Roadmap to a Cosmic Model that Supports Nonphysical and Nonlocal Phenomena

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Abstract

Dark matter and dark energy have characteristics in common with other enigmatic phenomena, such as quantum waves, entanglement and mental activity. They all seem to have nonphysical or nonlocal qualities. Basic assumptions of string theory are discussed to find a new understanding of the theory that is capable of modelling nonphysical and nonlocal phenomena. The six extra spatial dimensions of string theory are proposed to be open and capable of modelling two additional parallel, nonphysical universes/branes that can be observed by introspection and referred to as mental. The predicted extra particles of string theory are understood to be nonphysical, populating the nonphysical universes, unable to collide with physical matter, but having a mutual influence by means of gravity, such as required by the string theory. Dark matter and dark energy could exist in these two parallel universes and could be the storage medium of our memories and personality. The negative solution of the energy equation could point to a real phenomenon in this model, - negative energy could be the seat of consciousness in a separate fourth parallel universe/brane.

Keywords: nonphysical, string theory, mind, consciousness, negative energy

1. Introduction

Dark matter and dark energy is part of a greater cluster of enigmatic phenomena having common characteristics. This 'science gap' includes phenomena experienced as nonlocal or nonphysical, such as entanglement, quantum waves, consciousness, other mind-related issues and what we call psychology. Measurement of quantum entanglement has proven that spatial nonlocality is real and part of the cosmos. The double slit experiment with single photons adding up to a wave pattern can be understood as temporal nonlocality. We are all aware of our own consciousness, memories, thoughts and psychological structure that seem to be nonphysical. A storage medium is never found in the brain. Nonphysical beings such as spirits, angels and gods are claimed to exist but not scientifically verified and generally not accepted by scientists. Could some or all of these nonphysical phenomena be real, based on 'nonphysical matter'? If nonphysical particles interact only by gravity and not by the other three cosmic forces such as required by the string theory, then we cannot detect the particles in accelerators or by collisions in other detectors. This kind of nonphysical objects should not be visible and such objects should be able to pass through walls and other solid physical matter. Dark matter and dark energy could be part of a nonphysical segment of the cosmos, where gravity is the only known connection to the physical segment.

All experiments and published explanations of dark matter and dark energy so far, seem to be based on the standard model of particle physics, which cannot model gravity and has no room for nonlocal and nonphysical phenomena. The standard model could be too limited for a future cosmic model that includes nonphysical and nonlocal phenomena. String theory is a potential theory of everything that models all known (physical) matter particles and cosmic forces including gravity. In addition, there are anticipated particles, extra dimensions and the concept of branes and the concept of broken symmetry. These could be used for modelling a more complete cosmos having a nonphysical segment in addition to the physical universe. Up to now, string scientists have tried to adapt the theory to a pure material and physical universe. If string theory is correct and the cosmos is partly nonphysical, this adaptation is doomed to fail. We should look for an interpretation of string theory that can express what we experience to be nonphysical and nonlocal.

This is in the spirit of Nicola Tesla who is quoted to have said "The day science begins to study nonphysical phenomena, it will make more progress in one decade than in all the previous centuries of its existence." Any new science of nonphysical phenomena needs to connect itself to established science in order to really get going. This connection has to rely on particle physics since 'nonphysical' and 'nonlocal' are closely related to 'time', 'space' and 'matter'. This article proposes a framework for a model that could make up the required connection to established science.

2. Evaluation of the string theory

The evaluation below is based on information presented by string scientists for the interested public, such as by Greene [1], and Smolin [2]. String equations require the strings to have nine spatial dimensions, which implies that the strings must vibrate in minimum nine independent directions. We can only observe three dimensions in the physical universe. In order to match string theory with observations made in a physical only cosmos, string scientists have assumed the extra dimensions to be curled up and compactified to such a small size that their influence cannot be measured. Since the extra dimensions can be curled up in 10^{500} different ways, called the string landscape, a major effort within string theory is to find the one point in this landscape, corresponding to the known physical laws. However, the whole concept of curling up dimensions is questionable. Can a circular pattern in space really be a separate cosmic dimension? It can, after all be expressed by two existing spatial dimensions.

Nature usually makes things simpler and more obvious than choosing one arbitrary of 10^{500} possible solutions. Could the extra dimensions instead be open and consequently nonphysical? Six extra dimensions could constitute two parallel nonphysical universes. This kind of a parallel universe would be all around us, so that strings could vibrate into all three universes simultaneously. The measurement of distance in the extra universes must be different from physical distance, or there must be a separation between the parallel universes that makes distance in different universes incommensurable. Different universes may have different particles so that laws of nature differ. The standard model is applicable to the physical universe. Other models should apply to the nonphysical universes. All models should be special cases of an overarching Theory Of Everything that also defines the universes as such. String theory is a good candidate.

Ends of open strings must be connected to something called a 'brane'. Both ends to the same brane or separately connected to different branes. Branes can be 1-dimensional strings, 2-dimensional membranes, 3-dimensional spaces or entities of higher dimensions. String scientists have suggested our universe to be a 3-dimensional brane. All known matter particles and forces except gravity are modelled as open strings and have both ends connected to our universe and can therefore not interfere with particles from other branes (by joining ends for a short while). Only the graviton is modelled as a closed string and can wander between branes and will not join ends with other strings. This means that matter in different branes will be mutually attracted by means of the gravity force. Gravity is not strong enough to attract normal size objects, but on a cosmic scale, dark

matter and dark energy objects are influencing the physical universe. The dark matter and dark energy influencing the physical universe by gravity could be projections into our physical brane from entities in nonphysical branes. Newton's law of gravity applies to the projections. The projections of entities from the dark energy brane seem to be smeared all over the physical universe and could say something about the dimensions or content of the dark energy brane. E. g. a Fourier transform or comparable could be involved. Dark matter and dark energy seem to have a real chance of being projections of matter from two parallel nonphysical branes, according to string theory.

Such as two objects in a plane can have the same projection in the Y axis and different projections into the X axis, two co-located object in the dark matter brane can have projections into the physical brane that are far apart. This can explain spatial nonlocality. A photon could have one physical body and one nonphysical ("mental") body being connected in some way. When the physical body is split and separated, the nonphysical body is still complete and has a projection or connection into both physical bodies. When one of the physical bodies hit a sensor, the nonphysical body is instantly split and allocated to each of the physical part-bodies. The nonphysical body with its multitude of possible expressions has collapsed to a certain physical projection, adapted to the physical reality of the detector.

Symmetry breaking of particles is assumed to be part of the string theory, and is also applied to the standard model. Because of the assumed broken (super-) symmetry, there should be at least one and maybe two extra sets of particles that have not been verified by particle detectors. This supports an assumption that these particles inhabit nonphysical branes. Symmetry breaking can be seen as phase transitions. Big Bang could be an example of such a phase transition where a part or whole of a brane with high energy nonphysical particles is cooled down and at a certain point breaks apart and creates several symmetrically broken-down branes with low energy particles and low entropy. The low energy branes could maintain mutually supportive functions so that a cluster of different low energy branes can provide a higher functionality surviving from the high-energy brane, compared to the limited functionality being possible in a single low energy brane. This is how a physical body in combination with one or more nonphysical (mental) bodies make up a complex entity having both physical and mental functions. If mind and consciousness are such independent nonphysical functionality connected to biological beings, then conscious observations of nonphysical phenomena could be real observations by nonphysical senses.

3. Using introspection to establish a concept of nonphysical universes

Mathematics is used for creating reliable models on particle level. On a level with more complex entities such as biological/psychological beings, that kind of mathematics is not of much help. Statistical analysis is a common tool to discover laws of nature on this level. For nonphysical phenomena we have an extra challenge because instruments cannot be used and some phenomena are claimed by some person and not observed by others. Introspection is however available for all. It gives access to inner psychological phenomena, which we observe as nonphysical. Interpretation of the observations is not obvious. We must rely on processes where the observations are discussed and analysed in length and coordinated with other knowledge such as psychology, neurology and now also physics, to find reasonable interpretations that stand over time.

The description below is based on introspective experiences and research based on biometric measurements such as Benson et al [3] and Davanger et al [4]. More resent research also uses fMRI to measure brain activity in order to understand meditation and how mental activity can influence the brain and the body, Xu et al [5].

If you shut your eyes and direct your attention inwards, the first observations are perhaps from the surroundings as sounds, and sensations from the body. After a while, spontaneous activity from the mind start to emerge, - thoughts, memories, images, feelings, things to do etc. What is stored in the mind is called psychological residues, one residue from each moment in life contains thoughts, emotions, images, self images, a certain world

view and tension/stress that attracts our attention according to its strength. A residue with a high tension could be called a trauma. A residue with low tension could be called a neutral memory. The attention has, such as the eye, a centre that sees clearly. This is connected/associated to the external world and daylight. The periphery of the attention as well as the eye has a more diffuse perception and is associated to the shadows, the dark and the inner world. If you try to focus on an inner issue, you just loose it. You must widen your attention and use your peripheral night sight to hold on to it.

This inner room is called the psychological room/brane/universe. It contains our memories. Dreams and phantasies come from the stuff in this room. Such as rational thinking is associated to the outer world, mythical thinking is associated to this inner world. When our attention is fully embedded in this room, we are dreaming. The stuff of this room could be dark matter. Distance in this inner universe can be measured as emotional distance. Emotionally connected residues are close to each other. Thoughts and emotions of our beloved ones are also not so far away. Rituals and symbols seem to be capable of reducing the emotional distance to selected inner issues.

There might be a different part of the mind with totally different qualities. You can come in touch with it when looking into a fire or walking in the mountains. It is felt as important moments. The mind is quiet. The sensation of time and space is withering. The spontaneous activity of the mind is more ephemeral and has a different quality than for rational and mythical thinking. Our attention seems to approach a second part of the mind. We could call it the intuitive room/universe/brane having intuitive thoughts. The literature use metaphors like “the inner silence”, “the timeless” or “the pre-verbal” for this phenomenon. The content of an intuitive thought is much more complex than a rational thought and has therefore higher information density. If we manage to “unpack” an intuitive thought, it will adapt in a certain way, suitable for the situation, - as a piece of art, a machine construction, a way of behaving or something different, depending on the situation and which competence we have. It is not easy to catch an intuitive thought, but sometimes this seems to cause a feeling of creative “flow”, or it could lead to a rearrangement of our understanding of the world. It is as if we start using a new part of our mind, - a consciousness expansion. Something that used to be difficult can suddenly be neutral because it is understood in a different way.

Intuitive thoughts are difficult to perceive, not because they are “unconscious”, but because the rational or mythical frame of understanding we normally use cannot perceive them. A more ethereal and slumbering part of our mind has to be used for perceiving these complex thoughts. After getting in touch with an intuitive thought, days and months can be used to settle it properly into our lives. We can say that an intuitive thought collapses to an incarnation in time and space. For a different person in a different situation, the same thought could collapse to something different, but it would express the same quality in relation to the specific situation. Intuitive thoughts resembles quantum waves in that they contain a nonphysical complex whole that can collapse to a specific phenomenon depending on the situation, such as light can be measured as a particle or a wave depending on the arrangement of the measurement. The intuitive universe seems to contain quantum waves that contain structure or information. A shadow or projection of the quantum wave collapses into the physical universe adapted to the physical reality. The intuitive universe could be a quantum mechanical universe containing what we have measured as dark energy. The basic structure given by dark energy could have caused/collapsed to physical space or ‘length’, where physical matter and force can exist.

The timeless expression of a quantum wave in the dark energy universe can probably give temporal nonlocal projections into the physical universe. This is not quite obvious and has to be looked into by mathematics.

Such as we have emotional residues in the psychological universe; we could also have parts of our psyche in the intuitive universe. We call it the personality and the timeless Self. You can meet a stranger and immediately feel in harmony with that person. Some call it “good chemistry” or “soul mates”. A public example

is the president of the USA, Ronald Reagan and the president of the Soviet Union, Michail Gorbatsjof that seemed to go very well together when they met in Reykjavik. Their personality or Selves could be close in the intuitive universe where distance is measured in quality distance. The quality of our actions seems to influence relative distances in this universe such as symbols and rituals influence relative distances in the psychological universe. During deep sleep, time is absent and our attention is completely embedded into the intuitive universe.

The last thing you observe by introspection is perhaps the most obvious: There is an observer and something being observed. The observer can also be called our innermost identity or our consciousness. It can observe, take decisions and act. Our inner observer cannot observe itself. Anything observed must be different from the observer. Here is probably a basic duality of the cosmos, - between consciousness on one side and observable phenomena on the other. Descartes pointed at a duality between physical phenomena and nonphysical phenomena. The duality between consciousness and observable phenomena is probably more basic. Consciousness is usually defined to be a state of mind like "wake and self-conscious". In this article, it is defined as some form of nonphysical stuff or a mental body. This could make sense if we find such a kind of stuff, which is the "life" part of us. It is infused or attached to all forms of creatures and plants to make the physical body into a living organism. Actually, this stuff has already been discovered as a negative solution of the energy equation $E= -mc^2$.

4. Rediscovering negative energy

In the twentieth century, a new energy equation, $E^2 = p^2c^2 + m^2c^4$ was derived from relativistic quantum mechanical equations. For an object at rest, the momentum p is zero. This give a simplified equation with two solutions, $E = mc^2$ and $E = - mc^2$. In the second solution, negative energy was associated to negative matter. No evidence of such matter has ever been found. All physicists agreed that the second solution with negative energy could be discarded since it gave no physical interpretation. Luigi Fantappiè (1901–1956) was one of the most brilliant mathematicians of his time. He wanted to look at the negative energy solution from a pure mathematical point of view, as shown by Di Corpo [6]. As Fantappié listed the properties of the negative energy, he found that they all were descriptive of life as opposed to matter, such as in Table 1:

Table 1: Properties of positive and negative energy

Properties of positive energy	**Properties of negative energy**
Characteristic for matter.	Characteristic for life.
Have a cause in the past.	Have a cause in the future.
Order and structure is reduced with time.	Order and structure is increased with time.
Energy disperses with time.	Energy concentrates with time.
Governed by the law of entropy. Any use of energy will increase entropy.	Governed by the law of 'syntropy'. Any use of energy will increase syntropy.

In a cosmic model having nonphysical branes proposed in this paper, the negative energy makes sense without having negative matter, because the dimensions of another brane are expressed as an imaginary number. If negative energy and consciousness is found in a brane different from the physical universe, then the speed of light for negative energy is imaginary, and hence $E = -mc^2 = m(ic)^2$. In other words, the negative sign in E does not come from negative mass, but it comes from imaginary speed (i.e. speed in a non physical brane).
The driving force of all life forms is geared towards surviving and making a better day tomorrow. The cause is in the future. The life force is a part of the cosmos, and there is an eternal balance between the constructive life force based on negative energy and the destructive, entropic processes of positive energy. A deeper analysis is given in [7].

5. Completion of the cosmos

The super-symmetry in string theory splits a higher order particle into a matter particle and a force particle. Matter involved with a force and length makes energy; therefore it makes sense that the higher order particle is pure energy. Particles in the intuitive universe must then represent a form of structure that is equal to space/length when it is projected into the physical universe.

We should expect energy conservation in the cosmos. Energy conversion takes place when matter is transported in a force field. The only energy transfer between branes is by means of closed strings, which today means gravity only. When a dark matter particle (- projection) and a physical matter particle approach each other, they will not be repelled by the electromagnetic force. When they get sufficiently close, the gravity force starts to increase according to Newton's law, and they will snap together. This gravity snapping mechanism enables forces in the dark matter brane to move physical matter, because physical matter hangs on to dark matter if the atoms are sufficiently aligned. Psychology can in this way influence the physical body. This is known from epigenetics and biology, but never completely explained.

The smooth interworking of the brain and the mind is difficult to explain by means of gravity snapping. A second interbrane force modelled by a closed string is foreseen. This force probably interacts with electromagnetism since the brain and the nervous system is mainly working on electromagnetic pulses. The alleged aura found in connection with all living organisms is a good guess for such a force. Theoretically, it should be possible to measure this force, but it is very weak such as gravity. Kirlian photography use an electric field and claims to make images of the aura.

The last version of string theory (M-theory) requires an 11^{th} dimension. It expresses a kind of coupling strength. Since this dimension is never observed, it is assumed to be compactified such as the other six extra dimensions. String scientists have unsuccessfully tried to find an extra time dimension for this. I propose this dimension to be what we observe as the speed of time. During extreme concentration, such as in life threatening situations, the observation may go into slow motion. This is well known and often used in movies. Less known is, that during the opposite of concentration, occurring in non-directive meditation techniques, the time can accidentally go very fast. In other words, the speed of time is found to be connected to the scope of attention, which is also a kind of mental coupling strength. A narrow scope of attention makes a strong mental coupling and slows down the speed of time, while a wide scope of attention makes a weak mental coupling and speeds up the passage of time. If the attention can be directed along all cosmic dimensions, then the scope of attention/speed of time should be a real cosmic dimension. The inverse of the speed of time is the sampling time of the attention, an observed "now". This can theoretically vary between the Planck time and eternity. How will we observe the cosmos as we travel along the dimension 'speed of time'? Starting as a particle on the smallest scale being strongly coupled to the matter, all ultrafast interferences between particles would occur at normal speed for our attention. At the other end of the scale, the largest scale and weakest coupling, all time and all space would be here and now. Everything that has existed or will exist in time and space will be here and now.

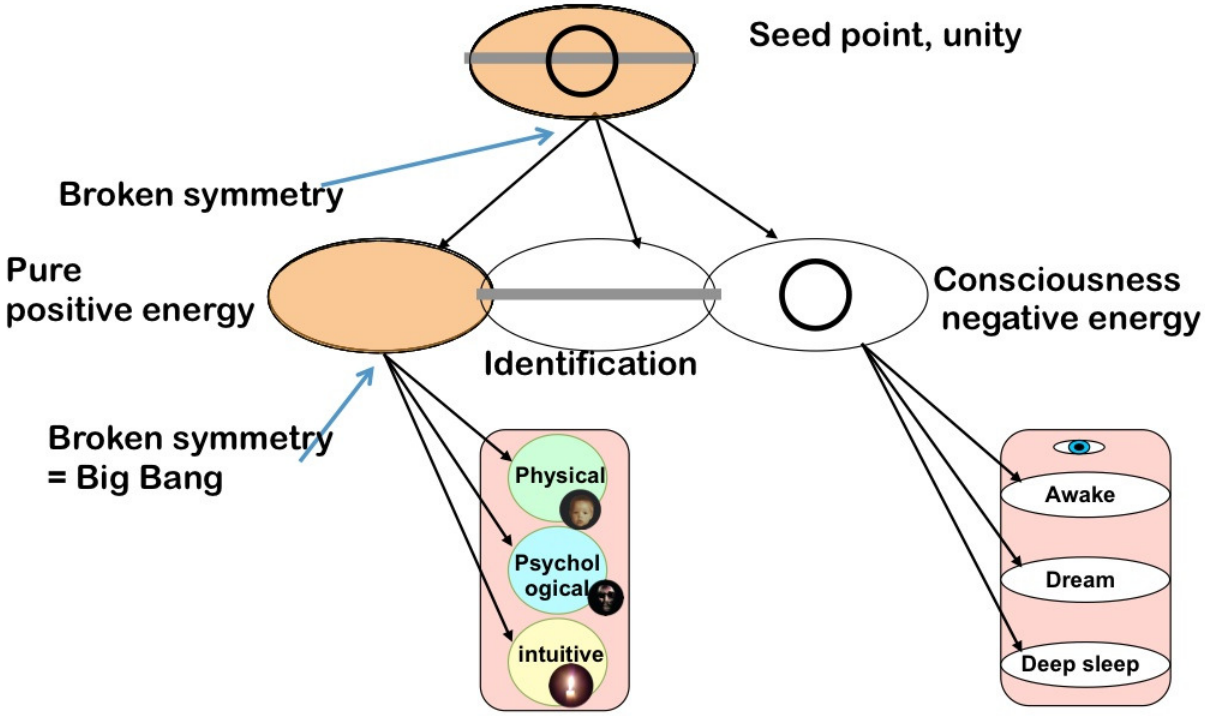

Fig. 1 Proposal for a cosmic brane model

It is a singularity that contains all dimensions and all content, - the "seed point", where consciousness and matter are inseparable. It is both the start and the end and, containing everything in-between. This is an interesting possibility. We might not need a turtle to suspend a flat cosmos. The cosmos is self sufficient - but the origin still remains in a mystic veil.

The transformation from the seed point to something having space and time must have been a process going from eternity, when seen from our vantage point. If the big bang occurred at a certain time, there must be something before, having time and space. Could there be a symmetry breaking from a highest form of particle into positive and negative energy, with the force of identification binding these branes together? Here are plenty of challenges for curious cutting edge physicists. Fig. 1 is summing up a proposal for a complete first approximation cosmos based on this analysis.

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