

Article

The Nature of Quantum Reality: What the Phenomena at the Heart of Quantum Theory Reveal About the Nature of Reality (Part I)

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ABSTRACT

What quantum theory has revealed about the nature of reality has remained hidden in plain sight for almost one-hundred years because what quantum theory has revealed about the nature of reality cannot be comprehended in the context of the materialist model and conception of reality in which science presently operates, which materialist model places physical reality at the center of reality and Consciousness at the periphery, as a secondary or derivative reality. What this work will demonstrate, by explaining the heretofore inexplicable basis of the phenomena that lie at the heart of quantum theory, is that it is Consciousness rather than physical reality that lies at the center of reality, and that it is physical reality rather than Consciousness that is a secondary or derivative reality. Specifically, wave-particle duality, quantum uncertainty, quantum non-locality, the probabilistic nature of the wavefunction, and the collapse of the wavefunction, will all be shown to be phenomena that have as their basis the way in which the fundamental Reality of Consciousness, through relation to Itself, creates what it apprehends as physical reality.

One of the most important things the phenomena that lie at the heart of quantum theory will be shown to reveal about the nature of reality is that the nature of physical reality is like that of a reflection, and like a reflection, physical reality is able to obscure from view what is actually there, as long as it is mistaken for what is actually there. Thus, in revealing the reflection-like nature of physical reality, the phenomena that lie at the heart of quantum theory indirectly reveal that what is actually there, underlying the reflection that is physical reality, is the non-physical, non-experiential Reality of Consciousness that is, through relation to Itself, both creating and apprehending experiential reality in general and physical reality in particular. Ultimately, understanding the reflection-like nature of physical reality should make it possible for Individuals to understand that what actually Exists directly where they are, where their physical bodies appear to be, is not different in Nature than what actually Exists everywhere else as well, where the rest of physical reality appears to be, thereby disabusing them of the notion that what they are is a physical reality, while at the same time revealing to them their true Nature as Consciousness, which, through relation to that which is also Consciousness, creates what they, as Individual points of Consciousness, apprehend as experiential reality in general and physical reality in particular.

Part I of this series of three articles includes: Background; Introduction; and 1. Building a new model of reality.

Key Words: Nature, quantum reality, quantum physics, Consciousness, materialist model.

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"There was a time when the newspapers said that only twelve men understood the theory of relativity. I do not believe there ever was such a time. There might have been a time when only one man did, because he was the only guy who caught on, before he wrote his paper. But after people read the paper a lot of people understood the theory of relativity in some way or other, certainly more than twelve. On the other hand, I think I can safely say that nobody understands quantum mechanics." - Richard P. Feynman, 1964, MIT¹

Background

There is a pattern in the progression of humanity's understanding of the Universe in which we reside. That pattern is that each time humanity takes a large step forward in understanding the nature of the Universe, which large step is always accomplished by throwing off the shackles of the present conception of reality and adopting a new conception of reality, we think that we have it all figured out, and all that remains is to fill in the details.

This was certainly the case with regard to the philosophy of materialism, the essence of which is depicted in figure 1, which at one time held the position that if one knew all of the physical laws that governed the interactions between physical objects, as well as the variable characteristics of all the physical objects, such as mass, position and momentum, then it would be theoretically possible to predict with complete accuracy all future events from that point onward, like calculating an almost infinitely complex pool shot.

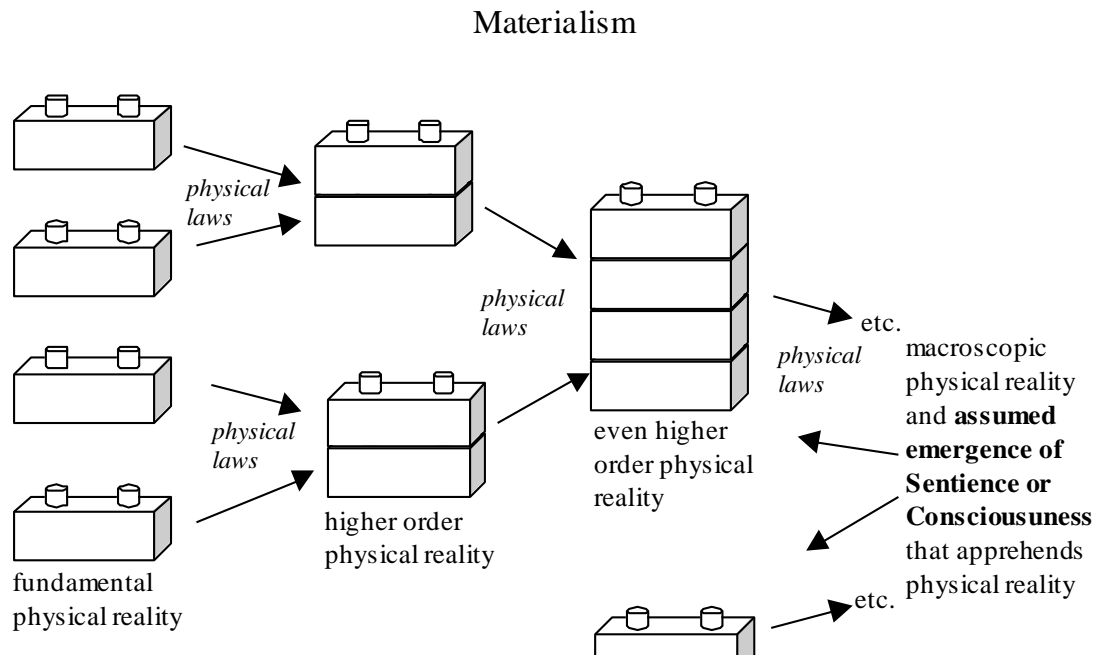


Figure 1 The philosophy of materialism has as its basis the idea that physical reality is essentially a mindless or non-sentient mechanism composed of some sort of fundamental physical building block that interacts with and comes together with other fundamental physical building blocks according to a set of physical laws to form higher order physical building blocks, which higher order physical building blocks

then come together to form still higher order physical building blocks, and so on, with the ultimate outcome of this progression thought to result in both the construction of what we apprehend as macroscopic material reality, as well as the creation and emergence at some point of the Sentience or non-material Consciousness that apprehends material reality.

However, for physicists working to determine the structure of the atom, this deterministic aspect of the materialist conception of reality was shattered nearly one-hundred years ago with the discovery of quantum uncertainty, which imposes a limit upon what it is possible to know regarding the variable characteristics of a physical object, e.g., the more one knows about the position of an object the less one can know about that same objects' momentum, thereby eliminating even the theoretical possibility of predicting with complete accuracy the future interactions of material objects. Instead, what they found at these very small levels of physical reality, i.e., at the level of quantum reality, could only be accurately expressed by what is termed the wavefunction, which is a mathematical expression that expresses the physical state of quantum realities in terms of probability, which is to say, in terms of the probability of observing a particular quantum reality to be in this or that physical state if it is observed. Thus, as physicists dug deep into physical reality, instead of finding very tiny physical realities, what they found instead were realities that were decidedly non-physical in their behavior, as shown in figure 2.

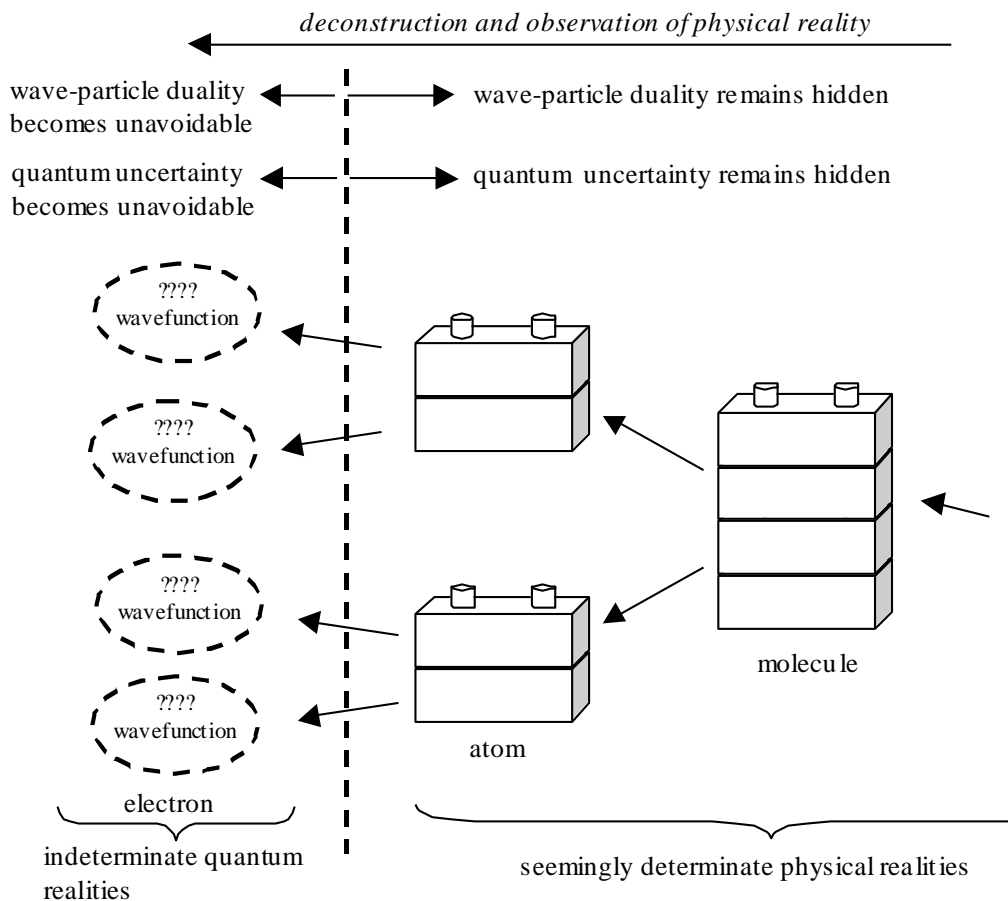


Figure 2 Scientists working to uncover the interior structure of the atom, i.e., working to determine the nature of the building blocks of physical reality, found to their surprise and great dismay that electrons did

not behave in the way that they were used to physical realities behaving, in as much as they could be observed to behave as either a wave or as a particle in any one moment, but never as both at once. The dual and yet mutually exclusive nature of reality uncovered at this level introduced uncertainty, such that the determination of one physical characteristic made impossible the determination of the complementary physical characteristic, leaving scientists to express what they found at these very small levels of physical reality not as physical realities with definite physical characteristics, but rather as quantum realities with indeterminate physical characteristics expressed as a mathematical statement of probability referred to as the wavefunction.

Another aspect of the materialist philosophy that was undercut by scientists probing into the quantum level of reality was the discovery, prior to the discovery of quantum uncertainty, that light could be observed to behave as either a wave or as a particle, depending upon the experimental setup used to observe it. Soon thereafter it was also determined that other larger quantum realities, such as electrons, displayed the same wave-particle duality. The fact that quantum realities could, in different moments, be observed to be in two completely different and mutually exclusive states made it no longer possible to assume that the Observer played no part in shaping the character of what was observed as a physical reality, at least at the quantum level. That is, the phenomenon of wave-particle duality introduced the notion that the Observer, i.e., the Sentience or Consciousness that was apprehending the physical reality, rather than just passively apprehending what was already there as a particular physical reality, instead played some active role in shaping what was being apprehended as a particular physical reality.

And so, even though some of the earliest discoveries made regarding the nature of physical reality at very small scales undercut two of the basic premises of materialism, i.e., that there is some fundamental determinate physical reality or building block out of which the rest of physical-material reality is constructed, and that what we apprehend as physical reality is already there as it is apprehended to exist regardless of whether it is being apprehended or not, the philosophy of materialism did not die nearly one-hundred years ago with the discoveries of wave-particle duality and quantum uncertainty, although it should have. Rather, it was poisoned and has been dying a slow death ever since, while still continuing to struggle to remain the dominant philosophy underlying science's and therefore humanity's conception of reality, even though it is science itself, in the form of quantum physics, that has administered the poison that has made its demise inevitable.

One of the reasons the materialist philosophy and conception of reality has been so slow to go away, even though its situation is indeed terminal, is because there has been no acceptable or satisfactory alternate conception of reality with which to replace it. To some degree, science's situation with materialism is like being stuck in an unhappy relationship, in as much as people tend not to leave their partner, no matter how badly things are going, until they find someone else to replace them. And so, even though materialism is not really working for humanity or science any more as a philosophy that can answer the big questions the Universe poses, humanity and science stick with it because they have yet to find a suitable replacement. That materialism is no longer working for humanity or science as a philosophy that can answer the big questions the Universe poses is evidenced by the fact that nearly one-hundred years after the discovery of wave-particle duality, quantum uncertainty, and the wavefunction, what quantum theory says about the nature of reality remains as much of a mystery to science and humanity now as was the

case when these phenomena were first discovered, owing to science's ongoing determination to cram these phenomena into a materialist conception of reality into which they can never be fit.

The source of the difficulty in finding a replacement for the philosophy of materialism that is consistent with the findings of quantum physics regarding the behavior of physical reality at very small scales is that there is a significant difference between the pending advancement in human understanding regarding the nature of reality that has been made possible by the discoveries of quantum physics and prior advancements in human understanding regarding the nature of reality. And that significant difference is that those prior advancements took place within the conceptual context of an intact physical reality and were essentially modifications of some physical or material model of reality, as shown in figure 3, whereas the pending advancement in human understanding regarding the nature of reality, which has been made possible by the discoveries of quantum physics, does not take place in the context of an intact physical reality and so cannot be expressed through a modification of some physical or material model of reality, but requires instead the annihilation of our present conception of physical reality, and specifically requires that we let go of our conception of physical reality as being what is actually there where it appears to be.

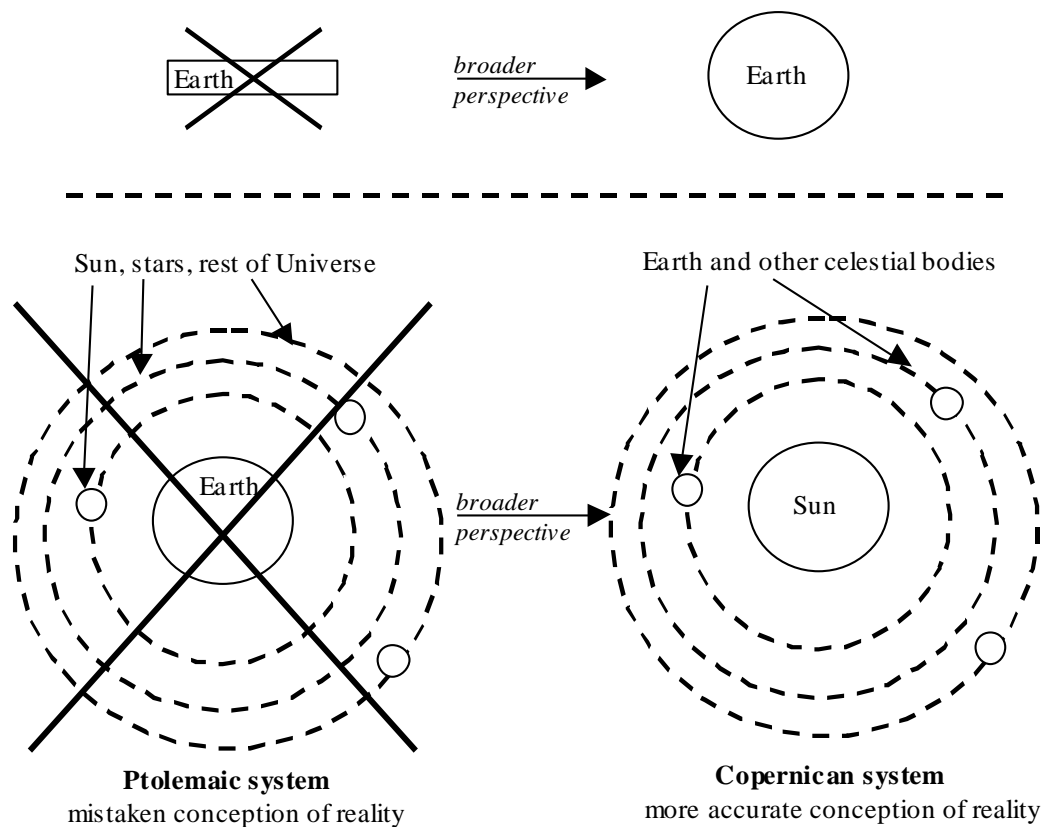


Figure 3 The idea that the Earth is round rather than flat, and that the Earth orbits the Sun rather than the other way around, are different ways of viewing or picturing a physical object or set of physical objects, respectively. Thus, these prior advancements in human understanding regarding the nature of reality, i.e., the shape of the Earth and the relation of the Earth to other celestial bodies, while involving some

rearrangement of physical reality, do not bring into question the assumed nature of physical reality as being what is actually there where it appears to be.

Our present situation with regard to our idea or conception of physical reality as being what is actually there where it appears to be, i.e., our idea that what is actually there where we apprehend a physical reality is actually a physical reality, which idea or conception is at the heart of materialism, is directly analogous to the historical situation wherein humanity thought that the Earth was at the center of the Universe, with the rest of the Universe revolving around the Earth. That is, just as a portion of humanity at one time placed the Earth at the center of the Universe, with everything else revolving around it, because from the common perspective that is how it appeared or seemed to be, materialism is a philosophy that places physical reality at the center of reality, with all other realities orbiting around it or extending from it, because from our common perspective that is how it appears or seems to be. And just as the findings of Copernicus brought humanity a new perspective from which to view the Universe, thereby requiring a new model of the Universe to fit that new perspective, so to do the findings of quantum physics bring to humanity a new perspective from which to view physical reality, thereby requiring a new model of reality to fit that new perspective, as shown in general terms in figure 4.

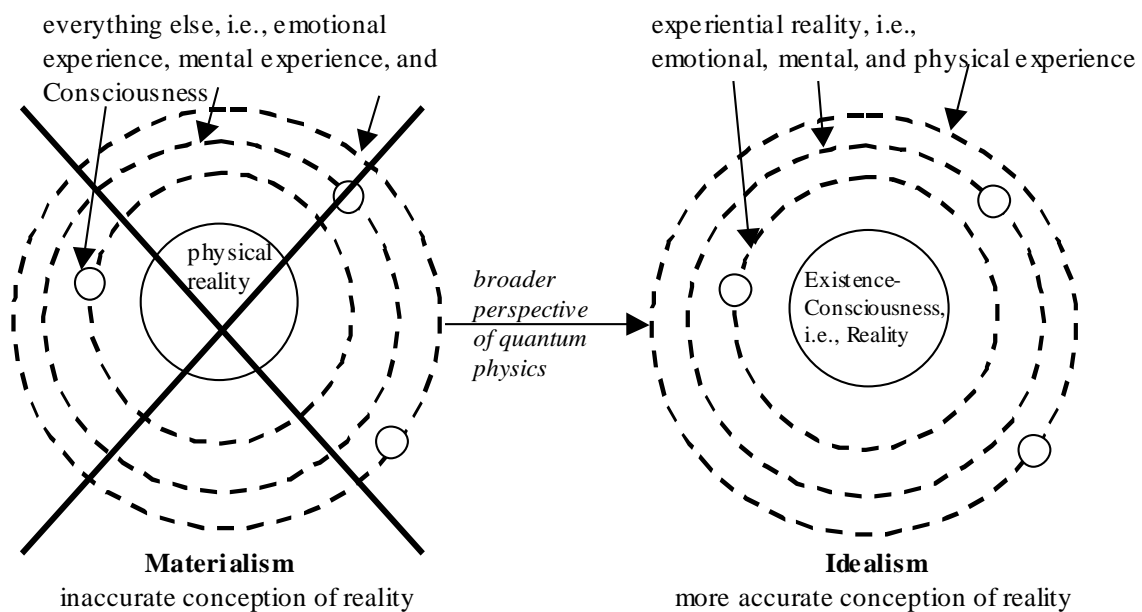


Figure 4 Just as at one time the common perspective left at least a portion of humanity with the mistaken idea that the Earth was at the center of the Universe, with other celestial bodies occupying a peripheral position relative to the Earth, our common perspective leaves us with the mistaken impression that physical reality is at the center of reality, with other realities revolving around physical reality, i.e., occupying a secondary or peripheral position relative to physical reality, as shown in the drawing on the left. However, quantum physics has brought to humanity a new perspective from which to view reality, one that requires a reorganization of how we see the different realities in relation to each other if humanity is to ever understand what it is that quantum theory says about the nature of reality. Specifically, understanding what quantum theory says about the nature of reality requires a reorganization with respect to how we view the relation between physical reality and the non-physical Reality of Consciousness, in as much as the nature of quantum reality can only be described and understood in the context of a model and description of reality that places the non-physical Reality of Consciousness at the

center of reality, with the rest of reality, i.e., experiential reality, including physical reality, occupying a secondary or peripheral position relative to that central Reality, as shown in the drawing on the right.

Owing to the new perspective upon physical reality afforded by the findings of quantum physics, any new model of reality that incorporates the perspective of quantum physics, as any model must for it to be considered to have any validity whatsoever, cannot be a model of reality that simply represents some modification of the still accepted and yet already discredited materialist model, and so cannot be a model that simply represents some rearrangement of the chairs on the deck of the sinking ship that is the philosophy of materialism, i.e., it cannot be a model that assumes both that physical reality is what is actually there where it appears to be and that physical reality is at the center of reality, simply because that is how it appears to us from our common and general perspective, but must instead be a model of reality that takes into account the fact that the Consciousness that apprehends physical reality plays some role in shaping what is apprehended as physical reality.

Therefore, the pending advancement in human understanding regarding the nature of reality made possible by the discoveries of quantum physics represents an advancement of far greater significance and scope than any that has come before, because understanding the nature of quantum reality does not require just another conceptual rearrangement of physical reality, but requires instead a conceptual rearrangement of all that can be called reality, both experiential and non-experiential. Specifically, understanding the nature of quantum reality will require that one cease to recognize physical reality as "the" reality, i.e., as the central or source reality that in some magical and mysterious way gives rise to all the other realities, including the Reality of Consciousness. Instead, understanding the nature of quantum reality will require one to recognize that physical reality is but one type of experiential reality, and that all experiential realities have as their basis the non-physical, non-experiential Reality of Existence or Consciousness. Additionally, understanding the nature of quantum reality will also require one to recognize that physical reality is not what is actually there where it appears to be, in the same way that one can recognize that a reflection in a mirror, or on the surface of a body of water, is not what is actually there where it appears to be, even though such reflections can present the appearance of being what is actually there.

It is the requirement of ceasing to place physical reality at the center of reality, of ceasing to treat it as "the" reality, and accepting that what we apprehend as physical reality is not what is actually there where it appears to be, and science's refusal to do so on both counts, that has so far, for almost one-hundred years, kept science, and therefore humanity, from understanding what its own endeavors and experiments in the quantum realm have discovered and uncovered regarding the overall nature of reality. Nor will science in a thousand years be any closer to understanding the nature of reality as revealed by quantum physics if it is still, at that time, trying to fit quantum reality into some increasingly twisted, distorted, and contorted materialist conception of reality, because the conceptual assumptions that lie at the heart of materialism have no more validity with respect to being reflective of the nature of reality than the idea of a flat Earth is reflective of the actual shape of the Earth. The Catholic church did not want to give up the idea of the Earth as being at the center of the Universe and science does not want to give up its related ideas regarding the primacy, centrality, and objectivity of physical reality. Dogma always dies hard and with great struggle.

That having been said, the philosophy of materialism was not a mistake. Materialism was a step forward, and it has also provided the opportunity for an even larger step forward with regard to increasing humanities' understanding of the nature of reality. And while materialism was not a mistake, it becomes a mistake when it becomes the barrier that keeps science and so humanity from taking the next step forward. Put another way, materialism was not a mistake, but it has become a mistake to the extent that it has become that which is keeping humanity from understanding what the discoveries of quantum physics reveal about the nature of reality. And as will be demonstrated, one of the things that the discoveries of quantum physics reveal about the nature of reality is that what we experience as physical reality is the product of a relation, much like a reflection in a mirror, making physical reality not what is actually there where it appears to be. And the importance of realizing that physical reality is not what is actually there where it appears to be is that, as long as one thinks that physical reality is what is actually there where it appears to be, then What Is Actually There must remain hidden from view, the same way that a body of water remains hidden as long as one takes the reflection that lies on its surface for what is actually there.

And What Is Actually There, and so that which has been hidden from view, or hidden in plain sight really, as a result of our mistaking the reflection that is physical reality for what is actually there, is that which we refer to as our Consciousness. As one might come across a block of wood and a tree, and somehow become confused with regard to their actual relation and so set themselves the impossible task of figuring out how the tree comes from the block of wood, so it is that humanity has, by and large, become confused with regard to the actual relation between physical reality and Consciousness, and so has left science with the impossible task of figuring out how physical reality produces the non-physical, non-experiential Reality referred to as Consciousness. And the task of figuring out how physical reality produces Consciousness is impossible because, as the phenomena that lie at the heart of quantum theory will reveal once their basis is understood, it is actually Consciousness that produces physical reality.

Consciousness is the means by which all experiential reality, including physical reality, is apprehended, and in the absence of which physical reality could not even be known to exist. The logical slight of hand through which materialism has been able to get away with making physical reality the creator of the Reality, i.e., Consciousness, without which it could not even be known to exist, requires the assumption of realism, which is the assumption that physical realities exist at some level independent of their observation as such, and so independent of Consciousness. Basically, what the philosophy of materialism requires one to imagine or assume is that there is an objectively existent physical reality that mindlessly evolved to a point where Consciousness somehow came into being, at which point Consciousness then, having been poofed into being through some as yet unknown physical mechanism, just takes in and observes what is already there as the objectively existent physical reality that is considered to be its source. However, as demonstrated by a group of physicists, the findings of quantum physics are in conflict with the assumption of realism, as pointed out in the following passages taken from their paper:

Physical realism suggests that the results of observations are a consequence of properties carried by physical systems. It remains surprising that this tenet is very little challenged, as its significance goes far beyond science. Quantum physics, however, questions this concept in a very deep way.

Most working scientists hold fast to the concept of 'realism' - a viewpoint according to which an external reality exists independent of observation. But quantum physics has shattered some of our cornerstone beliefs. ... Our result suggests that giving up the concept of locality is not sufficient to be consistent with quantum experiments, unless certain intuitive features of realism are abandoned.²

Thus, the findings of quantum physics directly contradict and undercut the assumption of realism that rests at the heart of the materialist philosophy, which philosophy still guides and constrains the vast majority of scientific thought. So it is that we have one branch of science that has, through some of the most rigorous experiments ever conducted, determined that the assumption of realism is almost certainly false, while the rest of science continues to move merrily along, blissfully ignorant of this fact, or at least ignoring this fact, still assuming realism to be the case and so still maintaining and upholding an already discredited materialist philosophy that places physical reality at the center of reality and Consciousness at the periphery of reality, as a reality somehow created by the machinations of an objectively existent physical reality that quantum physics has demonstrated, in all likelihood, does not exist. These are indeed strange times.

But as they say, the times, they are a-changin', for as Graham Smetham points out in his many excellent works, only three of the most recent of which are referenced, more and more physicists are recognizing that the findings of quantum physics are incompatible with the assumption of realism, i.e., that physical reality exists independent of observation, and so are rethinking their positions with regard to the relation between Consciousness and physical reality.^{3,4,5} Thus, it is no longer just idle metaphysical speculation, nor eastern philosophic tradition, that grants to Consciousness a place in the hierarchy of reality far more important and central than that ascribed to it by any materialist philosophy, and by extension, most of modern science. To the contrary, it is the branch of science that has delved the deepest into physical reality that has taken, or at least is beginning to take, however tepidly, the position that Consciousness and physical reality are inseparably linked in some way, since what that branch of science has found is that there is no such thing as a physical reality absent its observation as such. And as observation implies the presence of Consciousness, since in the absence of an apprehending Consciousness there is no observation, there is therefore no such thing as a physical reality absent some Consciousness that apprehends, i.e., observes, that physical reality. This finding completely undercuts the materialist notion that the machinations of physical reality somehow create Consciousness, since how can physical reality be the creator of the Reality upon which its very existence, such as it is, rests, and therefore in the absence of which it cannot even be said to exist? It cannot and so is not.

If one had somehow been raised with the notion and spent their life believing that trees come from blocks of wood, it would seem very strange and unbelievable at first to hear that blocks of wood actually come from trees. Likewise, having been raised in a cultural environment wherein physical reality is assumed to be the central reality that produces all other realities, including Consciousness, it is no doubt strange to hear that it is actually the other way around, i.e., that Consciousness produces physical reality. Understand though that the strangeness does not arise from any actual strangeness, but only appears as strange in relation to the opposite materialist position or conception of reality that one most likely presently holds, since materialism is the conception of reality that has been, and still remains, for the time being, the most dominant. Put

another way, the idea that Consciousness could give rise to physical reality only seems strange and unbelievable from within a materialist perspective and framework, which by its nature holds the opposite view. In the absence of an attachment to either philosophy, i.e., materialism or idealism, these are simply opposite possibilities, one no more strange than the other, i.e., physical reality produces Consciousness or Consciousness produces physical reality, respectively. The only question is, which position more accurately reflects the actual nature of reality, since it cannot be both.

The strange is only strange in the context of considering its opposite to be normal. But what are we to do when what we consider to be normal is itself an illusion, thereby making what is actually the normal state of affairs seem strange by comparison? We can either see through the illusion and so realize what is actually the normal state of affairs, or we can cling to the illusion, in which case what is actually the normal state of affairs remains hidden from view, as a body of water remains hidden as long as one takes the reflection that only lies on its surface for what is actually there. If one had somehow been raised with the notion and spent their life believing that trees come from blocks of wood, and then be told that it is actually the other way around, one might find it hard to believe, until they were taken to a lumber mill, at which point seeing the process by which trees are turned into boards or blocks of wood one would be hard pressed to maintain their erroneous belief in the relation between trees and blocks of wood. Likewise, most who are reading this have spent their life believing that Consciousness is produced by physical reality, and therefore probably find it hard to believe that it is actually the other way around. Therefore, one purpose of this work is to take the reader to the quantum lumber mill, so to speak, to demonstrate exactly how physical reality is produced by Consciousness, by using the actual relationship between Consciousness and physical reality to explain the heretofore inexplicable behavior and nature of quantum reality as expressed by the phenomena that lie at the heart of quantum theory.

As this work will demonstrate, it is possible to describe how the non-physical, non-experiential Reality of Consciousness gives rise to physical reality in a way that is both consistent with, as well as explanatory of, the nature of quantum reality as put forth and described by quantum theory, because that is what actually happens. Conversely, it will never be possible to describe how physical reality gives rise to Consciousness, because that is not what actually happens, but is only what appears to happen. The idea that physical reality produces Consciousness is a dogmatic assumption for which science has no actual proof whatsoever. All science has is what has been assumed based on common perspective, which is the same sort of perspective that at one time had humanity believing that the Earth was flat and that the Sun orbited the Earth. In fact, as stated previously, what science has proven is that physical reality cannot produce Consciousness, because physical reality cannot be said to exist in the absence of its observation, which is to say, in the absence of its apprehension as such by an Individual Consciousness.

It is time for humanity to continue to move forward in its conception of reality by freeing itself from the shackles of a conception of reality that has become a hindrance rather than a help with regard to furthering its understanding of the nature of reality. With that in mind, it is my intention in this work to function as a modern day Copernicus with regard to the whole of reality, by making the heretofore incomprehensible behavior and nature of quantum reality comprehensible by explaining its behavior and nature in the context of a model of reality that

places the non-physical and non-experiential Reality of Consciousness at the center of reality, with the rest of reality, including physical reality, revolving around or extending from That.

Introduction

As will be described, there is far less going on than meets the eye, and things are nowhere near as complex as they appear to be. In short, What Is Actually There, i.e., the Reality that underlies the reflection that is physical reality, forms a relation with Itself, and as a result of that relation something is produced that is apprehended by What Is Actually There. It is the innate, intrinsic, and inherent ability of What Is Actually There to apprehend the product created as a result of its relation to Itself that allows What Is Actually There to function as Consciousness, and it is that created product, as it is apprehended by What Is Actually There, now functioning as Consciousness, that is experience or experiential reality. Put another way, all experience, including physical experience and so physical reality, is nothing more than What Is Actually There apprehending the products of its relations to Itself.

In this work, the terms Existence, Consciousness, and Reality are all used to point toward or indicate What Is Actually There where physical reality appears to be, and so are for the most part interchangeable. Nonetheless, when discussing that which apprehends experience, What Is Actually There will most often be referred to as Consciousness, and when talking about that which through relation to Itself creates what is apprehended as experience, What Is Actually There will most often be referred to as Existence. And when referring in general to What Is Actually There, it will most often be referred to as Reality. Further, any word that is capitalized that is not at the beginning of a sentence is also a word that is being used to indicate or point toward What Is Actually There where physical reality appears to be. Also, owing to the use of this convention to indicate What Is Actually There, from this point onward words that are usually capitalized are not capitalized if they are not being used to point toward What Is Actually There.

In order to understand the nature of quantum reality, one needs to understand the nature of reality as a whole. The reason the nature of quantum reality remains a mystery is because, as has just been described, science has been stuck with a conception of reality, i.e., materialism, that bears little to no resemblance to the actual nature of reality. This has made it impossible to fit quantum reality, which is reflective of the actual nature of reality, into that conception of reality. In essence, quantum reality represents a section of the puzzle that is the whole of reality, and up until now humanity has been attempting to fit that section of the puzzle into a materialistic puzzle that is thought to depict the whole of reality, and the results have been as one would expect when trying to fit a section of a puzzle into what is the wrong puzzle, i.e., it does not fit.

The statement that the nature of quantum reality remains a mystery means that no one who deals with quantum theory knows what makes quantum reality behave the way it behaves and appear the way it appears, which is what Feynman meant when he stated that "nobody understands quantum mechanics." To a limited degree, quantum physicists are like the technicians in charge of a large machine, the inner workings of which remain a complete mystery. They know which buttons to push to make this or that come out, to produce this or that result, i.e., they know the equations, but they really know little to nothing of the machine itself that produces those results,

i.e., they do not know what the equations and the results of those equations actually represent. And again, the reason they do not understand the nature and inner workings of the machine with which they are dealing is because they were handed the wrong instruction manual in the form of the philosophy of materialism, leaving them to try and understand the why and how of the workings of quantum theory by looking to an instruction manual that really has nothing to do with the machine or mechanism with which they are dealing.

As a conception of reality materialism is very understandable, it just does not accurately reflect the nature of reality. The behavior of quantum reality is what it is. Quantum reality remains unknown and not understood because it cannot be fit into what we do know, which is the materialist model. Therefore, as the goal of this work is to allow the reader to understand why quantum reality appears and behaves as it does, the approach in this work toward that end will be to first build a new and different puzzle or model of reality, to write a different instruction manual, that represents the whole of reality, after which quantum reality will be fit into that new model by showing how the phenomena that lie at the heart of quantum theory can be explained and understood in the context of that model. This new model, which will be referred to as the *iterative Existential self-relation model of Reality and reality*, will be one that is also understandable, but will also have the added advantage of being accurately reflective of the nature of reality. Once this new model of reality has been built, the section of the puzzle that is quantum reality will be fit into that new model, thereby converting quantum reality from an unknown to a known reality, from a mystery to something that can be understood, because it will be seen in its proper context and place within the overall scheme and structure of reality, as shown in general terms in figure 5 below.

If one finds a strange object lying on the ground and that object is part of a larger mechanism, that object remains a mystery unless and until one discovers and understands the larger mechanism of which the strange object is a part, at which point the object ceases to be strange and mysterious. That is where humanity stands at present with respect to quantum reality and quantum theory, i.e., it has discovered this strange object called quantum reality, which strange object is described by quantum theory, but it has no explanation for that object because the larger mechanism of which it is a part remains hidden, and as a consequence the object continues to be strange and mysterious. For this reason, as already mentioned, the first part of this work will deal with developing a model of reality that describes the larger mechanism of which quantum reality is but a part.

And also as already mentioned, the model of reality that will be developed, and into which quantum reality will be shown to fit and thereby be rendered understandable, will be referred to as the *iterative Existential self-relation model of Reality and reality*. The reason for the cumbersome name will become clear as the model is developed, including why the name of the model contains both the words *Reality* and *reality*. And do not let the seeming complexity of the name fool you, because understanding the *iterative Existential self-relation model of Reality and reality* is as simple as understanding what happens to a rubber band that is twisted repeatedly upon itself. And so, if you are able to understand what happens to a rubber band that is twisted repeatedly upon itself then you will be able to understand the nature of reality as a whole, and if you can understand that, then you will be able to understand the nature of quantum reality. It really is that simple.

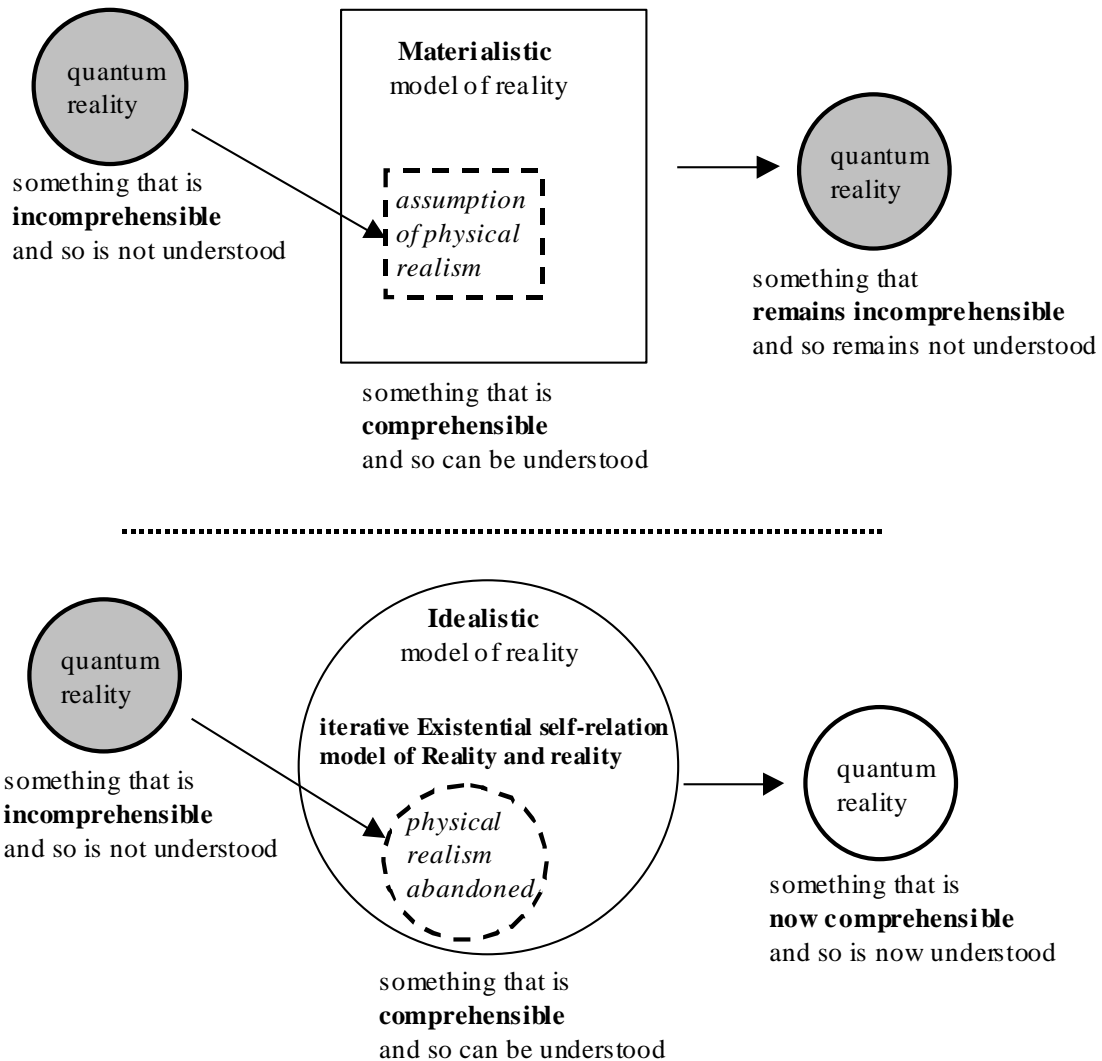


Figure 5 This drawing depicts, in a general way, the purpose of this work, which is to covert quantum reality from an incomprehensible to a comprehensible reality by fitting it into a comprehensible model of reality. As depicted at the top, although materialism presents a very comprehensible model of reality, the inability to fit quantum reality into the materialistic model, illustrated here as the attempt to fit a round peg into a square hole, has caused quantum reality to remain mysterious and incomprehensible. Quantum reality cannot be fit into a materialistic model because the materialistic model does not accurately reflect the actual nature of physical reality, in as much as a central tenet of materialism is physical realism, i.e., that what we apprehend as physical reality exists independent of observation and is what is actually there where it appears to be. However, as shown at the bottom, once quantum reality is fit into a comprehensible model of reality that reflects what the phenomena that lie at the heart of quantum theory say about the nature of physical reality, i.e., that physical reality does not exist independent of observation and is not what is actually there where it appears to be, then quantum reality will be converted from something that is both incomprehensible and not understood to something that is both comprehensible and understood.

1. Building a new model of reality

1.1 The evolution of Existence

As stated previously, in order to understand the nature of quantum reality it will be necessary to understand the nature of reality as a whole, and in order to understand the nature of reality as a whole it will be necessary to understand three things:

1. That the whole of reality consists of two completely different and yet related realities; experiential reality and the Reality of Existence that, through relation to Itself, both creates and apprehends experiential reality.
2. That Existence evolves through a process of iterative and progressive self-relation, and produces as a result of those self-relations both Relational Structures that are composed of Existence as It has become configured in relation to Itself, as well as experiential realities that are not composed of Existence.
3. That both Reality and reality are stratified owing to the process through which Existence evolves.

However, in order to understand the three things necessary to understand reality as a whole it will only be necessary to understand the second item listed above, i.e., how the Reality of Existence evolves through a process of iterative self-relation. Iterative processes are processes where something is produced as a result of a process, with that result then fed back into that same process, producing another result that is then fed back into that same process, producing still another result that is then fed back into that same process and on and on ad infinitum. The geometric structures referred to as fractals are generated through iterative processes. Physical reality, including organic reality, appears fractal because underlying what we apprehend as physical reality are Relational Structures composed of Existence that has become configured in relation to Itself as the result of an iterative process. Put another way, underlying what we apprehend as physical reality is Existence that has become configured into a fractal Relational Structure as a result of subjecting Itself to the process of iterative self-relation.

As already stated, the iterative process whereby Existence evolves into the progressive and stratified Relational Structures that underlie what we apprehend as physical reality is one of iterative self-relation. Specifically, that process is one in which Existence forms a relation with Itself, thereby Existing as a Relational Structure composed of Itself as It is being in relation to Itself, and then while Existing as that Relational Structure It forms yet another relation with Itself, thereby Existing as a new Relational Structure composed of Itself as It is being in relation to Itself, and then while Existing as the new Relational Structure It forms yet another relation with Itself, and on and on and on until here we are, taking part in that ongoing process while looking out upon and into a universe that has evolved and continues to evolve through that process. However, it is important to note here that what we apprehend as the physical or material universe is not itself the overall Relational Structure composed of Existence that has evolved through a process of iterative self-relation. Rather, what we apprehend as the physical or material

universe is only an etching of that Structure, a point which will become clear once the nature of experiential reality has been described.

And as perhaps daunting and abstract as all of the above may sound, the process of iterative Existential self-relation whereby Existence evolves into a progressive and so stratified Relational Structure, while producing at the same time, as a result of those same relations, what Existence apprehends as experiential reality, can all be explained by examining what happens to a rubber band that is twisted repeatedly upon itself. As previously stated, in order to understand reality as a whole, i.e., the nature of Reality and reality, as well as the relation of each to the other, one need only understand how Existence evolves into the progressive and hence stratified Relational Structure that is the basis of and underlies what we apprehend as experiential reality in general and physical reality in particular, and in order to understand that one need only understand what happens to a rubber band that is repeatedly twisted upon itself, i.e., subjected to the force of iterative self-relation.

1.2 The evolution of Existence into a progressive Relational Structure

Since I first began writing about the nature of reality as a whole and the evolution of Existence through the process of iterative and progressive self-relation, I have stated that what happens to a rubber band that is repeatedly twisted upon itself is analogous to what happens to Existence as It subjects Itself to the force of iterative self-relation. However, it has occurred to me recently that what happens to a rubber band that is repeatedly twisted upon itself is not just analogous to what happens to Existence as it subjects Itself to the force of iterative self-relation, but is in fact Existence being subjected to the force of iterative self-relation, albeit externally rather than internally, and as a result doing what Existence does when subjected to that force, which is form into a progressive Relational Structure. And so, what happens to a rubber band as it is twisted upon itself not only provides an example of the process of iterative Existential self-relation, but is itself evidence that when the force of iterative self-relation is applied to Existence, the result is that Existence becomes configured into a progressive Relational Structure. And even though what we apprehend as the physical object-reality referred to as a rubber band is not what is there directly, but is an etching of what is there, that etching nonetheless reveals in some measure what is taking place with respect to the Reality that underlies what we experience as the physical object-reality.

To be clear, we do not and cannot experience or see the Relational Structure that is actually there where the rubber band appears to be, because the Existence of which that Relational Structure is composed is of a completely different Nature than the nature of experience, a fact which will be made clear shortly. However, what we do experience as the physical reality of the rubber band is an etching of the Relational Structure composed of Existence that is actually there, which is another fact which will be made clear shortly. That is, what we experience as physical reality is never what is actually there where the physical reality appears to be, because what is actually there is always Existence that has become configured, through the process of iterative self-relation, into a Relational Structure. However, what we experience as physical reality does bear some relation to what is actually there, the same way the appearance of an etching bears some relation to whatever it was that was etched.

Therefore, what we apprehend as a rubber band is not what is actually there where the rubber band appears to be. What is actually there where the rubber band appears to be, even before it is twisted upon itself, is Existence that has been configured into a specific Relational Structure composed of a specific set of Existential relations which, when apprehended, appears as the physical object-experience-reality we call a rubber band. And when the Existence-Reality, i.e., the Existence configured into a Relational Structure, that is actually there is subjected to the force of iterative self-relation, which is accomplished by twisting the rubber band repeatedly upon itself, the Existence-Reality that is there becomes configured into a progressively higher order Relational Structure composed of additional Existential self-relations, which progressively higher order relational structuring we apprehend as the rubber band becoming increasingly twisted upon and configured in relation to itself, as shown in figures 6-8.

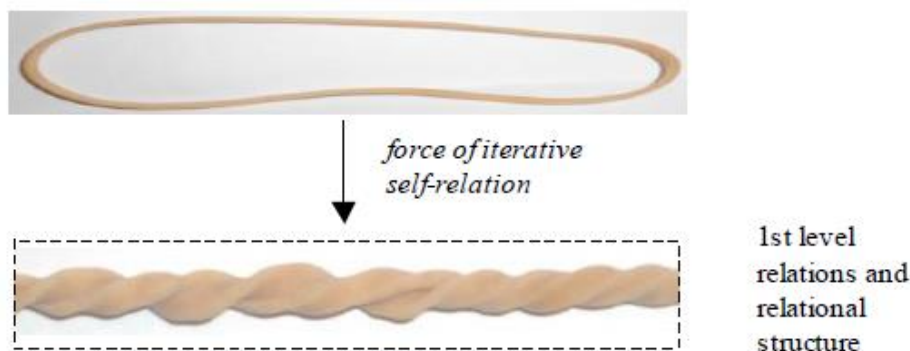


Figure 6 Depicted in this photo is a rubber band that has been repeatedly twisted upon itself, i.e., subjected to the force of iterative self-relation, and as a result has become configured into a first level of relational structuring consisting of a single set of relations of the rubber band to itself. The repeated twisting of a rubber band upon itself subjects the rubber band, and so the Existence-Reality that is actually there, to the force of iterative self-relation, which is the same force that is responsible for the evolution of Existence into the progressive and stratified Relational Structure that underlies what we apprehend as experiential reality in general and physical reality in particular.

It is important to note that the force of iterative self-relation being applied to the rubber band, and hence to Existence-Reality, in order to cause the rubber band to become configured into a relational structure, is being applied externally, i.e., from the outside in, or coming from outside the Existence-Reality that is actually there where the rubber band appears to be, whereas the force of iterative self-relation that is responsible for the evolution of Existence into the progressive and stratified Relational Structure that underlies what we apprehend as physical reality is one that is applied internally, i.e., from the inside out, or coming from inside Existence, as that force is intrinsic to Existence. That intrinsic force is what we refer to as the force of will, and is not different or other than the force by which we ourselves chose to think a thought or move our hand in a certain direction. That is, the force by which we choose to think a thought or move ourselves about is not different or other than the force that Existence uses to become involved in the progressive relations with Itself that cause it to become configured into the Relational Structures that underlie what we apprehend as physical-material reality. Put another way, it is possible to identify the force by which Existence becomes involved in relations with Itself as the same force by which we become involved in relations with the world around us and within us, because, as will be described, what actually Exists directly where we are is of the same Nature as what actually Exists directly where the rubber band, or any other physical reality,

appears to be. That is, the only difference between what actually Exists here and what actually Exists there is not in the Nature of what actually Exists here or there, but is only a difference in the way in which that singular Nature has become arranged and configured in relation to Itself, through iterative relation to Itself, both here and there.

Nonetheless, regardless of whether the force of iterative self-relation is being applied to Existence from the inside out or from the outside in, the result is that Existence becomes configured into a Relational Structure. The relational structuring of the rubber band shown in figure 6 represents a first level of relational structuring relative to the untwisted rubber band i.e., relative to the rubber band to which no external force of iterative self-relation has yet been applied. As such, the relational structuring of the rubber band shown in figure 6 is analogous to what will be described as the first level of Reality, i.e., the first level of Relational Structure or Existential Self-Relation.

And as shown in figure 7, as the rubber band continues to be subjected to the force of iterative self-relation it becomes configured into a higher order relational structure, i.e., a second level of relational structure. This second level of relational structuring arises as the first level of relational structuring becomes complex enough, i.e., has undergone enough iterations, that it is then able to form a relation with itself, creating a second level of relational structuring, both of which levels of relational structuring are composed of the single rubber band configured in relation to itself as a result of its being subjected to the force of iterative self-relation.

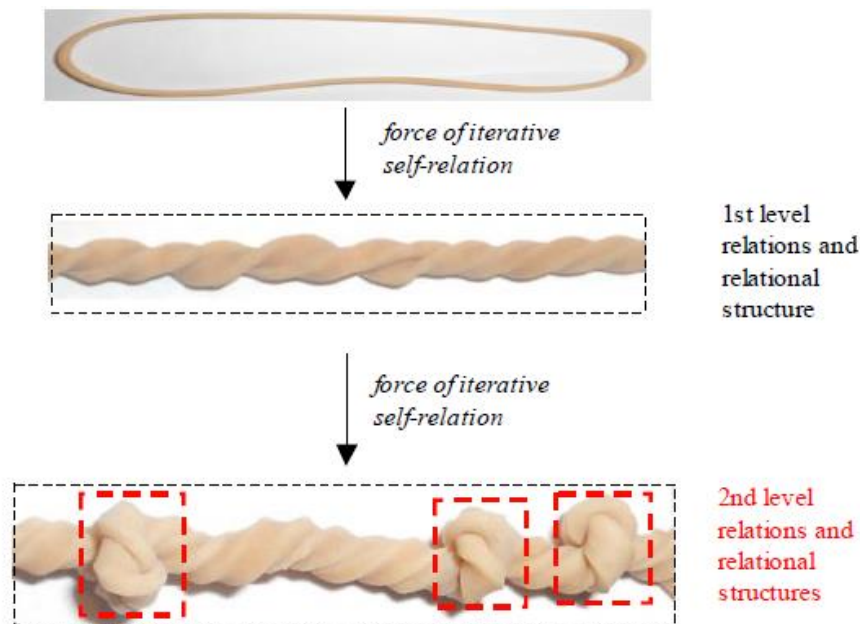


Figure 7 Depicted in this photo is a rubber band that has continued to be repeatedly twisted upon itself, i.e., continued to be subjected to the force of iterative self-relation, and as a result has become configured into a first and second level of relational structuring consisting of two sets of relations of the rubber band to itself. The second level of relational structuring occurs as the rubber band, already configured into a first level of relational structuring, continues to be subjected to the force of iterative self-relation, eventually causing the first level of relational structure to form a relation with itself, thereby creating a second level of relational structuring that is composed of the first level of relational structure configured in relation to itself.

The second level of relational structuring of the rubber band, shown in figure 7, is analogous to what will be described as the second level of Reality, i.e., the second level of Relational Structure or Existential Self-Relation. And as shown in figure 8, as the rubber band continues to be subjected to the force of iterative self-relation, it becomes configured into a third level of relational structuring. And following the same pattern, this third level of relational structuring arises as the second level of relational structuring becomes complex enough, i.e., has undergone enough iterations, that the second level relational structure is able to form a relation with itself, creating a third level of relational structuring, all of which levels are composed of the single rubber band configured in relation to itself through the force of iterative self-relation. And like the first and second levels of rubber band relational structuring of which it is composed, this third level of relational structuring of the rubber band is analogous to what will be described as the third level of Reality, i.e., the third level of Relational Structure or Existential Self-Relation.

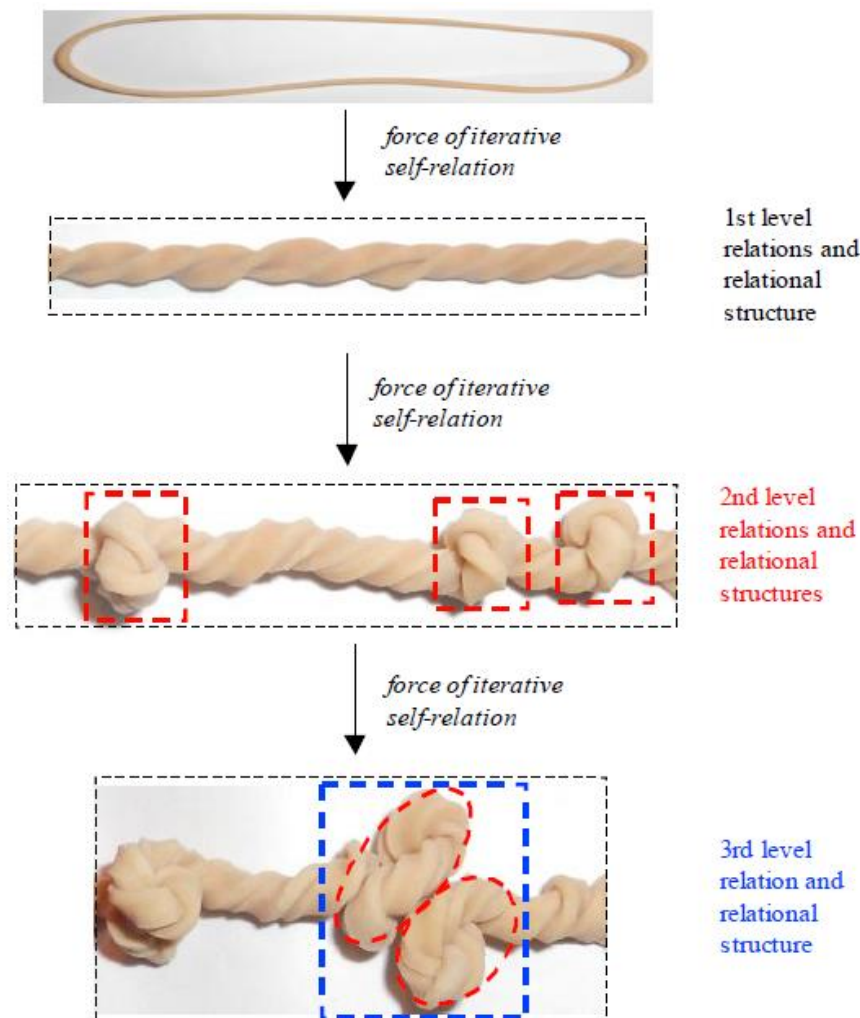


Figure 8 Depicted in this photo is a rubber band that has continued to be repeatedly twisted upon itself, i.e., subjected to the force of iterative self-relation, and as a result has become configured into a first, second, and third level of relational structuring, consisting of three sets of relations of the rubber band to itself. The third level of relational structuring occurs as the rubber band, already configured into first and

second levels of relational structuring, continues to be subjected to the force of iterative self-relation, eventually causing the second level of relational structure to form a relation with itself, thereby creating a third level of relational structuring that is composed of the second level of relational structure configured in relation to itself.

As stated previously, the process whereby Existence evolves into the progressive and stratified Relational Structure that underlies what we apprehend as physical reality is, like the process that causes the rubber band in figures 6-8 to become configured into a progressive relational structure, one of iterative self-relation. Also as stated previously, the geometric structures referred to as fractals are generated through iterative processes. Therefore, the progressive Relational Structure that underlies what we apprehend as physical reality is Itself a fractal Structure, since it is a Structure that has been generated as the result of an iterative process. One of the properties of fractals is that they exhibit the property of self-similarity, which is the repetition of structural patterns at different levels of iteration within a particular fractal structure. This property can be seen in the fractal referred to as the mandelbrot set shown in figure 9.

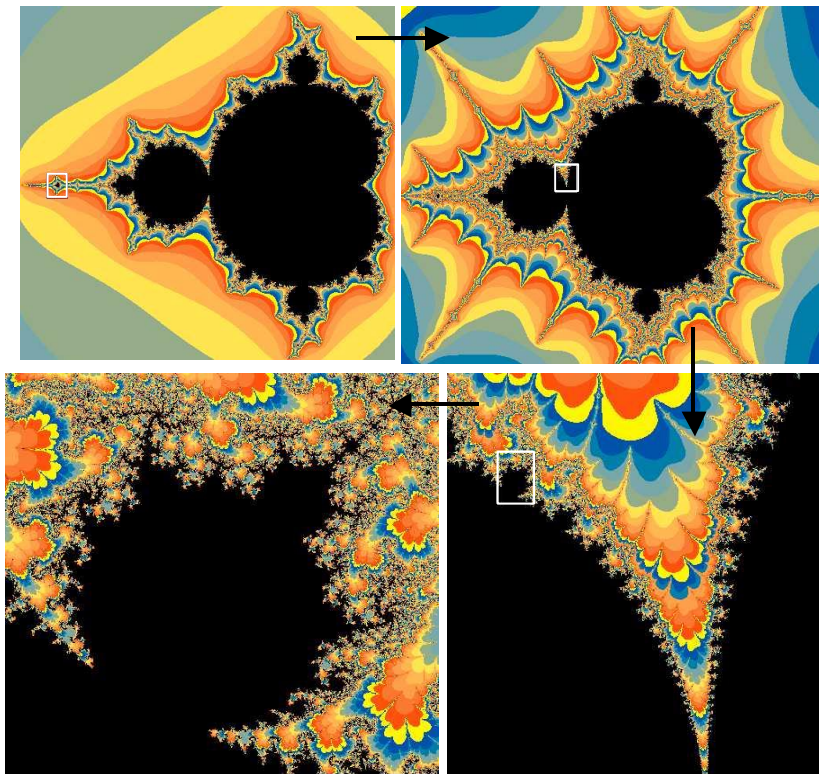


Figure 9 Shown here are images of the fractal structure known as the mandelbrot set, captured at increasingly iterated levels, progressing in clockwise rotation from the upper left. Within the first three images is a white box that shows the area that is expanded and depicted in the following image. What these images demonstrate is the property of self-similarity, i.e., the repetition of structural patterning at different levels of iteration, inherent in fractal structures, which is to say, inherent in structures that are created as the product of an iterative process, such as that which is responsible for a rubber band becoming configured into a progressive relational structure, or such as that which is responsible for the evolution of Existence into the progressive Relational Structure that underlies what we apprehend as physical reality.

The purpose of pointing out this property of fractals, i.e., self-similarity, or the repetition of pattern within pattern, is to explain why it is possible to use a rubber band to describe in general the way in which Existence evolves into a progressive Relational Structure through the process of iterative self-relation. As stated previously, what is actually there where the rubber band appears to be is Existence that is already configured into a Relational Structure. And as the force of iterative self-relation is applied to that Structure, i.e., to Existence configured as that Structure, which force is applied by twisting the rubber band repeatedly upon itself, the fractal Relational Structure that is actually there exhibits the property of self-similarity by repeating, at a higher level of iteration, the pattern of progressive relational structuring already intrinsic to it, by becoming visibly configured into progressive levels of relational structuring, as was depicted in figures 6-8.

The three levels of rubber band relational structure that have just been described and depicted form the basis of what one needs to understand in order to understand the Nature of Reality, because the Reality that underlies what we apprehend as physical reality consists of Existence that has, through the process of iterative self-relation, become configured into three progressive levels of Reality or Relational Structuring. The three progressive and so stratified levels of Relational Structure into which Existence has become configured or arranged have been described extensively in my various writings prior to this, and will be summarized below.^{6,7}

The three progressive levels of Relational Structure composed of Existence that underlie what we apprehend as physical reality evolve in the same way that the relational structure of the rubber band evolves. Specifically, as Existence subjects Itself to the force of iterative self-relation it becomes configured into a first level of Relational Structuring. And once that first level of Relational Structuring has reached a sufficient level of complexity, the ongoing application of the force of iterative self-relation causes that first level of Relational Structuring to form a relation with Itself, thereby producing a second level of Relational Structuring. And once that second level of Relational Structuring has reached a sufficient level of complexity, the ongoing application of the force of iterative self-relation causes that second level of Relational Structuring to form a relation with Itself, thereby producing a third level of Relational Structuring.

Each of these three different levels of Relational Structuring are each composed of Existence as it has become configured and arranged in relation to Itself owing to the force of iterative self-relation, and each corresponds to our apprehension of a different sort of physical reality. Again, physical reality is not What Is Actually There, but it is a sort of etching of What Is Actually There, and as such there is correspondence and correlation between the differences in what we apprehend as being there physically and differences in the way What Is Actually There is configured and arranged in relation to Itself.

Specifically, what we apprehend as the physical reality of space corresponds to the first level of Existential Relational Structuring, and what we apprehend as inorganic matter and energy corresponds to the second level of Existential Relational Structuring, and finally, what we apprehend as organic reality corresponds to the third level of Existential Relational Structuring. Put another way, What Is Actually There, i.e., Existence, forms relations with Itself and as a result becomes configured into a first level Relational Structure that is the basis of the physical

reality we apprehend as space. That first level Relational Structure then forms relations with Itself and as a result becomes configured into the second level Relational Structures that are the basis of what we apprehend as material reality. Those second level Relational Structures then form relations with each other and as a result become configured into the third level Relational Structures that are the basis of what we apprehend as organic reality. This progression is summarized in figure 10.

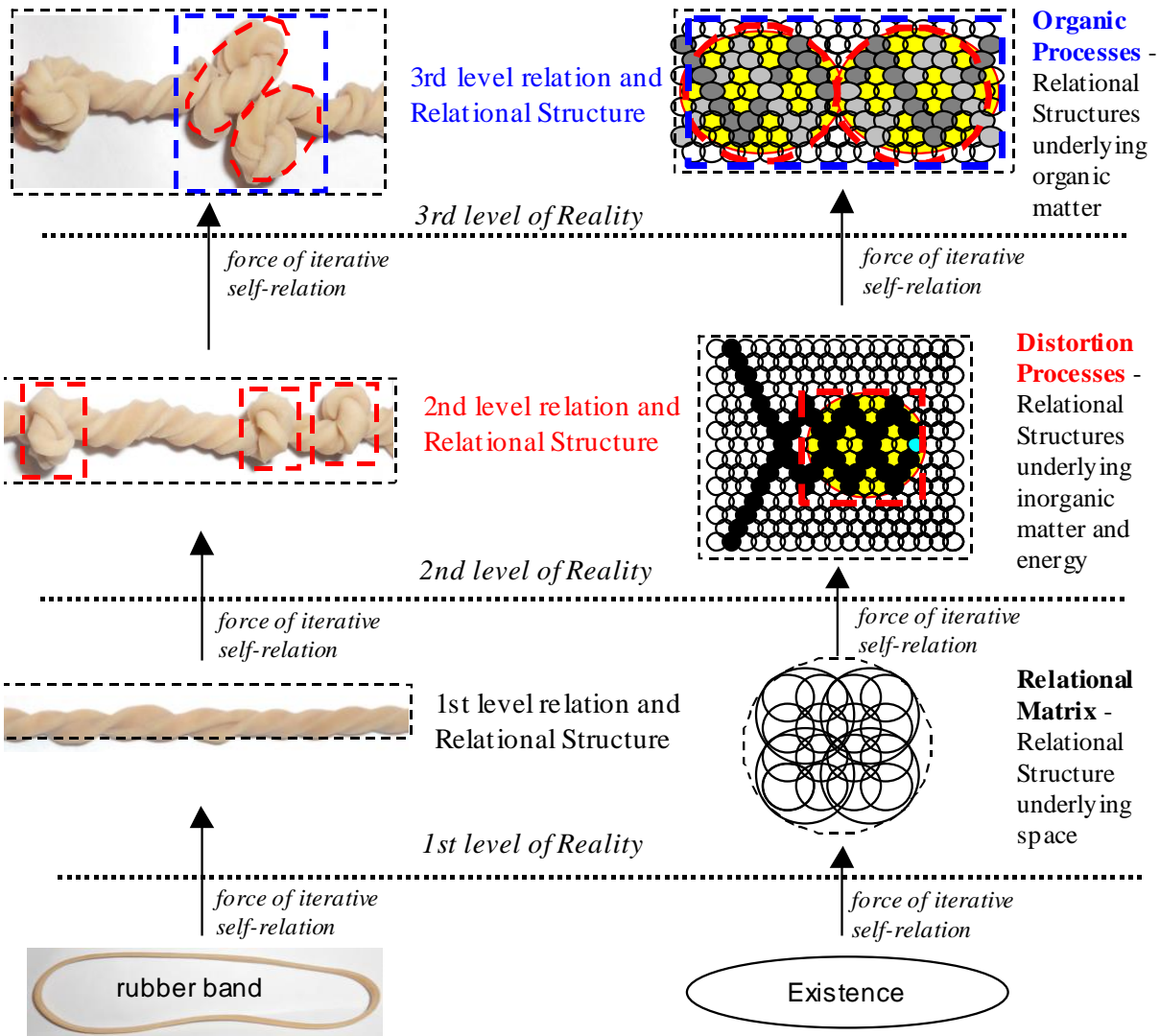


Figure 10 On the left is depicted the progressive relational structuring of a rubber band into three successive levels of rubber band reality as it is subjected to the force of iterative self-relation, and on the right is depicted the progressive Relational Structuring of Existence into three successive levels of Reality as it subjects Itself to the force of iterative self-relation. Each successive level of rubber band reality or relational structuring is composed of a different set of relations of the rubber band to itself only made possible by the relations of the rubber band to itself that compose the preceding or prior levels of rubber band reality. Likewise, each successive level of Reality or Existential Relational Structuring is composed of a different set of relations of Existence to Itself only made possible by the relations of Existence to Itself that compose the preceding or prior levels of Reality.

As shown in figure 10, the first level of Reality or Existential Relational Structuring is referred to as the Relational Matrix. That is, the Relational Matrix is the name I have given to the first level Relational Structure composed of Existence configured in relation to Itself that underlies and is the basis of what we apprehend as the physical reality of space or space-time. The credit for discovering the structure of space, or more accurately, the Structure underlying what we apprehend as the emptiness of space, must go to Buckminster Fuller. Fuller was interested in the way force was distributed in space, and found that forces in space followed the vectors described by a particular cubic-closepacking arrangement of spheres.⁸ And whether Fuller knew it or not, what he was describing with his arrangement of spheres was the static aspect of the first level of Relational Structuring into which Existence arranges Itself as a result of subjecting Itself to the force of iterative self-relation. Further evidence pointing toward the spherical Structuring of the first level of Reality can be found in the cellular structure of Organic Processes, which exhibit the fractal property of self-similarity by repeating, at a more iterated level of Reality, i.e., at the third level of Reality, the spherical or cellular pattern of Relational Structuring found at the first level of Reality.

Also as shown in figure 10, when Existence, already configured into a first level of Relational Structuring owing to the force of iterative self-relation, continues to subject Itself to the force of iterative self-relation, that first level Relational Structure forms a relation with Itself, thereby creating a second level of Relational Structuring composed of Existence configured in relation to Itself in a new way, only made possible by the relations that compose the previous level of Relational Structuring. Thus, the second level of Reality or Relational Structuring is composed of the first level, i.e., the Relational Matrix, being in relation to Itself. I refer to these second level Realities or Relational Structures as Distortion Processes, and it is these second level Relational Structures that underlie and are the basis of what are apprehend as the physical realities of electromagnetic energy and, in their more iterated form, matter. Einstein clearly understood that what we apprehend as matter is an accumulation and configuration of what we apprehend as energy, as expressed by his famous equation, $e = mc^2$. However, what Einstein also clearly understood was that what we apprehend as matter, and therefore what we apprehend as energy, extend from what we apprehend as space, as evidenced by the following quote:

I wished to show that space-time isn't necessarily something to which one can ascribe a separate existence, independently of the actual objects of physical reality. Physical objects are not in space, but these objects are spatially extended. In this way the concept of "empty space" loses its meaning.⁹

In other words, what we apprehend as physical objects do not exist in empty space; rather, physical objects are structures that are themselves extensions of, or which extend from, an underlying spatial structure.

Finally, as shown in figure 10, when Existence, already configured into first and second level Relational Structures owing to the force of iterative self-relation, continues to subject Itself to the force of iterative self-relation, those second level Relational Structures are able to form a new type of relation with each other, and as a result become configured into a third level of Relational Structuring. I refer to these third level Realities or Relational Structures as Organic Processes,

since it is these third level Relational Structures that underlie and are the basis of what we apprehend as organic physical reality.

As just described, each of the three different levels of Reality are composed of Existence that is configured and arranged in relation to Itself in a different way. Thus, the relations of Existence to Itself by which Existence becomes configured into the first level of Reality or Relational Structuring, i.e., the Relational Matrix, are different than the relations of Existence to Itself by which Existence becomes configured into the second level of Reality or Relational Structuring, i.e., Distortion Processes, and the relations of Existence to Itself by which Existence becomes configured into the third level of Reality or Relational Structuring, i.e., Organic Processes, are different than the relations of Existence to Itself by which Existence becomes configured into both the first and second levels of Reality.

The importance of understanding that each of the three different levels of Reality is constructed of Existence being in relation to Itself in a different way is that this will allow for an understanding of why there are three different types of experiential realities that we each, as Consciousness, are able to apprehend, once it is understood that what we apprehend as an experiential reality of any sort, i.e., emotional, mental, or physical, is the product of a particular type of relation of Existence to Itself occurring at a particular level of Reality or Existential self-relation. Also, understanding that each of the three different levels of Reality is constructed of Existence being in relation to Itself in a different way will also allow for an understanding of the stratified structure of experience that goes along with the stratified Structure of Reality, which will be of benefit in understanding just what it is that scientists are poking their noses into when they probe into quantum reality.

That having been said, it is now time to describe the nature of experiential reality, as well as the relation of experiential reality to Reality, i.e., the relation of experiential reality, and especially physical reality, to the Relational Structures composed of Existence being in relation to Itself that underlie what we apprehend as physical reality. And the way the nature of experiential reality will be described is by explaining how experiential reality is created as a result of the same Existential relations by which Existence becomes configured into a progressive and stratified Relational Structure.

1.3 The nature and creation of experiential reality

So far all that has been accomplished is a brief description of how what the universe is actually composed of, i.e., Existence, becomes configured into a tri-level Relational Structure. Not much has been said so far regarding the nature of experience in general, or regarding the nature of physical reality in particular, other than to point out that experience is always the product of some relation of Existence to Itself, and that what we apprehend as physical reality is not what is actually there.

As previously stated, reality as a whole consists of both Reality and reality, i.e., a progressive Relational Structure composed of Existence configured in relation to Itself, and what we apprehend as experiential reality, which is not composed of Existence, but rather is produced as a

sort of by-product of the relations of Existence to Itself through which Existence becomes configured into a progressive and stratified Relational Structure. That is, the same relations of Existence to Itself that cause Existence to become configured into a progressive Relational Structure also produce what the Existence involved in those relations apprehends as experiential reality. And in order to explain both how this occurs as well as how experience is created, which explanation will allow one to understand the relation of experience to Existence, we will return to the rubber band model.

When using the rubber band model to explain how Existence becomes configured into a progressive and stratified Relational Structure as a result of the process of iterative self-relation, the focus was upon the overall structure into which the rubber band became configured as a result of those iterative and progressive self-relations. However, in discussing the nature of experience and how experience is created as a product of those same relations, the focus will be upon a different aspect of that structure, which different aspect is the *boundary* that is created where the rubber band comes to be in relation to itself, and so becomes defined in relation to itself, as it simultaneously becomes configured in relation to itself.

As will be described, as well as demonstrated through direct correlation to quantum experience and phenomena, what we apprehend as experiential reality is analogous to the boundaries that are created where the rubber band comes to be in relation to itself as a result of its being subjected to the process of iterative self-relation, as shown in figure 11. That is, what will be shown is that what we apprehend as experiential realities in general, and physical realities in particular, have as their basis boundaries that are created where Existence becomes defined in relation to Itself as a result of being in relation to Itself, with the specific type of boundary that is created and so experience that is apprehended, i.e., emotional, mental, or physical, dependent upon the specific type of relation in which the Existence that is apprehending the experience is involved.

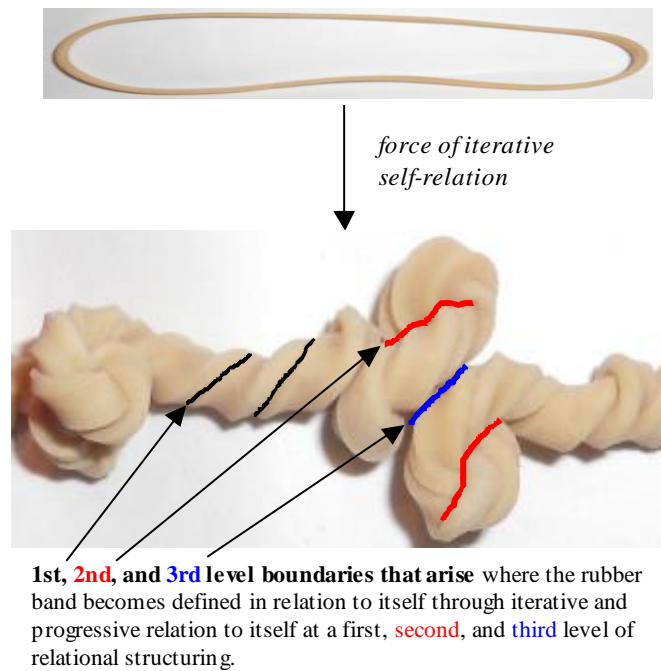


Figure 11 As shown in this photo, as the rubber band is subjected to the force of iterative self-relation and so becomes configured into a progressive relational structure, boundaries are created where the rubber band becomes defined in relation to itself through relation to itself. These boundaries, some of which are highlighted by black, red, and blue lines, are not what is actually there, but are created as a by-product of the relations occurring between what is actually there, which in this case is the rubber band. Likewise, as Existence subjects Itself to the force of iterative self-relation and so becomes configured into a Relational Structure, boundaries are created where Existence becomes defined in relation to Itself through relation to Itself. Such boundaries, which will be referred to as *experiential boundaries*, are also not what is actually there, but are created as a by-product of the relations occurring between What Is Actually There, which in this case is Existence, and it is such boundaries that are what the Existence-Consciousness that is involved in a relation that creates such a boundary apprehends as an experiential reality, with the particular type of experience apprehended, i.e., emotional, mental, or physical, dependent on the type and so level of Existential relation that produces the boundary.

As can be seen in figure 11, the nature of the boundary that arises where the rubber band becomes defined in relation to itself through relation to itself is different than the nature of the rubber band itself. The boundaries only exist as long as there is some relation of the rubber band to itself, whereas the rubber band continues to exist even when the relations that create those boundaries no longer exist. Likewise, the nature of what we apprehend as experience is different than the Nature of That which, through relation to Itself, both creates and apprehends experience, since what we apprehend as experience only exists, as it were, as the product of some relation of Existence to Itself, whereas Existence Exists regardless of whether or not it is involved in any particular relation. Thus, although they are related, inasmuch as Existence both creates and apprehends experience, Existence and experience are completely different in nature, which is why it is not possible to experience Existence, i.e., not possible that Existence Itself be an experience, not possible to experience What Is Actually There, because if it is an experience then it cannot be Existence, since the nature of experience is different than the Nature of Existence. Existence is that which can only be known through relation to Itself, and even then what is known is not Existence Itself, but rather is only the apprehension of the boundary that is created where Existence, as a result of some relation to Itself, has become defined in relation to Itself.

As previously stated, reality as a whole consists of both Reality and reality. The meaning of this statement should now be more clear, as it should now be possible to understand and comprehend the difference between Reality and reality, i.e., the difference between the Reality of What Is Actually There as Existence configured into a progressive Relational Structure through the process of iterative self-relation, and the realities that are created as by-products of those self-relations, which created realities are what the Existence that is involved in those relations apprehends as various experiential realities, simply by recognizing the difference between a rubber band that is twisted upon itself and the boundaries that arise and are created where the rubber band becomes defined in relation to itself as a result of its being twisted upon itself, i.e., as a result of its being subjected to the force of iterative self-relation.

In summary, when Existence subjects Itself to the force of iterative self-relation and so comes to be in relation to Itself, two things are created, one of which is composed of Existence and the other of which is not composed of Existence. That which is created that is composed of Existence, composed of What Is Actually There, is a Relational Structure composed of Existence as it has become configured and arranged in relation to Itself as a result of its participation in the

process of iterative self-relation. That which is created that is not composed of Existence, not composed of What is Actually There, are the experiential boundaries that arise where Existence becomes defined in relation to Itself as a result of its participation in the process of iterative self-relation. And it is the experiential boundaries that arise where Existence becomes defined in relation to Itself that are apprehended as experiential realities by the Existence-Consciousness that is taking part in the relations that create those experiential boundaries. Thus, there is Reality and reality, i.e., there is Existence-Consciousness, which is What Is Actually There, and there is experience, which, like a reflection, can present the appearance of being what is actually there.

Also as previously stated, Reality, i.e., the progressive and stratified Relational Structure composed of Existence configured in relation to Itself that underlies what we apprehend as physical reality, consists of three related and yet different levels of Reality or Relational Structuring, and each different level of Reality or Relational Structuring is composed of Existence being in relation to Itself in a different way. And as experience is always the product of some relation of Existence to Itself, it follows that different types of experience must be the products of different types of Existential relations. And as there are only three different types of experience or experiential realities, i.e., emotional, mental, and physical, it then also follows that there must then be three different levels of Relational Structuring, each composed of Existence being in relation to Itself, and so configured in relation to Itself, in a different way. Coming at it from another direction, if there are three different levels of Reality, three different levels of Relational Structuring composed of Existence being in relation to Itself in three different ways, then each level of Reality should produce its own unique type of experiential boundary as a result of the Existential relations that are unique to that level of Reality, which unique type of experiential boundary would then be apprehended as a unique type of experience by the Existence-Consciousness involved in the relations that create that particular level of Reality. And indeed this is what is found to be the case and is in fact why there are only three different types of experiential realities that we are able to apprehend, i.e., emotional, mental, and physical, because each of these different types of experiential reality is the apprehension of the product of a different type of Existential relation occurring at a different level of Reality or Relational Structuring. This is also why experiential reality is stratified along with the stratification of the Relational Structure of Reality, as shown in figure 12.

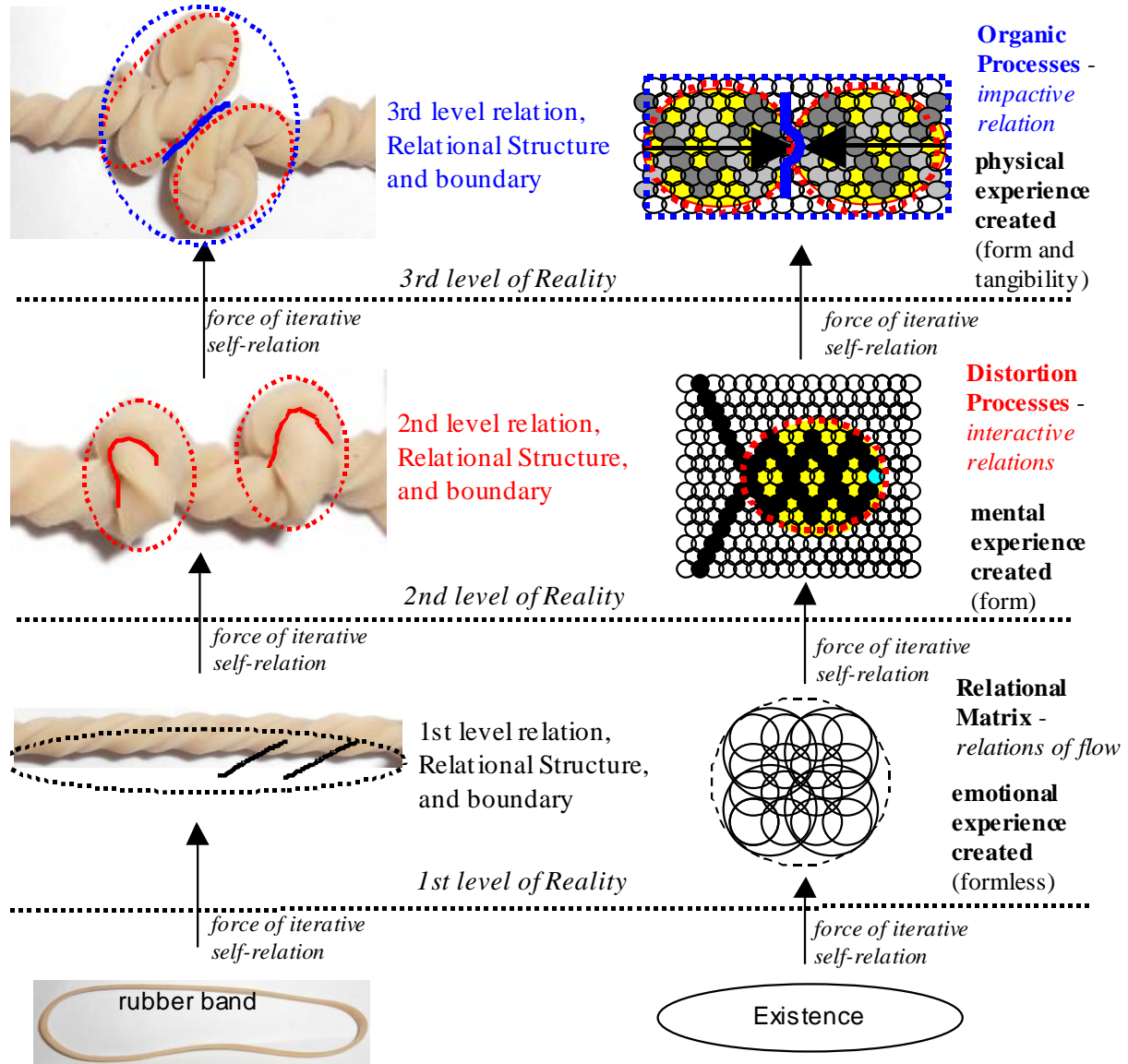


Figure 12 On the left is depicted the progressive relational structuring of a rubber band into three successive levels of rubber band reality as it is subjected to the force of iterative self-relation, and on the right is depicted the progressive Relational Structuring of Existence into three successive levels of Reality as it subjects Itself to the force of iterative self-relation. Each level is composed of what is there, i.e., the rubber band or Existence, involved in a type of relation that is unique to that level. And as the relations occurring to create each level of Reality are unique, the type of experiential boundary created and so experience apprehended at each level of Reality is also unique. Thus, the unique relations of Existence to Itself that occur in the construction of the first level of Reality produce an experiential boundary that the Existence-Consciousness involved in those relations apprehends as emotional experience, while the unique relations of Existence to Itself that occur in the construction of the second level of Reality produce an experiential boundary that the Existence-Consciousness involved in those relations apprehends as mental experience. And finally, the unique relations of Existence to Itself that occur in the construction of the third level of Reality produce an experiential boundary that the Existence-Consciousness involved in those relations apprehends as physical experience.

However, it should be noted that the nature of the stratification of the Relational Structure of Reality is not like the stratification we are used to, in as much as when we think of stratification we tend to think of progressive layers that are stacked on top of each other. That is, in the types of stratification we are used to, such as the stratification of the earth's layers or the rings of a tree, there is spatial distance between the different stratified layers. And while this conceptualization of the stratification of the Relational Structure of Reality has some validity, since in the progressive construction of the Structure of Reality successive levels are built upon prior levels, it is not accurately reflective of the actual nature of that stratification, as there is no spatial distance between the different and so stratified layers or levels of Reality. That is, in physical stratification, what exists in one layer is distinct from what exists in another layer, be it a more proximal or distal layer, whereas in Existential stratification, what Exists in one layer or level of Reality is not distinct from what Exists in the other layers or levels, since the more peripheral or distal levels are actually composed of the more central or proximal levels. Specifically, the second level of Reality is composed of the first level of Reality being in relation to Itself, while the third level of Reality is composed of the second level of Reality, which also includes the first level of Reality, being in relation to Itself.

Thus, the overall Relational Structure of Reality is stratified in a way that can be referred to as single-point stratification, where the term "point" does not refer to a point in space, or a point "in" anything, but rather refers to a point of Existence, i.e., a point of What Is Actually There. It is owing to this single-point stratification of Reality that, although we ourselves are third level Relational Structures, i.e., Organic Processes, composed of Existence that is being relation to Itself in way that is unique to that level of Reality, we are also, at the same point of Existence, both second and first level Relational Structures, and so are also composed of Existence that is being relation to Itself in the ways that are unique to those levels of Reality. And it is for this reason that we are able to create and apprehend all three types of experiential realities simultaneously, i.e., emotional, mental, and physical, because we are, at the same point of Existence, composed of and so simultaneously involved in all three levels of Existential self-relation. And as the explanation of the basis of the phenomena that lie at the heart of quantum theory will demonstrate, it is the relations of Existence to Itself that create what Existence, functioning as Consciousness, apprehends as experiential reality in general and physical reality in particular.

As shown in figure 12, the relations of Existence to Itself that occur in the construction of the first level of Reality are termed *relations of Existential flow*, while the relations of Existence to Itself that occur in the construction of the second level of Reality are termed *interactive relations*, and finally, the relations of Existence to Itself that occur in the construction of third level of Reality are termed *impactive relations*. It is the impactive relations occurring at the third level of Reality, as second level Realities or Relational Structures become involved in a higher order or more iterated relation, that create the experiential boundaries that the Existence-Consciousness involved in those relations apprehends as physical experience or physical reality. Therefore, it is these third level impactive relations and their experiential products that will now be examined in detail in order to explain the nature of quantum reality, which is to say, explain the behavior of physical reality at the quantum level, by using the model of Reality and reality just described to explain the basis of wave-particle duality, quantum uncertainty, quantum non-locality, the probabilistic nature of the wavefunction, and the collapse of the wavefunction, and

in so doing demonstrate that it is Consciousness that, through relation to Itself, creates physical reality, and not the other way around.

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