MIND BEFORE MATTER?

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Abstract

Modern Theoretical Physics appears to have reached an impasse in recent decades prompting some of the most high-profile physicists to ask, if a "new approach" might be needed. In this paper, I suggest deviating momentarily from our usual course of investigation into a mode of philosophical thinking, which is overtly more 'Eastern' in character. I will then use this method to solve a specific problem in modern-day Physics. The problem can be stated: "Why are Higher-Dimensions So Inaccessible?" and the method employed looks at all of reality from a Mind-Before-Matter perspective, rather than the Matter-Before-Mind routinely employed in Western Physics. It is my intention that we will only dip into this mode of thinking briefly, gather what we need from it and then jump back to the Materialist point of view "before we can get wet".

Science & Innovation

Over the last one hundred years, there has been enormous innovation and advancement in the science and technology sectors. But, in recent times, there has been a gloomy clamouring surrounding just how little headway our theories have made, when faced with the big problems like quantum gravity or Unified Field Theories. [1, 2] It would appear that science is stagnating in these fields. If this is correct, then how do we prevent this from happening in the future?

One way to avoid stagnation is to continuously look at the problem from a variety of different angles. For the most part, science concerns itself only with the physical aspects of a theory, and with good reason. The Scientific Method is predicated on that which is testable, observable and repeatable i.e. the physical Universe that surrounds us. [3] Based on this method, Western Scientists concluded early on that the 'stuff' which makes up the Universe is also responsible for creating us humans and therefore our consciousness must simply be an emergent property of some highly complex configuration of matter.

This conclusion is in stark contrast to the conclusions arrived at in our ancient religions, where it is always mind which comes before matter. In Christianity, for example, God is a being of pure mind who creates the Universe. [4] From the Buddhist perspective, it is the mind of each individual who is responsible for generating the physical reality around them. [5]

Obviously, this mode of thinking is not going to comport well with Modern Day science. How can we weigh or measure a thought? How can we bring hard scientific data across the divide between dreams and death? We can't. However, I maintain that if we wish to advance modern science, we must aim to do something of the sort.

Just as a virtual particle borrows its energy from the future and uses it up before it has to pay it back, [6] I suggest that we piggy back on the Mind-Before-Matter principles of the Universe and jump back to the Physicalist point of view, before we rightly have to contend with its damaging philosophical implications. In this way, we advance scientific thought without having to paint ourselves into a philosophical corner.

In order to demonstrate the applicability of this approach to work, we need to pick a particular field and example to work on. For this purpose, I have chosen a subject which is close to my intellectual interests. This subject can best be summed up in the form of the question; "Why can't we move in Higher Dimensions?"

Higher-Dimensional Constraint Problem

Higher dimensions are often invoked to explain how the different fundamental forces and particles of the Standard Model can be unified into a grand unified Theory of Everything. [8, 9, 10] But if these extra dimensions really do exist, then why can't we access them in everyday life?

With few exceptions, whenever you ask a physicist about this subject, you get the same answer. "The dimensions are curled up really small."

There are other explanations, of course, but there aren't many. For example, there is the flip side to this; "The dimensions are really, really big." [7]

The most recent attempt at a new explanation that I recently heard comes from Quantum Gravity Research in Los Angeles. Klee Irwin points out that the 600-cell is a 3-dimensional projection of a 4-dimensional quasicrystal, so there is really no need for higher dimensions anymore and we are left with a purely 3-dimensional theory. [11] Interestingly, this is the same method employed in the DGO Standard Model, for example in relation to the 4-dimensional W-boson, which via a vertex-first projection reduces to a rhombic dodecahedron. [12]

However, just because the higher dimension is removed from the model, it does not necessarily explain where it went, or why we can no longer access it.

In order to find a solution to this problem, we need an entirely different approach.

This is what the Mind-Before-Matter approach is going to give us. It is going to allow us look at the material world solely from the perspective of a conscious being and then backtrack from there to the physical. When we are done, what we should be left with is a purely physical and 3-dimensional hypothesis. Or, at least that is the hope.

Checkmate

What do String Theory, M-Theory, Space-Matter-Time Theory, E8-Theory, Emergence Theory and the Klein Kaluza Theory all have in common?

They all attempt to unify Einstein's Theory of Relativity with Quantum Physics, through the application of higher dimensions.

But, if that is the case, then where are all of these extra dimensions?



Fig 1: The chessboard in 'Through the Looking Glass'. [13]

Why can't I see into the 5th and 6th dimensions of String Theory, for example. Why can't I walk down the road, turn a corner and peer across the brane of a 10-dimensional M-Theory?

These are the kind of questions that physicists were asking themselves for decades, and the answer that they came up with was as simple as it was ingenious.

All of the dimensions are curled up really small.

When I first heard of this explanation as a child, I was perplexed.

Alternate dimensions and parallel universes are not 'infinitely small'. They are normal-sized dimensions like length, breadth, and height. If they weren't, then there would be no possible way for us to venture inside them and to encounter all of the strange beings and worlds that my comic books reliably told me about.

But, you say, if these dimensions truly are as large, as the ones in which we are ordinarily accustomed to, then why is it that we can't simply walk into them?

Well, I would argue that you can't do that, because it would require an enormous amount of energy to do so.

But, why would it? We don't need enormous reserves of energy to turn about in 3 dimensions. So, why would the 4th spatial dimension be so special?

It is a very good question and one which the theory of very small or very large dimensions answers amicably.

But, there is something very arbitrary seeming about this answer.



Fig 2: Lewis Carrol clearly making a pun: "Alice to drink me under the table". Such puns are not uncommon in Carrol's work (See Fig. 6).

Why do the dimensions need to be very small? Or very tall? Why couldn't they be delineated based on something far grander and less prosaic than mere scale? Something along the lines of; energy, exotic matter, vibrational frequency, or the differing densities of bulk spatial

dimensions? Anything that would keep the parallel dimensions set apart, to keep them human-sized, and still allow for the prospect of inter-dimensional portals to be advanced at some point, in the future. Anything to keep the dream of inter-dimensional gateway technology alive...

But, no. We have to be practical here. Sometimes we just have to face facts and realise that extra-dimensions are probably just tiny coiled up dimensions on the order of a billion times smaller than the smallest subatomic structure, or at least less than half the width of a human hair. [14]

But does this really make any sense?

And is not 'size' merely another way of describing dimension anyway?

The word 'size' and *dimension* are used inter-changeably in the English language. [15] If I say "there exists another dimension on really small scales"; all I am saying is that there is really just another size at another scale, which is a tautology.

If there are an infinite number of these extra dimensions coiled up everywhere throughout space, then how exactly are they inaccessible?

There's a tiny particle of dust on my table. It is too small to see, but it is there. If I pass my hand over the particle, I feel no trace. But multiply that particle by infinity and place it all around and we will surely all suffocate. By the same token, an infinite number of entry points into a higherdimension existing on a small scale should inevitably be detectable on a larger scale.

Unless you are to say that what is really meant by 'scale' is some kind of higher-energy barrier. But, then you are back to the questions we had to begin with: Why do you need more energy to enter into the 4th, 5th and 6th dimensions? What's so special about them? If you say, because they are so small, or so very large. Then we have to ask again; What's so special about them that they are so very large or very small?

And so, the position of small dimensions is 'checkmated' by its own disagreeable logic.

But does that mean to say that 'it is wrong'? No, as I have said, the concept of smaller dimensions to explain HDCP is a remarkable achievement. But it seems to me that it is the only achievement of its kind in over 70 years. Since we have never had confirmation of the existence of these extra dimensions, shouldn't there exist a variety of alternate explanations of why we can't move in extra dimensions? Wouldn't that not indicate a healthy and innovative scientific discourse that is moving forward, never circling or turning back on itself?

We see innovation in every field of technology and science constantly, so why shouldn't we see it in our Theoretical Physics on the issue of dimensional constraints?

In the next segment, I am going to provide an alternative explanation of the HDCP, using the mathematical tools employed within Quantum Physics and the precepts of the Mind-Before-Matter principle. Recall that because we are using such an unorthodox methodology, our descriptions of the Universe may appear insane. But, rest assured that by the end, at least some semblance of normality will be restored.

Eat Me, Drink Me...

Let's say we live in the fictional land of Edwin Abbot Abbot's satirical novella 'Flatland: A Romance of Many Dimensions'. [16] We wish to make a right angled turn that is 90 degrees to every direction in our known 2-dimensional space. In short, we wish to go 'up'. But there is something stopping us. Up exists. So what is it that is keeping us stuck on our plane of existence? It can't be some kind of material, like a metal plate, or we would have detected it. Neither can it be an extreme temperature difference. Is it some kind of physical force? What kind of force can keep a Flatlander constrained to his or her particular manifold?

The obvious answer is the kind of force, which produces rotation, or angular momentum.

Imagine you have a perfectly flat two dimension disk, about an inch and a half in diameter. This ideal 2-dimensional manifold is attached to a string. If you spin this string above your head; keeping the plane of rotation consistently flat, your 2-dimensional disk will never deviate from its plane of existence. From the point of view of the flat disk, it rotates in a 2-dimensional plane and so two dimensions is all it will ever truly experience.

Now, let's boost this up to three dimensions. You have a perfectly 3-dimensional manifold. No one knows what this is, as no-one has ever seen one before, so for all that we know our own Universe could be one. Spin that up in a 4-dimensional space and you can move around inside the manifold and never suspect that there is an extra-dimension lurking just beyond you.

But you would be able to see this extra dimension. Wouldn't you?

Not necessarily. If we think of it from an evolutionary perspective, we see that humans are uniquely adapted for their environment. Any sensory information that is ubiquitous or superfluous is tuned out by our highly selective consciousness. Why is the air see-through? Why is it not pink or blue or yellow? Perhaps in some other spectrum it is, but in the spectrum of vision that humans are attuned to — air is completely transparent. This is an example of selective sensory information.

Angular Forces

As you can see, angular momentum is the perfect candidate for keeping our 2D disk or 3D Universe constrained in its respective dimension. But what is driving this angular momentum?

Is it an electromagnetic force or a gravitational one?

Both of these forces generate circles (or ellipses), so either will do. However, I am going to focus on the mathematical language of U(1), which is used in Quantum Electro Dynamics (QCD). The fundamentals of QCD is more well known and better understood than gravity.

Geometrically speaking, U(1) couldn't be simpler. It is simply a circle that overwrites itself on each revolution;

$$i^n = 1, i, -1, -i..$$

The circle traced out by the spinning object is mathematically a 1-dimensional line. But, it needs 2-dimensions to exist (i and 1) and needs to be in reference to a 3rd (j or k); otherwise the idea of dimensional constraint is meaningless. Therefore, U(1) can be thought of as a 1-dimensional point reality rotating in 2-dimensions around a 3-dimensional relative source. By the same token, our 3-dimensional reality is rotating in four dimensions, allowing us to only see a 3-dimensional slice of a 5-dimensional reality, at any instance.



Fig 3: U(1) rotations in different dimensions, creating a circle, a torus and finally a hyper-torus (not shown) [30]

We can describe U(1), as a point moving around a circle in 2D. We can describe U(1)xU(1) [or U(1)²], as a circle moving around a torus in 3D, and U(1)³ a torus moving around a hyper-torus in 4D. From the perspective of the point in U(1), we know that it is travelling in a straight line. Therefore, U(1)² and U(1)³ are both travelling in straight lines from their own perspectives. Our Universe is a 3-dimensional manifold rotating in a higher-dimensional space. The reason why we can't enter into these higher dimensions is because we are constrained by the force of the angular momentum keeping us stuck to our 3-dimensional plane.

Does this mean that all this $U(1)^n$ rotation is equivalent to time? Maybe. But if it is, it means that from a geometrical perspective, time is completely circular and therefore cyclical. Recall that U(1) overwrites on each revolution, the concept of linear time is therefore an illusion.

Incidentally, the Buddhists, who belong to the Mind-Before-Matter philosophy, also believe that time is a self-similar loop made up of sections or parts. They call these parts 'Bardos'. [5] As we shall see, this concept may lead to the possibility of a 'quantisation of time'. In order to do that, we must first posit a particle of time, which is something that the famous botanist, ethnopharmacologist and researcher Terence McKenna already did for us. [17]

But, hang on a minute, if we are moving around and around in a circle, shouldn't we be uniquely aware of this motion? Not necessarily. Recall the evolutionary sensory selection principle. If the circular movement is so ubiquitous and uniform, it would feel like we aren't moving at all. Geometrically, this sensory selection will be equivalent to our perception moving into the centre of the circle. This interpretation is one that is only possible from a Mind-Before-Matter principle, so we will have to get rid of it, before the end, somehow.¹

Everyone else who exists in 3-dimensional space is also moving along this trajectory. From the perspective of an impartial observer in 4D space, therefore, the Universe consists of multiple nuclei, each one being orbited by a point of dense energy. Where do we see such a configuration in nature? We see it in the atomic structure of hydrogen, where an electron orbits an atomic nuclei, but in particular we see it in magnetised materials. In magnets, all of the electron orbits are orientated in the same direction. The same is true of the $U(1)^3$ orbitals, which everyone currently experiencing 3-dimensional space must be moving in.

The confluence of all of these aligned orbitals might produce a collective field of consciousness, just as the confluence of electron spin orbitals produces a magnetic field. Or perhaps, it is the fact that we are all rotating in the same plane, or around the same axis that keeps us all synchronised, in this regard. Or there may in fact be no difference between these two states of affairs. If for some reason the entire system was rotating in an even higher dimension, then we would all be rotating as one mass and as such we would perceive no relative motion. However, from the point of view of higher dimensions, this would mean that the 4th dimension would be cut off from the 5th, in the same way our dimension is cut off from the 4th.

If this were the case, then we would all synch to the centre of an even larger circle. In that case, we would see ourselves as the centre of the Universe encircled by bright points of light, which would actually be our disassociated physical bodies.

In fact, something of this sort is what we do see, when we look up to the night sky.

This might explain (from a purely Mind-Before-Matter perspective) why astrology ascribes the fates of men to the motion of the stars. But this is mere speculation, as there is no evidence that the $U(1)^4$ rotation is occurring and there is even less surety that it would produce these effects. However, the reader might be interested to note that all of the magnetic fields of the stars in our galaxy, are aligned in the same direction. [18] This implies that they all are rotating in the same

¹ This is mathematically equivalent to multiplying both sides of an equation by a number to get a desired outcome and then dividing them by the same number to arrive at the correct value.

direction and are therefore operating in the same physical dimension, as you might expect. While, it has been proven experimentally that coherent magnetic fields can be produced from random collisions, [19] The literature does not indicate if these random collisions are able to produce magnetic fields that are aligned over vast areas of space, but given the remarkable capacity for random stimulation to produce coherent effects, this possibility can hardly be ruled out.

Higher-Order Complexity

But it is not only U(1) that we have to contend with. SU(2) and SU(3) are the special unitary groups which determine the probability distributions of the Weak and Strong Force respectively. Understanding how would these probabilities distributions react to our inter-dimensional angular momentum rotations will give us a clearer idea about inter-dimensional travel and its effects on the human form.

This angular momentum rotation would be equal to the appropriate probability distributions determined by the SU(n) subgroups. A change in either the angle or the momentum would therefore result in a subsequent shifting of the SU(n) rotational matrices, and thereby alter the probability distributions of the particles themselves. It is this altering of the probabilities which alters our perception of reality and shifts us into a new dimension.

In these dimensions, we will see slight variations in the arrangement of matter, depending on the degree of the shift. If the degree of the shift is very large, then the resulting dimension will bare no similarity to the original dimension whatsoever. Events that should have taken place will not take place, thus making it equivalent to the Max Tegmark's Multiverse Theory, or something akin to Everett's Many Worlds Interpretation. [20, 21]

Just like when you turn a corner in your car, and see the streetlights dance across the windshield. It is clear that we are moving and the lights are stationary, but it could be otherwise. Similarly, none of the particles we are perceiving are behaving in a probabilistic manner. It is only our relative motion to them, which produces their state.

It is conceivable that drift or precession in the angular momentum may add up to perceived changes in a person's physical or mental state. These changes may include; people getting older, or falling out of synch with what could be termed the 'consensus reality'. Obviously, the consensus reality, in this model, is merely the shared plane of axial rotation. Any deviation from this plane might well produce visual, auditory or tactile hallucinations, which other people on the consensus reality plane would not be aware of. As such the angular momentum gives us a physical explanation for psychological conditions as schizophrenia, as well as altered states of perception brought about by psychoactive substances. It also implies that taking such substances leads to direct knowledge of these higher-dimensions.

However, due to the obvious dangers of such an undertaking, this is something that I do neither endorse or recommend.

Lobachevskian Spaces

Now that we appear to have completely done away with dimensions curled up on a small scale, does this mean that there is no longer any place for highly compacted Lobachevskian spaces in Quantum Physics? No, fortunately it doesn't. In fact, they are now needed more than ever.

Recall that simply compacted Lobachevskian spaces of Order 5 are needed to describe the Higgs Field in the DGO Standard Model. Obviously, this is an example of a higher-dimensional field. Therefore, according to the Angular Momentum (or Big Spin) Hypothesis, we must be rotating in relation to the Higgs field. As such, we can set the 5D Higgs Field, as the Fundamental Polytope (although, I'm not sure if 'fundamental' is the right word any more, as there appears to be a number of such spaces — one for each field at least), then we will assess our rotation in relation to this higher-dimensional object and draw conclusions from this assessment.



Fig 4: The hyperbolic 3-7 Kisrhombille tiling (Left). [23] The same tiling projected onto a 3D sphere. (Right)

In the same way that it is possible to make a stereographic projection of a Euclidean polyhedra onto a 2-dimensional surface, it is possible to project a hyperbolic tiling onto a 2-dimensional Poincare Disk (Fig 4: Left). Stereographic projections create massive distortions as we move outwards from the source of the sphere. [22] We see similar distortions on the hyperbolic projection, but this time they are getting infinitely smaller towards the edges, rather than infinitely

bigger. If we invert the distortion of the hyperbolic tiling, we get something that looks like a spacetime singularity. (See Fig. 5: Left) Wrapping this around a sphere, gives us the projection of the hyperbolic tiling on the sphere. (See Fig. 4 & Fig. 5: Right)² On one side there is one large polygon and on the other there is a point which is infinitely dense, just like the singularity of a blackhole.

Recall that our dimensionally constrained point of consciousness is going around a fibre bundle of this type. If this sphere is embedded in a higher-dimensional manifold, as it must be for the Angular Momentum Hypothesis to work in the first instance, then it may well encounter the projection of this hyperbolic manifold onto the surface of the sphere. If this is correct and the rotation is along one of the geodesics marked on the graph, then the consciousness entity on the DC point will inevitably and variously encounter regions of incredibly dense energy and incredibly rarified energy. Therefore, from the perspective of a conscious being this energy will be experienced as some kind of rhythmic pattern, or Sine wave. This experience could obviously be interpreted as the systole and diastole of the heart, or the feeling of breathing. From the perspective of a neutrino, for example, it would be probability distribution for that of an SU(2) particle rotation.



Fig 5: Inverting a hyperbolic tiling to produce a kind of 'singularity' (Left). The same tiling projected onto a 3D sphere. (Right).

But there are problems with this model. In order for the hyperbolic tiling to be directly analogous to the DGO Higgs Field, the constituent solids are required to have up to 5-dimensions of freedom within their own geometric forms. This is in contrast to merely having their vertices

² I suspect that a stereographic projection of this hyperbolic surface onto a 2-dimensional plane would result in an equal area projection of all of the polygons involved, but this would go against everything I know about Euclidean 2-dimensional spaces, which can only be tiled by polygons whose angles add up to 60°. Unless, somehow a hyperbolic projection can overcome this fact?

surrounded by a greater number of degrees, as in the case of the Lobachevskian fundamental domain. This implies a stacking of 4 and 5-dimensional objects into a grid-like structure. Such a stacking is easily carried out, but the resulting structure is enormously complicated to model. And the problems don't end there.

Time Quantisation

Suppose you are rotating around the hyperbolic projection of the Higgs Field and encountering the rarified and dense regions at roughly the speed of your heart rate or breathing; or about once every second. This would mean that you are encountering one of the edges of the Higgs polytope with a specific regularity. If we were to slow this revolution down, then you would see all of reality break up into the edges and vertices of the 5D polytope, leaving vast areas of nothing in between. That is until you hit the singularity, where reality would coalesce again, no matter what your rotational speed.



Fig 6: Alice's long neck getting tangled in the trees of a forest. The pun being; "What are you doing in this neck of the woods?" [24]

But, since this revolution of roughly 1 Hz is a relative snail's pace, we should expect to see visible gaps in our lived experience, perceived as a kind of 'flickering'. These gaps in the frame rate of reality are equivalent to the quantisation of the frequency of particles in the radiation of a black body. [25] As we know, these types of quantisation are solved via the application of an integral to the limit of one of these energy states. [26] Similarly, in order for these quanta of time to appear continuous to perception some kind of integration process must be taking place, either within the human brain or on the plane of the hyperdimensional polytope itself.

Therefore, all of reality is like a persistence of vision/motion illusion.³ [26, 27]



Fig 7: Poincaré disk [Source Unknown]

Another way to interpret the hyperbolic geometry of the Poincaré disk is to imagine circling along the outer perimeter, which is really the equator of the sphere (See Fig 8). Depending on the kind of tiling we employ, you will likely meet the edges (or 'spans') of the hyper-dimensional polytope projection at regular intervals, as illustrated in Fig. 7. Each of the spans meet at vertex bundles, which correspond to fractions on the perimeter, and mark the beginning or ending of a Bardo. There are an infinite number of such Bardos, most of which are insignificant, symbolising either variously; quantum noise, the spin of an electron or the firing of a synapse.

³ To make a cumulative argument in favour of a frame rate somewhere upon the order of 1 Hertz, it is my belief and contention that the synchronised magnetic fields of all of the stars and galaxies in the Universe is happening on the order of just under once a second. However, I cannot prove this, as this experience occurred to me, when my perception was no longer aligned with the axial rotation of our 3-dimensional plane and is therefore not an observation that can be proven, by current scientific or reality consensus.

It is only as we ascend you upwards in scale that we encounter larger more recognisable biorhythms like breathing, heart rate; diurnal functions like sleeping and waking and on into yearly festivals like Christmas and Easter.

Moreover, there would be a certain number of Principle Bardos, which would signify great events in a person's life; e.g. birth, death, a wedding day, the birth of one's child etc. The larger the event the bigger the vertex bundle encountered. Those who participate less in these sacraments may be rotating in a geodesic that crosses less extreme patches of bundles, but this could also lead to a lonelier and less eventful existence.

On the other hand, if you are like the Buddhist or Christian monks, it may very well be that you want to avoid as many of the bundles as possible, as they represent an 'Earthly life'. If such is your disposition, you may seek to move into the centre of the figure, where there is less going on. This could presumably be achieved through the practice of prayer and meditation, but it requires enormous discipline as the centre is unbalanced and is pulled in every direction. The only other option therefore is to get off the wheel entirely, but this will only occur to those who:

1. Encounter Death.

2. Come so close to the truth that the simulation shuts down entirely.

I'm not sure which one I'm closer to, right now. I hope it is 2.

When you do finally get off the carousel, be sure to give my regards to the fairground manager and tell him that I'll be along to see him shortly...

Renormalisation

Our final challenge, after contemplating all of the above, is to put the Mind-Before-Matter view of the Universe back into the context of a purely Physicalist Universe; a process I'm jokingly referring to as 'renormalisation'.

From a conceptual point of view, doing this is enormously easy.

Up until now, we have been imagining that our consciousness is rotating through a fixed field of energetic filaments and that this motion creates the appearance of the physical universe. In order to undo this, we have to transform this rotation, so that the energetic filaments are now rotating into the physical Universe, of which we are consciously aware.

Whether or not this flipped transformation is truly invariant remains to be seen. And I very much suspect that it isn't. In fact, I would lean towards it only being viable in the Mind-Before-Matter conception of the Universe.

If invariance between the two models were disproven in favour of the Mind-Before-Matter interpretation, then this would prove that all of matter and physics is an illusion generated by the human mind. If this is a real possibility, then I suggest that the majority of physicists should be working towards solving this problem.

The resulting idea therefore is not too dissimilar to Ehresmann Geometry and the concept fibre bundles. Fibre bundles are higher dimensional geometries which intersect our dimension to produce the known particles. [29] This theory was the one that inspired Garret Lisi to investigate the higher-dimensional spheres of E8 and attempt to ascribe the particles of the Standard Model to them. [28] This suggests that there may be a way to marry Fibre Bundles and the DGO Model to create a truer description of the Universe, which is certainly an exciting prospect.



Fig 8: In this hypothetical projection, the tiling continues on in an infinitely dense fashion beyond the edge of the Poincaré disk until it reaches the farther pole.

Conclusion

In the Big Spin model, instead of having the particles moving along a loop which intersects our reality, it is us that are moving in a loop that intersects the their higher-dimensional paths. The end result is a highly complex, multidimensional twisting matrix of fibre bundles flowing through the universe and creating all that you see, taste, touch and hear. This produces the dimensionally constrained Universe, we are accustomed to. But, I would point out that (failing some other explanation) such a universe is only possible either under the $U(1)^n$ rotations described above, or the infinitesimally small dimensions described in String Theory and theories like it. Otherwise, we would do best to drop all theories of higher-dimensions, altogether. However given their utility, I suspect that this is not something that will happen, anytime soon.

From out of this U(1) rotational model, we have been able to generate several other concepts, including; the quantisation and renormalisation of time, as well as the identification of its cyclical nature; a theory for inter-dimensional travel; an explanation of the efficacy of Astrology; a human-centric description of the Heavens; an explanation for ageing, schizophrenia, altered states of consciousness; the phenomena of heart rate and breathing, as well as yearly festivals and important milestone's in one's life.

We now have a model that explains the feasibility of higher-dimensions without them needing to be wrapped up incredibly small. This means that we can hope to travel in those dimensions at some point in the future, and we probably already do, in some sense. Finally, we have seen a way to make use of Mind-Before-Matter perspectives on reality without necessarily having to swallow all of the philosophical implications it entails and perhaps this kind of technique will also be useful to other branches of Science in the future.

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