscopic material bodies are identified as 3-surfaces with boundary identified as the outer surface of the macroscopic body. For instance, my physical body is a space-time sheet with my skin representing its outer boundary whereas external world is represented by a larger space-time sheet at which the space-timesheet representing my body is “topologically condensed”. This generalization implies a radical reformulation of condensed matter physics. Space-time sheets are connected to each other by wormhole contacts and join along boundaries bonds. Various new physics effects related to the many-sheeted space-time concept are discussed in the four books about TGD: see for instance, the chapters [?, ?, ?] and “Anomalies Explainable by TGD Based Space-time Concept” of [5]. Many-sheeted space-time concept is especially important in TGD inspired theory of consciousness and its applications to bio-systems (see the online books at [http://tgdtheory.fi/public\\_html/conscbooks.html](http://tgdtheory.fi/public_html/conscbooks.html)) since it makes possible macroscopic quantum systems. The reason is simply that the large non-atomic space-timesheets contain very few elementary particles so that the temperature at these space-time sheets can be extremely low and therefore various kinds of macroscopic quantum phases are possible.

The basic prediction of TGD is that the sign of energy depends on the time orientation of the space-time surface so that energy can be also negative as opposed to situation in standard physics. For instance, pairs of space-time sheets with opposite energies can be generated from vacuum. This makes possible an effective over-unity production of energy, a mechanism of coherent locomotion, classical signaling to the direction of the geometric past and many other exotic effects which could be important in living matter.

Absolute minimization of so called Khler action is the fundamental variational principle of TGD and assigns to a given 3-surface a classical space-time surface which is much like a field-theory counterpart of Bohr orbit of particle going through a fixed point (now 3-surface). Another useful analogy

is four-dimensional soap film spanned by a 3-dimensional frame which minimizes instead of area a non-linear counterpart of the Maxwell action. The variational principle is characterized by classical non-determinism caused by enormous vacuum degeneracy, and this requires a generalization of the notion of 3-surface in order to achieve classical determinism in a more general sense. In soap film analogy this means that single framedoes not fix the soap film uniquely and auxiliary frames are needed.

3-surfaces are ingeneral unions of disjoint 3-surfaces with time-like separations (“association sequences”) (illustration) playing the role ofauxiliary frames) rather than single time =constant snap shots of the space-time surface. In particular, space-time sheets with a finite time duration, “mind-like” space-time sheets ,are possible and are good candidates for the geometric correlates of selves in TGD inspired theory of consciousness (illustration). Perhaps the most plausible identification for the classical non-determinism is as a physical correlate of language understood in a very general sense: the sequences of space-like three-surfaces with time-like separations (blockquoteassociation sequences) are like sequences of the basic units of language. The identification of the blockquoteassociation sequences as classical correlates of thoughts has been also considered.

It seems however that p-adics pace-time regions are more natural in this respect, and that association sequences are symbolic representations of thoughts rather than thoughts: cognition transformed to sensory experience.

### 2.2.1 p-Adic physics as physics ofcognition, intention, and anticipation

p-Adic number fields are labelled by primes  $p = 2, 3, 5, \dots$  and, just like real numbers, theycan be regarded as completions of rational numbers  $q = m/n$ ,  $m, n$  integers to contain the p-adic counterparts of algebraic and transcendental numbers. p-Adic numbers emerged to TGD first only as an effective mathematical tool but it has turned out that p-adic physics is fundamental element of TGD. TGD spacetime decomposes into regions obeying real and p-adic topologies (illustration).

p-Adic regions obey the same field equations as the real regions but are characterized by p-adic non-determinism since the functions having vanishing p-adic derivative appearing as integration constants of differential equations are piecewise constant functions. Therefore one cannot fix the solutions of dynamical equations by giving the initial values of dynamical variables for fixed value of time (for instance, initial positions and velocities are integration constants for Newton’s equations and fix the solution). Pseudo constant depends on a finite number of positive binary digits of its arguments. This means that p-adic space-time regions are obtained by glueing together regions for which integration constants are genuine constants. The interpretation of the p-adic regions is as cognitive representations of the real physics occurring in real regions. Freedom of imagination is due to the p-adicnon-determinism. p-Adic regions perform mimicry and make possible for the Universe to form cognitive representations about itself. In this vision real/p-adic mindlike spacetimesheets are interpreted as geometric correlatesof sensory/imagined experiences. p-Adic regions provide also geometric correlates for intentionality.

A given real space-time sheet can be characterized by the p-adic prime defining thep-adic length scale characterizing its size  $L_p \propto \sqrt{p}$ , and the p-adic primes  $p \simeq 2k$ ,  $k$  prime or power of prime, seem to be physically preferred.  $k = 151$  corresponds tothe length scale 10 nm associated with the cell membrane thickness. p-Adic length scale hypothesis is absolutely crucial element ofTGD and gives it much of its predictive power. Why also real space-time sheets are characterized by p-adic primes is not yet completely understood.

## 3 TGD inspired theory of consciousness

In the following I summarize basic aspects of TGD inspired theory of consciousness relevant to the paranormal phenomena. The basic philosophy behind TGD inspired theory of consciousness is crucial for the model but I discuss it only briefly here. Material about the underlying philosophy (neither monistic nor dualistic but “tripartistic”) can be found in the chapter “Matter, Mind, Quantum” [20] of [?].

### 3.1 Quantum jump between histories as moment of consciousness and self as a subsystem able to remain un-entangled

The basic notions of TGD inspired theory of consciousness are quantum jump between quantum histories (rather than time = constant snapshots of single quantum history) as moment of consciousness, and the notion of self as subsystem able to remain un-entangled in subsequent quantum jumps (see for instance the chapters "Matter, Mind, Quantum" and "Self and Binding" of [?]). There is a deep structural analogy with physics: quantum jump is the elementary particle of consciousness and selves are atoms, molecules,.... of consciousness.

#### 3.1.1 Quantum jump as a moment of consciousness

Each quantum jump replaces the solution of field equations (universe) with a new one. Quantum jump involves three steps:

1. The unitary time development  $U$  giving rise to the S-matrix summarizing quantum physics as it is understood by particle physicist,
2. the counterpart of state function reduction,
3. and state preparation involving a sequence of self measurements.

$U$  can be said to generate multi-verse, quantum superposition of potentialities, a state of oneness in which everything is entangled with everything. State function reduction and preparation in turn mean gradual decomposition of the universe to maximally disentangled subsystems interpretable as a conscious analysis, a process giving rise to distinctions and separations. Thus oneness and separation are both basic aspects of consciousness. The sequence of quantum jumps defines subjective time whereas geometric (or physicist's) time corresponds to the fourth spatial coordinate. The distinction between these times allows to resolve the basic paradoxes of modern physics and philosophy of mind.

#### 3.1.2 The notion of self

Self is by definition a subsystem able to remain un-entangled in subsequent quantum jumps. Only bound state entanglement is stable in quantum jump and selves correspond to regions of the space-time surface having local topology in a given number field (real or p-adic number fields labeled by primes). p-Adic space-time regions are interpreted as physical (non-conscious as such) correlates for imagination, intention and cognition, whereas real regions correspond to matter. The unitary operator  $U$  could in principle generate entanglement even between p-adic and real regions (rational entanglement coefficients make sense in any number field), which is destroyed in self-measurement. This is crucial for the generation of cognitive maps assigning to the states of matter (say reading of physical measurement apparatus) cognitive states (say the cognitive mental image about the reading of the measurement apparatus).

The contents of consciousness of self are determined as the average over the quantum jumps occurred after it was created (the real or p-adic space-time region corresponding to self appearing in quantum jump). Selves can have sub-selves and self experiences them as mental images. Self itself represents a mental image of a higher level self. Self experiences only the average of sub-selves of given sub-self. Thus statistical averaging is involved in both subjecto-temporal sense and spatially and is of central importance in the theory of qualia. Qualia are identified as averages of quantum number and zero mode increments over quantum jump sequences defining sub-self (mental image) (see the chapters "General Theory of Qualia" and "Spectroscopy of consciousness" of [7].) It seems that the foundations of, not only quantum measurement theory, but also statistical physics, reduce to the theory of consciousness.

Quantum entanglement between sub-selves means fusion of mental images. Entangling self loses its consciousness. The sub-selves of two separate selves can entangle and this corresponds to a fusion and sharing of mental images so that consciousness is not so private as usually thought. Sharing of mental images is not possible if one uses elementary notion of subsystem. TGD (as also quantum field theory) however forces length scale dependent characterization of the subsystem

allowing subsystems of disentangled systems to entangle (the entanglement between the subsystems is not “visible” in the length scale of the systems containing them). The generalization of the subsystem concept is forced by the fact that the space-time sheets representing subsystems are information-theoretically black-hole like systems. Black-hole like property derives from the fact that smaller space-time sheets are glued to the larger space-time sheet by wormhole contacts for which the induced metric has Euclidean signature. As a consequence, the throats of the wormhole contact are surrounded by causal horizons at which the signature of the induced metric transforms from Minkowski to Euclidean (since the induced metric becomes degenerate at the horizon, the topologically 3-dimensional horizon is metrically 2-dimensional and gives rise to conformal invariance absolutely crucial for the theory). Black-hole like property implies that the description in the length scale associated with the larger space-time sheet contains only very rough information about the smaller space-time sheets (this is the space-time correlate for the averaging of the conscious experiences of sub-selves of sub-self).

### 3.2 Self hierarchy and collective levels of consciousness and “Maria” as a conscious field entity?

The basic notions of TGD inspired theory of consciousness are quantum jump between quantum histories identified as a moment of consciousness and self, which is essentially a pile of quantum jumps integrated to single experience. The sequence of quantum jumps corresponds to subjectively experienced time which is in principle separate from the geometric time of physicist. The preservation of self identity means that self does not generate bound state entanglement with the external world and remains thus quantum autonomous system during the subjective time development by quantum jumps. The generation of entanglement leads to a loss of consciousness: one can say that everything is conscious but consciousness can be lost. Selves form a hierarchy having the hierarchy of space-time sheets as a geometric correlate. Fusion of two space-time sheets by join along boundaries bond is the geometric correlate for the generation of entanglement. Sub-selves of two separate selves can entangle and this results in a fusion and sharing of a common mental image. This mechanism provides a general explanation of various remote mental interactions, such as telepathy, remote healing, and collective experiences. Also phenomena like apparitions and UFO experiences can be explained in terms of remote mental interactions.

In TGD universe any system has besides the visible, physical, body also field (magnetic) body, which has much larger, actually astrophysical size in case of humans. What I call personal sensory representations are realized at the personal magnetic body of astrophysical size. Second type of sensory representations (third person view) would be realized at the magnetosphere of Earth and would give rise to multi-brained electromagnetic selves representing collective levels of consciousness. Amazingly, plasma sheet at the night-side of Earth’s magnetosphere is known to be a highly self-organizing structure and the ionic velocity distributions represent features like “eyes” and “wings” [10]. Even religions could represent to collective levels of consciousness having a rich repertoire of mental images like Maria and saints. The simplest working hypothesis is therefore that the entity “Maria” is self, a completely real conscious entity, at a higher level of self hierarchy. In TGD framework any self defines a mental image of higher level self having it as a sub-self. The conscious entity “Maria” could communicate with humans using quantum entanglement making possible telepathic sharing and fusion of mental images.

1. The most obvious identification of “Maria” is as a mental image of a collective multi-brained consciousness realized at the magnetosphere and having only the field body. This would explain the cultural, standardized aspects of the vision.
2. One can consider also the hypothesis that the luminous “Maria” was analogous to UFO and in TGD framework identifiable as plasmoid, electromagnetic life form in TGD Universe, in the lower atmosphere, perhaps generated by tectonic activity. The physical effects associated with Sun miracle indeed suggest the involvement of a plasmoid like structure. The identification as Virgin Maria would thus reflect only the cultural background. It is however not obvious how plasmoid like primitive conscious entity could have predicted the occurrence of Sun miracle beforehand.

3. A compromise of this view is that a plasmoid structure was involved and served as a relay station entangling with both seer and “Maria”, just like in TGD based model of UFO experiences (see the chapter “Magnetospheric sensory representations” of [7]). This option gives better hopes to explain the physical effects involved and allows a lot of freedom in the identification of “Maria”: even the identification as an extraterrestrial entity becomes possible.

### **3.2.1 Many-sheeted space-time, topological field quantization, and extraordinary experiences**

In TGD Universe space-times are 4-dimensional surfaces of certain 8-dimensional space-time. Many-sheeted space-time is the basic prediction of TGD and means roughly that various structures that we see in various length scales correspond to space-time sheets with outer boundary glued by extremely tiny elementary particle-sized wormhole contacts to larger space-time sheets representing larger structures containing them. Besides atomic space-time sheets which our measurements are usually about, there is an entire hierarchy of larger space-time sheets with their own physics. The temperature at these space-time sheets can be extremely low and makes possible macroscopic quantum phases in even astrophysical length scales and crucial for the TGD based view about consciousness [6, 7]. Topological field quantization distinguishes between TGD and Maxwell's electrodynamics. What happens is that em field and classical fields in general decompose into flux quanta represented by space-time sheets. For instance, radiation field decomposes into cylindrical structures carrying em fields propagating with light velocity (illustration). These structures (“mass-less extremals”, MEs, see the chapter “Quantum antenna hypothesis” of [6]) are ideal for classical communications: classical signal propagates with light velocity inside a cylindrical tube and without weakening making high precision targeted communication possible, and the non-determinism of the associated vacuum current propagating also with light velocity allows a coding of arbitrary signal. At quantum level MEs serve as field bridges making possible quantum entanglement allowing sharing and fusion of mental images among other things. The mirror mechanism of long term memory relies on MEs allowing entanglement between geometric past and now and resulting in sharing of mental images.

Magnetic flux tubes and their electric counterparts represent also general solution families to field equations (see the chapter “Quantum control and coordination in bio-systems” of [6]). The flux tubes of Earth's magnetic field are superconductors in TGD Universe and this superconductivity is crucial for life. Closed magnetic flux tubes plus ions and their electric duals (involved with bio-electrets and liquid crystals and also with cell membrane) are the fundamental electromagnetic life forms around which ordinary bio-matter self-organizes. Some highly interesting new physics is related to the transfer of matter between different space-time sheets, in particular super-conducting ions from magnetic flux tubes of Earth's magnetic field to the atomic space-time sheets, where these currents become ohmic currents and dissipate. The many-sheeted circuitry provides the basic model of homeostasis as a many-sheeted ionic flow equilibrium, and metabolism at the basic level reduces to the circulation of protons and ions between atomic space-time sheets and magnetic flux tubes. Crucial elements of this circuitry are the bridges connecting different space-time sheets to each other, in particular atomic space-time sheets and magnetic flux tubes (see the chapters “Homeopathy in many-sheeted space-time” and “Macroscopic quantum coherence and quantum metabolism as different sides of the same coin” of [7]). Magnetic flux tubes are an essential element of the model of sensory representations on magnetic sensory canvas. Schumann resonances transmit horizontal communications between brains (see chapter “Magnetospheric sensory representations” of [7]) and could make possible collective shared experiences characteristic for Fatima case. Hypnagogic states give also rise to analogous experiences and probably involve Schumann resonances.

The nodes of the super-conducting circuitry formed by the magnetic flux tubes could be of special importance for phenomena involving communications with higher levels of self hierarchy. Therefore special geomagnetic features could characterize the places where apparitions occur.

Water has an especially complex many-sheeted space-time structure and the proposal of A. Brodzik [11] is that the springwater associated with places where apparitions have occurred plays some important role. We ourselves consist mostly of highly self-organized water and it would not be surprising if water would have varying degree of self-organization depending on external parameters such as the structure of the local magnetic field. Perhaps highly self-organized water helps to generate the quantum entanglement.

There are strong resemblances between TGD based models for UFO experiences, NDE experi-

ences and Marian apparitions. Also incase Fatima apparition structures, which might have been interpreted as UFOs in our cultural context appeared and even "Maria" could have been interpreted as UFO in modern cultural context. The TGD based model of UFO experiences discussed in the chapter "Magnetospheric sensory representations" of [7] involves in an essential manner quantum entanglement between conscious electromagnetic entities (plasmoids), and unifies Persinger's theories [3] with the view that ETs are real, although not in the sense usually thought. Plasmoids could be seen as advanced counterparts of space ships having a rather ghostly crew consisting of mental images (sub-selves) entangled with the magnetosphere of some distant astrophysical object serving as its tele-sensory system and able to entangle also with the person having UFO experience. Translating directly to this case this would mean that plasmoid like structure in the vicinity of the apparition place would have served a role of relay station entangling with both seer and entity "Maria", which could have been even extraterrestrial intelligence.

### 3.3 The Mystery Of The Buzzing Sound

The witnesses of FMA report buzzing sounds like bees in a vase. It would be interesting to determine the frequency spectrum of the buzzing sound produced by bees: presumably it results from the periodic motion of wings. Also one could test how strongly the sensation depends on the average frequency and to what degree the shape and phase relationships of Fourier spectrum are responsible for the sensation.

#### 3.3.1 Meteor sounds, taos hum, and physiophonic sounds

The buzzing sound might relate to several other strange sound phenomena like meteor sounds, taos hum, and physiophonic sounds. These exotic sound phenomena are discussed in [19].

1. A strange finding supporting the TGD view about sensory representations is that, contrary to expectations, the sounds generated by em fields of meteors have fundamentals around 40 Hz thalamocortical resonance band responsible for sensory representations [3]. This sound is like "pop", not buzzing, but frequency spectrum might be nearly the same. One might check whether 40 Hz frequency band is involved also with the buzzing sound produced by bees.
2. Taos hum [13] is a strange phenomenon which might relate to the microwave audition. No source for this sound, which has frequency spectrum in the range 40-80 Hz, has been identified. Taos hum seems to be an endogenous sound generated by classical em or  $Z^0$  field which does not penetrate outside the body. Buzzing sound is also sometimes associated with taos hum. If the buzz has the character of taos hum, this would require that sounds heard also by the witnesses were endogenous and not recordable by microphones. There is strong correlation between taos hum and so called microwave static having poorly understood biological origin [13].
3. Physiophonic sounds are endogenous sounds produced by electric stimulation of skin. One can transform speech to electric signals applied to skin and experienced as comprehensible speech. Physiophonic sounds are probably closely related to taos hum.

#### 3.3.2 Microwave hypothesis

It has been proposed [5] that so called microwave audition [12] could be involved with the mysterious buzzing sounds reported by witnesses of the FMA. There exists a standard physics explanation for microwave audition based on thermal effects caused by microwaves inducing small pressure pulses [12]. This explanation is however subject to objections to be discussed later and TGD suggests an alternative mechanism.

According to [5] French and Canadian researchers have found interesting results using a source of microwaves on the subjects heads: one of the sounds type heard was a "buzzing". The source was between 200 and 3000 MHz with a mean intensity of from 0.4 to 2  $mW/cm^2$  to a density level of above 300  $mW/cm^2$ . The modulating frequencies ranged from 200 to 400 Hz. According to [5], the insect sounds resulting from the motion of wings could be put between that interval. An order of magnitude for the resonance frequency of body guessing the sound velocity to be  $v = 300$  m/s in

body and body to have a size of order  $L = 1$  m is  $f \sim v/L = 300$  Hz. Microwaves could correspond to microwave static of biological origin [13] or be generated by plasmoid like structures.

Microwaves has been proposed as an explanation for the other physical effects reported in Fatima apparitions, namely those associated with the so-called Sun miracle when the people saw the “Sun” turning around itself and produce a heat wave that dry the soil that moments before has been wet by a sudden rain, as well the clothes of people in the spot, also wet. The problem with this explanation is that microwaves with the required intensity might have had drastic physiological effects: there is no known evidence for this. A more plausible explanation is that the plasmoid like structure playing the role of entanglement relay station induced these physical effects at visible and infrared wave lengths and was erratically identified as Sun. Ionization of atmosphere would have indeed induced emission of visible light.

Most importantly, microwaves could accompany EEG MEs by a mechanism to be discussed later: these topological field quanta in turn make possible quantum entanglement and sharing of mental images. Topological field quanta corresponding to 40 Hz resonance band are especially interesting candidates in this respect since in TGD based model they are responsible for sensory representations at magnetic sensory canvas.

## 4 Microwaves, Consciousness, And Life

The TGD counterparts for strong EEG waves are topological field quanta (electromagnetic bridges or topological light rays connecting seer with “Maria” ) generating quantum entanglement making possible the sharing of mental images. Also witnesses could participate in the vision (image of Mary in the center of the cylindrical light tunnel, Sun turning around). Microwaves received by the brain and possibly by the body of the seer and also witnesses (creating sensation of buzzing sound) could have generated topological field quanta of EEG waves and induce as a byproduct also microwave hearing [12] responsible for the sensation of buzzing sounds.

### 4.1 Support for the importance of microwaves

Microwaves span the wavelength range 1 mm -30 cm corresponding to the frequency range 300- 1 GHz. Note that the size of the dots in X-ray film was of order one 1 milli-meter and corresponds to the upper limit of 300 GHz for microwave. There is support for the importance of microwaves for living systems coming from various anomalous phenomena involving microwaves.

1. Microwaves in GHz range are found to be involved with water memory and homeopathy [10]. Microwave frequencies are accompanied by ELF frequencies such that the high and low frequencies  $f_{high}$  and  $f_{low}$  are related by the scaling law to be discussed later.
2. Microwave hearing [12] is a phenomenon in which microwaves in the frequency range 2-3 GHz (wavelength range 150-10 cm) induce a hearing sensation. There is evidence that ears are not involved with the microwave hearing [11]. The average pressure of the radar wave at the threshold of hearing is roughly three orders of magnitude less than the average pressure of a sine wave in air at the threshold of hearing air waves. Second, the location of the most sensitive area for hearing radar is remote from the ears, on top of the head. Third, the subjective frequency spectrum seems to include higher frequencies for radar hearing than for normal hearing of air waves. Fourth, the direction from which sound seems to come does not change as the head is turned about in the radar field.
3. Microwave static of biological origin having strong correlation with taos hum [13] and taos hum could be seen as a particular case of microwave hearing [19].
4. The proposal of Joaquim Fernandez [5] that microwave hearing would also explain the strange buzzing sounds reported by the witnesses of the Fatima apparitions served as a clue to the TGD based model of this phenomenon. The model led to the realization that quite a many apparently unrelated phenomena rely on a general mechanism of remote mental interactions in which microwave MEs propagate like mass-less particles inside ELF MEs, which generate the entanglement between remote subjects and thus make possible sharing of mental images and remote realization of intentions. Microwave MEs in turn induce self-organization at the

end of the receiver. The same mechanism is involved also with the endogenous realization of intentions and remote healing.

## 4.2 Breaking of super-conductivity in many-sheeted space-time and microwaves

The transfer of charged particles between space-time sheets is possible provided so called flux tubes connecting the boundary of a smaller space-time sheet to the boundary of a larger space-time sheet are generated [15]. Particles simply flow along this bond connecting the space-time sheet to the larger space-time sheet, say magnetic flux tube, and also vice versa. This mechanism leads to the breaking of super-conductivity since super-conducting matter from the magnetic flux tubes, which can be at extremely low temperature, flows to the atomic or possibly some other space-time sheets.

Microwave radiation could generate flux tubes. The energies of microwave photons in the wavelength range 1-100 mm are in the range  $10^{-5} - 10^{-3}$  eV and correspond to the temperature range .1-10 K. The critical temperatures for low temperature super-conductors are in this range. One can interpret this by saying that super-conductivity is not destroyed by the heating of the magnetic flux tubes but by the generation of the flux tubes with bond energy of order of the gap energy causing the leakage of the supra current to non-super-conducting space-time sheets and thus inducing dissipative effects.

## 4.3 Microwaves and biological control circuitry

The basic vision of the TGD inspired theory of consciousness [20] is that everything is conscious and consciousness can be only lost. This philosophy naturally leads to the view that plasma structures consisting of closed magnetic flux tubes plus atomic space-time sheets containing plasma ions represent primitive life forms. All life forms metabolize. In the case of plasmoid like life forms micro-waves induce a primitive metabolic cycle in which ions are transferred from the magnetic flux tubes to atomic or some other space-time sheets, where they dissipate and induce ionization and UV and visible light and then “drop” back to the magnetic flux tubes. If the intensity of the magnetic field is about .2 Tesla, which by the quantization of magnetic flux, corresponds to p-adic prime  $k = 157$  and p-adic length scale of 80 nanometers), electronic cyclotron transitions generate microwaves with frequency of about 2.4 GHz and the system can thus generate its “food” itself.

Microwaves can also “kick” ions from magnetic flux tubes to  $k = 151$  space-time sheets since the zero point kinetic energies for  $k = 151$  correspond to microwave frequencies. It seems that the process involves at least the following space-time sheet:  $k = 137$  (atomic),  $k = 151$  (cell membrane),  $k = 157$ , and  $k = 169$  (magnetic flux tubes of Earth’s magnetic field). UFOs are often observed near the lines of the tectonic activity could represent this kind of life form using the energy of microwaves of tectonic origin (quartz crystals are piezoelectrics and can amplify wide range of microwaves) as their “food” and therefore following the microwave beam emanating from the spot of tectonic activity. Also the UFO like structures associated with the Fatima apparition could be plasmoid like life forms.

In the living matter the same simple biological Karma’s cycle has developed to an extremely complex many-sheeted circuitry in ionic flow equilibrium and controlling the homeostasis [17]. Microwaves radiated in the conformational transitions of proteins and possibly amplified by the rotational transitions of water molecules and clusters of them mimicking the rotational spectra of molecules generate bridges connecting super-conducting space-time sheets and atomic space-time sheets and thus sustain the dynamical circuitry. If some protein fails to be expressed genetically, this implies the absence of certain microwave frequencies so that corresponding bridges are not present and erratic functioning of the current circuitry result. Medicines and homeopathic remedies in which water clusters mimic the rotational spectrum of the medicine molecules generate the microwave spectrum of the proteins, which are not expressed.

The average number of the bonds per say area element is the natural measure for the effectiveness of the bridge, and the increase of the microwave radiation intensity at some frequency increases the effectiveness of the corresponding bond and thus modifies the homeostatic equilibrium. Electromagnetic radiation in microwave range is known to be lethal to micro-organisms: this could be due to the transformation of the biological current circuitry induced by the radiation. Too high leakage of supra-currents to atomic space-time sheets might be also fatal. Personal computers

and travel phones produce microwave radiation and this raises interesting questions about their role in modifying many-sheeted current circuitry and thus modifying the homeostasis. One can also wonder about the role of this radiation in electric allergies.

#### 4.4 Microwaves and the mechanism of remote intentionality

TGD based model of remote mental interactions is discussed in [24]. The model is based on the notion of bound state quantum entanglement having as a geometric correlate the formation of so called flux tubes. Magnetic flux tubes as well as topological field quanta of radiation ("massless extremals", or briefly MEs [21] ) could act as such bonds. Many-sheeted space-time makes in principle entanglement possible in even astrophysical time scales. Also time-like entanglement is possible by the non-determinism of the basic variational principle and is provides quantum mirror mechanism of long term memory [25] ). Essential is also the notion of adjunct serving as a kind of relay station entangling any two subjects during remote mental interaction, say healer and healed, and inducing sharing and fusion of mental images and making possible also classical communications. An object possessed by the healer or healed is one example of an adjunct.

The entanglement is generated by mass-less extremals having a length, which is a multiple of the wavelength of the radiation involved and therefore the frequencies involved are typically ELF frequencies. On the other hand, the work done after developing this model has shown that also microwave MEs are probably involved. Human intention could be able to generate microwave MEs giving rise to the bonds between magnetic flux tubes and atomic space-time sheets also outside the body. Brain and body certainly generate microwaves (GHz frequency scale corresponds to protein and DNA conformational dynamics and water's rotational transitions), and the intention could be remotely realized as these microwaves if the system is sensitive to the microwaves. The problem is to understand how ELF MEs and microwave MEs are related to each other.

#### 4.5 How microwave MEs and ELF MEs are related?

The existing TGD based model for remote mental interactions is based on ELF (extremely low frequency) MEs serving as field bridges between sender and receiver and inducing entanglement. Also microwaves must relate closely to the remote realization of intentions. The question is how these two aspects of remote mental interactions are related.

1. ELF MEs are crucial for the sensory representations at the personal magnetic canvas and on the magnetic flux tubes structures in magnetosphere. The simple "feeling of existence" is generated by cyclotron transitions and the most effective manner to generate these is to "kick" super-conducting ions first to the atomic or some other space-time sheet. The ions having large zero point kinetic energy can "drop" back to high  $n$  cyclotron states at the magnetic flux tubes and decay by emitting a large number of ELF photons. Microwaves might be responsible for generating the bridges making this flow of ions to the atomic space-time sheets possible. Microwaves could also "kick" ions from magnetic flux tubes to  $k=151$  space-time sheets and the "dropping" of ions back by photon emission would generate further microwaves.
2. Magnetosphere is expected to contain plasmoid like life forms defining sensory representations getting input from biosphere. Microwaves are the "food" of the plasmoid like life forms and the question is where these life forms get their food from: from biosphere or from brains perhaps?
3. The so called scaling law [17] predicting that high and low frequency MEs somehow accompany each other, helps to understand the situation more clearly. The scaling law abstracted from the findings summarized in [10] reads as

$$f_{high} = (c/v) \times f_{low} , \quad c/v = 2^{137-k} \times 2 \times 10^{11} .$$

Here  $v$  is some velocity associated with the system transforming low frequency waves to high frequency waves and vice versa and  $k$  is prime of power of prime defining so called  $p$ -adic prime  $p \simeq 2^k$ , labelling the space-time sheets of the many-sheeted space-time and

characterizing their sizes.  $k = 137$  corresponds to the space-time sheets of atomic size and gives  $c/v = 2 \times 10^{11}$ .  $k = 151$  corresponds to the cell membrane length scale and gives  $v \simeq 6$  m/s, the phase velocity of alpha waves at the surface of skull.

TGD allows to understand the mechanism behind the scaling law:  $f_{high}(k)$  corresponds to zero point kinetic energy of an ion at the space-time sheet labelled by  $k$ , and flow to cyclotron frequency at the magnetic flux tube of Earth's magnetic field: both these energies are inversely proportional to the mass of the ion.  $k$  refers to the space-time sheet from which the ion "drops" to the magnetic flux tube. The value of  $c/v$  is inversely proportional to the local value of Earth's magnetic field and thus varies somewhat. In the case of  $k = 151$  this could explain the variation of the nerve pulse conduction velocity and EEG phase velocity.

The problem is to understand how EEG MEs and microwave MEs are related. It has been already hypothesized that they implicate each other and TGD provides mechanisms for how this is possible. A more detailed hypothesis is that the ELF MEs serve as entangling em bridges along which the microwaves MEs propagate like mass-less particles to the magnetic sensory canvas to be used by the plasmoid like life forms. The ions are "kicked" by microwaves to the atomic or possibly also other space-time sheets and "drop" back to high  $n$  cyclotron states which then decay by cyclotron radiation in ELF energy range. This self-organization process generates the simple "feeling of existence" mental image at magnetic sensory canvas entangled with more complex mental images in brain.

## 4.6 Microwave hearing

The previous findings encourage to think that microwave hearing involves the transformation of microwaves to EEG waves responsible for entangling brain with the magnetic sensory canvas. It might be that microwave beam actually induces the transfer of ions from magnetic flux tubes to atomic space-time or cell membrane space-time sheet (say), which then "drop" back and in the latter process induce also cyclotron radiation at EEG frequencies generating the auditory experience. Interestingly, for  $k = 151$  the zero point kinetic energies of ions are in microwave range and the "dropping" of ions from cell membrane space-time sheets to magnetic flux tubes of Earth could be involved with the amplification of both microwaves and generation of EEG waves by cyclotron transitions at magnetic flux tube. The velocity parameter  $v$  corresponds in this case to alpha wave phase velocity at the surface of skull. The lowest Schumann resonance at 7.8 Hz is in alpha band and there are reasons to believe that it is closely related to the UFO experiences and thus also to Fatima apparition.

In TGD universe these EEG MEs would project directly to the auditory magnetic canvas and generate the experience. Of course, one could argue that the modulation of EEG wave by a frequency higher than EEG wave does not make sense. There is actually however no reason forbidding "fast modulation" analogous to small ripples on sea waves and this kind of representation has been proposed to give rise to "features" [14] in alpha band [19]. The fast modulation could also occur with respect to subjective time: the fast modulation of the number of EEG MEs with respect to subjectively experienced time (defined by quantum jump sequence) is also possible: in this case there would be no modulation with respect to the geometric time. If the space-time sheet associated with brain and various brain structures (the sizes are correct!) serve as a receiving microwave antennae they could also act as active emitting antennae.

The amplification of microwaves could be seen as a maser like mechanism in which ions are pumped to  $k = 151$  space-time sheet by microwaves. The existing microwave photons stimulate the dropping of ions back and thus also the generation of new microwave photons.

In many-sheeted space-time particles topologically condense at all space-time sheets having projection to given region of space-time so that this option makes sense only near the boundaries of space-time sheet of a given system. Also p-adic phase transition increasing the size of the space-time sheet could take place and the liberated energy would correspond to the reduction of zero point kinetic energy. Particles could be transferred from a portion of magnetic flux tube portion to another one with different value of magnetic field and possibly also of Planck constant  $h_{eff}$  so that cyclotron energy would be liberated.

If the "dropping" of ions from  $k = 151$  space-time sheet amplifies the microwaves, microwave hearing is predicted possible from 3.75 Hz (He cyclotron frequency 75 Hz) down to frequencies.16

GHz corresponding to delta band (1.5 Hz cyclotron frequencies possible for heavy ions). Delta band dominates during deep sleep and the model of magnetospheric sensory representations predicts that brains can entangle with the plasma sheet by EEG MEs at delta band. This could correlate with the appearance of microwave static at nighttime [13]. Perhaps delta waves entangle sleeping brains with magnetospheric selves and microwaves feed energy to the corresponding mental images. The plasma sheet at the night side of the magnetosphere is indeed known to contain self-organizing plasma structures with ionic velocity distributions representing features like “eyes” and “wings” [2]. The prediction is that heavy ions should play important role in the generation of EEG during sleep.

The resulting unification would be rather economical. The formation of sensory representations, remote mental interactions, homeostasis, and homeopathy would all rely on the same basic mechanism: high frequency MEs propagating as mass-less particles along low frequency MEs. Low frequency MEs would induce quantum entanglement and high frequency MEs would force self-organization at the end of the receiver.

## 4.7 Do electromagnetic life forms “eat” microwave energy?

In the case of UFO experiences, and perhaps also in the case of FMA, microwaves, possibly generated by the tectonic activity, could have also a further important function besides entangling brains with the conscious entity involved. According to the TGD based proposal, so called plasmoids consisting of closed magnetic flux tube structures carrying supra currents plus atomic and  $k = 151$  (at least) space-time sheets associated with them, are good candidates for primitive electromagnetic life forms, in particular plasmoids identified as UFOs. Ordinary bio-matter is assumed to self-organize around these structures and nerve circuit represents a good example of a structure resulting in this manner.

Plasmoids from outer space could leak into the magnetosphere mostly through pole gaps, where the magnetic field of Earth is weak: elsewhere magneto-pause serves as a magneto-immune system, which does not allow the penetration of the external magnetic life forms to compete about energy sources. In accordance with magneto-immune function, planetary magnetospheres are known to be self-organizing structures and the fact that Mars does not possess magnetosphere might relate to the disappearance of Martian life. Also the magnetic field of Earth is getting weaker and the change of the polarity expected to occur within two thousand years might have rather dramatic consequences for the life as we know it.

Also the magnetic life forms need energy feed to self-organize and stay awake. Plasmoids could populate magnetosphere and only wait for energy sources to self-organize. The basic metabolic mechanism would be the same as in the case of living matter [18]. Energetic super-conducting ions must be somehow driven from the magnetic flux tubes to the atomic space-time sheets, where they collide with atoms, ionize them, and generate visible light in the atomic transitions giving thus rise to the observed luminous phenomena interpreted as UFOs (perhaps as the luminous entity “Maria” in Fatima case). The ions would eventually “drop” back to super-conducting space-time sheet and liberate the zero point kinetic energy as a quantum of metabolic energy defining what is often referred to as a universal energy currency. Essentially identical energetic cycle of Karma would be realized also in living matter but involve a complex molecular organization and many-sheeted current circuitry responsible for the control of homeostasis. For the proton the quantum is predicted to be of order .5 eV liberated also when a single molecule of ATP is used.

The realization of this primitive metabolic cycle requires the breaking of super-conductivity: some mechanism must generate join along boundaries bonds serving as bridges connecting magnetic flux tubes with atomic space-time sheets along their boundaries so that supra current leakage becomes possible. Microwave radiation could generate the required flux tubes to  $k = 151$  space-time sheets and pre-existing IR MEs could be responsible for the bridges between  $k = 151$  and atomic space-time sheets. The energies of microwave photons in the wavelength range 1-100 mm are in the range  $10^{-5} - 10^{-3}$  eV and correspond to the temperature range 1-10 K. The critical temperatures for low temperature super-conductors are in this range (note that the temperature at the magnetic flux tubes would be much lower). One can interpret this by saying that super-conductivity is not destroyed by the heating of the magnetic flux tubes but by the generation of the join along boundaries bonds with bond energy of order of the gap energy causing the leakage of the supra current to non-super-conducting space-time sheets and thus inducing dissipative effects, the dropping of protons and ions from  $k = 151$  cell membrane space-time sheet generates also

microwave radiation.

This suggests that microwave photons could induce these bridges, break super-conductivity, and induce energy feed and self-organization. A similar breaking of super-conductivity might be also involved with the driving of the super-conducting ions to the  $k = 151$  space-time sheets in the living matter. Proteins could generate the needed microwave photons by coherently occurring conformational transitions. Also rotational transitions of clusters of water molecules could emit microwaves and perhaps mimic and amplify the microwaves generated by proteins. IR photons of 5 eV produced metabolically “kick” protons to atomic space-time sheets. The MEs with electrical potential difference of 5 eV define the classical correlate for this process as acceleration of proton in electric field in full consistency with the existing model of ADP-ATP process.

Plasmoids, being extremely light structures, could easily follow the energy beam flowing from the spot of tectonic activity, and the random variation of the beam direction could explain the random butterfly like motion of UFOs often observed and very difficult to understand if UFOs are structures built of steel and copper. The strange motion assigned with Sun in the case of Sun miracle can indeed be interpreted as an example of this kind of rapid random motion of plasmoid possible following microwave beam of tectonic or some other origin.

One can also imagine that plasmoids generate partially their microwave “food” themselves via the cyclotron transitions of electrons. This would require that the magnetic flux tubes in question carry a magnetic field of about 2 Tesla: the p-adic length scale in question corresponds to the thickness of the cell membrane. Solar convective zone contains magnetic fields with this strength.

## 5 Fatima Apparition And Microwave MEs

In the case of Fatima apparition the interaction of microwave MEs accompanied by ELF MEs would generate entanglement between the brains of people seeing the visions, plasmoid like life forms serving in the role of medium, and conscious entity “Maria”. Same mechanism applies to UFO and ET experiences in general.

### 5.1 What was the source of microwaves?

The buzzing sound heard only when Maria talked with closed lips might be understood as follows. Buzzing sound would be due to microwave hearing. Facial expression is important part of communications, especially so when one cannot speak loudly. When microwave energy feed was near the threshold of the microwave hearing, “Maria” had to use also facial expression in order to become better understood. This explanation however implies that the strength of microwave radiation was not under the control of the sender of the message or that the control was only partial.

The microwaves could correspond to the so called microwave static having biological origin and correlating strongly with taos hum: also taos hum can involve buzzing sound sensations [13]. This microwave static appears at evening and ceases in the morning hours at definite local time. One plausible source of microwaves are transitions associated with protein conformations for which the time scale of dynamics is around 1 nanoseconds. It would be interesting to know what time of day the apparitions appeared. The occurrence of the event at 13<sup>th</sup> of every month is suggestive of both external intelligence and a biorhythm giving rise to especially intense microwave static with a period of month.

The possible biological origin of the microwave static raises the question whether the oak was the source of the microwave static. Oaks are holy trees in many ancient cultures: perhaps their ability to induce apparitions by strong microwave static could explain this partly. Some people (including me in very calm state of mind) are able to experience what might be called “a silent conscious presence” of trees. The energy scale for the rotational excitations of molecules is in the microwave region. In particular, rotational transitions of water molecules and clusters of them can generate microwave radiation effectively. Quartz crystals, piezo-electrics used both in clocks and for healing purposes, could amplify the microwaves using the energy provided by the tectonic activity. If the dominating contribution of the microwave energy is of tectonic origin, the strange motion of Sun experienced by many witnesses during Sun Miracle could correspond to the motion of a plasma ball following tectonic microwave beam. Of course, this is not the only possibility. The reported healings during apparitions suggest that microwave photons directed from the plasmoid to the

brains and bodies of the witnesses were involved. If plasmoids carrying magnetic fields of order 2 Tesla for which electron cyclotron frequency is 3 GHz were involved, they could have generated these microwave photons. Also the model for crop circle formations requires plasmoids with similar magnetic field strength [8] [16] and light balls are frequently observed near crop formations.

The heat wave causing drying of soil and cloths could have been caused by visible and possibly also infrared light generated by the plasmoid like structure, when highly energetic super-conducting ions flowing to the atomic space-time sheets dissipated their energy by colliding with the atoms of atmosphere and by ionizing them.

## 5.2 Connection with Schumann resonance

If microwave hearing involves the “dropping” of ions from  $k = 151$  space-time sheet and liberation of zero point energy as microwaves propagating along EEG MEs one could understand the connection with the Schumann resonance at 7.8 Hz in alpha band.

a) As a cavity resonance Schumann resonance prevails in entire Earth size scale, and is in TGD based model of magnetospheric sensory representations responsible for horizontal communications between different brains, and more generally, between various conscious entities. For instance, during hypnagogic alpha band dominates and could by the sharing of mental images give rise to the strange experiences in which one experiences of being another person. alpha band is also associated with creativity: perhaps our ideas are not completely ours.

b) The velocity parameter  $v$  predicted by the scaling law for  $k = 151$  (cell membrane space-time sheet) is the velocity of alpha waves at the surface of skull which suggests that alpha waves are generated in the process. For  $K^+$  and  $Cl^-$  ions cyclotron frequencies are 7.5 Hz and 8.5 Hz respectively and near to Schumann frequency and these ions are important for brain functioning: their cyclotron radiation could resonate with Schumann resonance (note that the local value of Earth's magnetic field in brain could be subject to homeostatic control). Thus the “dropping” of these ions from cell membrane space-time sheet could be crucial for the quantum entanglement with the conscious entity Maria.

## 5.3 Angel hair

The mysterious angel hair might result when ions from magnetic flux tubes flow to atomic space-time sheets. Perhaps the process creates chemical compounds in molten state which then cool and solidify. Hair like appearance might reflect the geometry of magnetic flux tubes (whose thickness is about 2.5-5 micrometers for Earth's magnetic field). Many crop formations are known to contain magnetized iron [8] as well as small glass balls consisting of  $SiO_2$ , that is quartz [6]. Meteoric iron could come from the ionosphere along magnetic flux tubes. Si ions or quartz could flow along magnetic flux tubes from the spot of the tectonic activity to the plasmoid, and become heated to high temperature when entering to atomic space-time sheets and colliding with oxygen atoms of the atmosphere. This in turn would give rise to glass balls. An analogous mechanism might be give rise to angel hair.

## 5.4 Were the “vehicles” real?

There is some anecdotal evidence suggesting that UFOs are more than mere plasma balls, and this kind of objects might have been involved also with the Marian apparition. Many-sheeted space-time concept predicts a mechanism leading to the reduction of inertial and gravitational masses of spinning magnetic systems [26]. These objects are predicted to be accompanied by plasma. There is laboratory evidence for this kind of phenomenon [9]. Hence some UFOs could be space crafts possessing almost vanishing gravitational and inertial masses and the vehicles observed by witnesses in the case of Marian apparition could be also genuine space crafts of this kind.

## 5.5 Healing phenomena and apparitions

Healings and water with special healing properties are also associated with Marian apparitions [4]. Microwave hypothesis provides understanding also about this aspect, and somewhat unexpectedly, about the mechanism of homeopathic healing.

In [17] it was proposed that the clusters of water molecules forming liquid crystals can mimic the rotational spectrum of various molecules, and that the ability to reproduce the rotational frequency spectrum of the medicine molecule is an essential element of homeopathic healing. The level of self-organization of water would thus be measured by how complex mimicry it is able to perform.

Why rotational microwave energy spectrum is so important for healing, can be understood as follows. The many-sheeted current circuitry, involving atomic space-time sheets and magnetic flux tubes and also other space-time sheets, is extremely complex control structure [22, 23]. The continual regeneration of bridges between say atomic space-time sheets and magnetic flux tubes by microwaves emitted by proteins is necessary to sustain this circuitry. An important category of diseases is due to the failure to generate the bridges between super-conducting and atomic space-time sheets so that this control circuitry suffers shortcuts. Perhaps the genetic expression of some proteins responsible for the microwaves generating particular bridges fails. The medicine or its homeopathic counterpart would help to generate (or even re-establish the generation of) the microwave spectrum responsible for the generation of the lacking bridges in the circuitry.

This would allow to understand why spring water with special healing properties seems to be a correlate of apparition places [4]. Just like the homeopathic remedy, the spring water would mimic the rotational energy spectrum of some medicine molecules and would induce the same healing effects (I am grateful for A. Brodziak for emphasizing the importance of the homeopathic aspect).

In present case the healing would require the feed of microwave energy to the healed. It could be the energy is transferred via the mediation of the self-organizing plasmoidic life form and has tectonic origin.

## 6 Appendix: a little glossary

*Topological Geometrodynamics (TGD):* TGD can be regarded as a unified theory of fundamental interactions. In General Relativity space-time time is abstract pseudo-Riemannian manifold and the dynamical metric of this space-time describes gravitational interactions. In TGD space-time is a 4-dimensional surface of certain 8-dimensional space. Hence space-time has shape besides metric properties. This identification solves the conceptual difficulties related to the definition of the energy-momentum in General Relativity. Even more, sub-manifold geometry, being considerably richer in structure than the abstract manifold geometry behind General Relativity, leads to a geometrization of known fundamental interactions and elementary particle quantum numbers.

*Quantum entanglement:* Quantum entanglement does not allow any concretization in terms of everyday concepts. Schrödinger cat plus bottle of poison is the classical popularization of the notion: the quantum state, which is a superposition of the living cat + the open bottle of poison and the dead cat + the closed bottle of poison represents quantum entangled state. Schrödinger cat has clearly no self identity in this state.

*Quantum jump:* Quantum jump between quantum histories (analogous to deterministic solutions of Schrödinger equation) is identified as moment of consciousness. Quantum jump has complex anatomy. First unitary process occurs and generates from the maximally un-entangled initial state a maximally entangled multiverse state. Then the TGD counterpart of statefunction reduction occurs and reduces entanglement between quantum fluctuating and non-fluctuating, effectively classical, degrees of freedom. Then follows a sequence of self measurements giving rise to state preparation and leads to maximally un-entangled state: only bound state entanglement is stable against this process. The latter two steps are analogous to conscious analysis.

*Self, sub-self, self hierarchy:* A system able to not generate bound state entanglement in subsequent quantum jumps is assumed to correspond to a conscious self. This implies that everything is conscious and consciousness can be only lost by the generation of bound state quantum entanglement. A self hierarchy extending from elementary particle level to the level of entire universe is predicted. Selves can have sub-selves which they experience as mental images. Sub-selves of two separate selves can quantum entangle and this gives rise to fusion of the mental images and the fused mental image is shared by both selves.

*Many-sheeted space-time, topological quantization:* TGD forces the notion of many-sheeted space-time with space-time sheets identified as geometric correlates of various physical objects (elementary particles, atoms, molecules, cells, ..., galaxies, ...). Quantum-classical correspondences

states that all quantum notions have topological correlates at the level of many-sheeted space-time.

*Topological quantization:* Topological field quantization is one of the basic distinctions between TGD and Maxwell's electrodynamics and General Relativity and means that various fields decompose to topological field quanta: radiation fields to "topological light rays"; magnetic fields to flux tube structures; and electric fields to electric flux quanta (electrets). Topological field quantization means that one can assign to every material system a field (magnetic) body, usually much larger than the material system itself, and providing a representation for various quantum aspects of the system: kind of a "manual" of the material system is in question.

*Sensory representations:* The separation of data processing and its representation is highly desirable. In computers processing of the data is performed inside CPU and representation is realized outside it (monitor screen, printer,...). In standard neuroscience it is however believed that both data processing and representations are realized inside brain. TGD leads the separation of data processing and representations: the "manual" of the material body provided by field (or magnetic) body serves as the counterpart of the computer screen at which the sensory and other representations of the data processed in brain are realized. Various attributes of the objects of the perceptive field processed by brain are quantum entangled with simple "something exists" mental images at the magnetic body. The topological rays of EEG serve as the electromagnetic bridges serving as the topological correlates for this entanglement.

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