

# Quantum mechanics, the manifestation of the territory, and the evolution of maps

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Reality is not a territory. Reality is an intrinsically undifferentiated Being that manifests the territory, wherein beings capable of mapping the territory evolve. Once fully evolved, these beings will realize their identity with each other and with the Reality manifesting the territory, whereupon their maps will be one with the territory. Freed from the obsession of contemporary interpreters of quantum mechanics with the reification of their calculational tools, quantum mechanics provides deep insights into the *atemporal* process by which Being has set the stage for its own evolution, that is, for the evolution of beings one with Being and partaking of the power by which Being manifests itself to itself.

## I. An ancient conundrum

Here is a problem that Scholastic philosophers have discussed for centuries. Imagine that in front of you there are two exactly similar objects. All their properties are the same, except that they are in different places. Because they are in different places, they are different things. But is the fact that they are in different places the *sole* reason they are different things? Or is there another reason? If you believe that there is another reason, you will look for it in vain, for if two things are different, it is their properties that are different, and right now we are assuming that the two objects have exactly the same properties, except that they are in different places. On the other hand, if you believe that the two objects in front of you are different objects for the *sole* reason that they are in different places, then what you really believe is that the objects in front of you are *one and the same* thing in two places, which sounds preposterous. The resolution of this dilemma had to wait for the advent of quantum mechanics.

Consider the following experiment. Initially two identical particles — that is, particles lacking properties by which they can be distinguished — are observed to be moving Northward and Southward, respectively. The next thing that is known about them — and the next thing that *can* be known about them under the experimental conditions envisaged — is that they are moving Eastward and Westward, respectively. The obvious question then is, “Which incoming particle is identical with which outgoing particle?” It turns out that neither of the two possible answers, illustrated in Figure 1, is consistent with what quantum mechanics predicts. In other words, there is no correct answer to the question “Which is which?” What gives?

Unanswerable questions tend to arise from false assumptions. In this particular case, the question implicitly assumes (falsely) that we are dealing with *two* things, while in reality we are dealing with *one and the same* thing observed twice. If the particles are one and the same thing, initially seen moving *both* Northward *and* Southward, and subsequently seen moving *both* Eastward *and* Westward, the question “Which is

which?” can no longer be asked. This is how quantum mechanics resolves the dilemma of the Scholastic philosophers. The two objects they contemplated *are* the same thing in different places. Reality *is* preposterous.

What is more, there is no compelling reason to believe that the identity of the observed particles ceases when it ceases to have observable consequences owing to the presence of “identity tags” — properties by which they can be distinguished and re-identified. Nothing therefore stands in the way of the view that all particles — at any rate, all *fundamental* particles<sup>1</sup> — are identical in the strong sense of *numeric* identity.<sup>2</sup> What presents itself here with these properties and what presents itself there with those properties is one and the same “thing.”

Fundamental particles are routinely described as pointlike. What is meant by this, however, is that they lack internal structure. By itself, lack of internal structure may be consistent with either a pointlike form or no form at all. There are, however, compelling reasons, both experimental and theoretical, why fundamental particles cannot be literally pointlike, but should instead be regarded as *formless*.

What, then, are the properties that a fundamental particle has, by itself, out of relation to anything else? It has none! To see this, consider a universe containing a single object. Would we be able to attribute to this object a position — to say where it is? Of course not, for we can only say where an object is *relative* to another object. Can we attribute to it a velocity or a momentum? Same answer, for we can only *compare* the velocities or momenta of different objects. Can we attribute to it a mass? Negative again, for only the *ratios* of the masses of different objects are independent of our arbitrary measurement units and thus capable of representing objective properties. Nor can we attribute to it a charge, for charges characterize *interactions*. And so on. Hence, all that can be said about an existing fundamental particle by itself is that it exists.

Putting two and two together: what presents itself here with these properties and what presents itself there with those properties is (i) one and the same “thing” and (ii) something that, considered by itself, lacks properties. It is not *a* being but *Being* — that to which all existing properties owe their existence.

If every fundamental particle in existence is identically the same Being *and* formless, then the shapes of things resolve themselves into reflexive spatial relations, and physical space becomes the totality of spatial relations existing between Being and (the very same) Being. But if physical space only contains (in the proper, set-theoretic sense of containment) spatial relations and the forms they constitute, then Being itself is

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<sup>1</sup> The particles presently considered fundamental are the leptons (which include the electron and the neutrinos) and the quarks (which “make up,” among other things, the proton and the neutron).

<sup>2</sup> Numerically identical things are the same thing under different aspects. Thus the evening star and the morning star are numerically identical—they are aspects of the planet Venus. In the same way “Barack Obama” and “the 44<sup>th</sup> President of the United States” refer to the same person. Similarly, “the particle moving Southward” and “the particle moving Northward” refer to the same object; they are the same object under two aspects.

not contained in space. Rather, Being may be said to contain space, inasmuch as the relations that space contains are reflexive and, in this sense, internal to Being.<sup>3</sup>

## II. Manifestation (according to quantum mechanics)

The key that unlocks the mysteries of the quantum world is the concept of manifestation. By entering into (or establishing) reflexive spatial relations, Being manifests both matter and space, for space is the totality of existing spatial relations, and matter is the corresponding (apparent) multitude of relata,<sup>4</sup> which physicists refer to as “fundamental particles.”

We keep looking for the origin of the universe at the beginning of time, but this is an error of perspective. The origin of the universe is Being, which exists in an anterior relation to time, and the origination of the universe — its manifestation — is an atemporal transition from undifferentiated Being to the familiar spatially and temporally differentiated world. This transition takes place in stages. The first stage results in the (apparent) multitude of formless particles. The subsequent stages mark the emergence of form, albeit first as abstract forms that cannot yet be visualized. The forms of nucleons, nuclei, and atoms can only be mathematically described, as distributions over probability spaces of increasingly higher dimensions. Only at the penultimate stage do visualizable forms emerge, as atomic configurations of molecules.

The question of how the general theoretical framework of contemporary physics can be a calculus of correlations between the possible outcomes of measurements — the notorious quantum measurement problem — becomes intelligible in this light. If quantum mechanics concerns the transition from the unity of Being to the multiplicity of the manifested world, then the question arises as to how the intermediate stages are to be described, and the answer is that whatever is not *as* differentiated as the manifested world, can only be described by assigning probabilities to the possible outcomes of measurements. Particles, atoms, and molecules, which mark the stages of this progressive realization of distinguishable objects and distinct regions of space, can only be described in terms of probability distributions over distinguishable objects or distinct regions of space.

## III. Manifestation (according to Vedanta)

As we have seen, quantum mechanics allows us to infer the reality of an intrinsically undifferentiated Being, a Being that manifests the world by entering into spatial relations with itself. What quantum mechanics cannot tell us is how Being enters into spatial relations with itself, and why. For this we shall turn to what is arguably the most illuminating theory of manifestation available, which is part of the quintessential

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<sup>3</sup> For detailed discussions of the interpretation of quantum mechanics invoked in this chapter see Mohrhoff (2013, 2014ab, 2016, 2017).

<sup>4</sup> Because the relations are reflexive, the multiplicity of the relata is apparent rather than real. Does this mean that the material world is unreal, as some illusionistic philosophies assert? By no means, for the material world owes its existence to a multitude of reflexive *relations*, and these are real.

Indian philosophy known as *Vedanta* (Phillips 1995). What follows is based on the original formulations of Vedanta found in some of the Upanishads (Sri Aurobindo 2001, 2003) and on its contemporary development by Sri Aurobindo (Heehs 2008).

In the terminology of Vedanta, what is ultimately and solely real is called *Brahman*. Brahman relates to the world in essentially three ways: it is the substance (*sat*) that constitutes it, it is the consciousness (*chit*) that contains it, and it is an infinite Quality/Delight (*ānanda*) that expresses/experiences itself in the world. (Because *ānanda* transcends the dichotomy of subject and object, it is at once an infinite Quality and an infinite Delight or Bliss.) Brahman is that by which the world exists, it is the self or subject for which the world exists, and it is the reason why the world exists. It is *sachchidānanda* (*sat-chit-ānanda*).

Brahman can and does adopt a variety of poises of relation between subject and object, between self and world. In its primary poise, this relation is one of identity. Brahman considered as self is (i) coextensive with the content of Brahman considered as consciousness and (ii) identical with Brahman considered as substance. In a secondary poise, the one original self adopts a multitude of standpoints. Concentrating itself simultaneously in a multitude of individual forms, it identifies itself with each. Identified with an individual form, it views the content of its consciousness in perspective, from a particular location. It is in this poise that the dimensions of experiential space (viewer-centered depth and lateral extent) come into being. It is also here that the dichotomy between subject and object becomes a reality, for a self that is identified with an individual form cannot be one with the substance that constitutes all forms.

By a further departure from the original poise of relation between self and world, this multiple concentration of consciousness becomes exclusive. We all know the phenomenon of exclusive concentration, when consciousness is focused on a single object or task, while other occurrences are registered subconsciously, if at all. A similar phenomenon transforms individuals who are conscious of their essential identity into individuals who have lost sight of this identity and, as a consequence, have lost access to the *supramental* view of things. Their consciousness is *mental*, which not only means that it belongs to what appears to be a separate individual, but also that it perceives the world as a multitude of separate objects.

When carried further still, the multiple exclusive concentration of Brahman qua *chit* gives rise to a world whose inhabitants lack the ability to generate ideas — a world in which consciousness is reduced to its power of executing or realising ideas, of giving them a material form. This power is the essence of what we call “life.” Finally, when the multiple exclusive concentration of consciousness is carried to its furthest extreme, it gives rise to a world in which life itself is “involved” (rendered latent or dormant) in inanimate matter. And since the power of executing ideas is responsible for the existence of material forms, the result is a world of formless bearers of purely relational properties called “fundamental particles.”

It is worth noting here that, beginning with Leibniz in the 17th Century, philosophers have argued that all physical properties are relational or extrinsic. This

offers a way to circumvent the widely discussed “hard problem” of consciousness (Chalmers 1995), which is the problem of explaining how (quantitative) physical processes (in a brain) can give rise to experience, or to the sensory qualities that make up the content or perceptual consciousness. Arguably this too is a problem that arises from a false assumption — in this case the assumption that physical processes give rise to experience. If they don’t, there remains the possibility of locating the evolutionary origin of consciousness among the intrinsic or non-relational properties of the relata which bear the relational properties. This possibility has been considered by Bertrand Russell (1927) and more recently by David Chalmers.

The problem with this approach is that it is hard to imagine how the consciousnesses of a myriad of particles can constitute something like the unified consciousness that we enjoy. But if not only all physical properties are relational but also all relational properties are ultimately reflexive — if, in other words, the particles are identical in the strong sense of numeric identity — then the concept of consciousness as an intrinsic aspect of the relata comes into its own. Consciousness is an intrinsic aspect of the relata because the relata are identically the same Being, and because Being, Vedantically conceived, relates to the world not only as an all-constituting substance but also as an all-containing consciousness.

#### IV. Why the laws of physics are just so

While the evolution of consciousness, and arguably the evolution of life as well,<sup>5</sup> is not a subject for physics, a proper theory of life and consciousness, such as the original Vedanta of the Upanishads, may well be able to tell us why the laws of physics have the form that they do.

In the article that featured his well-known cat paradox, Erwin Schrödinger (1935) noted that “Measurements on separated systems cannot directly influence each other — that would be magic.” Three decades later, John Bell (1964) derived his famous inequality, whose violation by quantum mechanics proved that the magic was real. Measurements on separated systems *can* directly influence each other. The magic consists in the fact that such influences cannot be explained by any process continuous in space and time — neither in terms of something propagating from one measurement apparatus to the other nor by something propagating from a single event anterior to both measurements and affecting their outcomes.

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<sup>5</sup> A hundred years ago, it seemed obvious to many that life could not have emerged from utterly lifeless matter, just as today it seems obvious to many that consciousness could not have emerged from utterly unconscious matter. Yet today no one appears to seriously doubt that life did emerge from utterly lifeless matter; the seemingly insuperable “hard problem of life” simply dissolved. So why should it not be the same with the hard problem of consciousness, a hundred years from now? As Strawson (2006) has pointed out, one cannot draw such a parallel unless one considers life completely apart from conscious experience. If consciousness is essential to life — and Vedantically conceived, life is essentially the power that executes what consciousness conceives — then life cannot be reduced to physics (via chemistry) if consciousness cannot be reduced to physics (via neurobiology).

But this only highlights the fact that quantum mechanics *never* tells us what (if anything) happens *between* measurements (except, possibly, other measurements), whether they are made on the same system at different times or on different systems at the same time. The theory only explains — via its conservation laws — why certain things will *not* happen. And this is exactly what one would expect if the force at work in the world were an infinite force operating under self-imposed constraints, such as the power by which Brahman manifests itself to itself, in various poises of relation between itself as object and itself as subject. In that case one would have no reason to be surprised (or dismayed) by the impossibility of explaining the correlations that quantum mechanics predicts. After all, it would be self-contradictory to explain the working of an infinite force by a physical mechanism or natural process. What would need explaining is why — to what end — this force works under the particular self-imposed constraints that it does.

To find out why it works under the particular constraints known to us as the laws of physics, we need to do three things. First we need to characterize “ordinary objects” as objects that

1. have spatial extent (they occupy finite volumes of space),
2. are sufficiently stable (they neither collapse nor explode the moment they are formed), and
3. are made (or manifested by means) of finite numbers of objects that lack spatial extent.

Then we need to investigate the conditions under which ordinary objects are possible; in other words, we need to ask what the existence of such objects entails. What we find is that it entails the validity of quantum mechanics. Lastly, we need to ask why ordinary objects are made (or manifested by means) of finite numbers of objects that lack spatial extent. And the answer to this question is that the stage for Brahman’s adventure of evolution was set by carrying the multiple exclusive concentration of consciousness to its furthest extreme, for this resulted in an (apparent) multitude of fundamental particles which, being formless, lack spatial extent.

But if Brahman’s intention was to set the stage for a thoroughly evolutionary manifestation of its inherent qualities and powers, we can expect an evolutionary origin for all but the simplest structures that are instrumental in the manifestation of forms, and then it can be shown that not only quantum mechanics (the general theoretical framework of contemporary physics) but also many aspects of the well-tested special laws of contemporary physics (the so-called standard model of particle physics and the general theory of relativity) are needed to set the stage for evolution (Mohrhoff 2002, 2009, 2011).

## V. Supermind vs. mind

If the physical world were accessible to our senses on all scales of length, it would be differentiated all the way down. Taking for granted that this is the case, classical physics allows us to model reality from the bottom-up, either by explaining wholes in terms of interacting parts or by associating physical properties directly with

the points of space, as classical field theories do. Quantum theory's "explanatory arrow" points in the opposite direction. If in our minds we go on dividing a material object into distinct parts, we reach a point at which the "parts" cease to be distinct. The attempt to (conceptually) divide the physical world into distinct parts leads to numerically identical particles and thus back to undifferentiated Being. We might say that ultimately there is but one "thing," and this is everything.

By the same token, if in our minds we keep partitioning the physical world into distinct regions of space, we reach a point at which the distinctions we make between regions no longer correspond to anything in the physical world. The spatial differentiation of the physical world is therefore incomplete — it does not go all the way down. If we choose to think of space as a continuous expanse, rather than as a family of relations, we have to think of it as an intrinsically undifferentiated expanse. We might then say that ultimately there is only one place, and this is everywhere. And much the same goes for the temporal differentiation of the world.<sup>6</sup> It follows that quantum mechanics does not permit us to model the world from the bottom-up. The world is structured ("built") from the top down, by a differentiation of Being that does not "bottom out."

The difference between the world of classical physics (differentiated all the way down and built from the bottom up) and the world of quantum physics (incompletely differentiated and structured top-down) reflects a difference between mind and the creative self-knowledge native to Brahman's primary poise which, following Sri Aurobindo, I call *supermind*. The action of supermind is primarily qualitative and infinite and only secondarily quantitative and finite. Mind is essentially the agent of supermind's secondary, quantifying, and delimiting action. If mind is employed by supermind, as it is in reality, its tendency to divide space and things *ad infinitum* is checked. This is why there are limits to the objective reality of the distinctions we make between things and between regions of space. If, on the other hand, mind is separated from its supramental parent and left to run wild, as it is in us, it not only divides *ad infinitum* but also takes the resulting multiplicity for the original truth or fact. This is why we tend to construct reality from the bottom up, and why we find it so hard to make sense of our fundamental physical theory. By implying that the world is created top-down, by a differentiation that does not bottom out, quantum mechanics is trying to tell us that the original creative principle is supramental rather than mental.

There remains the question of why Brahman=*sachchidānanda* would involve its infinite creative delight and its omnipotent consciousness-force in formless particles and a seemingly mechanical action. *Sachchidānanda* being what it is, there is only one possible answer: for "fun" (*ānanda*). In the physical world, Brahman is "playing Houdini," enchainning itself as best it can, challenging itself to escape, to re-discover its true self and its powers, to affirm itself in conditions that appear to be its very

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<sup>6</sup> In the physical world, temporal differentiation supervenes on spatial differentiation, for the existence of temporal relations requires something that can change, and in the physical world only the spatial relations can change.

opposite—nonbeing<sup>7</sup> rather than *sat*, inconscience rather than *chit*, insentience first and then pain of every kind rather than *ānanda*. In the words of Sri Aurobindo (2005, 426–427):

a play of self-concealing and self-finding is one of the most strenuous joys that conscious being can give to itself, a play of extreme attractiveness. There is no greater pleasure for man himself than a victory which is in its very principle a conquest over difficulties, a victory in knowledge, a victory in power, a victory in creation over the impossibilities of creation.... There is an attraction in ignorance itself because it provides us with the joy of discovery, the surprise of new and unforeseen creation.... If delight of existence be the secret of creation, this too is one delight of existence; it can be regarded as the reason or at least one reason of this apparently paradoxical and contrary Lila.

Lila is a term of Indian philosophy that describes the manifested world as the field for a joyful sporting game made possible by self-imposed limitations.

## VI. Evolution

What is meant here by “evolution” is neither descent with modification nor the Darwinian process postulated to explain this historical fact. Essentially, evolution is the gradual reversal of the multiple exclusive concentration of consciousness which culminated in the creation of matter. Because life came to be involved in matter, life can evolve in matter; because mind came to be involved in life, mind can evolve in living matter; and because supermind came to be involved in mind, supermind can evolve in mentally conscious matter. But evolution does not simply retrace the steps that led to the creation of matter, for if it had done so, particles would have acquired forms. Evolution proceeds by integrating (rather than re-absorbing) the lower principles into the higher. When life appears, what is essentially added to individual forms is the power of executing ideas, and when mind appears, what is essentially added is the power of generating ideas. What has yet to evolve is a consciousness that is not exclusively concentrated in the individual, a consciousness aware of the essential identity of all individuals, a consciousness no longer confined to the perspectival outlook of a localized individual but capable of integrating its perspectival outlook into the supramental “view from everywhere,” a consciousness informed with the infinite Quality/Delight at the heart of reality and capable of throwing it into mutable forms of its own immutable substance.

At bottom, all we can rationally understand is what can be reduced to laws. If there is something that is inexplicable in terms of natural laws, we consider it random. Because evolution has aspects that cannot be explained in terms of natural laws, the

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<sup>7</sup>How does Brahman create something that appears to lack being? Think of space. Seen from the aperspectival poise of the original creative consciousness, it is a self-extension of what is at once, indistinguishably, an undivided substance and a single self. It is *sachchidānanda* extending itself to make room for variations. Now look at the same thing from the perspectival poise of a consciousness that has lost sight of its single self and, consequently, of the undivided substance constituting the world. In this poise of relation between self and world, space presents itself as a void, an extended nothing, a nonbeing, which nonetheless somehow exists.

rationalist is compelled to attribute the origin of species to random mutations, in addition to environmental selection pressures and biological processes that are intelligible in terms of natural laws.

Don't get me wrong. I am not an advocate of Intelligent Design. (Nor am I an advocate of stupid design.) The constraints under which a designer works are different from the constraints under which evolution works. If Brahman has the power to enter into reflexive relations and to subject them to physical laws, then it also has the power to modify these laws. If there are limits to this power, they are self-imposed. The difference is that a designer makes use of the physical laws without being able to change them, whereas evolution works through modifications of these laws.

The objection may be raised that modifications of the laws of physics have never been observed. But this is what we should expect. Given the Houdinesque purpose of this evolutionary manifestation, it stands to reason that the range of possible modifications will be seriously limited — so limited that no presently feasible experiment can reveal statistically significant departures from what the physical laws predict.

The Force at work in the physical world has two aims to pursue. The first is to bring into play the creative powers of life and mind — the power of executing ideas and the power of generating ideas. Because it has to accomplish this through tightly constrained modifications of the physical laws, the evolution of life necessitates the creation of increasingly complex organisms, and the evolution of mind necessitates the creation of increasingly complex nervous systems. The second aim is to express, at any stage in the course of evolution, by whatever means available at that stage, the infinite Quality at the heart of reality. (How could the angiosperms not be the works of accomplished artists? What if not a frenzy of creative ecstasy could have produced the arthropods?)

It used to be said that qualities (like colors and sounds) are “nothing but” quantities (such as electromagnetic or acoustic frequencies). It would be much closer to the truth to say that quantities are nothing but means of manifesting qualities. And here I am not speaking merely of sensory qualities; I am also speaking of the transcendental qualities of beauty and goodness. The reason this is not obvious is that the dynamic link between quality and form is inaccessible to a consciousness whose characteristic activity is the formation of ideas. This link is accessible only to a consciousness whose characteristic activity is the development of quality into expressive ideas — a supramental consciousness that is directly aware of the qualities to which it gives expression. If our social world exhibits an appalling lack of the good and the beautiful, it is for two reasons. The first is that such a consciousness is yet to evolve, and the second is that it would not evolve if we were not duly appalled.

Brahman's power to modify its self-imposed constraints cannot be explained in terms of another self-imposed constraint. In other words, it cannot be reduced to laws, and therefore we have no way of knowing how it works. If the constraints were loosened, more would become possible while less would be comprehensible. If the constraints were removed, everything would become possible and nothing would

remain comprehensible to our mental way of knowing. The evolution of supermind will remove the constraints. As you will remember, it was due to these constraints that the evolution of life had to depend on the creation of complex organisms, and that the evolution of mind had to depend on the creation of complex nervous systems. Once the constraints are removed, this complexity will have served its purpose. Matter will no longer offer any resistance to the executive force of life, nor will life offer any further resistance to the ideative faculty of mind. Fully integrated into the supramental dynamism, both life and mind will participate in the unhampered development of quality into fully expressive material forms.

All of this seems perfectly preposterous, to be sure, but here is why: we tend to conceive of the evolution of consciousness as an emergence of increasingly successful adaptations to, if not increasingly faithful representations of, a pre-existent world. And we tend to think of science as being in the business of devising more and more faithful models of such a world. From the Vedantic point of view, this is a serious mistake, for it blinds us to the possibilities of the future. The evolution of consciousness consists in the successive emergence of increasingly rich and complex ways in which Brahman presents itself to itself, not in the progressive uncovering of a pre-existent world.

It will be instructive to contrast our present consciousness structure (to borrow a term coined by the cultural historian and philosopher of evolution Jean Gebser) with the one that preceded it. Take the ancient notion that the world is enclosed in a sphere, with the fixed stars attached to its boundary, the firmament. We cannot but ask: what is beyond that sphere? Those who held this notion could not, because for them the third dimension of space — viewer-centered depth — did not at all have the reality it has for us. Lacking this dimension, the world they experienced was in an important sense two-dimensional. This is why they could not handle perspective in drawing and painting, and why they were unable to arrive at the subject-free stance which is a prerequisite of modern science, and which Thomas Nagel (1986) has called “the view from nowhere.” All this became possible with the consolidation, during the Renaissance, of what Gebser (1985) has called the mental structure of consciousness, which superseded what he termed the mythical structure. While the latter structure’s characteristic way of making sense of the world was through myths, the way we, at this point in history, attempt to make sense of the world is through science and rational philosophy.

As the mythical consciousness structure was superseded by the mental, so the mental structure will be superseded by a structure Gebser termed integral, and which he equated with the consciousness Sri Aurobindo termed supramental. And just as mythological thinking could not foresee the technological explosion made possible by science, so scientific thinking cannot foresee the radical consequences of the birth of a new world, brought about by the evolution of the integral structure.

Our very concepts of space, time, and matter are bound up with, are creations of our present, characteristically three-dimensional consciousness structure. It is not matter that has created consciousness; it was consciousness that has created matter, first by carrying its multiple exclusive concentration to the point of being reduced to an apparent multitude of formless particles, and again by mutating into our present

consciousness structure, which is capable of integrating our location-bound perspectives into a subject-free world of three-dimensional objects. Ahead of us lies the evolution of a consciousness that transcends our time- and space-bound experience, a consciousness to which our theoretical dealings with the world will seem as dated as the mythical explanations of the pre-scientific era seem to us. To this characteristically four-dimensional consciousness matter will be transparent, revealing its ultimate constituent as well as the identity of the latter with the ultimate subject of all consciousness.

## VII. Map and territory

Quantum theory requires us to distinguish between two kinds of measurable quantities and two corresponding domains — quantities belonging to a microscopic or quantum domain, which possess definite values only when they are measured, and quantities belonging to the macroscopic or classical domain, which possess values that are definite *per se*. Half of the crux of the aforementioned measurement problem lies in understanding the origin of the definiteness of these values. The other half concerns the statistical character of quantum mechanics, which I have already addressed, without mentioning that it too makes it necessary to distinguish between those two domains. The difficulty of understanding why we need this distinction has bedeviled the interpretation of quantum mechanics from the get-go. Yet it is readily understood once we recognize it as the distinction between the manifested world and what is instrumental in its manifestation.

Why, then, are the properties of the manifested world definite *per se*? The reason is that when we speak of the manifested world, we mean the world manifested *to us*. We mean the world that Brahman manifest to itself at the present stage of the evolution of consciousness. It is only in our experience that measurement pointers have definite position and, consequently, that measurements have definite outcomes. After countless ways have been tried to disprove this, it has become increasingly clear that the origin of definiteness — like that of so many other features of the “objective” world — lies in the nature of human conscious experience. Niels Bohr was right all along, insisting as he did that “in our description of nature the purpose is not to disclose the real essence of the phenomena but only to track down, so far as it is possible, relations between the manifold aspects of our experience” (1934, pp. 17–18).

But if all that science can do is track down relations between the manifold aspects of our experience, then what we call “nature” or “the physical world” is a construct of such relations — grammatical or logical relations like the relation between subject and predicate, to which we owe the concepts of substance and property, and spatiotemporal relations like the relation between here/now and there/then, to which we owe the concepts of causality and interaction — as Immanuel Kant (1781/1998) has shown. And then there can be no question of science mapping the territory of a pre-existent world. If there were such a world, we would have no concepts to describe it, as Bishop Berkeley (1710) has shown.

To what, then, can the metaphor of map and territory be applied? We tend to take a mind-constructed map for the territory in which evolution takes place. But if this “map” is exclusive to a particular structure of consciousness and thus limited in time, what could be the territory in which consciousness itself evolves? If we think of the different structures of consciousness as maps, what could be the territory in which one map is replaced by another? In a Vedantic context, the obvious answer is: the supramental consciousness in which “this apparently paradoxical and contrary Lila” takes place.

If there is a real world beyond the world constructed by our minds, it is not a world existing out of relation to consciousness altogether, but the world as it exists — as it is perceived and by being perceived created — in the primary poise of relation between Brahman qua subject and Brahman qua object. Sri Aurobindo (2005, p. 143) speaks of “a consciousness higher than Mind which should regard our past, present and future in one view, containing and not contained in them, not situated at a particular moment of Time for its point of propection,” a consciousness “not situated at any particular point of Space, but containing all points and regions in itself,” and he adds that

At certain moments we become aware of such an indivisible regard upholding by its immutable self-conscious unity the variations of the universe. But we must not now ask how the contents of Time and Space would present themselves there in their transcendent truth; for this our mind cannot conceive, — and it is even ready to deny to this Indivisible any possibility of knowing the world in any other way than that of our mind and senses.

This indivisible regard, upholding by its immutable self-conscious unity the variations of the universe, is the territory. And so it is when this indivisible regard manifests itself in a species of supramentally conscious beings that the maps will have become one with the territory.

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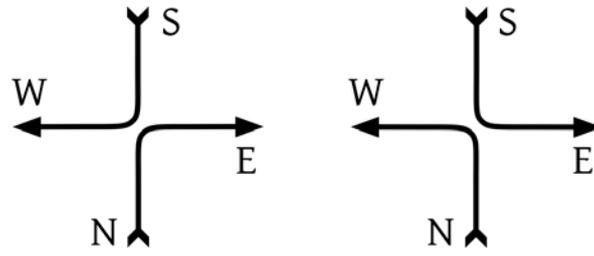


Figure 1: Possible identities in a scattering experiment with incoming particles moving Northward and Southward and outgoing particles moving Eastward and Westward.