Article

Biological Plausibility of the Pace of Creation Written in the Genesis

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Abstract

The purpose of this paper is to discuss the biological plausibility of the pace of creation written in the genesis. A fascinating hypothesis is made on the central role of serotonin as a guide, as the director of the phenomena that enable the best use of light by the plant world, the growth, the regulation of mood in the complex molecular interactions that characterize the varying levels of consciousness. This hypothesis provides biological interpretations of the correspondence of creative steps, from light to man, passing through the vegetable and animal world.

Keywords: serotonin, biological, anthropological, creation, genesis, light, man, vegetable, animal, consciousness.

Introduction

As is well known, the term "creation" refers to a triple meaning (cfr. la voce "Creazione" in Tanzella-Nitti, 2002):

- **Active creation** (*bara*, *ktízein*, talvolta *poieîn*): God as the only person who draws things out of nothing;

- **Passive creation**: the actual contingent world as an expression of divine will;

- **Creation as a relation**: structural dependence of creation on the Creator (San Tommaso: Summa theologiae, I, q. 45, a. 3; Contra Gentiles, II, c. 18; De potentia, q. 3, a. 3).

Well, in all these meanings, we think that there is a binding biological and biochemical structure, which is the expression of a wondrous divine project embracing, especially thanks to the crucial neurotransmitter serotonin, all human beings, animals and plants, with major ontological and ethical consequences (Cusano (1969; cf. also Schelling, 1969) wrote some interesting pages on the notion that man is made of earth, water, air, light, plants, animals**.**

1. The central role of serotonin

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The powerful biblical creation framework, the appearance of light, of plants, animal, and man as the final element of the divine plan, refers to a strict biological dynamics made operational by divine *fiat*. One element, among the others, seems to connect this creative bio-chronology: neurotransmitters, especially serotonin.

All neurotransmitters are known to perform specific functions in the regulation of life, from plant, to animal and man, but there is much evidence that led to reflect on the fact that serotonin possesses a more involved role in the regulation of living matters, both from a purely physical point of view (use of light, growth, etc..) and in behavioral dynamics.

Serotonin is a ubiquitous substance derived from the tryptophan, an essential amino acid that is needed in greater concentration in the animal world, which explains, by the way, the omnivorous nature of humans to satisfy this needs. The tryptophan in the plant kingdom, through a biochemical pathway, turns into serotonin, allowing the plant to the best use (Figure 1) of light, and life (Pelagio-Flores et al., 2011; Azmitia, 2001; Fujiwara et al., 2010).

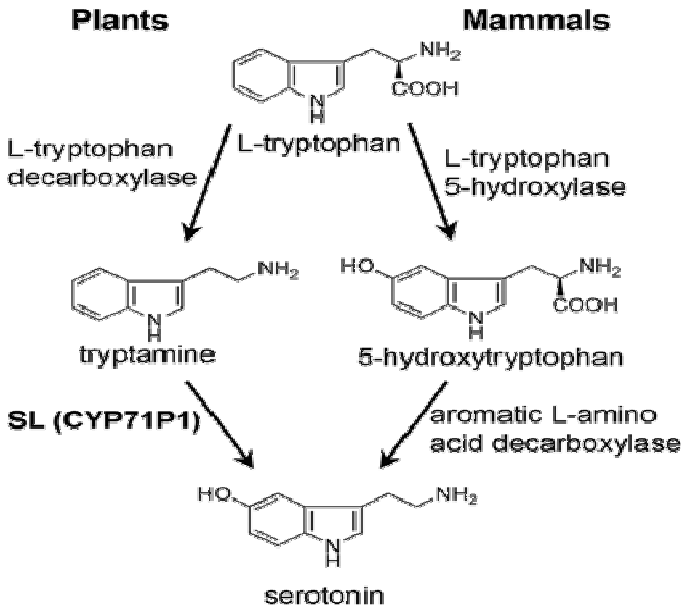

Figure 1. The figure briefly describes the key steps of the metabolism of substances that lead to the formation of serotonin in animal and human worlds.

Serotonin is widely recognized as a substance primarily involved in growth and mood, in the production of melatonin and niacin (Figure 2).

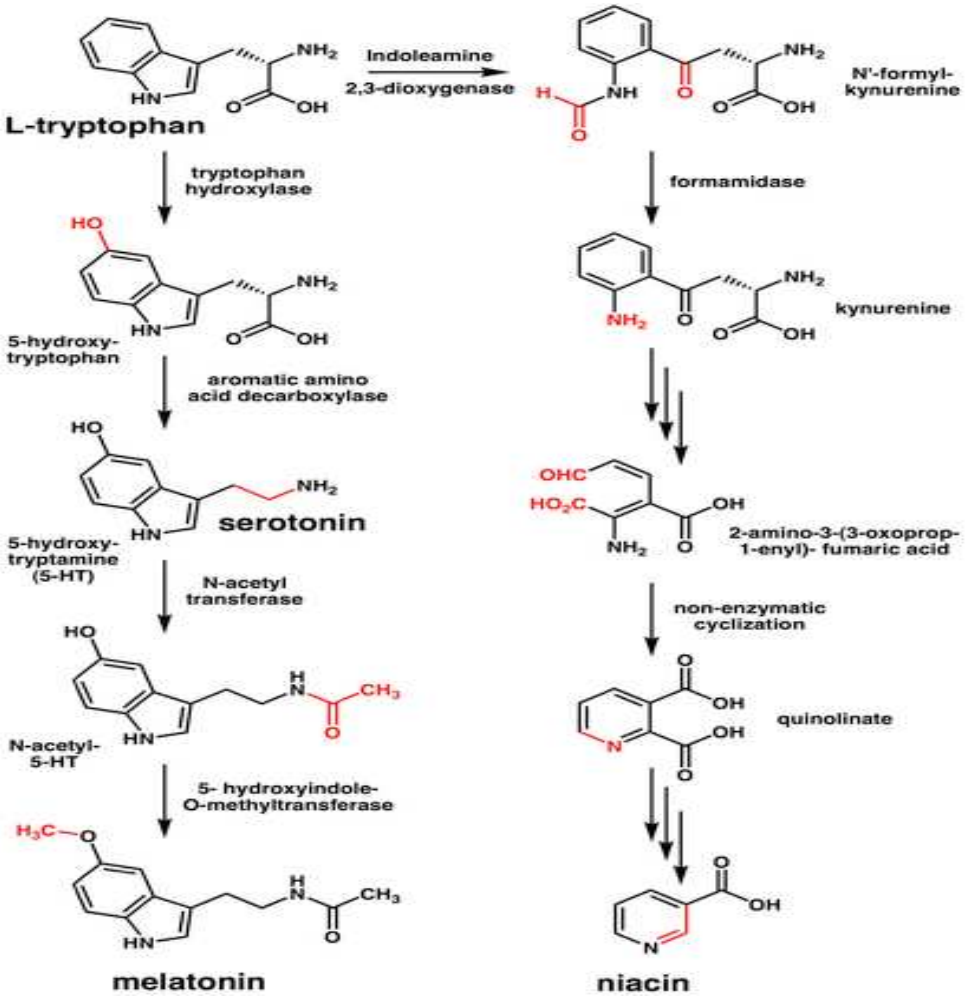

Figure 2. Stages of metabolic transformation of serotonin to melatonin and niacin.

It seems, at this point, very clear that there is a first element of continuity in the sequence that takes place between light, plant and animal life.

Undoubtedly, plants are organisms that lack the normal brain activity humans and animals have. "However, they are able to manifest all the characteristics of intelligent behavior in addition to being equipped with neuro-active molecules, in particular glutamate receptors and sinaptogamine" (Mancuso, 2005). In fact, "Recent developments in plant cell biology have identified structures in plants similar to synapses that use the auxin as a neurotransmitter-like molecule specific to plants.
This suggests that the synaptic communication is not limited to animals and humans, but is also widely present in plant tissues (Mancuso, 2005).

Mitosis, cell migration and maturation are regulated by molecules that contain serotonin and 5-hydroxytryptophan, such as indole, by melatonin and auxin (Pasternak et al.,2005; Kolar et al., 2005). In animals, serotonin participates to the most important biological functions, including some

concerning the brain; even in plants there is proven evidence that serotonin and its products such as melatonin and auxin possess and carry out crucial activities for their life and their organization.
Serotonin seems to have the same action on the plant cell cytoskeleton and on the neuronal development and neuroplasticity in mammals (Azmitia, 1999).

Serotonin appears to be, then, as a central element of life and physical manifestations that regulate mood, and animal and human behavior (Figure 3):

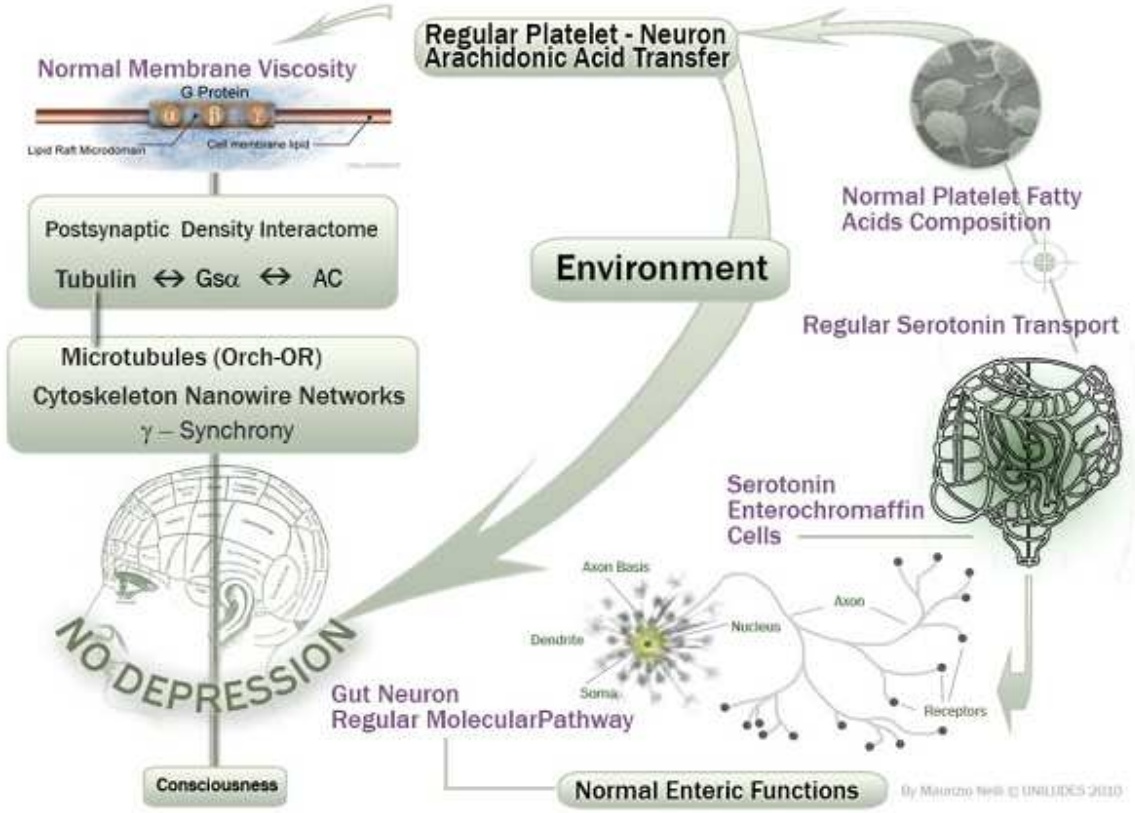

Figure 3. Schematic description of the path of serotonin from enterochromaffin cells to platelets and regulation of the interactome through the membrane viscosity in normal conditions. (Cocchi et al., 2011; Cocchi et al., 2011a; Cocchi et al., 2011b; Cocchi et al., 2011c; Cocchi et al., 2010).

Furthermore, if we consider one of the key moments of the evolutionary path, the transition from cold-blooded animals to warm-blooded ones, until you get to humans, serotonin is, once again, a decisive element (Figure 4).

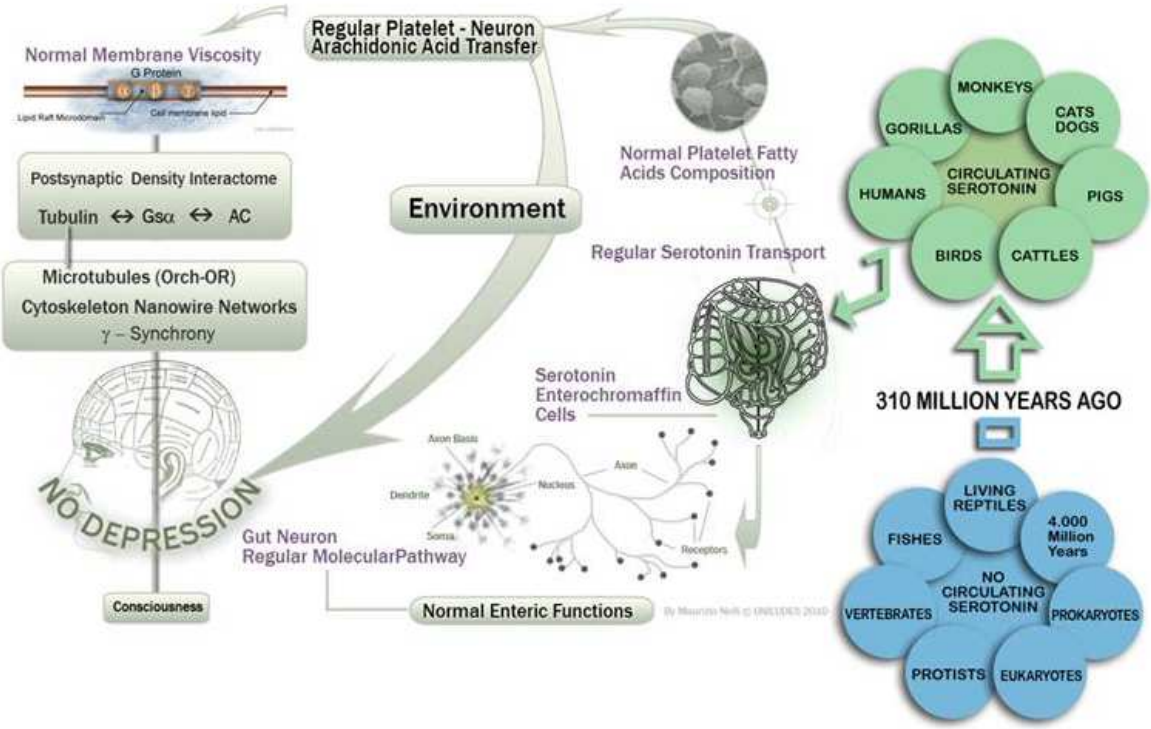

Figure 4. The figure (left) shows the serotonin pathway in its connections with the interactome under normal conditions compared with depressive disorder in which the serotonin transport to platelets and neurons could be modified by the viscosity of the membrane and, therefore, consciousness could be modified too (Cocchi et al. 2010). The phylogenetic comparison between animals with and without circulating serotonin (right) (Maurer-Spurej, 2005), makes it plausible, even for animals, for the molecular and quantum hypothesis of consciousness, although for different levels of expression.

It has been shown that in different types of psychopathology, there are measurable changes of consciousness (gamma synchrony) and that this aspect involves a complex molecular mechanism, including serotonin (Figure 5).

A central consideration, at this point, should be made on the conscience in its classical and quantum aspects that will bring us closer to a more and more divine understanding of the phenomenon. Assuming that consciousness is realized through the quantum mechanisms of cytoskeleton, we could say that a potential consciousness could be expressed by each and every cell equipped with the cytoskeleton, in any animal species, and that this could be the biological interface, supporting the vision of interpretation of consciousness as Manousakis (2006).

Therefore, there could be different expressions of the potential levels of consciousness according to the evidence referred to above.

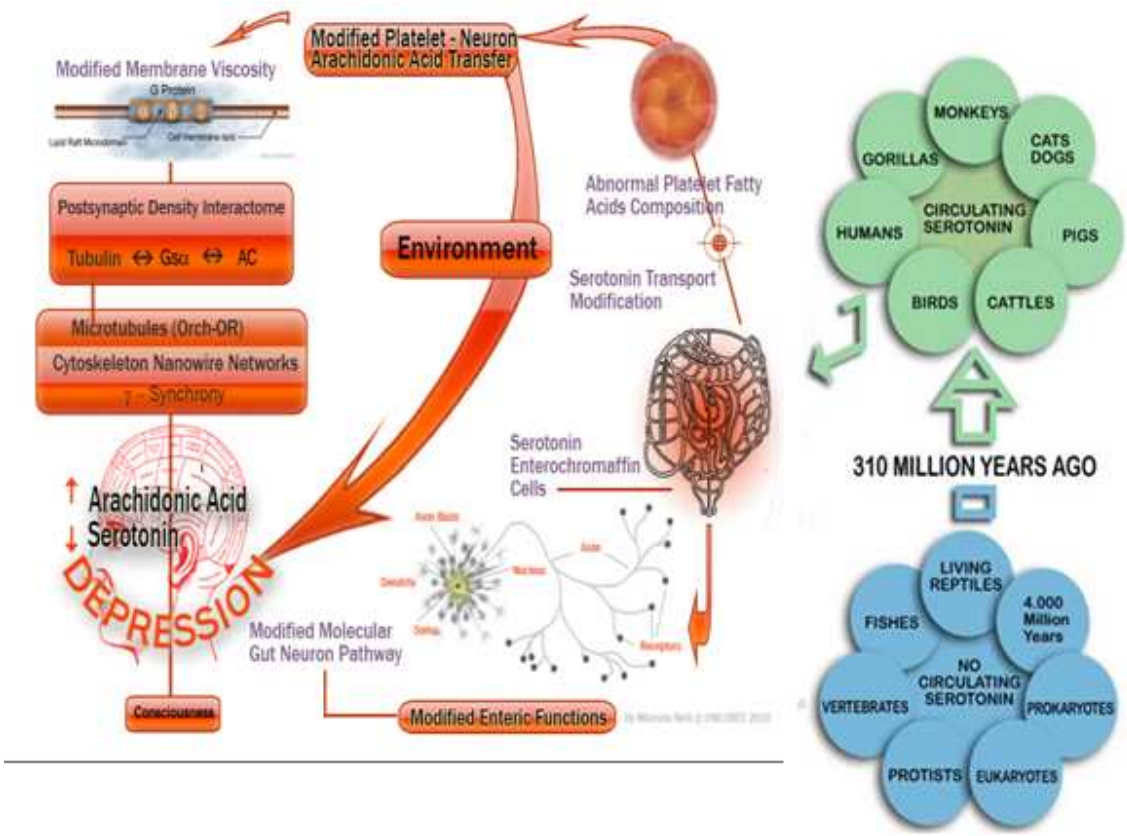

Figure 5. Schematic representation of the possible modifications and interactions among platelets, neurons, fatty acids and cell interactome as to depressive disorder and alteration of consciousness.

These considerations should, however, be substantiated as follows. The Orch OR Theory requires the presence of at least 300 neurons, as a minimum level to express conscious states, which correspond to 100 milliseconds of "quantum coherence", then it is unlikely that we can speak of "true consciousness" in paramecium, also, the paramecium, certainly does not have a mature form of the cytoskeleton, but a primitive one (tubulin-based circuits),(Hameroff, 1998a). A sort of "pre conscious" protein, based on quantum computing could be a condition of evolutionary continuity among living organisms. The scientific debate on Orch OR Theory has never considered the role of serotonin in living species, whether they have or not circulating serotonin.

Human and animal consciousness, therefore, should be considered and discussed with respect to the pre-and post-circulating serotonin era (Figure 6).

Serotonin should be considered as a modulator of the intensity of mood disorders and different types of psychotic disorder and, therefore, might be the subtle regulator of neuro-correlated consciousness, through the interactome-receptor-cytoskeleton connections. (Jackman et al., 1983; Mann et al., 1992; Kovacic et al., 2008; Fujii t al., 2001; Blardi et al., 2002).

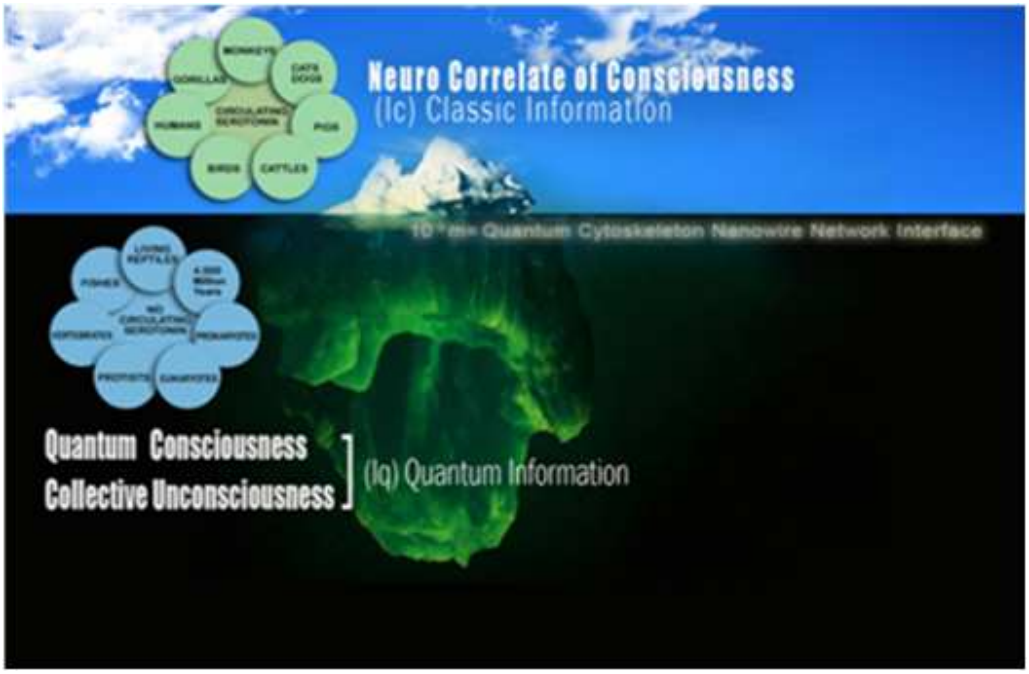

Figure 6. The figure shows the boundary between classical and quantum consciousness according to the appearance of circulating serotonin.

Figure 6 compares the hypothesis of a border between classical and quantum consciousness. In animal models, according to the anatomical and physiological characteristics of organisms and the presence of circulating serotonin, one might think that it is only with the transition from cold-blooded to warm-blooded (Maurer-Spurej,2005) animal consciousness begins to take on characteristics of growing complexity. From Drosophila to Man, the evidence of an early phylogeny of serotonergic neurons has been well documented (Jacobs et al., 1992; Azmitia, 2001).

The first evidence of the presence of serotonin is in the thrombocytes of birds and of three species of reptiles, the endothermic leatherback Sea Turtle, Green Sea Turtle and partially endothermic American alligator (Maurer-Spurej, 2005). The available evidence suggests that, in vertebrates, serotonin-containing enterochromaffin cells lack only where there is innervation of the intestinal mucosa by nerve fibers that contain high concentrations of serotonin (Anderson et al., 1988).

At this point a reflection arises: is the late appearance of the circulating serotonin the watershed between quantum consciousness and classic consciousness? This confirms the hypothesis of the existence of a watershed in the evolution of consciousness, giving continuity to the properties of the molecular mechanisms of consciousness with the Orch OR Theory, from the most primitive conditions to the most evolved.

A submerged animal consciousness that finds probably in tubulin and microtubules the self-determination of a state of consciousness, restricted to what is necessary to exist without emotional expressions and that faces a growing event of neuro-correlated consciousness (classic information) which brings with it emotional expressions of conscience, more complex and differentiated, with

respect to the progressive realization of a critical mass ratio between tubulin, synapses, cortex and serotonin.

In practice, there would be the molecular circumstances that provides for the dimension and depth of the phenomenon of "consciousness", those aspects that relate men to their environment and their perceptions in a scalar complexity that from man goes back to the animals which marked the endothermic turning point and to the previous animal categories, where the dimension of consciousness is increasingly elementarizing, limited to the narrow needs of those animals that represent the pre-serotonin and serotonin circulating era, to man. "*Single celled animals such as amoebas and paramecium have no nervous system. However, they are obviously capable of sensing and responding to the presence of food, danger, and obstacles and appear to be capable of learning from their mistakes. The cytoskeleton is thought to be the mechanism through which their awareness is structured. This would imply that not only our neurons but every single cell in our body has its own 'nervous system' capable of independently processing information"* (Minsky, 1986).

The exact mechanism by which serotonin may affect consciousness or behavior is not yet clear to modern science, although there is evidence of a relationship between serotonin and tubulin in psychiatric disorder (Crespi, 2010; Azmitia, 2001). così come fra citoscheletro e cervello. (Cronly-Dillon et al., 1979; Bond et al., 2006).

Accepting the evidence cited above, together with the fact that consciousness is expressed through the condition of the state of tubulin, as reflected by its proximity to the molecular structure of the cell, we assume that each neuron of any animal species, with its cytoskeleton, is provided with the same potential of consciousness. Different levels of expression of potential consciousness, therefore, might occur. In practice, even in the most elementary forms of life there might be a potential of consciousness that expresses itself and is limited to the needs of the living organism.

All this would be a condition of continuity between living organisms, without affecting the meaning of creation, reported in Genesis (1, 25), of the animals categories ("*Et fecit Deus bestias terrae* ***iuxta*** *species suas et iumenta* ***secundum*** *species suas et omne reptile terrae in* ***genere*** *suo*"…), the concept is therefore confirmed, and about the man:"… *formavit Dominus Deus hominem pulverem de humo et inspiravit in nares eius spiraculum vitae, et factus est homo in animam viventem...* " (*Genesi*, 2:7).

Only humans would have been reached by the vital breath that, in terms of biological reading, could mean the optimization of a critical mass ratio between tubulin, synapses, cortex and serotonin. As part of the above considerations, we believe that, serotonin plays an important role in the dynamics of the process of consciousness, by modulating the intensity of mood disorders as well as the intensity of the different types of psychotic disorder.

2. Details on consciousness

We believe that consciousness can be represented as an organic continuum of levels communicating with each other (Cocchi et al., 2011). Very briefly:

1. Pure biological level or primordial ego: the proto self of Damasio (2000), the fact of attributing in crudely form the feelings of hunger, thirst, pleasure, and pain to his own ego;

2. Bio-eco-logical level: on the conscious interaction between subject and environment, but set only the "hic et nunc" with no extension project.

3. Extended mnemonic level: belonging to a consciousness that, while expanding "back and forth, " can't yet embody in language its continuous narrative character, cherished by the memory as a place of meaning of life. (the language, whose anatomical and physiological foundations have evolved genetically on the basis of natural selection, is biological and cultural innovation: (Cavalli, et al., 1996);

4. Level of identity sense: starting from its original roots in biology, the ego has gradually expanded to the ecological dimension or short-range mnemonic; it has then reached the long-term mnemonic dimension, and now, through language, it produces an accomplished culture.
In other words, the ego produces articulations of sense about itself and the world by incorporating into its experiences and its acts- in an intellectual, emotional, exclusive narration- world views, social stress, scientific and cultural expressions. Here is substantiated the concept of the individual understood as die-hard vocation embodied in the world and in its narrative, by virtue of a relational dynamism, ontologically grounded in the Mystery.

5. Mysteric level of consciousness or abyss of consciousness (Cocchi et al., 2009).

The presence in humans of a *prophetic* intuition, of an abyss of consciousness opens the way for intellectual freedom as liberation from the outer limits (subject, "obstacles" to overcome in pursuit of personal projects), as well as from internal ones (excessive biological determinism or panbiologism).
The man is rooted in biology, but his life is not limited to it. In short, it would be reductionist to identify the personal self in a simple chain of neurons or, in other words, to explain the mind, and so indirectly the soul / consciousness, only on neural basis: for example, on neuro-psychoanalysis and on the old Freud's dream to reduce the mental to the neural, see the contributions of Henrich et al. (Henrich et al., 2010; Semenza, 2010). On the other hand, it is, obviously, ontologically meaningless to separate the self from its flesh, its biological dimension.

There is, in short, a carnal self, but also a self whose nature is immaterial a-quantum, mysterious, chaste guardian of freedom and openness to a transcendent sense: «To seek to make clear the idea of the Soul would involve investigation laborious for any but a god; but the tongue of man may speak of this more easily through a figure». (Plato, *Fedro*, 246 A tr. it. G. Reale; see also Eraclitus, fr. 45; compare also the intuition of the Heraclitean logos which increases itself [fr. 115] and the passage of Plato's *Phaedo*, 99 A-B).

In this framework, the dialogue among brain-tubulin and synapses is regulated by serotonin, may be the privileged hermeneutical key to determine the different levels of consciousness or states of consciousness (Figure 7). As to animal consciousness, it could be placed both at the pure biological level and at the bio-eco-logical level. (Dennett, 1996; Griffin, 1992; Wilder, 1996; Bekoff et al., 1997; Mitchell et al., 2001a; Bekoff et al., 2002; Bekoff et al., 2009).

It is believed, indeed, that the animals show a wide range of moral behaviors, including a sense of justice, empathy, trust and reciprocity: a hypothesis that would lead us to an even higher level of consciousness, to the extent that morality would be understood as an evolutionary trait that humans share with other social mammals. Some scientific trials have shown that even rats are characterized by a high sense of altruism and solidarity, whose biological basis, from cerebral circuits-cerebral trunk , amygdala, hypothalamus, orbicular-frontal insular cortex- to the hormones activating these very centres-oxytocin, prolactin, vasopressin-are very similar to ours, included the individual empathic variations(Ben-Ami Bartal, Decety, Mason, 2011).

Plutarch and the reasonableness of animal

In ancient times, Plutarch (The first century AD) (L'intelligenza animale, Moralia, 962b – c, 963 e - f; Grillo, Moralia, 991 d – f; Del mangiar carne, Moralia, 997 e), especially in the first seven chapters of *On the Intelligence of Animals*, in opposition to the Stoic position, remarked that it is inconsistent to say that living things have an ability to feel but not reason and opinion, in fact "nothing is endowed with sensation which does not also partake of intelligence and that there is no living thing which does not naturally possess both opinion and reason " (L'intelligenza animale, Moralia 960 d; with citation of fr. 112 Wherli, referred to Stratone).

And in an even more accurate way, Plutarch stated:

"It is perfectly possible to gather that animals have a natural endowment of reason and intellect. For just as one tree is not more nor less inanimate than another, but they are all in the same state of insensibility, since none is endowed with soul, in the same way one animal would not be thought to be more sluggish or indocile mentally than another if they did not all possess reason and intellect to some degree — though some have a greater or less proportion than others. Please note that cases of dullness and stupidity in some animals are demonstrated by the cleverness and sharpness of others — as when you compare an ass and a sheep with a fox or a wolf or a bee". (Grillo, Moralia 992 c – d; Santese, 1994: - Martin Jr., 1961).

Quaranta et al. (2007) argue, on the other hand, that the lateralization, appeared before language, it is not just a prerogative of man but also of very different organisms (i.e. dogs). Mascalzoni et al. (2010) studied the chicks (chicken) and concluded that in the brains of vertebrates there is an innate neural mechanism underlying the recognition of animate objects (along with physical causality, the distinction between animate and inanimate objects constitutes a kind of "Kantian genetic a priori").

In accordance with these studies, delving into the concept of "animal potential memory", one could hypothesize a sort of proto level of animal consciousness (extended mnemonic proto level). Figure 7.

Even in the world of plants one could speak of a first level of consciousness. Tryptophan, in fact, together with some plant intermediates (oxygen and reduced co-factors), forms serotonin: their role is to ensure the utilization of light, which is essential for life (Azmitia, 2001).

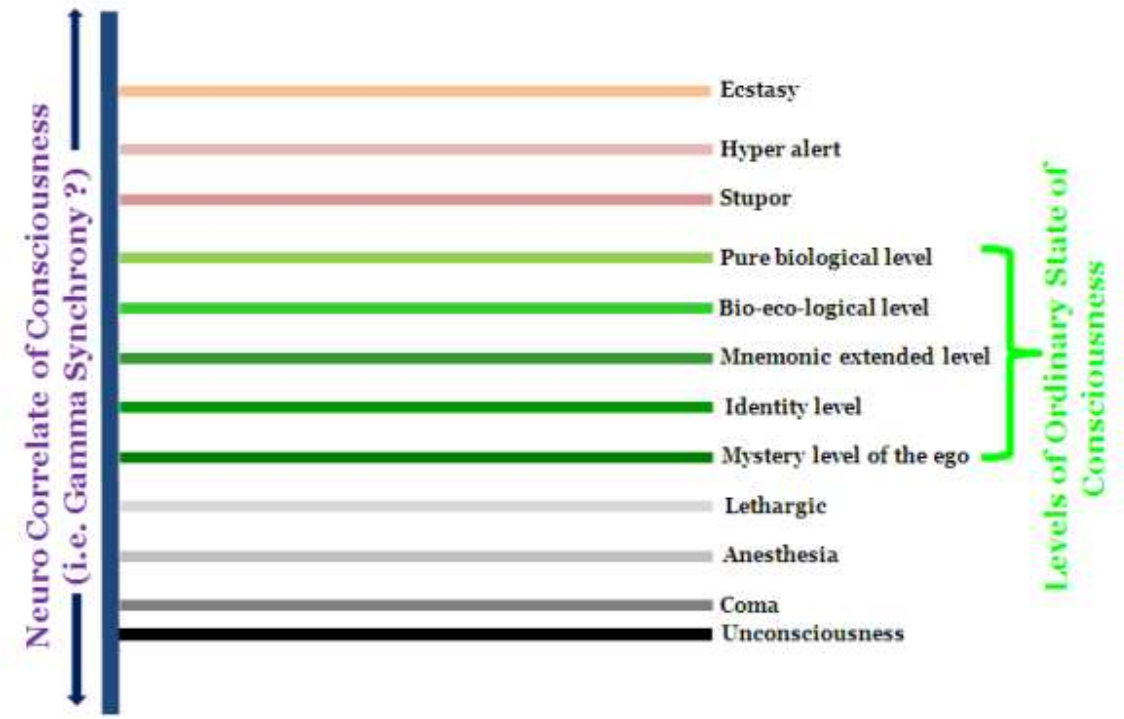

Figure 7. Representation of the level of consciousness

In fact, since we can find in animals and humans a proto-self linked to the fulfillment of basic living needs (hunger, thirst, pleasure, and pain), there is also a sort of pre - proto-self plant, expression of the dialectic between tryptophan-intermediate substances-serotonin-light, which guarantee a biological life. Serotonin, with all its dynamics, would therefore constitute the principle of identity of the plant: the plant lives because the serotonin guarantees the light. In other words, you could also divide the pure biological level in:

- primordial consciousness of the plant or pre-proto-self
- primordial animal and human consciousness or proto-self.

The Spinoza's *conatus sese conservandi*, the power that every natural expression has to expand its power, in primis the existence, is therefore, trasversal to the whole nature and seems to impose itself as an original marker of consciousness in its original announcement, that is, to say from and at the very moment we start talking about that.

The dynamism of consciousness: the interaction between tubulin and Gs*α* protein

The levels of consciousness detailed above are characterized by a strong internal dynamism and a subtle dialectical interplay between biochemical factors, rational and emotional processes, cultural experiences. In particular, with regard to ethical and existential decisions, this dialectic game is expressive of a slow process, emotional and cognitive, in which benefits and damages of every action are calculated. (Greene et al., 2001; Greene et al., 2004).

In what follows we want to highlight the biochemical factor in relation to the links between tubulin

and Gsα protein, about the possible involvement of the first, regarding the expression of consciousness. The main protein interaction, to be taken into account in the post-synaptic density interactome is Gsα-Tubulin interaction. Increased Gsα catalyzes the polymerization of MTs. In major depression decreased Gsα-Tubulin interaction causes a reduction of cytoskeletal network and of the molecular quantum phenomena involved in the states of consciousness. (Layden et al. 2008; Donati et al. 2008).

According to Woolf (2010) disruption of MTs, which occurs in mental illness may be caused by abnormal fluctuations between cycles of tubulin polymerization-depolymerization resulting in different mixtures of conformational patterns (as classified by Craddock as behaviors of types I-IV). Billions of quantum computation in MTs would be responsible for the mobilization of millions of proteins over distances of nanometers, with collective effects, among the most important, affecting the neural activity, on time scales of milliseconds. Woolf (2010) says that: *".... the classical and quantum information processing in the brain MTs may be compromised in mental illness. The extent to which this mode of information processing can be regarded as scientific importance, needs an appropriate support and experimental validation."*

Assuming that the work of a conscious state is based on the level of complexity of the chaotic structure of tubulin and that it is this chaotic characteristic which gives it stability, and, while aware that there is a deep connection among tubulin, Gsα protein and membrane viscosity consequently to different arrangements of cellular fatty acids, there remains difficult to understand what and whether there might exist critical moments able to radically alter the state of consciousness.

It refers, for example, to changes in the conscious state, that come into play, determining the "breaking point" that can lead to suicide or to commit dramatic gestures. Although very controversial, may remain as the only way to understand this phenomenon, the induction of changes of different degrees of consciousness and, in light of what appears to be the platelet-neuron matching, to verify, in vivo, if, in platelets of suitable animal is possible to build a mathematical model that can simulate the projection of the oscillations of tubulin to the point of no return. In the experiments concerning the “Psychiatry Marche Project " we found ourselves in front of data (not published) of considerable interest with regard to the serotonin and Gsα Protein in platelets. The Gsα protein presents, in diagnostically homogeneous groups (depression and bipolar), strong, for now, unexplained fluctuations. The same thing applies to the serotonin content of the same platelet. This great variability, if in neurons, makes us think seriously about the pharmacological opportunities, but also on the relationship between tubulin Gsα protein, serotonin, and membrane (Crespi, 2010; Yehuda et al. 1998).

Overall theoretical considerations

Our path led us to identify a common biochemical house shared by animal and man and among animal species and among human beings, in a sign of a harmonious integration of nature and culture, with three consequences:

A) The overcoming of reductionist readings of reality, which, regardless of their scientific or humanistic nature, are considered inauthentic expression of knowledge, since any undue simplification involves anthropomorphic tendencies. According to Whitehead' words (2007):

«*The task of science is to seek the simplest explanations of complex facts, but it is easy to fall into the trap of believing that the facts are simple, because simplicity is the goal of our research. The motto of every natural philosopher should be "seek simplicity and distrust it"* ».

Reductionism provides for a hierarchical vision of reality: being, knowing, and acting. In other words, reductionism translates truth as power, as the supremacy of a stable essence on an epiphenomenal, accidental multiplicity.

Polkinghorne states: "*Reality is a multi-layered unity. I can perceive another person as an aggregation of atoms, an open biochemical system in interaction with the environment, a specimen of homo sapiens, an object of beauty, someone whose needs deserve my respect and compassion, a brother for whom Christ died. All are true and all mysteriously coinhere in that one person. To deny one of these levels is to diminish both that person and myself, the perceiver; to do less than justice to the richness of reality."* (Tanzella-Nitti, Struma, 2002).

Against this general backdrop, Benini (2009), for example, is right when he emphasizes the primacy of the explicative reductionism over the ontological one. The first form of reductionism is pluralistic, since it considers the scientific explanation of macro phenomena as the description of micro-mechanisms; it is open-minded, completely alien to those ontological confinements in the supernatural or to the miraculous dynamics not ascribable to any physical element.
On the contrary, it goes without saying that the *ontologica*l reductionism or "*nothing but"* believes that only the lowest level of physical reality could be explicative, heuristic. The theorists of the *nothing but* risk confining their ideas in their self-referentiality, that is in the theoretical withdrawal of a brain studying itself.

B) The opening to a systematic theology (cf., for example, the Letter of John Paul II on 12 October 1996 to the members of the Pontifical Academy of Sciences):

In our case, you are talking about the opening to a theology that recognizes in serotonin, as well as in the underlying evolutionary-biological rationality - which, in our opinion, does not exclude, indeed requires, a purposeful design on the explanatory level- the element of continuity of the bio-chronologic sequence light-plant life-animal.

In this sense, our evolutionary path seems, from the theoretical point of view, congruent with the epistemological foundations of natural finalism:

- *Tendentialism*, ie, existence of trends in the natural dynamics;

- *Cooperative unitarianism*: integration of elements and factors in an integrative unitary framework which is a *plus* compared to the mere sum of the parts.

- *Explicative functionalism*: each and every natural component plays a specific role that is finalized to the best explanation of the system.

In this case, serotonin, in the path that we have drawn, stands as a privileged key to the interpretation, from the biochemical point of view, of the life system, understood as a *unicum*, as the expression of the cooperation of the various component parts, according to their tendencies and their functions. (Agazzi, 1991; Artigas, 2001; Agazzi et al., 1984; Artigas, 2000; Barbour, 1997; Cantore, 1987; Gesché, 1997; Gismondi 1993; Heller 1986; Lambert 1999; Moltmann, 2003; Polkinghorne, 1986; Poupard, 1996; Strumia, 2003; Tanzella-Nitti, 1992; Timossi, 1999; Torrance, 1992).

Well, the life system, as an organized body composed of parts that have gradually evolved according to a rational-purposive plan, tends to make the best thing for itself, ie, the self-preservation (*conatus essendi*), ultimately, as recalled by Thomas Aquinas, the individual and comprehensive good. (Summa theologiae, I, q.2, a.3; De potentia, q. 3, a.6; Contra Gentiles, I, c. 13; III, c. 64; De potentia, q. 3, a.6; Commento alla metafisica di Aristotele, XII, 10, lect. 12; Commento al Simbolo degli Apostoli, art. 1; Commento al Vangelo di San Giovanni, prologo).

Here are the exact Aquinas' words about the "fifth way" to prove the existence of God (the argument of Thomas, which is associated to finality, has philosophical roots in the Περί φιλοσοφίας of Aristotle and in the thoughts of stoic matrix*):« We see that things which lack intelligence, such as natural bodies, act for an end, and this is evident from their acting always, or nearly always, in the same way, so as to obtain the best result. [*quod apparet ex hoc quod semper aut frequentius, *eodem modo operantur ut consequantur id quod est optimum]. Hence it is plain that not fortuitously, but designedly, do they achieve their end. [ex intentione]. Now whatever lacks intelligence [aliqua quae cognitione carent] cannot move towards an end, unless it be directed by some being endowed with knowledge and intelligence; as the arrow is shot to its mark by the archer. Therefore some intelligent being exists by whom all natural things are directed to their end; and this being we call God. [*et hoc omnes intelligunt Deum*]* (Summa theologiae, I, q.2, a.3).

Thomas, compared to other formulations of the evidence (criticized by Kant in his *Critique of Pure Reason*), in the Seventeenth and Eighteenth centuries, does not start from the finality of the universe, but lands there; in addition, his God is transcendent Purpose and not a kind of watchmaker who assembles parts, mechanically.

C) The rational-and not merely spontaneous- recovery of a solid *cosmos-community* ethic, capable of going beyond ecocentrism and become *personalistic ecology* (D'Agostino, 1992: 17-26; Blasi et al., 1991; Küng et al., 1995):

In other words, in the context of an anthropology relationships, the cosmos -in all its forms- is entrusted to the person (see the 4th and 5th levels f consciousness), to be cherished and looked after (Weil, 1985; Mele, 1998; Bonora, 1992; Caprioli et al., 1998; Sgreccia et al., 1997; Gadow, 1992). In this context, starting from our community biological reading, we can say that "*between human flesh and the flesh of the world there is no fracture*" (Breton, 2007)**,** as long as we see in man that preferred provider of sense who can interpret the cosmos, always being aware of his duty of cherishing and preserving it.

So we can clearly understand the existential and ethical urgency to recover that temperance or "right balance" which guarantees *kosmióteta*, harmony and beauty, that is to say order (Reale, 1995; Reale, 1999; Galimberti,1999; Galimberti, 2005; Natoli, 201o). In this context, Michel Serres gets to the core of the problem, where he speaks of "reasonable reason and restraint"(Serres, 1990).

Now, to set a seal on our reflections, we propose a paradigmatic passage, taken from Le Tiers-Instruit, (Bourin, 1990), in which Serres reinterprets the "right balance" as "modesty", almost an ontological reticence of the man towards nature seen as a complex living being:

"We arrange the world for ourselves alone, now exclusively political animals, inexorable winners of the war of survival, enclosed forever in the city built without limits, coextensive with the planet: already who can leave the city called Japan or the greenhouse called Holland? When Greenhouses cover the earth -disaster. In the midst of stones and glass, men will have nothing but glass and stones beneath them, for building and, in front of them, for living, in a world finally vitrified, subjected to their law alone. Living from relations, eating, drinking only from their own bonds, finally dedicated to politics and to politics alone, finally alone, long creepers in knotted networks of communication, great colonies of agitated ants, lizards by the billions. The human species takes over and is going to reign, is to wary of itself, does not hold back, withholds neither its power nor its science nor its politics. The hominid must learn to hold back, must learn modesty and shame; and his language must learn understatement; his science reserve. To persevere unceasingly in its being or in its power characterizes the physics of the inert and the instinct of animals. Doubtless humanity begins with holding back." (Serres, 1998; Jonas, 1979; Passmore, 1974 e 1980, who, although, limits himself to a sort of "social engineering" which doesn't have sound roots in ethics: in this sense Hargrove's position (1989) appears to be more grounded; on the concept of "right use" of human power, cf., among others, Guardini, 1979).

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