

Translating Fifteen Mysteries of the Universe by Applying a Nine Dimensional Spinning Model of Finite Reality: A Perspective, the Standard Model and Triadic Dimensional-Distinction Vortical Paradigm, Part I

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ABSTRACT

There are fifteen mysteries pertaining to nine dimensional finite realities. The current Standard Model of Physics (SMP) is a good beginning, allowing us to explain most aspects of the reality we *experience* through the physical senses, but has significant limitations, some quantum contradictions, and areas that remain mysteries. The principles of the SMP are not negated. Instead, they are incorporated into a broader higher dimensional fabric. We show that reality appears to be more complex than what we as sentient beings *experience* as 3 spatial dimensions embedded in a moment in time (the present) (3S-1t): *Existence* appears to be broader than overt human experience, and much of it involves the covert hidden higher finite dimensions. Specifically, our findings strongly suggest that finite reality involves specifically a 9 dimensional spin reality. This was not surprising because we had postulated this based on the Triadic Dimensional-Distinction Vortical Paradigm of Neppe and Close (TDVP). The TDVP model involves mathematical methods such as the Calculus of Distinctions, and Dimensional Extrapolation, where extrapolation across dimensions can demonstrate how movement across dimensions occurs.

Key Words: 9-dimensional rotational model, consciousness, dimensional extrapolation, higher dimensional realities, Neppe, Standard Model of Physics, Triadic Dimensional Distinction Vortical Paradigm

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1. A perspective to the mystery 2. 1A.What's it all about?

Because there are several sections in this paper all moving toward the same unitary theme, it may be easier at this point to prioritize. This we do here in Section 1 by listing briefly the various

sections. We can treat this as a summary of what is to come, so as not to be overwhelmed by detail. This paper is all about solving the mysteries of mathematical physics by putting consciousness into the equations.

The first mystery in Section 1B discusses the first great mystery: Can the standard scientific model be used to develop a theory of reality? Briefly, it cannot. There are limitations of the Standard Model of Physics. Essentially the standard model does not work in all cases: It appears to work for explaining the experiences of day-to-day reality. But it does not work with important exceptions in physics or in psi

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phenomena². We introduce the concept of a new method of validating data namely “lower dimensional feasibility, absent falsification” (LFAF) and of paradigm shifts and theories of everything.

The second mystery: In Section 1C, we describe the broad brushstrokes of the second great mystery. Is there a model that accommodates a broader theory of reality? We think there is, and we provide a theoretical basis explaining the essential elements of the Neppe-Close Triadic Dimensional-Distinction Vortical Paradigm of Neppe and Close (TDVP) (Close and Neppe, 2013; 2014f). In this paper we have postulated a 9-Dimensional finite spin model derived directly from the proposed TDVP concepts, and we provide a logical basis for developing that nine-dimensional finite spin model (Neppe and Close, 2013a).

The third mystery: In Section 1D, we apply TDVP constructs. These are important new methods combining mathematics, geometry, and logic. They include an expanded geometry we call “dimensionometry”, and the concept that the experience of reality is relative to the dimensional domain of the observer (Neppe and Close, 2015b). We explain why dimensions are orthogonal (Close and Neppe, 2014; 2013a; 2014f), with the application of new mathematical techniques like the “calculus of distinctions” (Close and Neppe, 2012) and “dimensional extrapolation” (Close and Neppe, 2012). We define two effective new methods for evaluating scientific hypotheses, namely LFAF (lower dimensional feasibility, absent falsification) and the Calculus of Dimensional Distinctions. We believe the importance of these new techniques integrating mathematics, dimensional geometry, and logic cannot be overstated (Close and Neppe, 2013; Neppe and Close, 2014f).

The fourth mystery: In Section 1E, we demonstrate the initial application of mathematical dimensional extrapolation numerically upward and downward from $n = 3$, showing the feasibility of a 9D reality.

The fifth mystery: In Section 2A, we discuss what is known about the mixing angle of fermions. The mystery here is how little is known. The Cabibbo mixing angle is an empirically derived angle in Theoretical Physics

(Fritzsch, 1977) and it cannot be derived from the prevalent current Standard Model of Particle Physics. It appears that the derivation problem may have been neglected because of lack of progress made by applying the Standard Model (Fritzsch, 1977).

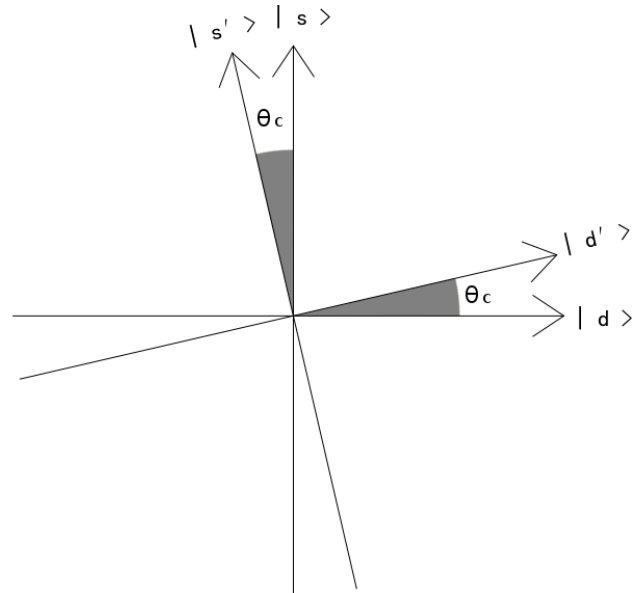


Figure 1. The Cabibbo angle represents the rotation of the mass eigenstate vector space formed by the mass eigenstates $|d\rangle, |s\rangle$ into the weak eigenstate vector space formed by the weak eigenstates $|d'\rangle, |s'\rangle$. The rotation angle is $\theta_c = 13.04^\circ$.

The sixth mystery: In Section 2B, we derive the Cabibbo mixing angle in fermions (Figure 1). We show how only a 9-dimensional vortical (spin) model produces a logically consistent derivation. Hence, inter alia, both the Standard Model of Particle Physics involving 4-dimensions and the various String Theories (none of which involve 9-dimensional spin) fail. We derive the Cabibbo mixing angle at 13.032 degrees (applied to 5 significant figures) (Close and Neppe, 2013; 2014; Neppe and Close, 2014f). This finding can *only* be derived by applying the dynamic rotation of elementary particles as nine-dimensional objects (Close and Neppe, 2013; 2014; Neppe and Close, 2014f). Though previously relatively unknown, the Cabibbo angle is critically important: It is by the Cabibbo derivation we have been able to show that we live in a 9-dimensional reality. We also validate the proposed component of TDVP that postulated that finite reality has 9 spinning (vortical) dimensions. Though 9D spin is supported, the mathematical derivation does not indicate the

² “Psi” is a composite term for so-called “psychic phenomena” which traditionally subdivide into “extrasensory perception” and “psychokinesis”.



exact nature of any of the specific dimensional substrates involved. We have found no evidence that anyone has attempted to explain the Cabibbo mixing angle using a 9-D spin hypothesis before. The empirically derived value of 13.04 degrees perplexed scientists for 50 years. This value is not obtained using any other theoretical model. Yet, this result can be derived easily by applying the relatively simple mathematics of the conservation of angular momentum with appropriate relativistic adjustments to the dynamic rotation of elementary particles as nine-dimensional objects (Close and Neppe, 2014; Neppe and Close, 2012; 2014h).

We discuss how this result supports the hypothesis that the Cabibbo angle could be the result of the fields, waves and particles of modern physics. However, we are only able to distinguish part of this finite reality in our three-space-one instant of time (3S-1t) subjective experience. 3S-1t nevertheless, could be reflecting the covert aspects of the effects of nine-dimensional spinning particles. This would allow for the feasibility of the larger 9-dimensional spin (vortical) unified finite reality of the essential substrates (Close and Neppe, 2013; 2014; Neppe and Close, 2014f).

The seventh mystery: In Section 2C, we show that the same principles can be applied to a new concept of intrinsic electron spin and intrinsic angular momentum incorporating relativity. This becomes a very important concept in particle physics that has not been recognized before and has not yet been fully explored (Close and Neppe, 2013; 2014; Neppe and Close, 2014f).

The eighth mystery: In Section 2D, we show two different explanations of electron rotation: with the electron not a perfect sphere or with a modification to light speed relative to other dimensions. Wheeler and Aharonov ideas (Aharonov and Bohm, 1959) on time may support this. If the electron shape is uniformly spherical then the spin velocities exceed the velocity of light, violating the most basic principle of relativity (Einstein, 1952).

The ninth mystery: In Section 2E, we very briefly mention extending the concept of weak universality based on the 9D findings (Close and Neppe, 2013; Hughes, 1991). This is a lesser issue in the context of the Cabibbo angle derivation, but is theoretically important.

The tenth mystery: In Section 2F, we briefly

discuss another remarkable finding indicating that electron clouds are distributed in a double Bell normal curve (Close and Neppe, 2013; 2014).

The eleventh mystery: In Section 2G, we briefly discuss how one can replicate the 9 dimensional spin findings with a thought experiment. We derive the mixing angle at 13.038, degrees suggesting that the derived value may be even more accurate than the mean empirical finding of 13.04 (to 4 significant figures) \pm 0.05 degrees (Close and Neppe, 2013; 2014).

The twelfth mystery: In Section 3A, we introduce an exceedingly important new concept, presented briefly but for the first time in any detail, namely TRUE units—Triadic Rotational Units of Equivalence and the concept of “gimmel”, a third form of the substance of reality. We apply this analysis to subatomic particles and to the periodic table of the elements, finding a commonality for the elements that are associated with life.

The thirteenth mystery: In Section 3B, preliminary speculative thirteenth mystery is suggested: The proportion of dark matter and dark energy together correlates almost exactly with the ratio of gimmel to TRUE units.

The fifteenth mystery: In Section 3C, we discuss some implications of these findings.

Some dimensions are hidden from us in our 3S-1t subjective reality.

The essential substance of finite reality manifests as mixtures of matter, energy and consciousness in 9 finite dimensions even although we only perceive three of space and a moment of time through our physical senses and extensions of them.

The fourteenth mystery: In Section 3D, we discuss how mathematical derivation supports other significant implications for understanding reality:

- the potential for exploring higher dimensional realities the pertinence of spin, the application of relativity corrections in electron rotational velocity, and the conservation of angular momentum;
- the derivation of the Cabibbo mixing angle of quarks linked with electron spin and

○the broadening of Cabibbo's concept of "weak universality" by hypothesizing that all discrete phenomena result from specific elementary patterns inherent in the multi-dimensional substrate of reality.

○These findings because of their range and theoretical importance may generate new ideas for testing and application.

We propose that reality may be more complex than sentient beings experience as 3S-1t. Our findings strongly suggest that the Triadic Dimensional-Distinction Vortical Paradigm (TDVP) hypothesis that finite reality consists of 9 dimensions, with some dimensions hidden (unavailable to our physical senses) may be correct, indicating a deeper and more meaningful reality.

Importantly, these multiple areas of application of TDVP overlap greatly. Consequently, it is somewhat contrived to completely separate them as we have done in this paper. They dynamically interface, with a mathematical thread connecting them throughout the discussion. However, the authors believe that the background and references provided allow comprehension of the hypotheses, methodology, and discussion involved.

1B. The first mystery

Can the standard scientific model be used to develop a theory of reality?

"Let us suppose that an ichthyologist is exploring the life of the ocean. He casts a net into the water and brings up a fishy assortment. Surveying his catch, he proceeds in the usual manner of a scientist to systematize what it reveals. He arrives at two generalizations: 1. No sea-creature is less than two inches long. 2. All sea-creatures have gills.

These are both true of his catch, and he assumes tentatively that they will remain true however often he repeats it.

In applying this analogy, the catch stands for the body of knowledge which constitutes physical science, and the net for the sensory and intellectual equipment which we use in obtaining it. The casting of the net corresponds to observation: for knowledge which has not been or could not be obtained by observation is not admitted into physical science. An onlooker may object that the first generalization is wrong. "There are plenty of sea-creatures under two inches long, only your net is not adapted to catch them." The ichthyologist dismisses this objection contemptuously. "Anything uncatchable by my net is ipso facto outside the scope of ichthyological knowledge." In short, "What my net can't catch isn't fish." Or - to translate the analogy - "If you are not simply guessing, you are

claiming a knowledge of the physical universe discovered in some other way than by the methods of physical science, and admittedly unverifiable by such methods. You are a metaphysician. Bah!"

"The mathematics is not there till we put it there."

Sir Arthur Eddington, 1938 (Eddington, 1938)³

Sir Arthur Eddington's remarkable insight that obvious experimental data may not locate all of reality is a key to this series of articles. We cannot appreciate all of reality when only applying a small component of reality.

The Limitations of the current Standard Model of Physics

The current conventional world-view of our "Standard Model of Physics" (SMP) explains perhaps 99.9% of physical reality. We perceive the SMP as generally correct, relating to three dimensions of space (length, breadth, height) (3S) and one single instant (possibly a quantum) in time (1t): These together are called 3S-1t. This is the reality that we humans directly experience on earth on a day-to-day basis at this time (our "sentient reality"). We amplify the SMP indirectly by applying scientific apparatus to further extend our perception of these four dimensions. We recognize that space and time are inseparable and call it "space-time" (Minkowski, 1908). So the current paradigm certainly allows explanations of almost all aspects of our experience, but certain areas of scientific interpretation are still contradicted.

Respectfully, we perceive the SMP as generally reflecting correct experiential and empirical data, but *incomplete* and this is why we present mathematical proofs demonstrating that our finite reality consists of nine spinning dimensions. These generally add to the SMP, but not replace the empirical and practical 3S-1t knowledge. In turn, these 9 dimensions appear to be embedded in a broader infinite reality. A key point here is that we are not refuting the SMP: The SMP is *incomplete* and our research has added to it, not replaced it. TDVP incorporates the SMP, it is not a substitute for it. Therefore, all

³ Sir Arthur Eddington (1882 - 1944), the great British Astrophysicist and Philosopher of Science, quoted from Eddington's book *The Philosophy of Physical Science* in 1938. Eddington became world-famous when his observations of on 29 May 1919 of the bending of starlight near the eclipsed sun confirmed predictions made by Albert Einstein in his General Theory of Relativity. http://en.wikiquote.org/wiki/Arthur_Eddington



the laws and findings in the SMP are not refuted or contradicted, simply amplified. However, the SMP does not explain all verifiable phenomena. TDVP departs from reductionistic materialism to explain findings such as psi phenomena in Consciousness Research (Neppe and Close, 2011; 2012; Tart, 2009), or mysteries such as entanglement in Physics even at great distances (Aspect and Grangier, 1982), or Wheeler's delayed-choice two slit experiments (Wheeler, 1994). These remain unexplained by the SMP (Neppe and Close, 2011; 2012; Tart, 2009). Similarly, there was a mystery about why the mixing angles in elementary particles have the specific values they have as demonstrated empirically (Close and Neppe, 2014; Frittsch, 1977; Morisi and Peinado, 2011), including the 13.04 degree size of the Cabibbo mixing angle (Close and Neppe, 2014; Frittsch, 1977; Morisi *et al.*, 2011).

Why we need a new model

This differentiation is important because of the occasional contradictions in some of the currently known laws of physics and many of the above observations. An important example in this paper is why the mixing angles in elementary particles are the numbers that they are (Close and Neppe, 2014; Frittsch, 1977; Morisi *et al.*, 2011; Neppe and Close, 2014c; 2014f).

We argue that a new model is needed because there are rare areas in which the standard paradigm is incomplete, for example:

- The contrary quantum experimental evidence (as indicated, the double-slit and delayed choice experiments; plus the relationship of quantum mechanics and gravity and relativity) (Bell, 1966; Close, 2000),
- the contradictions of the standard model of subatomic physics particularly in the context of relativity and data that varies greatly from predictions;
- the nine different six sigma meta-analyses in consciousness research (Neppe, 2013; Neppe and Close, 2012; 2014c; 2014f; 2013b),
- the internal inconsistency in physics across quantal, macro- and astronomical levels;
- 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.

Additionally, there is other as yet, not fully solved conundrums:

Applied to the standard paradigm, can evolution be adequately demonstrated because it is not falsifiable, yet there is debate as to its feasibility: it is unanswered, for example, whether the so-called "jumps" in evolution can be explained purely in a Darwinian (Darwin, 2008/1853) context (Neppe and Close, 2014f; Lanza and Berman, 2009; Laszlo, 2004; László, 2010).

A more challenging question is the unanswered question of how life comes about. We know about DNA and RNA, but we do not know if there is an essential other component of life. We know about DNA and RNA, but we do not know if there is an essential component of life beyond matter and energy (Neppe and Close, 2014f). We briefly touch on the new concepts of "gimmel" and TRUE units in this paper.

These limitations are not surprising because the SMP does not take several key features into account, namely Consciousness, extra latent dimensions, the continuous infinity. Order (as opposed to entropy and tendencies to disorder) and life. On the other hand the SMP recognizes the Quantized, integral nature of reality in Quantum Physics and this plays an enormous role in our TDVP model, recognizing *discrete finite reality* as contrasted with the *continuous infinite* (Neppe and Close, 2014c; 2014e; 2014f).

In summary, the SMP involves data based on experience. *But direct physical experience is only part of existence.* There are unsolved areas and ostensible paradoxes that are soluble with a 9-D model.

We have called the discipline involving multiple dimensions, "Dimensional Biopsychophysics" (DBP) and DBP is exemplified by any model, such as 9 dimensions, that incorporates physics (here quantum physics and spinning particles including fermions) and examines biology all the context of "Consciousness Research" (Neppe and Close, 2014a; 2014b; 2014; 2015b). DBP is therefore broader than physics, which focuses on 3S-1t. DBP also involves mathematical proofs, and these



derivations such as those deriving the Cabibbo angle, move this from speculative metaphysics to direct derivable mathematics and empirical science. A major limitation of the SMP, most commonly involves the ignoring of the area of “consciousness”. The SMP is interpreted as a paradigm that cannot explain why there is complex structure and conscious organisms in the universe, or a universe at all. In the SMP, “consciousness” is an emergent feature or epiphenomenal expression of materialism, and arguably, neuroscience cannot adequately explain consciousness in terms of the physical brain alone (Neppe and Close, 2014e; 2014b). Similarly, some would regard “String Theory” in its many iterations (Brax, 2011) as speculative because it remains unproven —it remains a “theory” (Morgart, 2014).

Because of this failure alone, besides everything listed above, there is a need for a radical new paradigm of reality which will address the complex controversies unexplained by the SMP.

Lower dimensional feasibility, absent falsification (LFAF)

Because there are areas with evidence and even proof in science that cannot be replicated, we need to consider adding to this approach to proof in special circumstances. The special circumstances in which the classical approach of Karl Popper in the *Philosophy of Science* (Popper, 2005) requiring falsifiability cannot be applied include evolution, cosmology, certain new models (for example, Einsteinian General Relativity took some years), dimensions beyond 3S-1t, models of indeterminacy, psi, entanglement and alleged survival after bodily death (Neppe and Close, 2014f).

Because falsifiability is usually limited to only 3S-1t, we propose a new model approach to the philosophy of science. This recognizes that some elements cannot be falsified at this time in 3S-1t, yet there may be ample feasibility evidence in 3S-1t (Neppe and Close, 2014f).

We propose applying the LFAF model: Lower dimensional feasibility (usually 3S-1t), absent falsification. This is equivalent to using a jigsaw puzzle in 3S-1t and filling in the pieces that fit, but not accepting any contradiction where a piece does not fit, implying it is falsified or contradicted by empirical evidence (Neppe and Close, 2014f).

By demonstrating the limitations of Popperian (Popper, 2005) demands for the falsifiability of science in metadimensional realities (i.e., beyond 3S-1t), we apply this LFAF (lower dimensional feasibility—absent falsification /falsified) approach where logically indicated (Neppe and Close, 2014f).

Because data at the higher dimensional levels cannot be completely represented in 3S-1t, they present like single puzzle pieces in a whole, multidimensional (i.e., >3S-1t) puzzle. The data are only there in part. Consequently, conclusions may be feasible yet not falsifiable or falsified in the traditional sense as they cannot be directly or completely represented in 3S-1t (Neppe and Close, 2014f).

Paradigm shifts and theories of everything

A paradigm shift refers to a fundamental change in approach or modification of our current underlying assumptions. In our book (Neppe and Close, 2014f) we motivated the term “metaparadigm— a global paradigm shift that includes consciousness and interfaces every known area of scientific endeavor—commonly called a “Theory of Everything” (TOE). When we examined the SMP it scored a creditable 13/39 which is a good score, but not like the perfect 39/39 that TDVP scored when applying objective criteria (Neppe and Close, 2011; 2014f).

Requirements of a TOE AND Paradigm Shift

1. To be true, the key components of any TOE must allow feasible modifications from the current conceptual, mathematical and scientific models without contradicting fundamental knowledge (other than materialist reductionism). They must be feasible fitting pieces of the 3S-1t jigsaw puzzle without being falsified.

Any all-encompassing TOE must conform to all known laws of nature. Such a TOE must also seamlessly reconcile with the major theoretical models and authoritative sources of all the natural sciences.

2. Scientific areas that must be actively evaluated include not only the

- physical sciences including physics, chemistry, meteorology, and astronomy;
- the biological sciences including anatomy, biology, genetics, physiology, pharmacology, the life sciences and medicine;



- the social sciences, including anthropology, psychology and sociology; and
- the consciousness sciences including dimensional biopsychophysics, phenomenology, parapsychology and quantum consciousness.

3. A complete TOE should also be specifically compatible (feasible) with the three major disciplines examining concepts outside our 3S-1t conventional reality: Hyperspace, Consciousness research and Philosophy, except when those concepts that can be falsified by new logic and/or evidence (and this is frequently so);

- Moreover, we posit that such a TOE should be compatible at all levels of cosmology, from the tiniest subatomic packets to the macrophysical usual realities to the astrophysical.
- The TOE should also be compatible with the known forces including all energies.
- We posit that a TOE should be able to explain events in all of time. This includes evolution.
- A TOE must not only be empirically scientifically appropriate,
- It should also be explainable within the confines of Philosophy, Mysticism and Spirituality.
- A TOE should preferably have a demonstrable solid logical and mathematical base.
- We regard the principles of LFAF and falsifiability as key to motivating any scientific models including TOEs.
- Our premise is that the laws of nature should be universally applicable to all finite cosmic and also infinite reality. This includes scientific endeavors. We do not have data on infinite subreality but propose this is also part of the broadest laws of nature, however, we do not know in which way.
- The infinite contains and pervades with the finite subreality and therefore there is a bidirectional communication just like there is between and within finite dimensions.
- Data expressed from the infinite is seldom if ever generally directly accessible, but expressed like a mirror in discrete quanta

(or Qualits because these is “consciousness” in the finite.

- We posit that a TOE should not imply anything supernatural or miraculous. What may be perceived as miraculous in 3S-1t, may not be anomalous in other higher dimensions but nevertheless, its occurrence at that moment in that place under that circumstance may be meaningful, possibly reflecting the meaningful, guided finite-infinite interface.

Revisiting the standard model

Whereas we can just ignore advances and contradictions in science and stick with the portion of reality that can be explained by the SMP, we propose that we need to apply a metaparadigm that works for all verifiable phenomena. Clearly the Standard Model of Physics does not work in all cases and therefore fails as a so-called Theory of Everything. Whereas this paper focuses on demonstrating our 9 dimensional studies, it also happens to present the TDVP model. Based on the available data, and three years' availability of colleagues to critique TDVP, this paradigm appears to be the only TOE that actually works. We are not claiming that TDVP is the ultimate TOE, but it does appear the best available alternative at this time to the prevailing Standard Model of Physics (Neppe and Close, 2014f).

It is not surprising that mainstream science, focused on the limiting philosophy of reductionist materialism, has lost touch its metaphysical roots. The SMP cannot explain how it is that a large part of reality is not available to us for direct observation. Instead, it makes its existence known only indirectly through quantum phenomena like non-locality and quantum entanglement, as well as the near light-speed vortical spin of fermions and the effects of so-called dark matter and dark energy in the rotation of spiral galaxies

And so the answer to the question “*The first mystery: Can the standard scientific model be used to develop a theory of reality?*” is “*unfortunately not*”. We need more than just a limiting model, we need to involve what might exist as well as what we might just experience. This paper presents a significant and proven viable alternative of a nine dimensional reality.

1C. The second mystery: The Neppe-Close TDVP model

The second mystery: How the Neppe-Close TDVP model develops a theory of reality (Section 3A).

The need for a new paradigm: challenges current thought

The authors have applied well-defined physics including carefully substantiated empirical data (Neppe and Close, 2013a; 2014f), utilizing well-defined constants such as the Bohr radius (radius of the hydrogen atom) (Bohr, 1987), speed of light, Planck's constant, rest mass of the electron, its radius and charge, the Coulomb constant and pi (π), and added well-defined equations and principles. These additions include the Lorentz correction (Minkowski and Lorentz, 1952), the principle of conservation of angular momentum, kinetic energy equation, De Broglie's wave equation, Coulomb's equation, the centrifugal force equation, the wave length of a rotating body calculations of magnetic moment. Additionally, we've developed new mathematical techniques such as Dimensional Extrapolation and the Calculus of Distinctions, as well as extended applications of the Fermat's Last Theorem (Aczel, 1996; Kleiner, 2000) and extensions of the Pythagorean Theorem as a new "dimensional conveyance equation" to derive and demonstrate a nine-dimensional vortical model of finite reality. These techniques can be applied to particle physics and may allow new approaches for the current conundrums in experimental physics (Neppe and Close, 2013a; 2014f).

Particularly pertinent has been the application of electron rotation and its inherent spin (Neppe and Close, 2011; 2012; 2014d; 2014e; 2014f) utilizing the basic concepts of a unified space-time-consciousness theory of finite reality from the Neppe-Close "metaparadigmatic"—theory of everything—model called Triadic Dimensional—Distinction Vortical Paradigm (TDVP). These applications allow us to produce a detailed mathematical derivation of the mixing angle of elementary particle fermions. This is exemplified by the Cabibbo angle in quarks: empirically this angle had already been found to be 13.04 degrees ± 0.05 (Fritzsch, 1977), but why it was this particular angle was not explained within the framework of the Standard Model (Neppe and Close, 2013a; 2014f). We have now demonstrated two related hypotheses first by deriving the Cabibbo mixing angle mathematically (Neppe and Close, 2013a; 2014f),

and furthermore even replicated our findings with a thought experiment (Neppe and Close, 2013a; 2014f) Importantly:

1. The derivation can be obtained *only* from a nine-dimensional mathematical spin model.
2. The derivation supports a pre-postulated hypothesis of the broader TDVP model, namely that finite reality can be effectively described as a 9-dimensional vortical (spinning) model (Close and Neppe, 2013).

In this paper, we unify these findings, *briefly* discussing each component. There are several critically important parts to this paper given that the finding of a nine-dimensional spin model of reality has been mathematically derived, and the empirical support reflects a major breakthrough in physics (Morgart, 2014). This paper aims at providing an overview of what is potentially a profound revision in thinking about physics and reality. The detail involves hundreds of pages and is, *inter alia*, reflected stepwise in the Neppe and Close book *Reality Begins with Consciousness*, Fifth Edition (RBC5), (Neppe and Close, 2014f) but a priority base is important (Neppe and Close, 2013a). We target here the introductory principles and then discuss particularly the detailed mathematics which does not appear in this form in RBC5 (Neppe and Close, 2014f).

The basics of the Neppe-Close TDVP model

A new paradigmatic approach to integrate several different scientific disciplines postulating a new and comprehensive model would produce 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) is infinity, order and life fundamentally incorporated (Neppe and Close, 2011). 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—the necessary linkage between Space, Time and Consciousness—becomes looser, the fundamental link always still exists, and has from the beginning of *finite time*.



Briefly, and as an extra, the TDVP model allows for the interfacing within, across and between multiple dimensions of finite subreality. This is achieved technically by allowing for a mechanism of communication: The communication is integrated.⁴ Essentially everyone can experience their own unique reality and yet also have many commonalities with others (Neppe and Close, 2011). This finite reality bridges an all-pervasive infinite sub-reality essence of all-embracing time, space, and extended consciousness (meaningful information) as well as ordropy⁵ (multidimensional order), existence and potential for physical life.

Comparing TDVP with 24 other Theories of Everything across 35 different parameters, TDVP scores 39/39. Remarkably, no other model scores above 20/35 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

⁴ These integrative mechanisms are described in detail in *Reality Begins with Consciousness* including in a series of simplified pictures in a *Glimpse* e-book, and briefly in a previous publication in this journal. There are several special terms here. The *mechanism* involves via a somewhat complex *process* called "indivension" (Neppe and Close derived this from "individual-units" plus *dimensions*). The indivension process utilizes the multidimensional content of three dimensional "vortices". There is also a systems component, involving not only individuals, but any groups (psychological, social, family, culture, ethnic, even species) all handled by "individual units". More formally, indivension is the process involving fluctuating Space Time and Consciousness across "zillions" (N^n) of individual-units. Indivension describes the process of moving across, between and within dimensions, and interfacing across different levels of individual-units. For those in 3S-1t, we can conceptualize only the limited, relative and fragmented views of reality afforded by the physical senses of different sentient beings. *Dimensions involve substrates of measurement: They have extent: they are non-congruent, non-parallel extensions measurable in terms of variables of extent (CoD) such as Space, Time and (dimensional) Consciousness.* Operationally, in the Euclidean framework, for convenience, dimensions are defined as orthogonal to each other, and characterized in degrees of freedom. Dimensions involve distinctions measured in units of extent. *Individual-units* refer to distinct "conscious" finite biological units across dimensions and also the infinite. Multiple levels manifest together, most obviously in individuals but "individual-units" can reflect any systems level: familial, group, ethnic, cultural, social, and species linked. "Vortices" involve three-dimensional rotating movements: dynamic moving curvilinear manifold multi-dimensional distinctions of any open or closed form, including spherical, ovoid, helical or spiral forms (adjective: vortical) with the essential characteristics being curvature and movement. However, the movement can equal zero relative to a specific dimensional domain or reference frame.

⁵ *Ordropy* from "order" was previously called "extropy". But others had used this term and we wanted to ensure that this was understood as not only one dimension of disorder-order but multidimensional.



generates six hundred ideas, speculations, hypotheses and extensions for research. Philosophically, the model of TDVP uniquely involves "Unified Monism" (Neppe and Close, 2014f). This paper contains new information and results that strongly support TDVP. We demonstrate mathematically that 9 dimensions exist. This conclusion is demonstrated not only one way, but with several different approaches.

Much more detail about TDVP is available elsewhere. For the present, we provide important priorities in Tables 1 and 2 (*please see supplement* in the web site). Table 1 lists the fundamental axioms, basics and validations of TDVP; In Table 2, we provide mnemonics on TDVP with the key mnemonic, namely DICTUM, in Table 2A and the broader, still important detailed elements listed in Table 2B. These are outlined in more detail in our 500 page Fifth Edition of *Reality Begins with Consciousness* (Neppe and Close, 2014f), and beyond that in many publications about TDVP (Close and Neppe, 2012; 2014; Neppe and Close, 2011; 2014a; 2014c; 2014g; 2014h; 2014; 2015b). After three plus years, and hundreds of scientists in several countries examining it, the TDVP model remains unrefuted. Moreover, proofs and support grow by the month.

TDVP, the *Triadic Dimensional-Distinction Vortical Paradigm* is a metaparadigmatic model developed equally by Drs. Vernon Neppe and Edward Close. TDVP applies several major related areas:

- *Triadic* Space, Time and broader 'Consciousness' tethered together
- *Dimensions* of extent involving mathematical *distinctions*
- *Vortices* interfacing across dimensions (indivension)
- *Paradigm* (Metaparadigm /Theory of Everything) across the sciences and mathematics with unification of the infinite and finite resulting in the philosophical model of Unified Monism.

In TDVP, all of "space, time and consciousness" (*S, T and C*) are tethered together. They are fundamentally inseparably attached together at one or more roots.

TDVP is based on the available broader empirical data of all the sciences (physical, biological, consciousness and psychological). It is validated partly by mathematical theorems,

applying the philosophy of scientific validation method for evaluating scientific findings namely LFAF (lower dimensional feasibility—the jigsaw puzzle pieces in 3S-1t that fit—are feasible with the absence of refutation applying (Popperian falsification) (Neppe and Close, 2012; 2014e; 2014g). TDVP can also be applied to a philosophical model (as "Unified Monism"), but secondarily following the mathematical logic and empirical scientific findings (Neppe and Close, 2014f).

The key features are STC tethering, 9 finite quantized dimensions (9D) with 10^{th} plus transfinite dimensions embedded within a continuous Infinity. Depending upon the frame of reference, some or all of these dimensions are spinning relative to the conscious observer—they are vortices as there is always movement and curvature [mathematically relative to a specific dimensional clustering—domains—there may be no movement (=0 transiently)].

TDVP also answers the real need to explain why we sometimes catch glimpses of a broader reality in rare extra-corporeal (out-of-body) experiences and other documented *psi* phenomena. The current mainstream scientific paradigm cannot explain so-called anomalous phenomena and the “missing” portions of reality because there is no place in its formulation for phenomena that may involve more than matter and energy interacting in three-dimensions of space and one dimension of time. TDVP, on the other hand, reveals a multi-dimensional reality and the need to recognize a third form of reality, not measurable as mass or energy, in the equations of science. As we shall see, TDVP provides a theoretical basis for a much deeper understanding of reality, as well as providing the appropriate tools for exploring it.

TDVP includes consciousness as an objective reality and recognizes that dimensions exist beyond our simplistic 3S-1t experiential reality, and conceptualizes the finite as embedded in the infinite. It is producing testable results and explaining observations that the current materialistic paradigm cannot explain. Several of these are listed in our publications (Neppe and Close, 2014d; 2014e; 2014f; 2013b). The model of TDVP expedites a serious effort to upgrade the mathematics of the physical sciences to include the direct and indirect involvement of consciousness. If successful, and there is now cogent evidence for this, there is then a reason to

believe that this new paradigm will provide a comprehensive framework within which all the branches of science can be expanded to include phenomena heretofore excluded from scientific investigation.

TDVP provides a proposed theoretical basis explaining the postulated 9-Dimensional finite spin model (9D finite spin). This model provides a logical basis for comprehending extra dimensions (Close and Neppe, 2014; Neppe and Close, 2014f). A fundamental aspect of TDVP involves vortical rotation through nine finite dimensions (Neppe and Close, 2014d; 2014e; 2014f). The justification works reciprocally because by the Cabibbo demonstration and by explaining the intrinsic spin of fermions in a 9D spin context, we have been able to validate this finite component of TDVP. However, our Cabibbo derivation does *not* elaborate the nature of any of the specific dimensional substrates involved, namely those of Space, Time and a postulated “Consciousness” (Neppe and Close, 2014f).

Effectively, within the confidence limits of experimental measurement error, the exact Cabibbo angle derivation supports both the fermion mixing angle hypothesis for electrons and the feasibility of our nine-dimensional finite model. The likelihood of such findings occurring by chance should be very low because applying mathematical physics, no one in fifty years had shown such a calculation to be effective (Neppe and Close, 2013a).

1D. The third mystery: applying TDVP constructs in our dimensional calculations

Our conventional scientific reality of “3S-1t” is what, we, as living sentient beings experience—3 dimensions of space (length, breadth, height) (3S) and 1 moment in time. This 3S-1t reflects our perceived physical reality, open to extensive conventional scientific study. We therefore always discuss 9 *dimensions relative to* our own 3S-1t experience. No experience is absolute: There is a *framework of observation*, and experiences are necessarily relatively conceptualized (Neppe and Close, 2014; 2015b).

This differentiation reflects an important distinction, mathematically justifiable through the *Calculus of Distinctions*, which is an important practical mathematical application of the TDVP model. It allows us to discuss real integers of dimensions, and half-spin based on our real



number experiences, as opposed to applying a number system of real (spatial), imaginary (time) and complex numbers (consciousness). The *Calculus of Dimensional Distinctions* is applied in the context of the mathematical study of dimensions, in an area we have called “*dimensionometry*”. We can link across dimensions by a mathematical technique involving *extrapolation* through the various dimensions. These are all new areas pioneered by Ed Close, and linked up with the Neppe-Close TDVP model (Close and Neppe, 2014; 2013a; 2014f; 2012).⁶

3S-1t reflects our perceived physical reality, open to extensive conventional scientific study. We therefore always discuss 9 dimensions *relative to* our own 3S-1t experience. No experience is absolute: There is a framework of observation, and experiences are relatively conceptualized. This is an important distinction, allowing us to discuss real integers of dimensions, and half-spin based on our real number experiences, as opposed to applying a number system of real (spatial), imaginary (time) and complex numbers (consciousness) (Close and Neppe, 2012; 2014; Neppe and Close, 2013a; 2014).

The Calculus of Distinctions and Dimensional Distinctions

TDVP is a consciousness-based model that applies a well-defined system of logic based on an application and extension of George Spencer Brown’s *Calculus of Indications* (Brown, 1977). This is called the *Calculus of Distinctions* because it draws distinctions as and in so doing formalizes the most basic elements of mathematical logic. It was first developed by Close in 1986, published in 1990, expanded to include dimensional notation by Close and Brandin in 2002 (Brandin and Close, 2003), and has been further amplified by Close and Neppe since 2009.

CoD is a “Calculus” because it involves a system of operations, governed by a set of logical rules. The *Calculus of Distinctions* allows fundamental processes of calculation at a level of

logic prior to the development of any other mathematical operations: The CoD applies symbolic representation of a distinction or distinctions and extends into geometry and into multiple dimensions (“*dimensionometry*”), algebra, arithmetic and even to the calculus of Newton and Leibniz. It can be applied to any size of system, from the quantal to the astronomical, and recognizes the fundamental role of “consciousness”, namely the drawing of distinctions. For the purpose of calculation, CoD expressions are changed by one or more logical operations, consisting of one or more steps, to another form. It differs from Set Theory because it involves multiple dimensions, consciousness, is triadic (not binary), incorporates imaginary, complex and negative numbers, and involves distinctions not similarities. CoD fundamentally mathematically conceptualizes reality. This new mathematical technique is critical in TDVP as part of its mathematical feasibility because although analyses occur across the frameworks of multiple dimensions, CoD applies mathematical feasibility relative to specific domains like our common 3S-1t reality (Close and Neppe, 2012).

Distinctions are actually the basis of all conceptualizations, perceptions, observations, measurements, and knowledge, and the *Calculus of Distinctions* (CoD) is logically prior to enumeration and equivalence, the basis of all conventional mathematics. Because of this, the calculus of dimensional distinctions is a powerful tool used to evaluate and extend all mathematical procedures.

Distinctions may be drawn in any number of dimensions, but dimensions are only those elements of perception that can be measured using these variables of *extent*. This is often an error made in conceptualization by speakers or writers when the term “dimension” is used loosely. This makes an enormous difference mathematically and in scientific conceptualization. Dimensions are conceptually and physically different from parameters of *content* and also of the *impacts* that influences of consciousness, mass or energy may have.

Distinctions are drawn in all dimensions, and therefore, we define an n-dimensional distinction as anything distinguished from its surroundings and measured in units of content. Because distinctions such as physical objects of the same size (dimensional extent) may vary in mass and energy content, units of content per

⁶ Dimensional Domain: (also called “Domain”): A contiguous collection of perceived or conceptualized distinctions of extent; in our living sentient reality it usually is 3S-1t(-1c). When conceptualizing a 9-dimensional finite reality it could be any set or subset of dimensions, for example, 3S-3T-3C or even, theoretically, 2S-1T-6C. (See, too, “domain”).



unit of extent are used to express the strength or density of the distinction.

1E. The fourth mystery: applying mathematical dimensional extrapolation non-specifically in our dimensional calculations

Initial dimensional extrapolation

Dimensional extrapolation is a mathematical technique. This allows us to combine what is normally thought of as a geometric procedure with the mathematical logic of the calculus of distinctions to determine the mathematical nature of multi-dimensional domains. It's pertinent below; inter alias, as an important multidimensional demonstration.

Dimensional Extrapolation (DE) allows determination of the mathematical nature of multi-dimensional domains. A unitary vector, defined in a one-dimensional domain is rotated about its origin and projected into the two-dimensional domain. Maintaining the same origin, this process is repeated until the fourth dimension is reached, where the unitary projection domain, in order to reach a point outside of the 3-S domain must be represented by an imaginary number, consistent with Minkowski's representation of time as the fourth dimension (Minkowski, 1908). All points located in the 4-D, 5-D and 6-D domains are found to be congruent with the field of real and imaginary numbers. Continuing in this way, we find that the number field of domains 7, 8 and 9 require complex number representation. DE is therefore an iterative logical operation based on the natural correlation between number fields and multi-dimensional domains of extent. Dimensionometric mathematical invariances existing between dimensional domains are identified, first in one-two- and three-dimensional domains; and then, using these invariances, the natural correlations between number fields and spatial domains are

extrapolated, into domains of more and more dimensions. The 4-D domain is the most fundamental where the points are real in space, and either real or imaginary in time. Mathematically, the 5-D and 6-D domains are also definable with real and imaginary numbers, but DE requires that complex numbers are the variables of 7, 8 and 9-D. Extrapolated elements of both space and time within consciousness project mathematically as complex numbers which include both real numbers (*Space*) and imaginary numbers (*Time*). The application of DE involves executing multiple rotations and projections from dimension to dimension. However, when we examine our 9 dimensional spin model, we take into account that there is no rotation in the first dimensional extrapolation, only a projection from 0-D to 1-D: This is different from DE from all other dimensions as 0 is a point where DE only involves projection (Close and Neppe, 2012).

Application

Once the derivation of figures for spinning dimensions is obtained, it actually involves a simple final stage multiplication to obtain 9 dimensions, and this can be compared with the previously empirically derived reality of the Cabibbo angle, and with spinning through other dimensions. There had to be a mathematical technique to spin across such dimensions and dimensional extrapolation is the logical mathematical technique to accomplish this.

We have published a demonstration of the initial application of mathematical dimensional extrapolation upwards and downwards showing multidimensionality and feasibility of 9D but not specifically demonstrating 9D (Close and Neppe, 2013). This result that is still remarkable, in itself, and appears to be a major contribution because *extrapolation upwards to and downwards from 9 dimensions produces the same asymmetry*.

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