

# Applying Consciousness, Infinity and Dimensionality Creating a Paradigm Shift: Introducing the Triadic Dimensional Distinction Vortical Paradigm

Vernon M. Neppe and Edward R. Close

## Abstract

Despite our current reductionistic materialist paradigm allowing explanations of almost all aspects of our experience, certain areas of scientific endeavor are still contradicted. This motivates the need for a new paradigmatic approach to integrate several different scientific disciplines and to postulate a new and comprehensive model, producing a paradigm shift. But this is not easy and has never before been achieved. Previous models have often ignored the fundamental role of an extended consciousness. Even in the score of Theories of Everything (TOEs) recognizing consciousness, few include multiple extra dimensions, and only in our Triadic Dimensional-Distinction Paradigm (TDVP) are infinity, order and life fundamentally incorporated. TDVP regards the unification of space and time as insufficient, and postulates that space-time and a broader extended "consciousness" (STC) are fundamentally tethered from their finite origin, such that even when the tethering becomes loose or untethered, the fundamental link still exists. The TDVP model allows for the interfacing within, across, and between multiple dimensions of finite subreality (by a process called "indivension" and a content of "vortices") and allows, too, for individuals or any groups ("individual units") to experience their own unique reality. This finite reality bridges an all-pervasive infinite subreality essence of all-embracing time, space, and extended consciousness (meaningful information) as well as extropy (multidimensional order) and potential life. Comparing TDVP with 20 other Theories of Everything across 39 different parameters, TDVP scores 39/39. No other model scores above 20/39 other than the original models of Neppe (Vortex N-dimensionalism) and Close (Transcendental Physics). But TDVP is far more than a theoretical model. It is supported empirically, has areas of testability in our 3S-1t (three spatial dimensions with one point of time) domain, has mathematical and logical support including the calculus of distinctions and generates six hundred ideas, speculations, hypotheses and extensions for research. Philosophically, the model of TDVP uniquely involves "Unified Monism".

**Key Words:** axioms, dimension, essence, extropy, individual-unit, infinity model, influence, information, integrated, metaconsciousness, meta-information, metaparadigm, multidimensional scaling, n-dimensional manifolds, negative entropy, quantum consciousness, theorem, triadic dimensional-distinction vortical paradigm, unified monism

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## 1. Introduction

Modern science, while very successful and beneficial to mankind, has its downside. In spite of the fact that most of the great pioneers of science, like Newton and Einstein (Ohanian, 2008), were deeply spiritual and based their theories in their humble metaphysical awe of the intelligence behind manifest reality, in recent years, an increasingly materialistic scientific attitude has undermined human thinking, resulting in a world of declining morals and increasing violence. The historical approach of science, philosophy, and religion, has been primarily fragmentary and reductionistic. Individual groups of scientists, philosophers, and theologians tend to wall themselves off from each other, and the rest of humanity, both conceptually and institutionally. Even the abundance of information on the Internet has not changed this very much. Science is divided into many fields and disciplines, each with their own logical structure and technical language, largely cryptic and indecipherable by the average layperson, and even by many scientists in other fields. Philosophy is divided into ontology, the study of the nature of things, and epistemology, the study of knowledge and knowing, with endless further subdivisions of these two broad disciplines. Various intellectual and cultural groups of theologians argue for the existence of greater realities circumscribed by dogmas based on divine revelation. None of these groups of thinkers has an exclusive lock on truth, and none are devoid of it, but what the world needs now is a new comprehensive integrating paradigm that will unite the search for truth (Neppe and Close, 2011f).

The desire to know and understand, whether manifested as science, philosophy, religion, or in some other form, is essentially the same innate desire for direct contact with, and direct knowledge of ultimate reality. Over the past few hundred years, and notably so over the past few decades, thinkers in the various fields have amassed an impressive amount of data and knowledge concerning the nature of the reality we experience. Possibly, we should all be working toward the same goal: a comprehensive understanding of reality. There are, however, conflicts between and within some of the bodies of knowledge,

indicating the need for an integration of the various fields into one body of knowledge. This would constitute a reversal of the reductionist approach and would require the development of a comprehensive paradigm capable of encompassing the true knowledge of all fields and resolving the conflicts between them.

The authors come from very different academic, professional, and cultural backgrounds. Yet they have arrived at similar conclusions regarding the nature of reality and the need for an integrative paradigm. Both have produced papers or books addressing the need for a scientific theory that includes consciousness as the organizing feature of the universe. On reading the other's written works, both were surprised at the synchronicity and complementarities of each other's ideas (Close, 2000; Neppe, 2003). They have combined their efforts to articulate the underlying concepts, logic, mathematics, and multi-dimensional geometry of a new comprehensive paradigm. Over the past two years, they have collaborated intensely, and this article is a brief summary of this collaboration.

We believe that a new dimensional and consciousness-based paradigm will reunite science with spirituality and provide the remedy to many of the ills of modern society.

## 2. The Approach

### The historical background

Albert Einstein saw that the forces of electromagnetism and gravity could be unified with a few elegant equations, revealing the beauty, as he said, of some of "God's thoughts" (Harris, 1995). He also reasoned that, if two of the fundamental forces of the universe could be unified, he should be able to discover the mathematical laws integrating all of them. He believed the universe to be ordered and logical, and that the laws governing it could be discovered and understood. A Theory of Everything would reveal the elegant harmony of the universe.

Einstein and many brilliant scientists since have tried to find this "Holy Grail" of science and failed. Why do we think that we have succeeded now? We have done something that has not been done before:

We have identified the missing elements of the current paradigm, and we have found a way to rectify the glaring omission of any mathematical representation of consciousness in the equations of the standard model. We have reunited science with human experience by formally describing the conscious act of the drawing of distinctions with a mathematical tool called the calculus of distinctions (Close, 2011). This simple act of including consciousness in the equations leads to a completely new understanding of time, space, and consciousness, as well as the finite and the infinite (Close and Neppe, in press). Added to this is a model of life, origins, and of multidimensional order.

### The current problem

1. A paradigm refers to a specific worldview underlying the theories and methodology of a particular scientific subject.

2. Our standard paradigm for reality involves our usual current day-to-day world experience with the physical conventional reality domain of three dimensions of space and one point of time—3S-1t. The standard paradigm has applications for almost all of our everyday earthly human realities, and works in almost every instance.

But a new model is needed (Neppe, 2011i) other than our standard paradigm because there are rare areas in which the standard paradigm is incomplete and, indeed, falsified, for example:

- a. contrary quantum experimental evidence (the double-slit and delayed choice experiments);
- b. the contradictions of the standard model of subatomic physics particularly in the context of relativity and data that varies greatly from predictions;
- c. the nine different six sigma meta-analyses in consciousness research;
- d. the internal inconsistency in physics across quantal, macro- and astronomical levels;
- e. the applications of special and general relativity theory have facilitated new approaches to the previous Newtonian physical understanding of the world but reduced new challenges.

f. Whether evolution can be applied to the standard paradigm cannot be demonstrated because it is not falsifiable, yet there is debate as to its feasibility: it is unanswered;

g. The unanswered question of how life comes about.

3. We argue that this standard paradigm cannot explain why there is complex structure and complex conscious organisms in the universe or even why there is a universe at all. This physicalist, materialist paradigm fails. In it, consciousness is nothing more than an emergent or epiphenomenal feature of the physical world, and disputably neuroscience itself cannot adequately explain consciousness in terms of the physical brain alone.

4. Because of these failures there is a need for a radical new paradigm of reality which will address the complex controversies that are not explained using our standard model.

### Our paradigm shift

Our new book on our model, *Reality Begins with Consciousness: A Paradigm Shift that Works* (Neppe and Close, 2012), and its soon to be published amplification *Space, Time and Consciousness: The Tethered Triad* (Close and Neppe, in press), present a sweeping new paradigm shift that we know will be greeted by a wide range of reactions. A few will embrace it, many will be stunned by it, and those with vested interest in a materialistic worldview will react with hostility. A new theory incorporating elements that lie outside the scope of the existing scientific paradigm will always meet with resistance: And this is as it should be. All of the major advancements, which Thomas Kuhn (1962) called “scientific revolutions” or “paradigm shifts,” like those brought about by Copernicus and Kepler, Newton and Leibniz, Einstein and Bohr, challenged long-held assumptions and were met with great resistance. But a new theory should never be rejected out of dogged adherence to belief in a priori assumptions. If the new assumptions are correct, or even just more correct than the old, they will eventually win over open-minded scientists and thinkers.

## Models of science

Every scientific theory is based on a priori assumptions, and since they are a priori, by definition, no matter how correct they appear to be, there is always the chance that they may be wrong. This certainly applies to the tacit assumption of modern science that everything can be explained in terms of matter and energy interacting in time and space as we now understand them, and that consciousness is an epiphenomenon of material complexity. This new paradigm challenges this belief. But we are not just replacing one belief system with another, we present cogent arguments based on empirical evidence from relativity and quantum mechanics, and we provide new mathematical and logical tools and frameworks to support the new paradigm.

Sometimes such models are so esoteric that they are difficult to interpret unambiguously. Our paradigm shift, a theory of everything holistic model that permeates scientific, mathematical, and philosophical disciplines<sup>2</sup>, was extremely complex to the extent that readers commented there were very few who would be able to understand it. Indeed that was so, initially in its first drafts: There were few who could fully appreciate all the disciplines because it was multidisciplinary and required a high level of knowledge, a conceptualization background, and a training in specialized aspects of the physical, psychological, biological, and consciousness sciences, in philosophy and in logic, plus a specialized background in mathematics.

## Moving towards clarity

Our emphasis over an intense half a year, was to make our model far more comprehensible and yet maintaining its fundamental soundness. We have strived for clarity and lack of ambiguity. This was more easily achieved by the excellent feedback of our colleagues: It also strengthened our resolve that this appeared a viable TOE because we did not encounter refutations. Instead, we were able to clarify. We realized a new vocabulary was needed, usually with specific definitions and sometimes entirely new words. (Table 1)

## 3. Brief Glossary of Key Terms

The following terms (Table 1) are used in special ways in our model and are defined in *Reality Begins with Consciousness*. They are defined briefly here to assist the reader in understanding the ideas presented in this article. These terms are discussed in some detail in previously published books and papers, by the authors, and they will be elaborated on in the more technical second book: *Space, Time and Consciousness: The Tethered Triad*. A third book, written for the general public is also planned.

**Table 1.** Brief Glossary of Key Terms

**3S-1t:** Our conventional scientific reality—3 dimensions of space and 1 moment in time.

**Conceptual:** The never complete interpretation of the perceptual combined with the logic inductive and deductive reasoning processes.

**Consciousness:** A broad, general term describing both infinite conscious meaningful information and finite awareness and responsiveness ranging from the discrete finite physical meaning at inanimate levels and extending to transfinite continuous interactions, and modulated in sentient beings in the brain.

**Continuous:** Spatial, temporal or conscious extension, infinitely divisible, non-discrete, without breaks or gaps.

**C-substrate:** The conscious ground of all distinct entities, connecting the finite with the transfinite.

**Dimension:** A continuous distinction that can be measured in units of extent. These interact together forming different domains with specific properties.

Euclidean dimensions can be characterized in degrees of freedom.

**Distinction:** Any finite object, event image or thought that can be distinguished from its surroundings.

**Discrete:** Finite, discontinuous, countable set of values; not continuous.

**Essence:** Fundamental infinite nature including infinite space, time, consciousness, information, order and life. Qualities of the infinite incorporate metaspaces, metatime, and metaconsciousness, plus extropy and potential life.

**Extrapolation:** A mathematical term for the logical extension of a known parameter or parameters facilitating the process of moving to higher dimensions.

**Extropy:** The existence of spatial, temporal or other meaningful multidimensional order and patterns, including, but not limited to, negative entropy: "Negative entropy" is only one component.

**Finite:** Of limited extent in space, time or consciousness.

**Fluctuations:** Relative dynamic changes in dimensional perspective. An instance of chance; the rate or magnitude of change. These are within, across and between dimensions, and may be state related (at that moment in time) or trait related (more consistent over time).

<sup>2</sup> Triadic Dimensional Distinction Vortical Paradigm (TDVP)

**Indivension:** The process by which conscious individual-units relatively experience transdimensional perceptions through the fluctuating interaction of vortical distinctions. It is a necessary new term in the absence of others. It portrays the fluctuating dimensions and domains in the individual-unit or a combination of individual-units experiencing a common reality.

**Individual-unit:** Distinct conscious biological unit or group including individual, family, social, cultural and ethnic units.

**Infinite:** Limitless and unbounded.

**LFAF:** Lower-Dimensional Feasibility, Absent Falsification; the basis for including logically feasible concepts in hypotheses that may not be falsifiable in 3S-1t. This is closely related to feasibility and is applicable at all dimensional levels.

**Origin Event:** The initial origin in finite reality of events at the beginning, corresponding with the origins of space, time and consciousness, and possibly mass and energy. (Some use terms like Event Horizon and this may be linked with singularity and expanding universe or the Big Bang, but these are controversial concepts, and we are using the term Origin Event non-prejudicially here (Close and Neppe, in press).

**Paradigm:** A model of reality constituting a specific worldview underlying the theories and methodology of a particular scientific subject.

**Perceptual:** In physics, it is what we obtain from the senses and instruments extending the senses. It is considered as empirical evidence though in reality it is affected by the observer state and their relationship to the whole substrate. It is thought of as objective physical reality with measurable data and interpreted as reality, but limited by the axiom of physical limitations. This is an easily misunderstood partial and incomplete element because of its necessary limitations of the senses and instruments measuring it.

**Reality:** The infinite and finite subrealities making an indivisible holistic unit. In sentient beings, that which is subjective, perceived or experienced; common reality may be verified independently by a majority of conscious observers.

**Space:** Volumetric extent including the dimensions of height, depth, and width (reflecting three variables of extent with an interval metric) within which physical reality manifests.

**Substrate:** The ground or source of all distinctions of extent, content and extropy: There is a space substrate, a time substrate and a special kind of substrate of "consciousness" (C-substrate).

**Tethering:** Nonlocal trans-dimensional connection. It has two components:

- 1) a fundamental inseparable existence of the parts at the origin, namely space-time and "consciousness".
- 2) Separation of these parts, namely any aspect of the STC components, when untethered (not tethered together but still loose attachment, metaphorically like a balloon on a string is attached to its base.)

**Time:** Duration of finite moments perceived together as past, present and future and an infinitely continuous

substrate. In finite reality, this encompasses proposed 4th, 5th and 6th dimensions of extent encompassing all lower-dimensional realities and events and necessarily moving through space and consciousness.

**TDVP:** Triadic Dimensional-Distinction Vortical Paradigm (model of the metaparadigm).

**TTOURS:** "Triadic Tethered Ordered Origin Unified Relative Subjectivity" (description of the metaparadigm).

**Triad:** An inseparable trio such as space, time and consciousness (STC) (adjective: triadic).

**Vortex:** A dynamic moving curvilinear manifold multi-dimensional distinction of any open or closed form, including spherical, ovoid, helical or spiral forms.

**Warping:** The distortion of Euclidean dimensional realities by opposing forces.

We are providing here only the briefest overview of our model. In our books we endeavor to elaborate on every one of these major points of emphasis by applying empirical data and mathematical axioms, theorems, proofs, and relevant equations. This will assist more in comprehending our ideas, but in contrast to the 600 references in our two books (Close and Neppe, in press; Neppe and Close, 2012), this summary can be perceived as equivalent to abstracts that are largely non-referenced. But, just as abstracts reflect detailed, well-referenced articles, we have endeavored here to support every component of this model with appropriate sources spread through the body of our books.

#### 4. A Brief Perspective on TDVP

We present to you here the basic remarkable ideas underlying our work, though evaluation of the scientific and mathematical support of the theory will require detailed reading of the two books (>600 pages).

Ideas that have inherent merit should stand the test of time. However, they must also be comprehensible and sound. Sometimes such models are so esoteric that they are difficult to interpret unambiguously. It's fascinating that when we examine broad "Theories of Everything", we find Kabbalic and Vedic Mysticism have survived centuries or even millennia, yet are so complex that interpretations are ambiguous. We also find remarkable, but conceptually limited, older models that focus on one specific area, such as consciousness (Kelly *et al.*, 2007). By

contrast, in our model, we have striven for clarity and lack of ambiguity. We differentiate more speculative information from our key axioms.

The scope of our challenge has been enormous. But we hope it will stimulate long-term further developments and research. We attempt the broadest of paradigms, not a single area of focus (Close and Neppe, in press; Neppe and Close, 2012). We attempt to develop something never before done: an all-encompassing paradigm that is feasible yet not falsified in all the major scientific disciplines; namely, the physical, life, psychological, and consciousness sciences. Additionally, we ensure that there is a mathematicological basis to justify this overriding paradigm, plus a philosophical mystical basis, as well. Our fundamental metaparadigm has hundreds of eventually or potentially testable ideas applying a novel approach to the philosophy of science<sup>3</sup>, and indirectly suggests about six hundred different concepts, ideas, postulates, or hypotheses. It uses both the empirical, often inductive data of scientific method, plus the deductive bases of mathematics.

### **The Ten Point Brief Summary of TDVP**

1. In *Reality Begins with Consciousness*, we propose a model that appears to be the first comprehensive paradigm that can be explained consistently in science, mathematics and philosophy (Neppe and Close, 2011a).

2. The proposed model is called the Triadic Dimensional-Distinction Vortical Paradigm model (TDVP). In its full descriptive name, it is called The Triadic Dimensional-Distinction Vortical Paradigm (TDVP) — The N-Dimensionometric, CST Substrate, Entropic-extropic, Infinite-finite Mathematicologic, LFAF Model: An integrated space, time and “consciousness” substrate reflecting origin event, warping-N-Dimensional extrapolation, extent-content-intent distinctional-C-substrate indivision, open-closed, holistic-unified, biopsychophysical reality.

3. TDVP is based on a single metaparadigm:

For clarity, we divide this metaparadigm of Triadic Tethered Ordered Origin Unified Relative Subjectivity (abbreviated TTOOURS) into five statements:

- i. Reality involves a unified wholeness of the continuous infinite with the infinite pervading the discrete finite experience at every dimensional level.
- ii. The continuous, infinite reality reflects all of time and space in totality simultaneously (and therefore on a finite level appears “nonlocal”) and exists as a reality essence (a metareality) involving a pervasive consciousness (information expressed through meaning as metaconsciousness) and order (extropy) with potential life — “polife”—which then manifests as physical life in the finite when linked with the correct current physiology.
- iii. The discrete, finite, natural-law based cosmic reality component is fundamentally inseparably tethered from its origin as a triad of space—time—broader “consciousness” (S, T and C-substrates—STC). This tethering then separates and manifests across, between and within multiple fluctuating dimensions. This allows a merging of individual-unit realities and yet retains a profound potential communication with the tethered STC components. Individual-units may reflect individual humans or any other individual sentient beings. Importantly, individual units can also reflect groups, or families, or societies or cultures or ethnic groups or any other living population. They may also reflect any inanimate (not living) components of the finite S, T or C substrates.
- iv. Our experience of the commonly interpreted physical reality (3S-1t) is profoundly limited by subjective perception, conception and common experiential reality. In humans, the endpoint expression of such a finite-infinite interface is the brain, and the brain can filter, integrate or manifest meaning through neurological consciousness (N-consciousness). N-consciousness (N-C) can be clear, or in

<sup>3</sup> This is called “lower dimensional feasibility, absent falsification” (LFAF). We also apply Popperian falsifiability.

various states of altered or impaired consciousness. There is a technicality here, implying that because of the “consciousness” element, at minimum, any sentient being is dealing with 3S-1t-1C because there is a dimension of conscious meaning that is fundamentally linked with S and T. And if we describe 1C, then it is technically more consistent to describe N-C as there is no restriction in our experience to 1 dimension of consciousness and therefore it is 3S-1t-NC even in our regular human experience. This neurological consciousness through the brain becomes the final common pathway for Psychological Consciousness as well as the broader metaconsciousness (which may include qualities like love, honor, courage or even hatred) (Neppe, 2011b).

v. The finite-infinite reality is always relative. It is relative to any subjective realities experienced by any level of individual-units. And at the broadest level, it can be conceptualized from the “top-down”, in terms of transfinite higher dimensions influencing dimensions below. Alternatively, it can be also be experienced “bottom-up”, using dimensional extrapolation (Close, 2011), beginning at the information and meaning we have in the few pieces of our 3S-1t jigsaw puzzle, and trying to conceptualize or distinguish dimensions of time and consciousness that are difficult to perceive or conceptualize. The bottom up approach is much more limiting and difficult to think out of the box than the top-down approach which also pervades the infinite subreality.

4. TDVP applies eleven interwoven fundamental components to a proposed “theory of everything” (TOE):

1. C-substrate (as an infinite metaconsciousness from metainformation possibly linked with finite quantal “conscits” with meaning translated into reality by neurological consciousness (N-C) in 3S-1t.

ii. metadimensionality (including space and time, extended dimensions beyond our conventionally perceived 3S-1t, plus

interactions with the infinite).

iii. Infinity (with its mathematical, logical and philosophical implications). The infinite subreality bridges the finite subreality to produce the reality of the laws of nature.

iv. Infinite potential for life: This manifests in the finite subreality as physical life provided adequate biology can support that physical life. When that physiological support is no longer possible, physical life terminates as physical death, but that infinite potential life still exists.

v. Life has related implications for extropy (order across many dimensions and going beyond negative entropy).

vi. Inseparable finite tethering of space-time and C-substrate is a core idea in the TDVP model that then become untethered but still linked (the metaphorical balloon on a string).

vii. The tight STC tethering can then become untethered: This still allows communications with the original STC via the tethering ( the metaphorical balloon on a string communicating or linked with its base), and

viii. The untethered elements involve a communication process across, between and within dimensions, called indivension (individual units interacting with dimensions).

ix. Indivension reflects the process by which a fundamental level content namely vortices can produce sources of information, time or space (Neppe, 2011a). These manifest at interfaces to allow meaningful information (specific “metaconsciousness”) in 3S-1t. Vortices reflect *any* 3 dimensional moving, fluctuating, curved or rotational content within, across and between dimensions: They are ubiquitous in our 3S-1t domain. The interfaces across vortices can be facilitated by vector, scalar or tensor elements (Neppe, in press-b) Each individual-unit interfaces with zillions<sup>4</sup>of other vortical individual-

<sup>4</sup> The term “zillions” is used here to communicate an extraordinarily large quantity. It is of the same order of magnitude as another term, now well known for a different reason, namely “googol”. A googol is technically  $10^{100}$ . An even larger term is when googol becomes exponential, namely “googolplex” which is  $10^{\text{googol}}$

units producing a complex web, and a finite origin of all information.

- x. The beginning in finite subreality is the Origin Event (the beginning of existence, e.g., around the big bang or other event), and tethering occurs from there. In the infinite subreality, there is no beginning or end.
5. Based on this model not being contradicted, these eleven features appear necessary. No other TOE apparently applies more than three of these principles as necessary building blocks. TDVP extends these components to develop an extended explanatory model for all the sciences (physical, life, consciousness and social) from the finite subatomic to the conventional macroreality to the astronomic realities applying quanta, or (more correctly) “qualits” (which include consciousness elements, plus all the subatomic elements in quantum physics and may be subquantal), as basic finite discrete reality units with the interlinking continuum of the infinite (Neppe and Close, 2011h).
6. We apply a new philosophy of science model for evaluating science, in addition to Popperian falsifiability (Popper, 1972; Popper, 1974; Popper, 1990), which is very useful in many 3S-1t macroreality physical events, we utilize the idea of feasibility. Reality in 3S-1t is sometimes expressed scientifically as empirical pieces of a complex jigsaw puzzle in our common physical reality experience of three spatial dimensions at one point of time (3S-1t or technically, 3S-1t-NC). This means we don’t have the full metadimensional (higher dimensional) picture and we must assess what is feasible, yet has not been falsified. This model is called Lower Dimensional Feasibility, Absent Falsification (LFAF) (Neppe, 2011c). The TDVP model logically allows for feasible applications in all the sciences and non-contradiction in mathematicologic evaluations. This LFAF technique is combined with the recognized scientific analyses of falsifiability as part of the methodology of literature review, hypotheses, methods, results, analysis, discussions, provisional conclusions (including statistical, clinical significance

and observational non-statistically needed analyses) and then amplifying by modifying the hypotheses until a paradigm and ultimately a metaparadigm is developed.

7. Mathematics and logic are applied to these fundamental principles to further validate the empirical findings and hypotheses.
8. The TDVP model generates over 600 new ideas, some speculative, that logically follow from its fundamental axiom. These are covered in our book, *Reality Begins with Consciousness: A Paradigm Shift that Works*, (Neppe and Close, 2012) and particularly so in the (to be published) associated companion book involving more speculations and models, *Space, Time and Consciousness: The Tethered Triad* (Close and Neppe, in press).
9. Amongst these ideas, the TDVP model provides for rare communications across a fluctuating number of dimensions (Neppe, 2011a). However, potential information, knowledge and meaning may exist without expression, just as we have available more than we see, hear, taste or smell at any moment, and only a tiny spectrum of these abilities are available for humans. This differentiates what is *potentially* available from what is used at any point.
10. The implications of TDVP lead to a new philosophical model that we call “unified monism” (Neppe and Close, 2011b).

## 5. The Paradigm Shift Revisited

The most important goal of science is a deep understanding of reality. The deeper and more complete our understanding, the better our chances of survival and growth as a species and as individuals. A review of the history of science reveals slow growth punctuated by occasional relatively sudden leaps in understanding. These are called paradigm shifts (Kuhn, 1962). During the periods of slow growth the attitude is: “We know what reality is, we only have to fill in the details.” But science as we know it has always been incomplete. The important paradigm shifts, like the discoveries of Newton’s laws of motion, relativity, and quantum physics, have occurred when, in the process of filling in the gaps, phenomena that contradicted or could not be explained by the existing paradigm were found (Close, 1990).

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New paradigms always open new vistas revealing aspects of reality that were either only dimly perceived or totally unexpected prior to the advent of the new paradigm (Close, 2010; Neppe, 2011d; Neppe and Close, 2011c; Neppe and Close, 2011f; Wilber, 1995). Overall, science moves forward most rapidly when the details of various studies and disciplines are integrated into a larger, more consistent picture.

The standard scientific physicalistic paradigm involving 3S-1t alone has not integrated relativity and quantum physics, and it does not adequately explain quantum observations and various psi phenomena. Nor does it adequately explain, some scientists argue (Schroeder, 1990; Schroeder, 1998), an unguided evolution, and the states of order reflected in life, or the phenomenon of physical life itself (Donoghue, Golowich and Holstein, 1994; Neppe and Close, 2011i; Oerter, 2006). Whether the brain can fully explain all facets of “consciousness” simply as epiphenomena of underlying physiology is strongly disputed (Neppe, 2008, 2009). In the past, scientists have not associated psi phenomena with quantum phenomena, yet they both defy explanation in much the same way (Radin, 2006): They both exhibit connections over time and space without the normal physical mechanisms found in other phenomena and the rare event ostensibly anomalous behaviors invoke the possibility of a unified mechanism.

### **Revisiting a Key Area: Consciousness**

Numerous key ideas have sprung from the TDVP model: Dimensions and Consciousness with extropy, tethering of CST, indivension, fluctuating dimensions, and the varying relative components (Neppe and Close, 2012). All of these fit into our model well and we believe they can be unified (Neppe and Close, 2011e).

Our approach, therefore, has been to investigate the areas of contradiction and incompleteness, and the various documented phenomena that are not explained by the current paradigm. We identified one common element in these phenomena as “consciousness.” Consciousness has been defined in a broad sense of encompassing three key components (Neppe, 2011e; Neppe, 2011f; Neppe, 2011g).

- First is brain related awareness and response, which also facilitates the processing of cognitive, affective, and volitional functions (CEV) (Neppe, 2009), plus in humans (and possibly other animals), such higher qualities as love, courage, meaning, knowledge, understanding, wisdom, and spirituality. The physical senses, the autonomic nervous system, the central nervous system, and the brain are the major functional components of the vehicle used by consciousness for interaction with the physical universe. Brain consciousness is a property of all living beings.

- Second is the extended, more collective reality from which information and knowledge could be apprehended and influenced—metacosmic—where the contradictions and incompleteness could be resolved and corrected by applying this new consciousness-based metadimensional paradigm, which by definition therefore extends beyond 3S-1t. Extended consciousness is a property not only of all living beings but also of all informational existence and knowledge.

- Third is a meaningful awareness and responsiveness in all particles or packets even at the subatomic level. This meaningful consciousness exists in everything living or dead, animate or inanimate, from the subquantal to the macrophysical to the astronomical. It pervades the cosmos.

The essential element of a broader consciousness required bringing it into a broader dimensional reality with the equations describing this reality. We did this by applying a new consciousness-based mathematical tool called the calculus of distinctions. We also found that the application of other relevant theorems revealed asymmetry in motion and the existence of additional dimensions.

### **The Process of Indivension: The Content of Fluctuating Vortices**

There needed to be a process of interaction, interface, and communication across and within these dimensions. This process we

defined as “indivension” (Neppe, 2011a). There needed to be a content in which this process could take place, one broader than just a field in one dimension. This content involved vortices.

We applied these vortical motions in all their varied manifestations as the primary underlying form content of all reality. Vortices fluctuate across and within dimensions as individual-units (individually, or as groups, or as even subatomic units), through the process of indivension, creating an enormous web of interacting and interfacing vortices with “zillions” of other individual-unit vortices (Neppe, 2011a; Neppe, 2011h; Neppe, in press-b; Neppe and Close, 2011d). In this way, information is shared and meeting points are created via vortical intersections that may appear to be vectors, scalars, or tensors depending on the dimensional interfaces. Such meeting points (in a way singularities) or vortices (3 dimensional) allow psi and entanglement to manifest at the 3S-1t level of our usual human earthly domain living. Vortices exist within the S-, T- and C-substrates therefore impacting space, time and consciousness (Neppe, in press-a).

We realized that the vortices need to have a fundamental link with all of space, time, and consciousness and this came about through the STC tethering that exists in all objects from the subatomic to the astronomical and from the beginning of the Origin Event, be that the Big Bang or another event.

### **The Unified Basis**

In order to have a TOE, explanation of previously unexplained phenomena should rest in a unified theoretical basis. We have discussed 3 aspects of evidence that support the need for a new paradigm, namely:

- extensions of special and general relativity using dimensional extrapolation,
- interpretations of entanglement or relative non-locality in the paradoxes of quantum mechanics, and
- consciousness research, including the solid scientific data, which has been achieved by a century of research into psi, and the numerous different ways

psi can manifest in consciousness. We can already unify psi and consciousness, and that is a major step. If these three bodies of evidence can be explained by one underlying possible unitary model, then the TDVP paradigm is indeed unified. Alternatively, it could be that each of these is independent.

Our explanation above links psi and entanglement with a meaningful reality consciousness at its tethered core, and requires dimensionality, which is achieved through relativity warping of forces and manifesting by extrapolation to higher dimensions. Therefore, this is a unified model. The rarity of the events of relativity and quantum mechanics and the rare events of psi phenomena are all explainable within the framework of the TDVP model. This rarity is a striking similarity in 3S-1t.

We have necessarily invoked two components to our model: 1- metadimensionality as extra dimensions explain why there is an incompleteness at the 3S-1t level, and 2-vortical indivension, because the indivension process allows for connections across fluctuating dimensional realities and fluctuating domains. These too may be rare events.

These models allow an explanation of what appears to be entanglement at a distance.

This distance does not need to be identical on both sides because one is dealing with a 3 dimensional fundamental triadic reality in consciousness, in space, and in time, and that these contribute to potentially higher dimensions that are almost always (unless in rare instances) asymmetrical.

### **The Ultimate Unification**

In summary, space, time, and consciousness in the context of S, T, and C-substrates exist always together, each time. This means that any kind of quantal mechanical action, or action at any level, exhibits all three of these substrates.

We find that the integration of dimensional structure, vortical form, and the drawing of distinctions, as well as the organization of those distinctions into meaningful patterns, constitute the actual

nature of our reality. The patterns of vortical distinctions created by consciousness out of consciousness are tied together or tethered at the point in CST dimensionality where quantum and psi phenomena meet. We hypothesize that greater awareness of this connection, implying the integration of all phenomena, will facilitate the further development of this real theory of everything.

In the merged unification of our TDVP paradigm, we can show how entanglement originates from the tethered STC substrate and so does psi phenomena.

Psi appears to manifest precognitively and possibly retrocognitively, not only contemporaneously. This implies that extra time dimensions are required.

We have proposed a model of extending the warping of the gravitational dimensions in General Relativity to including other energetic forces and possibly C-dimensional (non-energetic or less likely different subtle energetic) forces by using dimensional extrapolation. By utilizing models of metadimensionality, the inconsistent, incomplete entanglements of 3S-1t and the rare transitory or incomplete events picked up, or influenced by, ostensible psi becomes more detailed or complete applying three-dimensional vortical indivision (based on Pythagorean and FLT theorem modifications).

Taken to the limits of an N-Dimensional reality, by applying a calculus of distinctions, specifically variables of extent (ordinal in C-substrate, interval metrics in S and T substrates), the next stage for a TOE must be infinity as otherwise it would be incomplete. A corollary modification of Gödel's incompleteness theorem allows for this.

Our model incorporates some key features. It logically suggests some hypotheses that may or may not be true, or which have not yet been tested. The key elements of TDVP relate to STC tethering, metadimensionality, distinctions, and vortices. The first suggestive level reflected in our subtitle suggests the possibilities of N-Dimensionality, as well as order in living organisms. At the next level of speculation we tentatively suggest models of how to extrapolate dimensions, and the roles of

infinity and unifying of reality. Whereas we attempt to apply mathematical and physical data, and to utilize theorems while supporting the feasibility of the broader model, it does not prove that exact model. This is why we have separated the primary aspects of our hypothesis from secondary elements. We have used a paradigmatic shift and the major jump in ideas that flow from it will ultimately take several hundred scientific papers in order to evaluate some of this data. It is likely that they will still be sources for debate. Importantly, the refutation of any single concept does not refute the model, only that single concept. That becomes a building block to re-assess the status, and part of the heuristic structure of a related or modified model.

### Summary perspective

For a Theory of Everything to be truly a Theory of Everything it must be feasible at every level of endeavor. It must be scientifically feasible, even when opponents don't like the idea. Applying LFAF, it must not be falsified and it must remain feasible in the physical, psychological, consciousness, and life sciences. It must be feasible subatomically, in macrophysical reality, and cosmologically. It must be mathematically appropriate, and it must form an appropriate theoretical model for philosophy, theology, and mysticism.

1. Our premise is that the laws of nature should be universally applicable to all reality.
2. Space, time and a broader descriptive "consciousness" (S, T and C-substrates) are fundamentally inseparably tethered from the origin event (e.g., the big bang) producing a unified wholeness of cosmic reality. (Axiom of Tethered Origin [ATO]).
3. The model that develops from this single axiom is called The Triadic Dimensional-Distinction Vortical Paradigm (TDVP) and ultimately is expressed in a metaparadigm.
4. TDVP impacts several speculative critical and fundamental ideas: Three dimensions of time, N-Dimensions of consciousness, cause-effect, cognition-affect-volition, ego-boundaries, free will, hyperspace, meaningful information, knowledge and awareness, understanding, wisdom and thought, and their influence across and interactions with subtypes of affect and

volition, life, mystical awareness, special higher qualities such as love, and causality. "Metaconsciousness", subject-object paradoxes, multidimensional time-space and numinosity, are all introduced. Relative non-locality, relative zero, relative time, relative infinity and even relative non-Euclidean mathematics facilitate the interface with our current physical universe. An ultimate endpoint is the infinite interacting with the finite even prior to the Origin Event with a primary receptor. We show how warping of dimensions occurs, producing an open-closed, holistic-unified, finite-infinite universally applicable biopsychophysical reality. Ultimately, at minimum there is a 3S-3T-3C reality (implying 3 dimensions each of space, time and C-substrate) but there may be more dimensions of time and space than 3, and almost certainly it is 3S-3T-NC (implying N dimensions of C-substrate [broader consciousness])

5. The TDVP model is versatile, involving a process of fluctuating dimensions with indivisions, and a content mechanism with vortices, specific hypotheses or tests that have been proposed to support several other TOEs will not refute the TDVP model but provide added supporting feasibility data. This great flexibility involving process-content across dimensions allows for the applicability of the model across numerous different disciplines and across many concepts. Consequently, specific hypotheses or tests that have been proposed to support several other TOEs will not refute the TDVP model but provide added supporting feasibility data.

6. In the life sciences, the potential for life arises around the big bang event horizon (see Definition section) or any Origin Event in the C-substrate. Physical life becomes actualized into reality when the correct genetic and anatomicophysiological markers evolve to sustain such existence.

7. The essential characteristics of TDVP are listed. There is no current TOE that fits all these criteria other than TDVP. This includes:

a. "Consciousness". This is not unique for a TOE. Models such as those of Klein, Evert, Laszlo, Smythies and Carr recognize the pre-eminence of consciousness and possibly Hoffman

recognizes the pre-eminence of information (Carr, 2008; Evert, 2010; Hoffman, 2008; Klein and Boyd, 2010; Laszlo, 2004; Smythies, 2011).

b. Consciousness as conceived of in three components (Metaconscious, CNS consciousness, Meaningful reality at the quantal level) and deliberately called "C-substrate" to ensure this concept is understood, as the conceptualization may be unique.

c. C-substrate has several subcomponents: It can be expressed in CEV: Cognition, Emotion, and Volition, which have solid expressions through neurophysiology of CNS consciousness. It can also be expressed as possible metaconsciousness component qualities such as love, honor, courage, wisdom, understanding, a wide variety of qualities relating to higher attributes, or it can be expressed at its most basic level (e.g., quantal) with apprehension, or perturbation of objects or events.

d. Ultimately in the living organism, the expression of such awareness while awake in clear neurological consciousness is through the brain (CNS consciousness). However, we do not think "consciousness" can simply be explained as an epiphenomenon of physical evolution without resorting to some unexplained "self-organization." In other words, we cannot explain all aspects of consciousness, meaning, and qualities such as honesty, love and courage simply based on biochemical or electrical processes in the brain. We cannot reduce consciousness to a reflex, a habit or an organismal stimulus, integration and response. There has to be a level of order to it, a level allowing separation of self from not self. Moreover, quantum physics requires that consciousness precedes the first quantum out of the big bang (Neppe, 2011e).

e. An N-Dimensional base. Such a base includes hyperspace and various string theories (this requirement eliminates those models that are still based on the 3S-1t standard physical paradigmatic model which explains

most daily experience but does not explain the contradictory data). ND reality with  $N > 4$  is a hypothesis. However, it is strongly supported with logic, mathematics and empirical evidence.

f. The *unification of STC substrates*. The only other TOE amongst the current ones is that of Laszlo. Hoffman's uses mass-energy-information as a basic threesome though not unified inseparably.

g. The initial elements from the Origin Event or equivalent. This is comprehensible mystically, e.g., Kabbalah and possibly Vedic philosophy, and also with Laszlo, Lanza and Watson.

h. The unification of past, present, and future. This is comprehensible mystically (e.g., Kabbalah and also with Laszlo).

i. The integration of biology including entropy and life. The interpretation of how life actually begins is a unique part of the model and involves an explanation for life. A similar concept is implied in Watson's enformy but is not so verbalized.

j. Conceptual linguistic elements with order are used in Langan and Watson *et al*, as well our TDVP model.

k. Multidimensional time, which several have proposed but not integrated (e.g., Broad, Carr, Close, Dunne, possibly Hawking, Neppe and Whiteman).

l. The concept of pervasive processes is frequent in the TOE model. This includes not only TDVP with vortical indivision, but Sheldrake's morphogenetic fields, Carr's TFT, Laszlo's akashic fields, and also seen in String theory, Hawking, Langan, Watson and Smythies.

m. The only model that moves across fluctuating dimensions is TDVP.

n. The tethering of STC and vortical separations allowing communications between, across and within dimensions is unique to TDVP.

o. Indivision relating to individual-units and communication both at a

state and trait level. This integrates the social sciences and allows for a fluctuating number of dimensions. This is unique to TDVP.

p. The role of the infinite, and its interaction with the finite, which very few paradigms incorporate. Kabbalic and Vedic mysticism recognizes this.

The Space Substrate is at least three dimensional and represented mathematically as real numbers. The Time Substrate is posited as multidimensional and applies the imaginary numbers (as per Minkowski space). Because C-substrate is tethered with time and space, the interface is likely to be represented mathematically as complex numbers (the sum of real and imaginary numbers).

8. TDVP as expected scores a maximum. In fact, at this point, the only TOE it competes against is making itself better. However, it is somewhat tautological because the criteria we have deemed important may not be the criteria that others deem important. Nevertheless, the criteria derivation were sent to the developers (or with Kabbalah (Kaplan, 1991) and Vedic mysticism, the representatives) of all available authors (15/21).

Remarkably TDVP scores a full (16+11+12) or 39/39. This would be required for a real TOE because it cannot afford exceptions. These results strongly motivate for the powerful breadth of TDVP as a TOE and a paradigm shift. These qualitative results are even more dramatic when looked at quantitatively. No other TOE besides our previous Neppe and Close models, score above 19/39.

9. The speculative but important idea of all fundamental forces warping reality as a mechanism to extrapolate dimensions, following on an Einsteinian general relativity modification is raised.

10. TDVP is supported by the accumulated solid empirical data in 3S-1t including what are contradictions in the conventional reductionist materialist Standard Model of Physics (Close, 2000).

11. TDVP is also supported by the mathematical theorems that have been generated and by 21 axioms. Amongst the important mathematical demonstrations are

new applications of:

- the Pythagorean theorem (Close and Neppe, 2011b), showing that the three dimensional Euclidean substrate is common to space, time, and consciousness;
- how all dimensionometric representations (not only Pythagorean), e.g., radians, can be used to show the same three dimensional limitation;
- Fermat's Last Theorem (Aczel, 1996), demonstrating the fundamental asymmetries in metadimensionality and the ubiquity of the vortex (Close, in press);
- Gödel's incompleteness theorem, applied to finite complete arithmetical functions (Berto, 2010) and therefore TOEs, which necessarily reflect Theories of Everything, would require infinity to go beyond the finite completeness (of peano arithmetic) (Smullyan, 1991).
- Bell's theorem and inequality being refuted demonstrating the Copenhagen interpretation of physics or equivalents (Bell, 1987);
- later Leggett's inequalities showing the same findings (Suarez, 2008);
- the application of real, imaginary and complex numbers in metadimensional reality arguing for real numbers in space, Minkowski space time dimensions of imaginary numbers and C-substrate dimensions involving complex numbers which therefore can interface with S and T substrates;
- the use of quaternions as potentially representing dimensions of the conscious substrate (Hamilton, 1844);
- both Euclidean and non-Euclidean mathematics demonstrating the relative perceptual reality of curved non-Euclidean space;
- extradimensionality going beyond Minkowski space (Minkowski *et al.*, 1952) and Cantor's set theory (Cantor, 1955);
- applying Close's calculus of

distinctions (Close, 2011), particularly with regard to the C-substrate (the broadest consciousness) as well as distinctions of extent, content and intent, plus interval and ordinal metric measures.

- the calculus of distinctions involving a modification of classical Newtonian and Leibniz motion of motion calculus to a calculus of conscious forms and indications (Close, 2011)
- how a potential use of Multidimensional Scaling applying Mean and Median Column Geometry can be applied to represent multiple higher dimensions into two dimensional graphs, e.g., as with the Neppe déjà vu work (Neppe, 2006).

The mathematics supports the feasibility of a number of the hypotheses in the TDVP model.

12. Even more so, the greater speculation of C-substrate particularly metadimensionality reflecting extra dimensions based on metaconsciousness forces is posited.

13. We perceive TDVP as a critically important beginning evoking further research and demonstrating a viable mathematical and scientific theoretical framework with demonstrated feasibility through application to various fields of science, from quantum physics to the life sciences to consciousness research. From a simple axiom of the fundamental tethering of space, time and C-substrates from the Origin Event, TDVP generates hundreds of ideas, some speculative, some testable, some already empirically demonstrated, some theoretical, and some mathematical or logical.

14. We briefly amplify these more subtle but significant differences that are apparently unique to TDVP. This allows a perspective on not only the quantitative ordinal comparisons here, but also the profound qualitative difference between TDVP and all the other TOE models:

- *tethering* of STC or of reality: This is the major theoretical advance in TDVP because it allows an ease of explanation of information that is unparalleled; this requires a specific triadic pattern from the origin of finite

reality and pervading the infinite;

- *fluctuating dimensions* in different *individual-units* (traits reflecting differences between individuals or groups etc.) or even the same individual-unit under different circumstances (states); these allow dimensional jumps by individuals or individual-units and allow for differences between individual-units. We are not dealing with a fixed 10 or 11 or 26 or 9 dimensional reality.

- *communication across dimensions* and conceptualization of these into domains (multiple dimensions conceptualized together). This allows for the interactions, transmission and reception of metainformation and metaconsciousness across individual-units, and across time and space;

- application of perceptual, conceptual and experiential actualized distinctions defining and applying the latest more complete form of *Close's Calculus of Distinctions (COD)* to our TDVP model: This allows C-substrate to be defined ordinally as dimensions (Close, 2011; Close and Neppe, 2011a; Neppe and Close, 2011g). COD is incorporated into Close's TP in its less complete form;

- the conceptualization of *life* potential as always existing and physical life in finite reality occurring when the correct physiology exists: this reverses the concept of the beginning of physical life requiring something extra to be added at conception or another point in the life cycle;

- the concept of *infinite subreality* interacting with the *finite subreality* as part of the structure of complete reality;

- this infinite element allows for *extropy* as multidimensional order (not just the opposite of a unidimensional entropy).

15. TDVP may become a major contribution to the physical, biological, psychological, and consciousness sciences, as well as to mathematics, philosophy, the philosophy of science, and impacts on the scientific linking of mysticism and spirituality. TDVP pioneers

the new discipline of "dimensional biopsychophysics."

We have been unable to find an area in which our TDVP model does not conform to the LFAF rule. The Triadic Dimensional-Distinction Vortical Paradigm (TDVP) truly appears to be a tenable paradigmatic shift.

### **The Four Sentence Axiomatic Metaparadigm Summary**

1. Reality involves a unified wholeness of the infinite and finite with the infinite pervading the finite experience of content and extent in the Space, Time and "Consciousness" Substrates.

2. The essence infinite reality component is without extent because it exists, or potentially exists, in all space, time, and consciousness, and information content. Infinity involves the potential towards order (extropy). Discrete elements of the infinite are manifested in the finite. Consequently, in finite terms, infinity is conceptualized as nonlocal (beyond space and time), but in infinite terms it involves a metareality of all existing metatime and metaspace, existing as a pervasive metaconsciousness and potential living, ordered subreality. Metacist is an acronym for metaconsciousness, meta-information, metaspace and metatime.

3. The Finite reality component is fundamentally inseparably tethered from its origin as a triad of space—time— broader descriptive "consciousness" (S, T and C-substrates), which manifests across, between, and within multiple fluctuating dimensions.

4. This finite-infinite reality is relative to all dimensional-distinction factors, and experienced subjectively (by individual-units).

We are confident that our Triadic Dimensional-Distinction Vortical Paradigm shift will usher in a new consciousness-based comprehensive science with a tremendously expanded scope, a scope including the spectrum of human physical, mental and spiritual experience. Our book, *Reality Begins with Consciousness: A Paradigm Shift that Works*, and associated articles and papers form the basis of a scientific paradigm shift unlike any in the history of the search for truth and understanding.

### We modify Minkowski (1908):

The views of space, time and a broad consciousness which we wish to lay before you, have sprung from the soil of experimental physics, the toil of consciousness research and the challenges of mathematics and logic, and therein lies their strength: A universality applicable to the sciences, to mathematics, and to philosophical ideation. These views are radical, indeed, reflecting a paradigm shift. Henceforth space by itself and time by itself are doomed to fade away into mere shadows, and only a kind of tethered union of the three from the very beginning will preserve an independent identity (Minkowski).<sup>5</sup>

We will go one step further and state our metaparadigm again. Clearly S, T, and C-substrates and the tethering are key from origin. But we want to also emphasize the role of dimensional distinctions, life, and extropy.

Reality can be expressed within the natural laws<sup>6</sup> of the physical, psychological, biological, and consciousness sciences with mathematical elaborations and involves a unified holistic reality with interweaving infinite and finite subrealities: the infinite is a continuous essence metareality (i.e., an all encompassing consciousness/information, space and time, with potential order and potential life); this (the infinite) pervades a discrete finite, cosmic subreality manifesting as a fundamentally inseparably tethered triad (originating from the Origin Event) of S, T and C-substrates (space, time and broader descriptive "consciousness"), which then separate into multiple interwoven, fluctuating 3-dimensional vortices within, between and across dimensions perceived and conceptualized subjectively (relatively by individual-units) via our responsive 3S-1t experiential entropic physical subreality

interpreted by our living physiological extropy (The metaparadigm of Triadic Tethered Ordered Origin Unified Relative Subjectivity [TTOOURS]).

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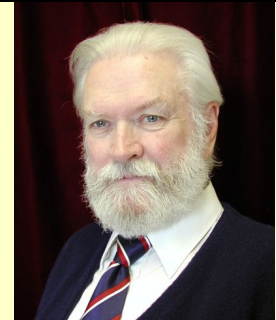
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<sup>5</sup> This quotation is again adapted from Hermann Minkowski, in his famous Cologne public lecture: 80<sup>th</sup> Assembly of German Natural Scientists and Physicians. 21 Sept 1908 "The views of space and time which I wish to lay before you have sprung from the soil of experimental physics and therein lies their strength. They are radical. Henceforth space by itself and time by itself are doomed to fade away into mere shadows and only a kind of union of the two will preserve an independent identity."

<sup>6</sup> We have used the term "natural laws" to refer to "the laws of nature" as is generally appreciated in the sciences. This is contrasted with the so-called "supernatural" which contradicts or goes beyond these laws of nature. We make this point because there are other uses for the term "natural law" (such as in various theological bases) and this is not our use here.



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