UCLA research showed that dendrites are electrically active in animals that are moving around freely, generating nearly 10 times more spikes than somas.
Special acknowledgement to Owen Cosby For reviving and restoring Infinity International Society and establishing IQ Nexus joined forum of IIS and ePiq and later ISI-S Societies for which this Journal was created.

Special thanks to Jacqueline Slade for her great help with English editorial work.

This issue featuring creative works of:

Alena Plíštilová
Ashraya Ananthanarayanan
Edward R Close
Harry Hollum
Jaromír M Červenka
Jason Munn
Joely Villalba
Kit O’Saoraidhe
Louis Sauter
Marilyn Grimble
Mark van Vuuren
Stanislav Riha
T.G. “Torg” Hadley
Vernon M Neppe

“Even though scientists are involved in this Journal, I and all involved in the IQ Nexus Journal have tried to keep the content (even though it is a Hi IQ Society periodical) on an ordinary human level as much as possible.

In fact, is it not the case, that - to be a human being is the most intelligent way of life?”

Stanislav Riha

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Non-members’ contributions are welcome and every contribution has to be accompanied by an introduction from the contributor.
Cover photo

Is property of http://newsroom.ucla.edu/releases/ucla-research-upend-long-held-belief-about-how-neurons-communicate

Dan Gordon | March 09, 2017 UCLA Mewsroom
The research is reported in the March 9 issue of the journal Science.

“Dendrites make up more than 90 percent of neural tissue,” said UCLA neurophysicist Mayank Mehta, the study’s senior author. “Knowing they are much more active than the soma fundamentally changes the nature of our understanding of how the brain computes information. It may pave the way for understanding and treating neurological disorders, and for developing brain-like computers.”

Scientists have generally believed that dendrites weakly sent currents they received from the cell’s synapse (the junction between two neurons) to the soma, which in turn generated an electrical impulse. Those short electrical bursts, known as somatic spikes, were thought to be at the heart of neural computation and learning. But the new study demonstrated that dendrites generate their own spikes 10 times more often than the somas.

The study’s other authors are Pascal Ravassard, David Ho, Lavanya Archarya, Ashley Kees and Cliff Vuong, all of UCLA. Funding was provided by the University of California.

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Fifty discoveries that are changing the world: Why the Triadic Dimensional Distinction Vortical Paradigm (TDVP) makes a difference.

Vernon M. Neppe MD, PhD, FRSSAf, DPCP(ECAO), DSPE and Edward R. Close PhD, PE, DF(ECAO), DSPE

Abstract

Core points: Applying objective criteria, the Neppe-Close Triadic Dimensional Distinction Vortical Paradigm (TDVP) has likely become the pre-eminent model of reality: It is far more than just a theory because the most important parts are empirically validated and/ or mathematically demonstrated. This means, that unlike all other currently proposed theories, the key parts of TDVP are not speculative, but based on solid science and mathematics.

Moreover, comparing the pioneering multidisciplinary TDVP with two dozen other proposed ‘theories of everything’ (TOEs), even at the time of it first being proposed (2011), TDVP was already still complete enough to score perfectly (39/39) applying predefined objective criteria— far, far higher than any other model. Qualitatively, no other alleged TOEs scientifically even included even two of the basics of TDVP — extra dimensions, infinity, and ‘consciousness’, let alone any of the more complex criteria of tethering, unification, mathematical proofs, feasibility, rotation, order and life, extent, content and impact, 9 dimensions, quantized volume, and gimmel.

In this paper, we summarize fifty groundbreaking TDVP discoveries listing the chronology of each finding.

Though subsequently amplified greatly with proofs and empirically, TDVP retains all its original 2011 concepts like:

• Space, Time and (Extent of) Consciousness always have existed together and are tethered and inseparable.

• ‘Consciousness’ is a key component of all models. Even beyond the more recognized neurological and psychological consciousness, nothing exists without some level of other ‘consciousness’ (quantized or extended).

• Our existence involves a finite multidimensional spinning reality, and that finite is contained within the infinite.

---

a Vernon M. Neppe MD, PhD, Fellow Royal Society (SAf) **, DPCP (ECAO), DSPE, and Edward R. Close PhD, DPCP (ECAO), DSPE *. Pacific Neuropsychiatric Institute, Seattle **; and Exceptional Creative Achievement Organization (Distinguished Fellow *, Distinguished Professor **) For perspective, Prof. Neppe is a Behavioral Neurologist, Neuropsychiatrist, Neuroscientist, Psychopharmacologist, Forensic specialist, Psychiatrist, Phenomenologist, Neuroscientist, Epileptologist, Consciousness Researcher, Philosopher, Creativity expert, and Dimensional Biopsychophysicist. His CV includes 11+ books, 2 plays, 700+ publications, 1000+ invited lectures and media interactions worldwide (http://www.vernonneppe.org/about.php); Dr Close is a Physicist, Mathematician, Cosmologist, Environmental Engineer and Dimensional Biopsychophysicist. Transcendental Physics is one of Dr. Close's 8+ books. (www.erclosetphysics.com).

b The material in this article has been peer-reviewed by many readers.

c Those not familiar with TDVP may find this abstract formidable: We recommend reading the whole paper before studying the abstract, which can serve as an intense, specialized and prioritized summary of our work.

Vernon M Neppe, Edward R Close. 50 discoveries changing the world and TDVP. IQNJ. 9:2, 7-39, v 4.3 170624248. 2017
Building on these ideas, Close and Neppe, thereafter, made several further groundbreaking discoveries, namely:

- **Our overtly expressed familiar finite physical reality** experience as living sentient beings occurs in three spatial dimensions in a moment in time (3S-1t). However, much of our finite existence is hidden (covert) and we’re not directly exposed to the influence of nine rotating dimensions (‘9D spin’) embedded in an infinite existence 9D.

- **The atom necessarily does not only have mass and energy as ‘contents’.** Empirically, for stability, we’ve shown there needs to be a third process — a mass-less and energy-less content (called ‘gimmel’) that is linked in specific quantities to all subatomic particles. Gimmel is proven mathematically, and empirically. Without gimmel, our cosmos simply could not exist.

- **The finite involves quantized volumes.** Everything empirically is volumetric, not linear or planar. There is a bottom limit requiring applying a fundamental, new mathematical technique—the calculus of distinctions. Importantly, this means that we cannot reduce anything empirical to infinitesimals, as in Newtonian calculus.

- **The discrete quantized finite is embedded in a never-ending continuous infinite reality.** This dynamic infinite component impacts and can be influenced by the finite component of the unit that makes up existence.

Applying their TDVP model, Neppe and Close outline and reference fifty major related earth-shattering discoveries. Each discovery strengthens our paradigms for reality, because the finding adds to the consistency of the whole, suggesting there is no contradiction. With each of the fifty-plus real data discoveries and proven hypotheses over 6-years, the likelihood increases that the TDVP model is broadly correct. This contrasts with the marked critiques of every other proposed major TOE.

All of these are consequences of gimmel and what we’ve called ‘Triadic Rotational Units of Equivalence’ (TRUE units) within the finite spinning 9-dimensions (9D) embedded in a continuous infinite. TRUE unit calculations measure mass-energy-volume of subatomic particles like quarks (up and down quarks in protons and neutrons) and electrons. They also measure the number of gimmel particles in union with these particles.

These discoveries include three groundbreaking hypotheses demonstrated by empirically verified real-life proofs:

- **Cosmological Correlations:**
  - **At the cosmological levels:** Dark matter and dark energy in the cosmos correlate almost exactly with the proportions of gimmel to TRUE units.
  - **At the quantal levels:** Moreover, the dark matter correlates with the gimmel in union with nucleons (protons and electrons) and the dark energy with the electron-gimmel proportions. As these dark substances do not fit into the atom in 3S-1t: they must reflect the extra-dimensional like 9D rotations.

- **Quantal equivalence:** ‘Gimmel’ and ‘TRUE’ are not just theoretically but empirically relevant as the Mass-Energy-Equivalents in TRUE units are identical with the ‘normalized’ Large
Hadron Collider results.

• **Dimensional derivations:** The 9-dimensional finite spinning model of reality has been empirically replicated on several occasions. This greatly enhances our perspective of the nature of reality.

**Examples of the key 50 findings:** We list 16 others with far-reaching implications:

1. The laws of nature that exist are the same universal rules at all levels including for quantum physics and the cosmos. There’s no ‘quantum weirdness’ or ‘dark’ cosmic paradoxes: These findings fit into 9D and infinity.
2. All of empirical reality is based on quantized volumetric measures. Applying the ‘Close Conveyance Equation’, this means that there are only rare natural suitable Diophantine solutions of $a^3 + b^3 + c^3 = d^3$ in elements and compounds. In every instance, $c$ refers to the quantity of gimmel that needs to be in union with nucleons and electrons.
3. This means that in applied particle physics, the atomic structure with just protons, neutrons and electrons (or quarks and electrons) is mathematically impossible: We cannot have half an atom or half a particle (e.g. electron).
4. The solution: Every atom requires a stabilizing third substance (amounts of gimmel units) to be stable.
5. Remarkably, every ‘life element’ (Carbon, Hydrogen, Oxygen, Sulfur, Nitrogen, Calcium, Magnesium) is symmetrical and stable, and fits into an atomic mathematical calculation relating to multiples of $10^{33}$.
6. Hydrogen-1 appears to compensate for its absent neutron by containing extra third substance. This makes it the element with a union of far the most ‘gimmel’, and likely explains H1’s ubiquity in the universe.
7. We can predict that Silicon is an element of life based on its characteristics. This is a future empirical test.
8. Gluons describe a likely non-existent misinterpretation of particle physics. Gluons are applied alone to protons and neutrons or to quarks. But this would cause the elements to fly apart. Gimmel replaces gluons and allows stability and uses electrons.
9. Electron shells, valence and the Periodic Table can be better explained applying TRUE units.
10. Individual-units and Indivension are two exceedingly important concepts in communication across, between and within dimensions and involving individual and collective approaches.
11. The occurrence of events, such as entanglement, tethering and psi, provide fertile awareness and explanations of moving to higher dimensions. TDVP should be applied in the relative non-locality context.
12. Mathematics is real: It closely reflects the nature of reality. Math is more than just for calculations or operators. Mathematics is empirically meaningful.
13. The philosophical model of Unified Monism (UM) is a consequence of the science/mathematics of TDVP. UM is a versatile philosophical model that can be used to explain all the many and varied mind-body dilemmas.
14. Applying the philosophy of science extension of LFAF (lower dimensional feasibility, absent falsification) allows scientific evaluation of many disciplines such as evolution, cosmology, medicine and psychology as well as dimensionality, including TDVP, and psi. These then become legitimate parts of science.
15. TDVP allows the unification of science and spirituality. Science previously was limited to...
Popperian thinking, but applying LFAF allows what is feasible to markedly extend science. Therefore, some concepts that were never proven or demonstrated in 3S-1t, become legitimate scientific study areas because

16. After eight plus years, TDVP not only remains unrefuted, but with each additional discovery, the model becomes more integrated, supports more hypotheses, and therefore has a more comprehensible and stronger structure.

**SEARCH TERMS:** 3S-1t, 9D spin, 11NCR, atomic, calculus of distinctions, calculus of dimensional distinctions, Close, consciousness, Conveyance Equation, covert, dark matter, dark energy, dimension, Diophantine, discoveries, electron, Einstein, Fermat’s Last Theorem, finite, discrete finite, distinction, falsifiable, feasible, gimmel, gluon, infinity, infinite continuity, Kuhn, LFAF, life elements, materialism, mathematics, metaparadigm, Neppe, nepton, neutron, origin, overt, philosophical models, Popper, proof, proton, psi, quantum, quantized volume, quantum weirdness, quark, reality, relative, revolution, rotation, science, silicon, speculation, spin, spirituality, TDVP, theory of everything, TOE, triadic, Triadic Dimensional Distinction Vortical Paradigm, Unified Monism, vortical.

**KEY WORDS:** 3S-1t, 9D spin, 50 discoveries, TDVP, theory of everything, TOE, triadic, Triadic Dimensional Distinction Vortical Paradigm, empirical demonstration, mathematical proof.

**Fifty discoveries that are changing the world: Why the Triadic Dimensional Distinction Vortical Paradigm (TDVP) makes a difference—the paper**

**Why the Triadic Dimensional Distinction Vortical Paradigm is of profound significance:**

In this world of human experience, the authors point out that we will never truly understand the Nature of Reality until our searches for scientific and spiritual knowledge are merged into one serious, combined effort. Once this happens on a global scale, we maintain that humanity will experience an explosion of new knowledge and understanding far beyond anything experienced so far in the current era of recorded history. This is likely only the tip of the iceberg!

**Historical perspective to the chronological development of TDVP.**

We trace the chronological development and give a perspective to fifty discoveries linked with the Neppe-Close Triadic Dimensional Distinction Vortical Paradigm (TDVP). Since 1989, and even before that, both authors had been determined to find a better way to explain putting the Primary Reality of Consciousness into the equations of science.
In 1996, Dr. Edward Close, mathematician, physicist and engineer, published his groundbreaking book “Transcendental Physics”\textsuperscript{10}, an effort to make his previous 1990 work “Infinite Continuity” book more accessible\textsuperscript{11} It reached a few more people, but still only relatively few scientists and others interested in the merging of science and spirituality. One who shared Close’s vision was Dr. Vernon Neppe, MD, PhD, and Fellow of the Royal Society (SAf). Neppe became Close’s research partner since 2008. Neppe is an internationally known and published neuroscientist, psychopharmacologist, psychiatrist, behavioral neurologist, philosopher, research methodologist, systems theorist, and phenomenologist, creativity consultant, and forensic specialist. Over these many years from 2008, with Close, he pioneered the new discipline of Dimensional Biopsychophysics.\textsuperscript{d} Neppe, too, had sought a research partner to develop ideas on reality and had presented initially on “Vortex Pluralism” — a model he had first developed in 1989\textsuperscript{12;13}, and recognizing that this was monistic, he renamed the model to “Vortex N-dimensionalism”\textsuperscript{14;15}.

Together over these 9 years (late 2008 to the present), Drs Close and Neppe developed a comprehensive framework: a paradigm for the science of the future. This was first published as “Reality Begins with Consciousness: A paradigm shift that works” (RBC) in 2012\textsuperscript{9}, and that was reviewed by hundreds of scientists and philosophers worldwide. Since then RBC has gone to 5 editions with major additions\textsuperscript{1;5;8;9}, but throughout there new model, the Neppe-Close Triadic Dimensional-Distinction Vortical Paradigm (TDVP) model remains sound. Close and Neppe or Neppe and Close have subsequently published hundreds of technical papers including introducing groundbreaking concepts in the past 4 years such as:

- The versatile, empirically proven and important concepts of ‘gimmel’ TRUE units.
- The unification of all the laws of nature — quantum mechanics and cosmology (and also our regular macrophysical world) all obey the same unified laws, they’re not separate.
- Mathematical proof that we must exist specifically in a 9-dimensional finite rotating cosmos\textsuperscript{e}.
- The infinite continuity impacting all our finite reality (strongly supported by applying logic which is feasible based on our current knowledge).
- Mathematics appearing to be part of nature, not just a method of calculations and operations.
- Certain mathematical techniques allowing a more accessible way to discovery of reality\textsuperscript{16;17}. In particular, Close’s Calculus of Dimensional Distinctions,\textsuperscript{16;17} along with Close’s Dimensional Extrapolation technique, have facilitated higher dimensional analyses.\textsuperscript{16;17}
- The game-changing role of \textit{volume} in Quanta in the finite, being enumerated for the first time.

\textbf{TDVP in a nutshell.}

The Triadic Dimensional-Distinction Vortical Paradigm is a metaparadigmatic model developed equally by Drs. Vernon Neppe and Edward Close. It is based on the available broader empirical data of all the sciences (physical, biological, consciousness and psychological). It’s validated in part by mathematical theorems, extending the philosophy of science idea of ‘Lower Dimensional Feasibility Absent Falsification’ (LFAF) to validate scientifically what is feasible and not falsified\textsuperscript{18;19;20} in

\begin{itemize}
  \item Neppe, despite his medical training, has, nevertheless, been markedly involved with the physics and math of TDVP. This might partly be understood through his well-recognized, prodigious creative, but largely unused early childhood mathematical skills. Neppe pioneered many new TDVP math models, inter alia, on infinity, the transfinite, and ordinal measures. Close, too, exhibited childhood prodigy skills.
  \item ‘Rotation’ describes the 8 rotations between dimensions 1 to 9. In quantum physics, terms like ‘half-spin’ imply 180-degree rotations are used: So 8 rotations. ‘Spin’ is an alternative to ‘rotation’ so if half-spin = 4 full ‘360-degree’ rotations. In 3S-1t it’s illogical: 1.5 rotations.\textsuperscript{e}
  \item \textit{Vernon M Neppe, Edward R Close. 50 discoveries changing the world and TDVP. IQNJ. 9:2, 7-39, v 4.3 170624248. 2017}
\end{itemize}
TDVP, and applying TDVP to a new philosophical approach (as “Unified Monism”). The key features of their TDVP model were initially: tethering of Space, Time and Consciousness; finite rotating dimensions; as well as a further discrete transfinite domain, and a continuous infinite, including a model of life and order, and a broader ‘consciousness’ concept.

To these, many extremely significant innovative and extremely important additions occurred—some listed below. However, two profound and groundbreaking findings developed over these years of collaboration. These findings are of such significance that a major reviewer of the TDVP model has regarded these Close-Neppe contributions as unprecedented in this twenty-first century.

- The first was that they proved that there definitely was a finite reality that specifically exists in nine finite rotating dimensions: This idea both revolutionizes thinking, as well as supporting a hypothesis specifically enumerated in an earlier version of their RBC book, that 9D was the logical consequence of TDVP. Therefore, this validation of a prediction on TDVP strongly supports that model.

- The second was the concept of TRUE units where they have proven that reality has to contain a third substance, which they called ‘gimmel’. Gimmel is the third mystical letter of the Hebrew alphabet, and this gimmel substance is likely pure or part consciousness dependent on the framework of examination: For example, in the continuous infinite, gimmel is pure consciousness but this contains mass and energy. And in particle physics, gimmel is in union with every particle that exists, including electrons and the different quarks that are the major parts of the atom.

In this brief paper, we effectively list the discoveries linked with gimmel, giving a chronological perspective, as well as the source of each discovery: All these apparently groundbreaking discoveries have ultimately involved both Close and Neppe as equal authors, however, whoever is mentioned first below was the first to find the key data, and then together they were amplified. At the end of the paper, we also give a perspective of how groundbreaking the discoveries were, by relating the opinions of colleagues and the awards given to Drs Close and Neppe. We emphasize that these are not just theoretical findings, but empirically, there are three major evidential discoveries applying comparable and demonstrable, verifiable independently documented research data.

This empirically demonstrates our TDVP results are real not just unproven theoretical results.

- Gimmel units to ‘TRUE’ correlate almost exactly with dark matter/dark energy findings.
- The normalized volumetric mass energies of protons, neutrons and electrons are exactly the equivalent findings to normalized results in the CERN Large Hadron Collider.
- Our finite reality contains 9 (and only 9) dimensions, replicated in several empirical ways.

Going from abject rejection to acceptance of new metaparadigms.

Sadly, but not surprisingly, this is the typical history of groundbreaking endeavors. The Neppe-Close contributions have been largely ignored by many colleagues: with excuses such as “it’s too difficult”, “I’m not so trained”, and “it’s too wrong to be wrong”, or Wolfgang Pauli’s
famous anecdote to his then student, later eminent physicist, Victor Weisskopf (translated to) “This
is not even wrong.” These kinds of comments reflect the onset of the typical Thomas Kuhnian
progression describing how scientific revolutions begin with denial of what is not ‘normal science’—new, ‘unscientific’ ideas—much later, the final, fifth phase concludes with acceptance of new
norms. Kuhn described 5 stages of ‘1. The pre-paradigm phase; 2. Normal Science; 3.Crisis Phase;
4. Paradigm Shift; and 5. Post-revolution.’

In 2016, this Kuhnian Revolutions Model was extended by Neppe and Close into the ‘11
Neppe-Close Revolutions model’ (11NCR). 11NCR filled in gaps in and extended 11NCR has a
particular emphasis on Kuhn’s middle phases 2 through 4. 11NCR describes the scientists’
progression in their stages of understandings of the revolutions of change—the reshaping of
science—by adding several more paths along the way from Phase 3 to Phase 5, producing eleven
key periods of adjustment (Table 1). Arthur Koestler summarized the situation well, and we
quote here, without meaning to offend, because it’s logical to be careful with new data, and even to
reject the ideas, but only after thorough evaluation:

“Innovation is a two-fold threat to academic mediocrities: it endangers their oracular
authority; and it evokes the deeper fear that their whole laboriously constructed intellectual edifice
may collapse.”

Table 1: The eleven phases of denial and acceptance of Neppe and Close (“the 11NC revolutions” or “11NCR”)
1. Initially, there is the claim “it’s too wrong to be wrong”: This is often accompanied by a condescending smile or chuckle; the alternative phrase is the derisive “it’s too false to be false”; “it’s not even wrong.”
2. then there is abject rejection, often with ridicule and name-calling: “the insults are deserved. I know, I’m an expert”;
3. then “that’s a good try, but it’s simply cannot be true”;
4. then the consensus rejects it: “it’s definitely incorrect”;
5. then it is regarded as “unlikely, but it may be mentioned as a hypothetical for completeness”: “it’s an unlikely outlier that we mention just to cover all our bases”;
6. then there is the stage of “I’m opting out: This is outside my discipline, so I don’t understand it”; or “I haven’t studied it” or perhaps the scientist evaluator says: “Let me suspend judgment”;
7. then “maybe there is something there, but I need more”;
8. then “there is some evidence... interesting”;
9. then “it appears to be proven: the evidence is cogent; but most scientists don’t accept that”;
10.then it is hailed as “it’s a new breakthrough” (even though it may have been proven much earlier);
11.then “it’s obvious: we all know that”.

Building From Prior Knowledge: Key Principles:

Let’s now embark on our journey. This listing, in a way, is like a long abstract because each point could be justified through many pages. However, we cite all our data for further reference by
interested readers. We know that sometimes simply stating results is uncomfortable, so we
encourage further study. Everything listed below is well-documented, empirically sound, and not falsified. All the data below is feasible, and if a hypothesis has been mathematically proven, we list
that as that constitutes the highest level of scientific validation. In contrast, we also indicate if a
concept is speculative, though often that’s based on good logic, and therefore a justifiable opinion.

As a perspective, there are certain fundamental principles that we have published elsewhere,
but which are key to illustrate that the findings below are based on solid, peer-reviewed, empirical
research and mathematics. Many of the findings are proven mathematically, and based on the Neppe-Close Triadic Dimensional Distinction Vortical Paradigm (TDVP). 5; 28; 29

The following are the key principles to the paradigm (the ‘P’ in TDVP)—actually, TDVP is an all encompassing ‘metaparadigm’ because it impacts multiple scientific areas and is so versatile.

1. **The most fundamental ‘deep axiom’ of TDVP is the ‘Axiom of Origin’**: Space, Time and Consciousness (STC) are always tethered together: This axiom was developed in mid-2011 by Neppe and Close together while directly in discussion. Historically, this Axiom of Origin was born after eighteen months of intense working together: TDVP had arisen in its vestigial state! The TDVP model at that point contained the STC triad, STC involved dimensions, vortices were always regarded as a key mechanism with rotational movements in STC, and it was a new paradigm. Of course, this TDVP model at that point already contained ‘consciousness’.

   Tethering was conceptualized as far more than a linkage, like an arm tethered to a shoulder, an elephant to his trunk. Moreover, the recognition of the finite and the infinite was implied. The this Axiom of Origin involved tethered STC at the start of the discrete finite; in the infinite there was not beginning.

**Fundamental foundations of TDVP**

Over the next six years, several groundbreaking findings followed on the Axiom of Origin.

2. **We exist in a 9-dimensional rotating finite reality.** (Close and Neppe, mid to late 2013) Dimensions, like all terms in this discussion, have been carefully and specifically operationalized: Technically, dimensions are non-congruent, non-parallel extensions: They are measurable in terms of units 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 interact together forming different ‘dimensional domains’ with specific properties 3.

3. **Gimmel is a third substance besides mass and energy.** It is a content that is massless and energyless and always in union with mass and energy, just as consciousness extent is in union with space and time. (Close and Neppe, 2015; terminology Neppe and Close, 2015).

4. **Gimmel is part of all atoms.** This third form of the substance of reality is necessary for symmetric stability. Gimmel is linked with electrons in abundance—105 gimmel TRUE units to the electron, and with protons and neutrons to a much smaller degree (Table 2). These findings cannot be contrived. The mathematics provides only this lowest common solution.

---

5 In all of these new discoveries, we list the year that we first described our finding: This may or may not correlate with the first publication in the area. The first-mentioned scientist (Neppe or Close) refers to the initial discoverer although in all instances our work has been collaborative.

*Vernon M Neppe, Edward R Close. 50 discoveries changing the world and TDVP. IJNQJ. 9:2, 7-39, v 4.3 170624248. 2017*
5. **Gimmel is a necessary part of TRUE units.** The establishment of Triadic Rotational Units of Equivalence is an enormously important concept because by normalizing with Diophantine triplet equations one is able to explain the stability of atoms. This cannot be achieved by pure physical materialism of matter and energy alone, or specifically just protons, neutrons and electrons (together we’ve called these ‘neprons’
30; 31). TRUE units reset thinking in the area of Quantum Physics. TRUE units, too, involve very detailed mathematical calculations based on triadic Diophantine equations, Calculus of Dimensional Distinctions and Dimensional Extrapolation. Again, the mathematics produces not speculations here, but proofs.
31; 32; 33; 34 TRUE unit calculations repeatedly work. We know therefore that they are soundly based mathematically. (Close and Neppe, 2016).

6. **TRUE unit calculations are empirically proven.** They are not just theoretical mathematical constructs. However, if the mass of the protons, neutrons, and electrons as demonstrated by the Large Hadron Collider data demonstrate equivalence with TRUE unit mass findings, then this becomes an empirical reality, not something purely theoretical.
18; 19; 20; 35. This equivalence has been demonstrated. (Close and Neppe, 2016)

7. **The finite is contained in the infinite.** The finite STC is embedded in the infinite STC (Close and Neppe, 2011).

8. **The finite existence is made of discrete quantum volumes.** This is fundamental and differentiates the finite from the infinite. In the finite, we’re not dealing with reductions to points, but to quanta: finite quantities cannot be endlessly divided into extensionless points, but have limits (quanta). This contrasts with the infinite, where there is no reduction to any limit because the infinite continuity is limitless without beginning or end: it is a single unending unit, but contains the finite (Neppe and Close, 2016).

9. **The infinite involves continuity.** The finite and infinite are inseparable. Therefore, there is no need for a ‘link’ between the finite and infinite. The infinite permeates everything. (Neppe and Close, 2014).

The above 9 discoveries are provided above to emphasize and prioritize their importance.

**Amplifications:**

10. **9-dimensional mathematics:** The nine dimensions themselves are proven mathematically. Reality only works with 9 dimensions (9D), not 8 or 5 or 4 or 10 or 26 or any other low number, and questionably with exponents (e.g. \(9^2 = 81\) or \(9^3 = 729\)). 9D proof involves numerous proofs and replications.
30; 31 Lower dimensions are contained (embedded) in the
higher dimensions; the finite is contained in the infinite; the substrates of Space (S) is contained in the Time (T) Substrates which, in turn, is embedded hierarchically in Consciousness (C). Therefore, S is contained in T which is in C. The exact proportions of dimensions in reality are dynamic and may fluctuate in state, and seldom are all 9 in play in experience, though they still exist. (Close and Neppe, 2013).

11. **The Cabibbo Angle:** The first and most well-known was the derivation of the Cabibbo Mixing Angle in Particle Physics (Close and Neppe, 2013; published 2014). This was one featured finding with Calculus of Distinctions in an article in USA Today Magazine (early 2014) (Close and Neppe, 2013)

12. **9-D replications:** Subsequently, there have been numerous replications such as a thought experiment, intrinsic angular momentum through 9 dimensions, extrapolation through 9 dimensions of intrinsic spin, and explanations of the disappearing electron cloud (Close and Neppe, 2013), as well as gluons vs gimmel in 9 dimensions plus Cabibbo-like explanations. (Neppe and Close, 2015)

13. **9D likely is hierarchically and dynamically made up of 3 dimensions of space, 3 of time, and 3 of consciousness.** Based on the math, and several empirical hypotheses, included quanta always being volumetric, it’s likely but unproven that the 9 dimensions consist of 3 of space (which extend far beyond our physical reality), three of Time (past-present-future is one dimension; this is best perceived in graphic 3-D), and three of ‘Consciousness- extent [C_c]. We sometimes refer to that as 3S-3T-3C: This is the postulated triad of 3-D domains: 3 of Space ‘embedded’ in 3 of Time and that in 3 of “Consciousness”. (Close and Neppe, 2013)

14. **Communication occurs across dimensions:** This involves vortical movements. Rotations from dimensions 1 to 9, i.e. 8 rotations. This is critically important when talking of ‘half-spin’ of fermions. This allows for 8 half-rotations, i.e. 4 full rotations. No longer is half-spin a theoretical physical construct, but something pertinent across finite reality. Vortices involve rotational movements and are fundamental to reality. Hence the *Vortical* in TDVP. (Neppe and Close, 2016)

15. **Dynamic dimensional domains:** These dimensions and dimensional domains differ dependent on our state and traits of existence. In our current physical reality, we experience 3 physical dimensions of space in a moment in time (the present). We do not directly experience the other dimensions, though may in part experience these in altered states of consciousness. (Neppe and Close, 2014)

16. **Our physical reality experience as part of our existence:** The most important dimensional domain we deal with in reality is our limited physical reality called 3S-1t. This is our conventional scientific reality: We, as living sentient beings, experience—3 dimensions of
space (length, breadth, height) (3S) and 1 moment in time (1t) (the “present”); (3 dimensions are abbreviated 3D or 3-D). Some would argue that that might be 3S-1t-1c: Our living sentient-being reality always includes some meaningful consciousness.

Commentary: Our experiential reality consists of 3S-1t plus a tiny part of our current present ‘Consciousness’ dimensions. [Neppe and Close, 2011]. The 9 dimensions contain (embed) our physical experiential reality of 3S-1t. Therefore, all the laws of nature still apply to our physical experience, and the presence of 9D does not contradict what’s been demonstrated in our conventional standard model of physics. The finite quantized 9D, and the infinite continuity that embeds it, allows for amplification and clarifying conundrums that appeared contradictory or misunderstood in 3S-1t. All of reality —finite in the infinite— is one unit. Our experiencing an overt reality while physically alive, reflects just our 3S-1t framework, and everything is relative to that for us. But 9D reflects a hierarchy of different relative non-local experiences of parts of our covert existence. Yet other altered states might involve different dimensional domains, speculative as to which: e.g. near-death experiences speculatively dimensions could be 5, 6, and 7; or survival after death could theoretically be part of that 9D essence like 7 to 9 or other dimensions. Even more so, we've argued that psi phenomena—and there is cogent empirical evidence for such experiences, as so-called ‘extrasensory perception’ in its various manifestations—is likely variably linked in that 9D essence. These happenings will manifest, at times, by impacting 3S-1t so we live humans can experience that psi phenomenon.

Effectively, 9D is a single essence with different states. (Neppe and Close, 2015)
S, T and C, this still results in a relative non-local (network) linkage at every dimensional level. Effectively, even at the subatomic level, space, time and “consciousness” always immediately together co-exist, originally and eternally across space, time and meaning.

Commentary: Tethering is not even like traveling at light speed— it is not a wave: communication is instantaneous. Effectively, there is “immediate” relative non-local communication at every level: it is there—tethering does not need to move through space, time or meaning or “physically link”. S, T and C always remain linked, across, between and within all dimensions. The tether might be either tight (with many roots or source) or loose (more subtly connected). Even when loose, the linkage always exists, as even any ostensible separation still exhibits communication of all of the STC components. However, speculatively differences in tethering extent occur: it could be weak or strong: This might explain differences in communications like psi. Metaphors like “balloon on a string” or “boats moored to the pier” assist the linkage idea, but they greatly mislead because they reflect 3S-1t local space-time linkage descriptions whereas tethering involves multidimensional relative non-local STC communications. Closer, but still just reflecting 3S-1t not 9D or the infinite, is the non-separation of a hand and a shoulder. Mass and energy are also always tethered to consciousness content as they’re measured in space and time extent. 3 (Neppe and Close, 2015)

19. **Immeadiacy and instantaneity:** The occurrence of events such as entanglement, tethering and psi provide fertile awareness and explanations of moving to higher dimensions. This is likely and feasible but not proven mathematically. 55 (Neppe and Close, 2015)

20. **Psi and TDVP:** The critical relevance of understanding psi phenomena is ostensibly achieved by applying TDVP with relative non-locality and psi. 48; 51; 52; 53; 54; 55; 56; 57; 58; 59; 60; 61; 62; 63; 64; 65; 66; 67; 68; 69 (Neppe and Close, 2015)

21. **Distinctions:** If something can be distinguished from anything else we’re making distinctions to any finite object, event, image or thought that is distinguishable from its surroundings. In 1990, Close published “Infinite Continuity” wherein he introduced the Calculus of Distinctions, an adaptation of a form of symbolic logic, and attempted to apply it to problems in quantum physics and cosmology. The Calculus of Dimensional Distinctions (CoDD) is a direct derivation of the CoD, but involves application to dimensions specifically: 16; 40; 41; 42 Close developed the CoDD approximately 2003; Neppe worked with Close further on this area from 2011 on. 16; 41; 42

22. **The ‘calculus of distinctions’ (CoD)** involves a well-defined logical and mathematical operations. These involve the ‘drawing of distinctions’ which constituted the most basic concept underlying all logic and mathematics.

23. **Fundamental Existential Distinctions** There are three fundamental ‘existential’ distinctions in TDVP applying Close’s ‘Calculus of Distinctions’ (CoD) spelling out ICE — distinctions
of intent (impact / influence), content and extent.  

a. **Intent:** (or impact or influence) allowing bidirectional impacts such as earthquakes, thought, prayer allowing for meaning.

b. **Content:** Our content consists of Mass, Energy and a third substance called gimmel. Mass-energy (ME) can be combined into Mass-Energy-Volumetric units. All ME is linked with Gimmel necessarily. Therefore content of any substance necessarily *contains* mass—energy-gimmel. “Content” is what is contained. Imagine a container or receptacle: They contain and can be measured indirectly only through “Content Density” (content/unit extent). The density of a content distinction is measured as content (mass, energy or meaningful impact) per unit of *Volumetric Extent*. In psychiatry the parallel is the “voices are telling me to get a knife”: That’s content. The process is the auditory hallucination based on the voices. That is process or extent. There is no process without content.

c. **Extent:** In CoD, extent involves measurable real, imaginary or complex numerical values, ranging from zero, discrete values to infinity, and from interval to ordinal. They can be finite, transfinite (quantized or discrete infinity) or infinite (reflecting continuous infinity). The major extent we can measure in the finite (either intervally as in physical space, or ordinally in time or consciousness) is dimensions. Dimensions of extent are meaningless empirically without content. They are not theoretical constructs but allow the measurement of content. (Close and Neppe, 2011).

**24. The versatility of Gimmel TRUE units (GTUs):** Gimmel is an extraordinarily important concept that has allowed a major advancement in TDVP. It has been the last bastion to conquer in TDVP because the ‘Extent’ in dimensions, now incorporates the content in gimmel. The amount of gimmel units is fixed with each subatomic particle. For example, remarkably, the tiny electron is in union with 105 gimmel TRUE units (GTUs). There are also different GTUs for each of the 2 down-quarks and the one up-quark in neutrons; and again, different GTUs for the protons, which are made up of 2 up-quarks and 1 down-quark. Consequently, each of these six has a different numerical equivalence of gimmel. (Table 2). Therefore, the number of ‘gimmel TRUE units’ (GTUs) in atoms made up of protons, neutrons and electrons can be calculated and vary with each element and compound (one made up of two or more elements united in specific proportions). To illustrate gimmel’s versatility, there are many articles on it ranging from the Periodic Table, to gluons, to Dark Matter and Dark energy in the cosmos, to the contents of atoms. (Close and Neppe, 2011).

**Commentary:** We note that each of the 6 up-quarks and down-quarks have different Gimmel TRUE Units (GTUs) scores. This is not only just illustrating a principle here. It might imply that even though we ‘label’ all up-quarks and all down-quarks as the same, they are subtly different. This could then likely apply to every quantal particle. (Table 2)
25. **Relative non-locality:** The concept of *relative* non-locality is critical. There are those who like to talk of “non-local”. That non-local term is meaningless unless there is a hierarchy of non-locality. Non-locality is always relative to the position of the observer in Space, Time and Consciousness: Non-locality is experienced differently in 3S-1t compared with an altered state of consciousness, e.g. meditation that might intrude into other dimensions and very different from ostensible survival after death. We regard gimmel in certain forms as synonymous with consciousness content but this varies dependent on the relative dimensional and infinite frameworks in *relative non-locality*. One important aspect of this is how we examine events and perceive from different frameworks with everything being relative. (Neppe and Close, 2011).

### Table 2: Tabulation of elementary particles including their gimmel and TRUE scores

<table>
<thead>
<tr>
<th>Particle</th>
<th>Elementary particle</th>
<th>MEV</th>
<th>GTUs (gimmel)</th>
<th>Total TRUE Units</th>
<th>MREV Combined score</th>
</tr>
</thead>
<tbody>
<tr>
<td>e</td>
<td>electron</td>
<td>1</td>
<td>105</td>
<td>106</td>
<td>Electron =106</td>
</tr>
<tr>
<td>u1</td>
<td>proton</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>u2</td>
<td>proton</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>d1</td>
<td>proton</td>
<td>9</td>
<td>1</td>
<td>10</td>
<td>Proton= 24</td>
</tr>
<tr>
<td>u3</td>
<td>neutron</td>
<td>4</td>
<td>5</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>d2</td>
<td>neutron</td>
<td>9</td>
<td>3</td>
<td>12</td>
<td>Neutron =38</td>
</tr>
<tr>
<td>d3</td>
<td>neutron</td>
<td>9</td>
<td>6</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

TRUE= Triadic Rotational Units of Equivalence; u= up-quarks; d=down quarks; e= electron. GTUs = Gimmel TRUE units
MEV= Mass-energy volume; MREV= Minimal rotational equivalent volumes.

26. **Quanta and a new calculus.** In 1900, Max Planck discovered with his ‘black body radiation’ research that there were *quanta*; and Albert Einstein later applied the photoelectric effect. The fact that *everything is quantized* is extraordinarily important in finite reality. By contrast, whereas the infinitesimal calculus of Leibniz and Newton is very useful, particularly in calculations pertaining to the usual macroscopic scale phenomena, it has significant limitations based on quantal measurements because the quantum is the smallest finite amount. This means that calculations performed without a bottom limit, as exemplified by infinitesimal calculus which tends toward zero, may theoretically be useful, but in practice are approximations which do not fit the concept of the quantum. Therefore, Close and later Close and Neppe have had to develop a calculus that can be practically applied to quantized reality. Everything is discrete—all is quantized. This is the calculus of dimensional distinctions. It has major applications to dimensions and the quantal reality and in TDVP. (Close and Neppe, 2016)

27. **Quantized Volume:** Extremely important is the fact that the quantum is not a singular point or linear (one-dimensional) or planar (two-dimensional), though theoretically these exist. This
point does not appear to have been recognized beforehand but is huge because of stability of particles and the fact that one cannot tend to zero. All of empirical reality is based on volumetric measures, and volumetric implies three-dimensional measures. This means that all empirical mathematics must be based on cubic and three-dimensional calculations. \(^{42}\) (Neppe and Close, 2016)

28. **Applications of Fermat’s Last Theorem (FLT) and Close Conveyance Equation:** In 1636, Pierre de Fermat described a conundrum called ‘Fermat’s Last Theorem’ (FLT). FLT states that “no three positive integers a, b, and c can satisfy the equation \(a^n + b^n = c^n\) for any integer value of \(n\) greater than two.” \(^{83, 84, 85}\) FLT allows conceptualization of the natural asymmetries beyond three dimensions and mathematical calculations involving vortices. It is stated in the negative: in that, when dealing with, in this instance, cubic calculations (volumetric), one will not find that any solution that can involve just two addends. \(^{84}\) This absence is huge.\(^g\)

The Close Conveyance Equation developed by Edward Close in 2015, can be applied in particle physics, as we always require three addends. This means that all suitable Diophantine solutions must be \(a^3 + b^3 + c^3 = d^3\) (which is the ‘Close Conveyance Equation’ \(^{33, 88}\)) and not \(a^3 + b^3 = d^3\). This is extraordinarily important, because it restricts calculations and requires, based on this, possibly a third substance, which we are calling gimmel. \(^{83, 84, 85, 87}\) Given that gimmel is effectively at times completely just consciousness, this is the first time an equation of Consciousness has been mathematically proposed. (Close and Neppe, 2015).

**Commentary:** ‘Consciousness’ has many meanings and the authors have recognized four prongs of ‘EPIC Consciousness —Existential, paradigmatic, informational, and cybernetic. The paradigmatic aspects are quantized, extended (out of the brain), neurological and psychological. In this instance, we’re dealing almost exclusively with extended (or higher) consciousness, which may overlap the infinite and finite, and in the gimmel context, with the quantized finite form. We have written extensively about this \(2, 5, 6, 7, 69, 89, 90, 91, 92, 93, 94, 95\). (Neppe and Close, 2011-2016).

Also Diophantine Equations are a subset of number theory. They deal specifically with integers. This allows for a real-life perspective: We do not have half an atom, and the numbers of protons, electrons and neutrons are always whole, even if neutrons and protons contain elementary particles such as quarks. There are no fractions in empirical reality.

29. **Refutation of Atomic Materialism:** The general basic teaching of the atom consisting only of protons, neutrons, and electrons is impossible. Similarly, protons with two up- and one down-quarks and neutrons with two down- and one up-quark plus electrons, also becomes mathematically impossible. \(^{71, 99}\) This refutes the fundamental idea of atomic materialism. \(^{71, 99}\) It is simply mathematically impossible; it implies that there is a need for a third substance. That third substance we have called ‘gimmel’. \(^{30, 31, 33, 34, 47, 71, 75, 100}\) Moreover, such quanta are

\(^{8}\) FLT was officially solved by Andrew Wiles in 1994 \(^{85, 86}\), though Ed Close developed a short proof in 1965 (‘FLT65’) and he published FLT65 in a book. \(^{84}\) 50 colleagues have examined FLT65, and there is still no official refutation to Close’s solution. \(^{87}\) Some tried to refute FLT65: In two instances the ‘refutation’ involved irrelevancies that were not part of FLT. Dr. Close has produced a monograph on this. \(^{87}\)

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not just points, but volumetric. These calculations prove that materialism at the atomic level is refuted. Specifically, the atom is volumetric and integral and so are the subatomic particles (electrons, protons, neutrons and quarks) and as we know them, they are mathematically unstable applying all three different procedures available:

a. Volumetric analyses of the atom.
b. Mass and energy of the atom.
c. Mass-energy equivalence applying “TRUE unit equivalents” (TRUE unit) analyses.

Commentary: Our data shows the atom cannot be stable unless there is an additional third substance (gimmel). Atoms, mathematically, have to be very precise: They can only be whole with the correct combinations of very specifically derived gimmels being added. We created a unit score for the electrons, and recognized all other structures must be quantized integers and they should be calculated by volume (‘Volumetric Equivalence’ or VE) applying the new Close-Neppe “Triadic Rotational Units of Equivalence” (TRUE) units. Unless we incorporate gimmels in the correct quantities into the atom, mathematically atoms would just fly away—atoms need to be stable to exist permanently: They would be unstable without a union with gimmels. In essence, this means that we cannot have, for example, half an atom or a half electron. (Neppe and Close, 2015)

30. **Gimmel and gluons:** Because the subatomic particles alone are insufficient to explain the atomic mass, there must be another component. At one point, Murray Gell-Mann tried to explain this anomaly by proposing massless gluons which somehow acted as a ‘glue’. But gluons have never been demonstrated to exist, and would only be in protons and neutrons. We have proposed that there is another third substance, gimmels, and this is in union with protons, neutrons and their quarks plus with electrons. Gimmel has specific functions of stability, and has a role in spin rotation and 9-dimensional models. Gimmel can be shown mathematically to exist. (Neppe and Close, 2015)

31. **Cosmological solutions:** We have demonstrated that it is required and has specific gimmel equivalence unit calculations based on proofs in cosmology involving dark matter and dark energy proportions to the cosmos is almost exactly the same as the gimmel equivalent unit proportions to ‘TRUE’ units (Triadic Rotational Units of Equivalence). These are astonishingly close correlations, but not proofs. (Neppe and Close, 2015)

32. **Dark matter and energy in the atom.** Moreover, the proportion ratio of gimmels in union with electrons to dark energy, and of the quarks in proportion in relation to protons and neutrons to dark matter, correlate very well with the demonstrate cosmological proportions of Dark Matter to Dark Energy. These already hypothesized results were predicted and are strongly suggestive of some kind of causal link reflecting remarkably close correlations. But they are not proofs. (Neppe and Close, 2016).

33. **Dark matter and energy fit in 9-dimensional structures not 3S-1t.** This means, effectively, that the dark matter and dark energy could be embedded or contained in the atomic structure. However, a major problem is the high proportion -- 95.1% -- of dark matter and dark energy
to the cosmos, compared with the 4.9% of the calculated matter and energy\textsuperscript{102; 103; 104}. This means that one has to approach the ‘dark substances’ at a \textit{multi-dimensional level}. Dark matter and dark energy can be contained in the nine-dimensional atom. (Neppe and Close, 2016) The Quantal and Cosmological are linked!\textsuperscript{105 106} (Neppe and Close, 2016).

34. \textbf{Unifying the laws of the cosmos. The same laws of nature apply for everything from the quantum to the cosmological:} These findings are critically important: No longer do we need to apply ‘quantum weirdness’\textsuperscript{107} to quantum physics. The ‘weirdness’ might simply be a product of not taking the extra dimensions into account. (Neppe and Close, 2015).

35. \textbf{The life elements and gimmel:} We have demonstrated that every element that could be described as a ‘life element’ is symmetrical and stable. Remarkably, they all fit into an atomic Diophantine mathematical calculation relating to multiples of $10^8$. This is different from the non-life elements (Table 2): These non-life elements that are prevalent in our cosmos turn out to be asymmetrical but often stable, and those that are ephemeral, including isotopes, are unstable. Therefore, one can list the properties of life-elements including their proportionately more gimmel -- always the same amount of gimmel. These are C, O, S, N, Ca, Mg.\textsuperscript{30; 31} We can also predict that Silicon is an element of life based on its characteristics (Close and Neppe, 2015). Additionally, there is common Hydrogen-1, the most prevalent element in the cosmos, and part of every life chemical. Hydrogen-1 also appears to compensate for it absent neutron: It contains extra third substance—gimmel (except we call it \textit{‘daled’} as it might be different to the conventional gimmel) instead of that absent neutron. This means, effectively, that hydrogen contains far, far more gimmel. The most common molecule of life is water, and that contains proportionately even more gimmel than the other elements.\textsuperscript{30; 31} (Close and Neppe, 2015)

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|c|}
\hline
Elementary Particle & Particle Charge\textsuperscript{i} & MEV & GTUs & Gimmel & Total TRUE Units\textsuperscript{j} & MREV Combined Particle score \\
\hline
Electrons (e) & - 3 & 1 & 105 & 106 & 1,191,016 \\
Protons (P\textsuperscript{+}) & + 3 & 17 & 7 & 24 & 13,824 \\
Neutrons (N\textsuperscript{0}) & 0 & 22 & 16 & 38 & 54,872 \\
\hline
Totals & 0 & 40 & 128 & 168 & $(10^8)^3$ \\
\hline
\end{tabular}
\caption{Neptons\textsuperscript{h} subatomic particles with charge, MEV, GTU, TRUE and MREV score}
\end{table}

\textsuperscript{h} Neptons: Composite term for Neutrons, Electrons and Protons the atomic components.\textsuperscript{108} MEV = Mass Energy Volumetric Equivalence.

\textsuperscript{i} The numbers -3 and +3 appear unusual here: we usually talk about +1 and -1. However, everything is triadic and this is so with the triad of quarks too. Therefore, applying these calculations the numbers work out at 3 not 1 as there are 3 quarks each in protons and neutrons.

\textsuperscript{j} Gimmel to TRUE is the \% ratio of the gimmel to the TRUE units. We have applied some color codes here to clarify differences.

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36. **The special roles of the other non-life elements.** We can calculate and allocate gimmel for
MEV= Mass-energy volume; GTUs = Gimmel TRUE units; TRUE = triadic rotational units of
equivalence; MREV= Minimal rotational equivalent volumes; every element. We need to,
because everything is triadic, with the other components being mass and energy. Predictions
of stability and symmetry are pertinent. ³⁰; ³¹ (Neppe and Close, 2015) (Table 3). We can
immediately see which elements are asymmetrical, for example, potassium and surprisingly
phosphorus, and even what isotopes cannot exist. (Close and Neppe, 2015). Also, Iron has the
largest amount of GTUs, possibly because it’s a transporter of oxygen. ³⁰; ³¹; ³³; 108; 109 (Neppe
and Close, 2016)

37. **TRUE units and 9 dimensions:** Measurements of the ‘TRUE’ units are integrated into this
multidimensional concept—they rotate through 9 dimensions. These units of equivalence are
quantized and volumetric. When we do so we discover that mathematically all the life
elements are cubic multiples of 10³. ³⁰; ³¹ Normalization and natural units in TRUE research:
Importantly, we calculate the quantization of electrons normalized to the digit 1 (the electron
without gimmel) in TRUE units. This is not only ‘normalization’, but also one of the few
times fundamental constants are made natural. One can do this with all elements, and this is
how we can easily establish that Carbon, Hydrogen, Oxygen, Sulfur and Nitrogen (spelling
‘CHOSeN’) are the main life-elements. Others are calcium and magnesium. ³⁰; ³¹; 108; 109; 110; 111

38. **Electron shells and the Periodic Table: The role of gimmel:** The noble gases, He and Ne,
based on their electron shells 1 and 2, demonstrably have the same proportion of gimmel as
the life-elements. ³⁰; ³¹. The positioning of electron shells has great relevance to valence.
When applying TRUE units, a secondary consequence is re-establishing the rules governing
the laws of the Periodic Table of the Elements e.g. the two Noble gases, Neon and Helium,
superficially behave like the life-elements in their proportions of gimmel. However, they are
inert with equivalent valences of 0 and so non-reactive (Close and Neppe, 2015): Valence is a
criterion with the life-elements.

39. **LFAF (Lower dimensional feasibility, absent falsification):** Importantly, in order to deal
with multi-dimensional models, one has to broaden the definitions of science. ²⁰ This is
commonly already done in evolutionary theory and cosmology, and particularly in Medicine,
where falsification is seldom as important as feasibility of management of cases. But it has
not been so defined. Effectively, few dispute that Medicine, Cosmology and Evolution are
scientific endeavors yet they are in general not amenable to Popperian techniques and in
Medicine often not applicable. Also, it is likely, very applicable in psi, non-locality and
dimensionality. Feasibility is far more important. LFAF changes the whole perspective on
extending science to dimensions and spirituality. Popperian science has set back discovery,
not the reverse because science is far more relevant than just what can be falsified. ¹⁸; ¹⁹; ²⁰ It
also is of enormous importance in TOEs because feasibility is a legitimate empirical approach
in extending one’s areas of new knowledge. A key in multidimensional studies, is that these
extra dimensions appear to be not purely mathematical operations, but feasible empirical

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The feasibility of this is illustrated by the correlations above. (Neppe and Close, 2011)

40. **Proof of nine finite rotating dimensions:** The same LFAF considerations are applied here to any kind of multidimensional model. Nevertheless, the mathematical derivations of 9D make these findings sometimes empirically correct, proven mathematically and falsifiable. These proofs involve the derivation of the Cabibbo angle, replication by a thought experiment, calculations of intrinsic electron spin and angular momentum. There are also several non-specific components, such as the ‘electron cloud’, ‘angular momentum and spin’, which have their basis in the ‘calculus of distinctions’ and in ‘dimensional extrapolation’ mathematically. Other examples are weak universality and the electron cloud. *Nine finite dimensions are proven.* They are not speculations. (Close and Neppe, 2013).

41. **The infinite continuity plays a critical role in our existence, and in life, and order.** The infinite is needed because without it, TDVP could not be a TOE. It could not be a TOE, because applying Gödel’s incompleteness theorems the finite alone would be insufficient: *there would need to be something beyond the ‘finite box’; that something is the infinite continuity.* More importantly, TDVP as a model could not work: The infinite embedding the finite is needed to complete the model.

Commentary: The infinite is without a beginning or end in all of STC, extending forever and yet still everything is simultaneous. It’s never-ending, without end in space. And the infinite is a repository of conscious information containing everything in all time and all space. (Neppe and Close, 2011) Moreover, whereas our finite existence is entropic—tending toward disorder, the continuous infinite is ordered (it’s ‘ordropic’), tending towards order. Importantly, related to that order is the order that is linked with existence: That existence includes our physical life which reflects just one phase of ongoing infinite existence that goes on at all times: This means everything including ourselves is necessarily immortal. Though there’s physical death, that does not mean an end to real existence which in the infinite goes on forever. But what happens in the finite? After physical death, instead of our physical 3S-1t, a different dimensional STC footprint might exist such as portions of domains 5 to 9. The continuous infinite envelops all of the finite space, time and consciousness extent, and a mass-energy-consciousness content. (Neppe and Close, 2011)

Speculatively, gimmell might originate in the infinite. If so, this might reflect pure consciousness at that level, yet hierarchically that still would contain mass and energy entirely embedded in the gimmell infinite consciousness. (Neppe and Close, 2014)

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We dislike the term ‘Theory of Everything’ because of its ambiguous interpretations, but currently this is the term that is used for a complete explanatory model of reality conforming to the laws of nature. TOEs should seamlessly reconcile with all the major theoretical models and authoritative sources of all the sciences and mathematics. However, they should *not be construed as reflecting omniscience*, instead implying application of principles. TOEs are sometimes regarded as primarily philosophical, yet the original, limited meaning was in Physics. We believe that the TOE term as used in popular literature is a misnomer. Not only does a real TOE have to explain physical reality, it also has to explain consciousness, dimensions and infinity. A TOE needs to be able to explain mathematically, empirically and feasibly without contradiction.
Gimmel is also in union with photons in the infinite continuity: We've hypothesized photons infinite gimmel GTUs. However, in the discrete (quantized) finite, the photonic state is different: photons must be in union with the same amount of GTUs as electrons, because of electron involvement in the photo-electric effect. (Close and Neppe, 2016)

42. **TDVP is a theory of everything that works:** Searching for a Theory of Everything (TOE) has been a task that many have attempted. However, only TDVP reaches the heights of being a legitimate TOE. This is demonstrated when carefully performed metric comparisons of the 24 major different proposed TOEs are applied. The Neppe-Close TOE of TDVP scores a perfect 39/39 and no others besides the original Neppe Vortex N-dimensionalism at 27/39 and Close Transcendental Physics at 23/39 even score 20/39 or above. Even the conventional Standard Model of Physics (SMP) scores only 13/39. This shows the SMP might be insufficient though very useful in our physical reality.

**Commentary:** We maintain that consciousness has to be included in the equations to even begin to approximate a real TOE. TDVP includes all of this. Not only does it recognize consciousness as a key, and differentiates different kinds of consciousness paradigms. But TDVP also included infinity in it, because a TOE cannot be solved purely with the finite reality when applying the finite reality as it would be incomplete. Nepe and Close developed the term ‘metaparadigm’ instead. This involves the broadest paradigm impacting all sciences, mathematics and philosophy without contradiction. To achieve the level of a TOE or metaparadigm, the model must be groundbreaking with new discoveries and applications. TDVP does just that. (Neppe and Close, 2012)

43. **Individual-units and Indivension:** These are two exceedingly important concepts. (Neppe and Close, 2011). Individual-units applies Systems Theory: not only some levels of consciousness of individuals but such levels as familial, group, ethnic, cultural, social, and species-linked that could be regarded as experienced. We have listed over thirty different system levels: This reflects, not only finite groupings such as ‘ethicobiopsychofamiliosocioethnecultural’, but could include systems levels that are largely inanimate such as ‘astronomophysicochemical’. This is important as we different individual-units experience different realities. When individual-units move across, between within dimensions, the mechanism we describe is called ‘indivension’ (from individual-dimensions). In this way, finite biological units move across dimensions and this also complexly relates even to the infinite. Multiple levels of individual-units manifest together, for us most overtly in individuals but at any systems levels, particularly at higher dimensions when we might lose much of our individual identity (Neppe and Close, 2011). We combine indivension with vortical movements—vortical indivension—and this allows easier communication across dimensions. We’ve even used this mechanism to explain psi communication as well as such enigmas as alternatives to the Copenhagen like interpretations of physics. (Neppe and Close, 2011)
Projecting this information:

44. **Normalization**: A common method in mathematical physics is to ‘normalize’ formulae. It is important as complex results can be noted immediately. An example is normalizing the figures for TRUE units. We can immediately see how, given quantal units, all data on electrons, protons, neutrons and quarks, and the resultant atoms, must be integers. Normalization helps this analysis greatly. Effectively they can be measured in units of equivalence. (Close and Neppe, 2016)

45. **Mathematics appears to closely reflect the nature of reality**. This hypothesis has support. Math is not just for calculating, but has a vibrant basis for reality. Our analyses should be based on 3-dimensional cubic structures, not linearly. Our findings have not yet been contradicted and are feasible. We can use this as tool for further hypotheses. It’s our strong impression that mathematics involves empirical knowledge; it is not just a means of calculation. (Close and Neppe, 2011).

46. **Unified monism as a new philosophy**. This is the only philosophical model that can be applied to every level of mass, energy, finite, infinite, physical reality, infinite and higher dimensions. It is also the only philosophy that is secondary to science. This is a mind-brain philosophical model that could justify our regular three spatial dimensions in a moment of time experience of reality, as well as the infinite, survival after death, altered states of consciousness, and psi. This is the Neppe-Close philosophy of ‘Unified Monism’, incorporating their TDVP scientific and mathematical model. This is well supported and allows a different perspective from the philosophically restricted options of ‘Consciousness is derivative of Space-Time or Mass-energy’ or vice versa. When we compare UM to any other philosophical model, the most fashionable being panpsychism of Thales and Plato, or to Galen Strawson’s *Realistic Materialism* or his father’s Peter Strawson’s *Realistic Monism*, or to applying *Cartesian dualism* or *promissory dualism*, or to Spinoza’s *pantheism*, or even *panentheism*, or *transcendental materialism* of Zeno, Chryssipus and Betty, it’s no contest. UM fits all of the 29 criteria of comparison and is very versatile. (Neppe and Close, 2011).

47. **Unification of science and spirituality**. There is likely no place to merge the physical 3S-1t experience alone with spirituality. They are quite separate as 3S-1t does not contain a consciousness symbol: Consciousness is at a higher dimensional level than Space and Time. However, the key is extending science to 9D, and also to include infinity. This can be done by amplifying feasibility. The spiritual then fits, unlike the idea of Gould’s Magisteria where science and spirituality were perceived as different categories of things. Given extensions of LFAF to feasibility, there is a direct consequence of TDVP being feasible with spiritual ideas because Consciousness, in its extended form, can be incorporated into a multidimensional model, and this provides a useful starting point for extended science to fit into the mystical. Searching for a possible linkage, Kabbalic mysticism has strong philosophical similarities to many of the philosophical aspects of TDVP.
48. **Translation from theory to empiricism.** The atomic mass-energy-volumetric equivalents (MEV) in TRUE unit measures of protons, and electrons, directly correlate with the Large Hadron Collider! This means that TRUE units are real empirically not just a theoretical construct. We can demonstrate that the electrons, protons and neutrons correlate exactly after normalization with the LHC data. The neutron particularly is an unstable particle with beta decay of about 10-15 minutes, and converts mainly to protons, hence the close LHC calculations of these figures are 1836 for the proton and when corrected 1839 for the neutron applying TRUE units! This paper is in process but the math performed. The point is critically important. (Close and Neppe, 2017).

49. **Rotation (‘spin’) is through 9 dimensions:** All of the Elements of the Periodic Table are made up of stable vortical distinctions that are known as fermions, “particles” with an intrinsic angular spin of 1/2, or they are made up of combinations of fermions. We can analyze the fermions that make up the Hydrogen 1 and Hydrogen 2 atoms and Helium atoms and all other elements. We can examine their parameters of spin, charge and mass based on experimental data. The top- and bottom-quarks and the charm- and strange-quarks are ephemeral unstable particles, so are not part of the calculations, and nor are neutrinos or any “anti-particles”. (Close and Neppe, 2017). We’ve already shown this is result is correct for electrons and protons, and shown provisionally that it is so for neutrons.

A new paper is in process for neutrons and where we hypothesize and demonstrate that this normalized quantization is real and empirically valid, and not just part of an operational

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We list here several scientists mentioned in the pages that follow:

- Dr David Stewart, PhD, DNM. Physicist, Mathematician, extensively published author: “I rank Dr. Edward R. Close and Dr. Vernon M. Neppe as peers of the major authors of modern physics and mathematics. I equate them with greats, such as Planck, Einstein, Newton…. Their work has clarified, and extended the science and mathematics that these geniuses originated …I foresee the day when they will both be awarded other honors, such as a Nobel Prize in Physics and (equivalent in) Mathematics.”

- Dr Adrian Klein, MDD, PhD, PhD, Israeli Dimensional Biopsychophysicist and Consciousness Researcher: “The 21st Century’s revolutionary paradigm shift”; … “unprecedented brilliance and potentially limitless scientific and philosophical outreach …yielding a fresh and accurate understanding of various investigation fields of Nature, and opening … groundbreaking development perspectives for Sciences (emphatically plural!)”.

- Dr Alan Hugenot DSc, Physicist and Engineer: “When taken altogether, the entire work is worthy of several separate Nobel Prizes”.

- A fourth quotation series is collective, from SCERS as a group of eight including Dr Joyce Hawkes PhD, FAAAS, biophysicist: “…any one of these [31] areas, let alone the combination would be a very substantial reason for Drs Neppe and Close to be recipients of major prizes”.

- There are several brief comments by seven others in seven different disciplines (first the two leading experts in their disciplines in the world namely):

  - Stan Krippner PhD: “destined to become a classic in the literature on shifting paradigms and worldviews”,
  - Dean Radin, PhD: “RBC [is] in a radical multidisciplinary class by itself”;
  - and then five other prominent scientists:

    - Alan Bachers PhD: “an astonishing and prodigious accomplishment!”;
    - John Poynton PhD: “encyclopedic … broad exploratory paradigm for new scientific ideas”;
    - Lance Storm PhD: “a paradigm shift that hails in, if not, beckons for, a kind of scientific overhaul and shift in thinking”;
    - Helmut Wautischer PhD “will shape philosophical discourse … a profound value to the future of humankind…masterful…”;
    - Dr. Frank Luger (Canada) “astonishing that you could combine deep scientific notions with mysticism”.

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Vernon M Neppe, Edward R Close. 50 discoveries changing the world and TDVP. IQNJ. 9:2, 7-39, v 4.3 170624248. 2017
theoretical mathematical model. Consequently, we can demonstrate such a quantization of protons and neutrons and quarks themselves, measured in unit equivalence. The question comes up whether this is theoretical or if this is logical and actually based on empirical data. Indeed, this is empirically based -- correlating with the Large Hadron Collider data \(^{143}\), in terms of protons, electrons, and quarks -- so that all of these are real phenomena, they are not just theoretical constructs. The difference is enormously relevant, because it demonstrates that not only are there mathematically TRUE units, but that these are real and empirically viable. (Close and Neppe, 2017)

50. **TRUE equivalence:** We specifically demonstrate in this paper the empirical need for TRUE unit equivalence. This is based on the calculation of showing how the mass of the proton and the mass of the neutron, based on the LHC data, is exactly equivalent to the mass when converted into normalized units to TRUE unit calculations. This means, effectively, that this data is real, not theoretical (Close and Neppe, 2016).

**Putting these principles together:**

The question arises: Are all these principles and findings legitimate? Yes. All have been carefully peer reviewed, discussed in detail, published and presented to peers, at least in broad outline. They constitute the underlying concepts behind the Triadic Dimensional Distinction Vortical Paradigm (TDVP) and the data holds together, with each piece of the feasible jigsaw supporting the other pieces. TDVP involves a detailed paradigm ever-growing model based on applying LFAF for scientific validation of the available broader empirical data of all the sciences (physical, biological, consciousness and psychological) and, furthermore, in several instances, TDVP is validated partly through mathematical theorems. \(^{28}; 29; 49; 105; 144; 145; 146\). (Both Neppe and Close, 2011-2017).

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\(^{143}\) We’ve listed a group of scientists in the previous footnote. Scientist Dr Stan Krippner summarized much of the above in August – September 2016, in emails to some Closed Internet groups:

“Let’s imagine what would happen if someone:

a. Proved mathematically that our reality is far more than just our experience in three dimensions of space in a moment in time (3S-1t).
b. Demonstrated that our finite reality was proved to be 9 finite spinning dimensions, and yet that our day-to-day physical finite experience of 3S-1t is still pertinent but just part of our experience?
c. Calculated the properties of a massless, energyless substance’ in atoms, protons, neutrons, electrons and quarks.
d. Demonstrated that materialism at the atomic level is mathematically impossible;
e. Calculated that the proportion of ‘consciousness’ in the most abundant cosmic elements is exactly the exact same as the proportion of dark matter plus dark energy to the cosmos;
f. Determined that there is more functional consciousness substance in union with the elements of life than any other elements in the Periodic Table. And moreover, what would happen if these elements all have the same exact rules?
g. Showed, even more so, that water has the most of this ‘consciousness’ of any molecule? And that silicon appears to be an element of life?
h. Proposed several different ways to distinguish ‘consciousness’, including even the very way in which it exists?
i. Derived the first ‘equation for reality that included consciousness’?
j. Demonstrated that Space, Time, and Consciousness (STC) are all separate, with the one not just being derivative of each other in our 3S-1t reality. Instead, STC is always in union: Argued cogently that we have gone beyond Minkowski’s 1908 union of ‘Space-Time’ and as of 2011, we have a new union ‘Space-Time-Consciousness’ (STC).
k. Developed a model that could explain all psi phenomena that could even be compatible with survival of bodily death. And would it be even more interesting if that same model was versatile enough to also fit into our reality experience of 3S-1t?
l. Proposed a mind-brain philosophical model based on mathematics and science that could justify our regular 3S-1t experiential reality as well as the infinite, survival after death, altered states of consciousness, and psi.
m. Developed a new paradigmatic model for reality.

n. Suggested a method of broadening the criteria for legitimate science to also include what is feasible and not refuted.”
The number of peer-reviewed publications on different facets of TDVP run into the hundreds and was the basis for Edward Close and Vernon Neppe jointly being awarded the worldwide, interdisciplinary ‘Whiting Memorial Prize’ for 2016. The fifty illustrative fundamental points above (there are many others, too) allow new and old readers of the TDVP model to specifically appreciate its main ostensibly groundbreaking concepts and also provide a chronological basis of two scientists working together for nearly a decade where based on the Neppe-Close / Close-Neppe list above, we see that both Vernon Neppe and Ed Close have equally the pioneered the ideas and then further amplified the key concepts. The Close-Neppe interchange is necessarily like a shoe and a foot. This is not surprising because Neppe and Close had not as successfully applied their own work individually to developing their new metaparadigm (multidisciplinary paradigm; which some call a ‘Theory of Everything’).

**Views of other experts on TDVP**

This is a summary article on 50 discoveries and we could stop right here. One of the referees of this article felt this work was so powerful that we should let it stand on its own without mentioning any external expert opinions on TDVP. But we’re repeatedly asked how other scientists who’ve studied TDVP in detail perceive TDVP, and asked about the formal recognitions of this model. Moreover, the context of this IQNJ publication involves highly intelligent readers, but who are not necessarily expert in this area. This had to be taken into account. Therefore, when a reader commented that they wanted to see the independent comments of others, we realized that inserting the comments of a dozen experts in the footnotes was appropriate. Apologetically, we briefly deal with this here, to give a necessary and valuable perspective of outside perceptions. This is not for self-aggrandizement but as a historical record: Based on peer-reviewed feedback by those who have studied these findings in detail, the agreement has been almost universal that all the statements above have changed models of reality forever. These opinions have been recognized as such by the major experts on TDVP who’ve examined this work in detail, namely Dr David Stewart, and Dr Adrian Klein, and also by Dr Alan Hugenot DSc, plus others listed in the footnotes to this article.

However, we’ve now made another exception: Dr Larry Dossey has so beautifully expressed himself, and written a special paper this year on the importance of TDVP, that we’ve elevated his comments to the actual text. For the benefit of those who would like to see this highly respected award-winning author and one of the world’s leading Consciousness Researchers expressing an independent and quite unsolicited opinion, we extract some key statements from Dr Dossey, who is Executive Editor of Explore: The Journal of Science and Healing. Dr Dossey specifically devoted his editorial just to TDVP.

“... At this precarious stage of our existence, humanity has never needed a paradigm shift such as TDVP more than now. ... Enter Neppe and Close....TDVP stands supreme among the many contributions to science in general. ... I resonate especially with the consciousness-related implications of TDVP...In their TDVP and the concept of STC — ‘Space-Time-Consciousness’ — immortality for some aspect of consciousness is a key implication. This feature arises not through the revelations of religion, but through mathematical and empirical rigor.
This is an enormous contribution whose significance may surpass, even the profound implications of TDVP for cosmology and physics, in general. ...Neppe and Close have reversed the dismal conclusions of materialistic science toward consciousness, and have made the concept of immortality and the survival of bodily death scientifically respectable. ...The main contribution of Neppe and Close has been made, the deed is done. This may make all the difference in humanity's psychospiritual equipoise. ...It is difficult to imagine a greater contribution."

To begin his article, Dr Dossey extracts a quotation from one of the world’s leading Dimensional Biopsychophysicists, Dr Adrian Klein of Israel: We quote this. “TDVP is a work that will change mankind’s future. It is a monumental work forcing obsolete preconceptions to crumble. This is a seismic shift in understanding the understanding process itself.”

The paradox

In contrast to these comments, there is also a strange paradox, as well: Even though Neppe and Close have demonstrated that every one of these 50 discoveries are feasible and likely, often even empirically proven, many of their scientific colleagues have ignored the Neppe-Close work as if it didn’t exist. This is not knew, of course: Notable examples are the great mathematician, Georg Cantor; and the great inventor, Nikola Tesla, whose work was only recognized posthumously.

Even Albert Einstein suffered this fate for many years, prior to May 29, 1919. That was the date that (Sir) Arthur Eddington, who had traveled to West Africa to witness a rare eclipse, provided the data for the empirical proof of Einstein’s General Relativity.

As Max Planck wrote:
"A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it." –p150 cc

This Planck’s ‘advances from funeral to funeral’ comment is well known, and has almost become a rule when major paradigm shifts have occurred. Yet Close and Neppe hope this will change because we now have the vast Internet communications. This could make their task easier to persuade colleagues and allow for proper evaluation of their work.

A historical perspective:

There has already been some significant international recognition in awards for these two pioneers. This historical chronological perspective is mentioned to give a perspective on what is regarded as groundbreaking. Again, the contents are placed in footnotes so as to maintain the fifty discoveries theme.

Gabino Barreda Award:

First, In February 2013 in Puebla, Mexico, Dr Neppe and Dr Close received the well-respected Gabino Barreda Award and medal involving the earlier version of their critically important metaparadigm. This preceded their proven 9 dimensions in later 2013, and was before the discovery of gimmel in 2015. Ironically, therefore, their more major contributions were as yet
undiscovered, though they were direct results of those previous hypotheses and findings.

**Whiting Memorial Award:**

It was in late 2016, that Neppe and Close were unanimously awarded the prestigious, worldwide, multidisciplinary *Whiting Memorial Award* from the International Society for Philosophical Enquiry (ISPE) for “expanding the boundaries of scientific understanding”.⁸

By that time, these scientists were able to mathematically demonstrate that finite reality involves 9 spinning dimensions. They had showed that all particles are in union with the third property ‘gimmel’ thought to be consciousness at least in part, that this gimmel is mass-less and energy-less and in union with mass and energy, such that every fermionic particle at the subatomic level has different properties. Moreover, the materialistic model of the atom is refuted, and the proportions of dark matter and dark energy to the cosmos, correlates exactly with the ratio of gimmel to TRUE in the equivalent cosmological elements, namely predominantly Hydrogen and also Helium. These findings suggested *the same laws of nature apply for quantum, macroscopic and cosmological levels*, something different from current thinking about ‘quantum weirdness’ ¹⁰⁷.

Effectively, the Whiting award already recognized that their work was going a long way towards showing that spirituality and science are linked together and that mathematics is part of the broader reality of our existence, not just a way of calculating. Moreover, gimmel is far more logical than gluons (and these might not exist as mathematically gluons were postulated by Nobelist Murray Gell Mann and exist only in the nucleons (protons and neutrons) without being linked with electrons and also being a ‘glue’ only in 3S-1t is mathematically unfeasible.” ³⁰

**Timing**

Ironically, many of the key scientists of the past were deeply spiritual (e.g., Georg Cantor, Albert Einstein, Isaac Newton, Wolfgang Pauli and Max Planck), but they did not dare to introduce consciousness into the equations of science. The time was not ripe. But, even today, no other scientist that we know of has dared to include ‘consciousness’, ‘infinity’, dimensions, and math.

The current authors, Vernon Neppe and Edward Close, have done so with TDVP emphasizing these criteria and attempting to unify science, spirituality, and consciousness ²⁹; ⁴⁹. Moreover, no scientist has refuted the fundamental aspects of the TDVP model. Instead, as time has progressed, TDVP has

⁸ From the initial Whiting Memorial Prize citation. “Dr. Edward Close and Dr. Vernon Neppe were unanimously awarded the 2016 Whiting Memorial Award for “expanding boundaries of scientific understanding”. The Whiting Memorial Fund is a philanthropic fund administered by the International Society for Philosophical Enquiry (“ISPE”) (www.thethousand.com) to ‘reward individuals and groups, whose accomplishments and goals exemplify the ideals of ISPE’. This international award is open to anyone worldwide in any discipline, and is given to a person/ personalities or organization (outside or within ISPE) who typifies the ISPE ideal of “someone who strives to benefit society in general through advanced enquiry, original research and/or creative contributions, and who has demonstrated significant progress in these endeavors.” ISPE’s only mission is “to attract the world’s most intellectually gifted individuals and hopefully direct their achievements for the betterment of all humankind.” ISPE advances no political, governmental, religious, race, gender, ethnic, activist or academic agenda. “This is what ISPE is all about: Making our world better by encouraging profound excellence”, emphasized Stephen Levin, the ISPE President. (www.tddvp.org). “This award should have happened a long time ago to Drs Neppe and Close. It’s well-deserved and too long coming. They have needed to apply the empirical and theoretical findings of quantum physics, mathematical logic, philosophy, biology, psychology and consciousness research. But often it has been their creative jumps into the unknown that have been most important.”Hundreds of scientists worldwide have examined aspects of the Neppe-Close work, which many have compared with an advanced multidisciplinary graduate degree which requires significant study and application. Therefore, there are only a few experts worldwide. Ironically, Drs Neppe and Close are both Diplomates of ISPE, a unique achievement for winning the Whiting Memorial Award.
been further successfully amplified. We emphasize again that there are several components of TDVP are mathematically proven. (Neppe and Close, 2011). We do not need to guess, postulate, contemplate or speculate, as is characteristic of many other theories. Proof and empirical feasibility have become the powerful hallmarks of the TDVP metaparadigm.

**Demonstrable empirical and mathematical tests:**

Has this TDVP work been put to empirical tests? Indeed, there are also three key components of TDVP that are empirically verifiable involving data from completely separate outside agencies, namely:

- Dark matter and dark energy combined in the cosmos correlate almost exactly with the proportions of gimmel to TRUE units. Moreover, when we examine dark substances in relation to the atom, proportionately, dark matter correlates strongly with the nucleons (protons and electrons) and the dark energy with the electron gimmel. This leads to the hypothesis that as these dark substances do not fit into the atom in 3S-1t, they must reflect the extra-dimensional like 9D rotations.

- ‘Gimmel’ and ‘TRUE’ are not just theoretical concepts. They’re empirically relevant as the Mass-Energy-Equivalents in TRUE units are identical with the ‘normalized’ results from the Large Hadron Collider (LHC). This result is critically important. We show how the Mass Energy Equivalents of the proton, neutron and electron all are almost exactly identical with the results from the CERN LHC. No longer can we ever argue that gimmel and TRUE are only ‘interesting but just theoretical ideas.’ This work definitively demonstrates that gimmel is a real, empirical part of reality!

- Furthermore, the 9 dimensional finite spinning model of reality cannot just be explained as theoretical like String Theory is. 9D has been empirically replicated on several occasions, starting with the empirically calculated Cabibbo mixing angle derivation, as well as data on intrinsic spin and angular momentum, with assists from the disappearing electron cloud, the non-spherical electron, the Cabibbo-like electron data, and finally, also with a Cabibbo replication by thought experiments.

Therefore, we can cogently argue that this data is real, not just based on mathematical operators. We have also postulated something that other researchers can test: Silicon must be a life element because of its TRUE unit properties.

**Materialistic science: Is there an alternative?**

Nevertheless, the materialistic belief system is widely taught in our educational institutions today. It scoffs at, or even ridicules, the possible existence of anything beyond our restricted physical experience and is justified by the successes of materialistic science. But those successes lie almost entirely in the realm of explaining superficial physical mechanisms, and our current physical science at least recognizes conundrums that remain unexplained, and that there are even significant contradictions in physics. If physical experience alone in our 3S-1t reality existed without anything else, there would be many incomplete areas. And, as indicated, even such a basic as the atomic model without any balancing third substance is mathematically refuted.
Extending Science with 9D and LFAF.

An early task for Neppe and Close has been to extend science. But they still regard the model of our physical experience in 3S-1t as part of the 9D model and therefore not refuted, just broadened. All the profound contributions of 3S-1t physics and science have never been rejected, they’re included in their 9-dimensional rotation model unless there were definite contradictions or conundrums that needed further explanation: 3S-1t has just been modified in the areas that were lacking or failing.

Close and Neppe have, by necessity, had to develop ideas because physical reductionism was failing. This led in 2011 to their changing Karl Popper’s fundamental fallibility as a requirement in science to adding feasibility. Our model of Lower Dimensional Feasibility Absent Falsification (LFAF) was born: What was feasible and not falsified was also critically important to science. Without LFAF, a high proportion of what is science such as evolution, cosmology, Medicine and Psychology, can not be officially labeled as science, yet, usually they are. This broadening of science includes Dimensional Biopsychophysics and Consciousness Research. All of these disciplines involve postulates that are not falsifiable, and yet the components that make them up can be put together like pieces of a jigsaw puzzle.

Suddenly deeper and ultimately much more important questions about the meaning and the purpose of manifest physical reality, life and conscious awareness, have become awarenesses that can be tackled. Those questions, of paramount importance to humanity, are within reach of meaningful analysis when consciousness is included in the equations of science. Suddenly, perhaps, even the range of science can incorporate aspects of the mystical or spiritual. One purpose of this paper has been to show how this is and can be done.

The Neppe-Close TDVP model involves major rethinking about what is feasible, practical and empirically logical. TDVP also involves serious efforts to upgrade the mathematics of the physical sciences, with the direct and indirect involvement of consciousness, and incorporates the key mathematics of critically important, largely ignored, principles of Number Theory like Diophantine Equations, including Pythagorean modifications, Fermat’s Last Theorem, Close’s Conveyance Expression, Close’s Calculus of Distinctions and Close’s Dimensional Extrapolation.

These methods introduce the realm of mathematical proof, and replicable empirical demonstrations that the Close-Neppe findings are not just theoretical, but relevant to our world (e.g. the LHC data, almost exact Cosmological correlates, 9D). This moves TDVP towards documented proof, as well as providing feasible, empirical jigsaw pieces analyzed from the framework of our limited 3S-1t.

Vernon Neppe and Edward Close recognize this has been their song to sing in this world. They regard the challenge now to continue this work, which, so far, has not had a penny of funding.

Acknowledgements:
We greatly acknowledge the editorial assistance of Jacqueline Slade. Thank you, too, for the excellent comments and suggestions, inter alia, of Dr Stanley Krippner, Dr Michael Norden, Standa Riha, Joseph Slabaugh, and Suzan Wilson.
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I’m holding a wristwatch I’ve spent a great deal of time admiring, and it’s taken a great deal of sacrifice working, saving, scrimping in order to finally own one. It’s named the Haldimann H9, made by contemporary Swiss master watchmaker Beat Haldimann. It’s a manual-wind, triple-barrel flying tourbillon, in a solid platinum case. For me it’s the best movement ever made, and satisfies the dreams of early watch pioneers like Tompion, Harrison, and Breguet.

The watch glass is a totally opaque, black sapphire crystal. Totally opaque.

It keeps time, but it doesn’t tell time. Allow me to explain.

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When we were young we had it hard. The world was different then; we lived in a shack on a plot, working the land, and my father and oldest brother worked in the coal mine. I recall cold, dark mornings, the warmth of the kitchen stove, inconstant meals, and hard work. Always hard work.

Work meant money, and money meant food. One had to work. So every night, as my feet got used to the icy bed sheets, I would wind the old alarm clock, pull out the alarm pin, and then check again it had been pulled out. And check again just before putting out the candle.

When the early morning came too soon, my alarm clock rang, other alarm clocks rang and slowly the household ebbed into life. At 5:30 my mother started the kitchen fire, and began preparing breakfast. At 6:30 my father and oldest brother left for the mine, and at 7:00 my second oldest brother left for the fields. Every second month my sister would leave for the main farmhouse at 5:00 to milk the cows. I was the youngest, the only one to go to school, so I was the family’s Hope for the Future, and also secretly resented since hard labour was not my lot, even though all my free time was drowned in chores. The schoolbell rang at 8:00, and rang again at 2:00, the close of school. At 5:00 the family would start arriving home, and at 6:00 my father and oldest brother came home. I remember this time well because the house mood would change: They were tired, dirty and angry, and needed their solitude. We ate at 7:30, and 8:30 started retiring. Sleep, labour, eat; repeat.

On Friday evenings, after the pay-packets for the week were lumped on the table and apportioned, we then ate supper after which my father and my brothers would go to the local pub, which served the last round at 10:00. Sunday mornings we’d sleep late, requiring to be seated in the church only at 9:00.

When I was a young adult I was fortunate to work in an office, where work started at 8:30; tea-time was at 10:30, lunch from 1:00 to 2:00. We left at 5:00. When there was over-time work we grabbed it eagerly, limited to 5 hours a week, then home, relying on a regular bus service.
When promotion came, more responsibilities came my way, and time management became imperative. Staff meeting at 9:00, manager meeting at 10:00. Labour disputes at 2:00; production review at 3:00. The day became a cacophony of time-controlled boxes, each with a different purpose and demand, each with a different feeling.

I remember it quite clearly: It was the first Saturday after payday. The dance was at 8:00, we met at 9:00. It was serendipitous, she later explained, as she had intended to go to another dance but the directions got mixed up. For the next few months I knew the bus timetable to and from her house by heart, and I saw her as often and for as long as I could, restricted by the last bus of the evening, restricted by knowing I had non-negotiable 7 hours of sleep to respect, for work meant money, and money meant food.

One night I missed the last bus and walked home, and at midnight, stopping to catch my breath, it dawned on me: I was in love like I had never been before, and the world was magnificent. We married at 3:00 in the local church where my father and oldest brother were buried, and a year later, just after 3:30 in the morning after a difficult birth, my firstborn announced his arrival.

Promotion time again and I became a consultant, offering various services across departments and divisions, filling in a timesheet, getting paid according to the intellectual value I transferred within a set time. Where time was not billed, money was lost.

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Homelife and a family was something completely new to me. I had the responsibility of our baby son from midnight to 6:00, welcoming the early hours with a sense of positive purpose against the memory of my youth. My parents sacrificed their freedom when they had children, and committed themselves to a life of slavery to support us. We, the children, had a difficult upbringing balancing small pockets of gratitude and humanity against a hard life and wanting love from exhausted parents. Now a great deal of that was gone, the promise of a better life, a better humanity was becoming evident. There was now time each day in which to purposefully create joy. Times were set for rising, meals and bathing, but also for joy and laughter, which was a pleasant change from a commitment to sleep or labour. If only my parents were alive to see this.

It was at 3:00 when the phone rang, and that same night at 10:00 he was pronounced dead. The funeral service was at 9:00.

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On reflection, my son’s early death hit me rather hard. I had hoped for, anticipated, a fulfilling childhood for him, one I never had, and wanted to enjoy his fuller life with him. I had plans, savings, ideas for adventures and experiences that culminated into something worthy, something contrary to a labour-filled existence that had filled so much of my own life. From living memory, my grandfather and father had worked in a mine; this was the first generation in our family to afford free time; this death felt wrongful. I wondered aloud, “Was his death a punishment, or did this slip through cruel fate’s fingers?”
I stared at the mantle clock, specifically at the 10, and felt that that hour would always represent tragedy for me. Actually, every hour, every minute on the clock held a life experience for me: I was born at 4:00 in the morning; my sister went to work at 5:00, the kitchen fire started each morning at 5:30, at 6:30 my father and oldest brother left for the mine. At 8:00 the schoolbell rang; it was at 9:00 when the mine caved in. At 10:10 my mother aborted the twins. At 2:00 the schoolbell rang again, at 2:35 my second-oldest brother died in a wheat harvester accident. At 2:45 my father and oldest brother were buried. At 3:00 I married my wife, at 3:30 my mother drowned, her body never to be recovered. At 5:00 office hours ended, we ate at 7:30 and started retiring at 8:30. At 10:00 that evening he was pronounced dead.

There it was, my entire life, summarized, on a circular dial. I imagined streaks of light, of various colours and intensities, representing my life experiences hurtle towards the clock face, directed specifically to the hour and minute of its experience. The room filled with light lines travelling to the dial, and as I recalled more of my life the room lit up even brighter.

Then, I recalled my wife’s experiences. These, too, became light beams of various colours and intensities heading to the clock face to be represented. Two overly bright red beams stood out from the rest, heading to the 8 and the 9. The dance was at 8:00, we met at 9:00. This was our meeting place, and our hearts’ meeting; sweet, wonderful serendipity … Wait! She didn’t have to be there, she said she got the addresses mixed up.

The room went dark, and the bright cacophony of light beams was replaced with a cold silence and then a cruel message came to me: Time was present at all the elating, mundane, and destructive moments that defined each moment of our lives. Thousands upon thousands of variables randomly clashed each day, each moment, and we interpreted and reacted randomly to each. It was mere chance that I was born, in that moment, into a serf household, mere chance I had that job, and went to that dance. The room was dark; I could hardly make out the clock face, when suddenly a white light beam shot from the 4 into the room. I was born at 4:00; then another light beam shot from the 5, then the 6, and continued round the face, emanating from each hour, and once it returned to the 4 it continued, now coming out at each passing minute. These were my multiple lives, each filled with diverse values, each subject to chance.

“But I love her!” I cried out, and a golden beam shot from the 12; it was midnight when I recognised I had fallen in love, and slowly additional golden beams of light traversed the clock face, for each moment I would fall in love in each of the other lives I could have lived.

“I loved my son!” I shouted in anger. Just after 3:30 on the clock face a green light shone forth, and again, steadily, other points of green light shone into the room, each the first-born child of each life that chance offered. Again it was dark, a cold silent darkness, and the cruel message concluded: From the time of your birth, each life experience that shapes your multiple lives, each is real, serendipitous, each insignificant.

In defiance I held the whisky tumbler high in the air and drunkenly shouted, “I am not insignificant! We are not insignificant!” The glass cracked in my hand, the cold
whisky mixed with a small trail of blood ran down my wrist, down my arm. I felt my strength returning. I brought my arm down, smashed it through the glass side-table and roared even louder, “We are not insignificant!” I half lay, half sat in the chair, crazy-eyed, sobbing. Only 3 grey lights emanated from the dial now, when my son died, when the mine caved in, and when my mother drowned. Then other grey lights popped up and started filling the room, each from a point in time my other lives would suffer death, and I knew it to be true.

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When that happens, well, some of us recover and try, try again, to create order of the universe. I couldn’t; I didn’t. It was a few months later that I returned home, then back to the office. The bosses were nice about it, and all the wall clocks and desk clocks were removed from the department. It’s hard going.

I sit here now, at peace, whisky in one shaky hand, in the other I hold my Haldimann. It keeps time, but it doesn’t tell time.

-End-
Abstract

Computers have come a long way in a short space of time. Software competes against human endeavour, and has become stronger, e.g. chess and Go. Artificial Intelligence (AI) is now a commonplace phrase, and produces creative output in, \textit{inter alia}, literature, poetry, music and art. It’s not unreasonable to assume that with time these outputs will supersede human output in quality and quantity.

Introduction

In 2700 BCE Man was reliant on tools for daily survival, such as the spear for hunting, tools for making and containing a fire, and a tool for trade computations, i.e. the abacus.\textsuperscript{1}

In the modern day, reliance on tools has not reduced, and one wonders if existence without said tools is even possible. When the handheld calculator was invented in 1967, little did anyone guess future events.\textsuperscript{ii} For example, the square root of 4 is 2; the abacus confirms it. The square root of 2 is 1.414 and a bit. That ‘bit’ was calculated in 2010 to be 1 trillion digits, and later calculated to 10 trillion digits.\textsuperscript{iii} It seemed unnecessary, but … Man is curious.

With regards the game of chess, in 1996 World Champion Gary Kasparov lost to a computer, named \textbf{Deep Blue}.\textsuperscript{iv} This was a remarkable moment in computers, programming, AI (Artificial Intelligence) and related words only to be found in OMNI magazine.\textsuperscript{v} There was talk that Man was well and truly on the back foot.

Since then chess software (known as chess engines) has developed. The current World Chess Champion, Magnus Carlsen, has a FIDE rating of \textbf{2835}.\textsuperscript{vi} The top 3 chess engines have chess ratings as follows:

<table>
<thead>
<tr>
<th>Computer Chess Engines</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Houdini 4</td>
<td>3277</td>
</tr>
<tr>
<td>Stockfish 6</td>
<td>3318</td>
</tr>
<tr>
<td>Komodo 9</td>
<td>3340</td>
</tr>
</tbody>
</table>

These chess engines can even play each other, and have been doing so at the World Computer Chess Championship for the last 22 years. The results of the last 3 years have been:\textsuperscript{vii viii}

<table>
<thead>
<tr>
<th>Year</th>
<th>Computer Chess Engine winner</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Junior</td>
</tr>
<tr>
<td>2015</td>
<td>Jonny</td>
</tr>
<tr>
<td>2016</td>
<td>Komodo</td>
</tr>
</tbody>
</table>

And in further news, the 2500 year old Chinese board game Go, has a new champion. In early 2016, for the first time, the engine \textbf{AlphaGo} beat the human then-champion Lee Se-dol.\textsuperscript{ix} Back foot indeed.
Communication

When driving in one’s vehicle and using a GPS, a common feature is a voice instructing the driver when and where to turn. These are pre-programmed verbal cues corresponding to an algorithm.

In a more complicated development, there is a computer program whereby one types in any sentence, and the software verbalizes what you wrote. This is known as text-to-voice. One can also instruct a page of writing to be delivered through voice, even an entire text.

Getting more complicated, one can verbally instruct one’s Smartphone, and receive audible confirmation, for example, the intelligent assistant named SIRI, found in Apple products.

Crossing the Rubicon

In 1950 Alan Turing developed the Turing Test. It is a test of computer ability to present intelligent behaviour equivalent to, or indistinguishable from, a human being. Put otherwise, if you are in a written conversation with someone, can you tell if the other side is human or a machine?

In 2014, a computer named Eugene Goostman, passed this test, which no computer had passed before.

There is currently a program named CleverBot which allows one to type in questions and statements and receive, what appear to be, coherent replies. Try it out.

There has been much development in the realm of presenting a verbal statement and receiving a verbal reply, like a conversation. These programs, in human mannequin form, are known as androids, and even have names: Erica, Bina48, Nadine, Jules, Sophia.

This verbal riposte is entertaining; one almost believes the banter is meaningful. At a certain point of development it will be meaningful, probably first to one’s pets, then to children, perhaps even to the uninitiated. Here’s the rub: It’s always other people who are fooled, and the android will always be a clumsy automaton, or will it? Man is curious.

A vital ingredient for AI complexity is required: Creativity.

Literature

I writhed with joy, which I experienced for the first time, and kept writing with excitement. The day a computer wrote a novel. The computer, placing priority on the pursuit of its own joy, stopped working for humans.

This is the final paragraph of a short story submitted for the Japanese third Nikkei Hoshi Shinichi Literary Award, titled “The Day A Computer Writes A Novel”. What is notable about this competition is that judges are not informed which novels were written by humans and which were “created” by human-computer teams. This short story, not a winner although it passed the first round of judging, was robot-written.
To press a button and obtain a manuscript exists even in the realm of non-fiction. Automatic essay generation exists, whereby you input the title, specify topic keywords, word count, research depth, bibliography, and within a few seconds the work is auto-written.xxiv xxvii

NaNoGenMo started as a casual competition in 2013, with the requirement to write programming code during the month of November that generated a 50,000 word novel. Now in its fourth year it’s going from strength to strength. In 2015, 500 entries were received.xxv

If software can identify aspects of an author’s style, it’s possible, well, probable, that similar output can be generated. This is the intent behind a Google project to predict and replicate the works of famous dead authors, such as Dickens, Austen, Dostoevsky, Tolstoy, Melville.xxv Sounds kind of like a good thing.

**Poetry**

Given the following 2 poems, which one was written by a human?

*My adult oblivion*xxvi

> What muse and for love thus removed it, upon  
> My hand, others drag this thought to waft my  
> Name—drew. Oh, and trembling terror  
> Brings him fainting before thy path not have  

> Never fled, and there to thought's, my boast, without  
> One on a ring of men, three as finishing  
> Fate all bare sense of thee how hastily.  
> Oh may keep one thought of grave-damps o'er,  

> But only live the palmer bent on my  
> Lovers gone, if some palace-floor, diverse  
> From what sweetness, which conceal'd chips called to  
> Me that floats valley-fountain I wear too  

> Calm and absent all, my adult oblivion  
> Yield, at once on the kingdom of thy call

The second poem:

*Leaning up*xxvii

> Is it and leaning up the fruit lingers  
> In night with thy love, I desperate and to  
> Take at my secret influence thus to  
> The wise souls stand further road will not say.  

> Let us to be christ is changed was of thee,  
> And what a death shall know thee withdraw their  
> Scheme lost saints, and injury their ears. At
Our two transform’d my foot's dark, and precious,
And yet perplexed into the lustre spent,
And all my palm-tree something that censures
Life-angel justified follows where
Nothing hindereth o I may less truth

And such who in armour mail’d green wave appears,
And sickness if thou wert. Sonnet to do.

See the endnotes for the answer. To make it simpler, which of the following 2 sonnets were written by a computer program aka robot?

Sonnet 1

This is the same harsh angle of the sun, this is the same so deadly humid heat
I felt that week your ending had begun, reflecting from the glass along the street,
the shattered bits of accidents or trash, the careless cost of greed obsessed with speed,
the same damned world that made your system crash
and sprout that cancer like a roadside weed.
I walked those mornings to the hospital, eyes downcast, sweating, breathing in the fumes of fast Columbus traffic, senses dull,
or so I thought, but now this heat exhumes the body of that grief. I saw, I heard, and I remember, Mother. Every word

Sonnet 2

The dirty rusty wooden dresser drawer. A couple million people wearing drawers,
Or looking through a lonely oven door, Flowers covered under marble floors.

And lying sleeping on an open bed. And I remember having started tripping,
Or any angel hanging overhead, Without another cup of coffee dripping.

Surrounded by a pretty little sergeant, Another morning at an early crawl. And from the other side of my apartment, An empty room behind the inner wall.

A thousand pictures on the kitchen floor, Talked about a hundred years or more.
See the endnotes for the answer. The issue is not how good the software is but rather how fallible we are.

If software can recognise, predict and replicate the writing styles of famous deceased authors, one assumes this may well extend to poets: Shakespeare, Yeats, Wordsworth, Wilde, even Homer. Sounds kind of like a good thing.

**Music**

AI systems are able to create, i.e. generate music, autonomously. Sony has released 2 songs, “Daddy’s car” and “Mr Shadow”. Global annual music sales are over $15 billion; this is a lucrative market. In 2016, Google’s Magenta program produced its first piece of generated music. Just four notes were presented. After the creation the drums and orchestration were added (by humans) for effect. Listen to it hear by clicking on the endnote.

If songs can be generated in an instant and songwriters fees waived, and if software capability is a factor of time and investment, then this area of development should reach a high level of proficiency quite soon.

Perhaps, just as software can recognise, predict and replicate writing styles of deceased authors, the same can be said for music. Music in the style of Bach, Mozart, Beethoven, and even popular music could be forthcoming. Sounds kind of like a good thing.

For example, there is a AI model named DeepBach which can compose polyphonic chorales in the style of J.S. Bach. The chorale is a rather formulaic piece of Lutheran church music that usually reharmonizes a well-known melody. This is not a plagiarism of Bach, and it even fooled some critics; most importantly, it produced genuinely new work. Some critics have identified compositional errors like parallel octaves, but the Bach-like patterns of characteristic cadences to the expressive use of non-chord tones are accurate reproductions. The piece can be heard at this footnote.

It must be noted that music is a powerful influencer, and not always in a good way, e.g. Seress’ Hungarian Suicide Song, aka Gloomy Sunday. Furthermore, the perfection of a computer’s output is cause for concern: No errors. Brian Eno warns of the same error-free, consistent production played every time, with perfected voices having been run through pitch-correction software; it’s simply not human. The algorithm might need to be tweaked.

**Art**

What is art? (Perhaps an easier question would be *What is the meaning of life?*) Art, by definition, is:

- The conscious use of skill and creative imagination especially in the production of aesthetic objects.
- The class of objects subject to aesthetic criteria; works of art include paintings, sculptures, drawings.
- The expression or application of human creative skill and imagination, typically in a visual form such as painting or sculpture, producing works to be appreciated primarily for their beauty or emotional power.
The practitioners of art have a different way of defining and describing art:

1. "Art is either plagiarism or revolution." Paul Gauguin, painter
2. "Art is a jealous mistress, and, if a man has a genius for painting, poetry, music, architecture, or philosophy, he makes a bad husband, and an ill provider." Ralph Waldo Emerson, essayist and poet
3. "Art is meant to disturb. Science reassures." Georges Braque, painter
4. "Art is long, and time is fleeting." Henry Wadsworth Longfellow, poet
5. "Art is the signature of civilizations." Jean Sibelius, composer
6. "Art is a lie that makes us realize truth, at least the truth that is given us to understand." Pablo Picasso
7. "Art is the Queen of all sciences communicating knowledge to all the generations of the world." Leonardo da Vinci
8. "Art is essentially the affirmation, the blessing, and the deification of existence." Friedrich Nietzsche, philosopher

These quotes are important; the artists are accomplished, the statements reflect their experience, and it becomes clear that art is essential to the human spirit.

Enter the realm of software, AI, robots, etc. The term robotic art refers to any artwork that employs a form of robotic or automated technology. Example, brush strokes, complicated patterns applied with a unique instrument. A combination of software and hardware that can produce an existing work of art seems not dissimilar to a printer printing an image. Deep Dream Generator receives images and re-interprets them to a style or medium, e.g. charcoal, crayon, psychedelic, etc. The key question, asked a bit fearfully, is Can a computer make art?

The Painting Fool is a computer program that claims to answer this question by creating portraits based on its mood, assessing its own work, and learning from its mistakes. Its work has been exhibited in multiple galleries; there is even a Facebook page.

There is also the Robot Art Contest which accepts submissions in two categories:
- Telerobotics, which is for robots that collaborate with humans (prize money of $10 000), and
- Fully Automated painting robots (prize money of $30 000)

French artist Patrick Tresset is the inventor of Paul-IX, an automated sketch-bot that can outline a still-life setting. The robot comprises a camera, an arm holding a writing instrument, and software that operates the process. The work has been exhibited in art galleries. There is a recording on YouTube at this endnote.

What’s notable about Tresset’s robot is that the image is drawn on paper. Technology exists for an image to be created … in air. Think hologram. Holovect is an application that draws 3D images in air using light. It’s a holographic display, presenting free-floating objects in space, and projections can be manipulated in real time.

Hologram technology has developed to the point that actual item A in Hologram Box A in Location A can present image B in Hologram Box B at Location B; the Haptoclone does all, and it’s in real time. Added to this is ultrasound energy which creates the sensation of touching and being touched. In the public environment this might be used as a communication device, seeing the person you’re speaking to in 3D, and being able to experience the sensation of touch.
AARON is a computer program that has been in continual development since 1973, and claims to create original artistic images. Early programming was in C, then changed to Lisp. At one point the programs ran on a DEC VAX 750 minicomputer. Given the early development, many questions were asked about its output, if it was original, the nature of creative work, and the nature of creativity versus a program following procedural instructions.

Prisma is a program that takes a digital image and changes it to look like a painting in the style of particular painter. With this technology a simple image can have multiple siblings, each with a different style (e.g. Picasso, Van Gogh, Munch, Levitan, etc.). The software, in analyzing the pre-set artists even analyses their brush strokes. This is a welcome approach in an art environment where emphasis on painting techniques has waned, to be replaced by boldness or intricacy of ideas.

The interaction of art and technology is even taught formally, e.g. the University of London has a course titled Machine learning for musicians and artists. Perhaps, just as software can recognise, predict and replicate writing styles of deceased authors, this can be applied to art: Van Gogh, Vermeer, da Vinci, Michelangelo, etc. Sounds kind of like a good thing.

Discussion & Conclusion

Moore’s Law came into effect after Intel co-founder Gordon Moore noted that the number of transistors per square inch on integrated circuits had doubled every year since their invention. As a predictor, this Law was first scoffed at, and yet the growth rate of computing power has been incredible.

What is required is a Moore’s Law for AI creativity. The handheld calculator, the chess engine, passing the Turing test, the Go engine, then literature, poetry, music and art. It’s difficult to establish the rate of progress but it is evident.

One area of the AI field is the philosophic questioning about a computer making art, what defines an original piece of work, how human art appreciation differs from computer art, etc. The philosophy of digital art is not an established field; if this field interests you then refer to the work of Dominic Lopes.

A connected area of AI art is the programming, e.g. creating an original piece of work at the touch of a button, or taking an image and reinterpreting it in a unique way. Some AI programs have been mentioned, and although each seems somewhat limited, the way creativity expands is to mix and grow exponentially on previous ideas.

A third area is the output of art, which is the intention, after all. One might wonder when (not if) computer art complexity will pass its Turing test. Let the public decide.

Two observations are notable:

1. Program/Application fluency is a factor of time.
2. Creativity is pivotal for product development, and Man’s needs seem without end. Programmers and designers are creative in finding new applications. With software becoming a source of creativity, it will be very interesting to see what transpires.
The perseverant world turns, motivated by profit and perceived value, limited only by Man’s imagination, until now. Back foot indeed, and yet it sounds kind of like a good thing.

- end -

Further reading

1. 25 real-life robots that will make you think the future is now
2. 5 Advanced humanoid robots you have to see to believe
3. The 5 best computer chess engines
4. These androids can hold a conversation and crack jokes
5. 9 computer-generated novels you should read, or attempt to, or at least look at in wonderment

Keywords
AI, Android, Animatronics, Artificial creativity, Artificial Intelligence, Chat robots, Chatterbots, Chatterboxes, Cognitive computing, Computational creativity, computer vision, Creative computation, Creative computing, Humanoid robot, Mechanical creativity, Robot, Robotics, Uncanny Valley

Engines/Robots/Androids referred to in this essay

1. Deep Blue
2. Houdini 4
3. Stockfish 6
4. Komodo 9
5. Junior
6. Jonny
7. Komodo
8. AlphaGo
9. SIRI
10. Eugene Goostman
11. CleverBot
12. Erica
13. Bina48
14. Nadine
15. Jules
16. Sophia
17. Magenta
18. DeepBach
19. Deep Dream Generator
20. The Painting Fool
21. Paul-IX
22. Holovect
23. Haptoclone
24. AARON
25. Prisma
Introduction

In general, moral corruption has been widely recognized as the common denominator from which the ills affecting our ‘modern civilizations’ stem of. Having long acknowledged that moral corruption engendered the decline and fall of some of the greatest and most powerful nations throughout history, it is inconceivable how -to this very day- the scourge of ignorance continues to rampantly undermine our comprehension of Moral and its constitutive contribution to the evolution of humankind.

Upon confronting the alarming rate at which the vicious tentacles of moral corruption increasingly permeate people from all strata of society, it becomes evident that human beings have the imminent obligation to procure a philosophical/intellectual/logical consensus on the universality of Moral. The achievement of this consensus would, in turn, significantly prompt the academic support required for the implementation of those education courses deemed essential in order to effectively curtail its seemingly implacable dissemination.

The endeavor of this proposal seeks to engage the intellect in a new perspective of Moral along those characteristic operations of human nature/faculties elucidated to periodically delineate -in accordance to a theoretical framework-, the evolutorial outcome of four distinct sets of free willed actions capable of denoting the gradual advancement of conduct, herein deemed as the universal path to moral conduct. In addition, the distinctive particularities defining the singularities of their outcome were perceived to duly sustain the moral guidance that the course of humanity has so far established to so direly need.
I. Philosophical conception of Moral

As it stands, it could be said that the concept of Moral has been under dissertation ever since it was first proposed some 2,400 years ago. For, in spite of all the copious theoretical arguments in support of its objective reality, not one has yet been acknowledged to duly sustain the feasibility of its universality. Therefore, it was determined that in order to properly contemplate a different logical/intellectual approach to its philosophical conceptualization, the work herein had to start from scratch.

It was deemed of most significance to consider that at the time when the concept of Moral was being originally introduced, the vast majority of human actions had been established to be motivated by the irrepressible compulsion characteristic to the innermost emotional nature solely intrinsic to human beings. This situation accrued mostly due to the fact that whether the consequential effects of their actions were good or bad, did not seem to deter people from achieving their intentional objectives without further deliberating on the righteousness of their volitional choices. Due to this scenario, human actions were -and still are- judged and sentenced in accordance to the ethical directives of those laws, regulations and codes of conduct that precariously evolved in dependence of the cultural/religious standards of the prevailing authorities/institutions.

Having affirmed the superiority of cognitive discernment, philosophers presumably argued that it is precisely the ability to cognitively and volitionally choose the outcome of one’s actions, what gives human beings the tools to liberate their comportment from the grip of emotional impulsion. To that same effect, they referred to some very uncommon actions that had been distinguished -in spite of their rareness- to solely and consistently denote acts of admirable conduct. So that, even though human actions denoting acts of good conduct had been acknowledged to be motivated by positive emotions, these singular actions had been acquiesced to be motivated by superior emotional traits identified as Virtues. Whereby, virtues as crucial realities conducive to admirable/moral conduct also became fundamental to their philosophical axiomatic concepts of Moral.
It should also be noted that while the earliest theoretical discernments by Greek philosophers Socrates, Plato and Aristotle concurred in their conceptualizations of Moral as «the one objective reality capable of upholding the validity of human excellence» and as «the one objective reality essential to human happiness», they never quite agreed on the ‘specifics’ marking its natural/biological inherency to cognitive and volitional acts denoting virtuous conduct. It was then determined that the identification of those distinctive particularities that could be elucidated to duly define their congruent inherence, would be of utmost importance to the endeavor of this proposal.

Thereby, in order to sustain the objective reality of Moral in accordance to its original philosophical conceptions, the following premises would have to be maintained:

a) exclusively intrinsic to individual human beings;
b) naturally inherent to cognitive, volitional and virtuous conduct;
c) foundationally upholds the validity of human excellence;
d) fundamentally essential to human happiness.

●

Along this order, the philosophical conception of Moral was intuitively perceived to imply that its objective reality consists of those «invariant manifestations upholding the integral paradigm sustaining the evolution of humankind». Considering all of the above, it was deemed essential to at this time establish one and only one definition of Moral -decisively disassociated from those defining Ethical-, in order to comprehensively distinguish those distinctive particularities that could be proposed to feasibly delineate its objective reality and the universality being pursued.

Therefore, it was determined that the term Moral -in its strictest sense- should only be defined as follows: “Moral: of or pertaining to the optimum excellence of conduct/character.” Period.
II. Dual ‘nature’ of free willed actions denoting acts of conduct

Given the fact that, as far as we know, human beings are the only living entities whose actions have been acknowledged to be individually free willed, it could be said that ‘human excellence’ is validated by the progressive outcome of those free willed actions denoting acts of moral conduct. It would then follow to first analyze the correlation between human beings, free willed actions and conduct.

The outcome of free willed actions has been proclaimed to be contingent on the cooperative activity between the mental, sensorial and volitional faculties inherently associated to the rational, emotional and physical nature solely intrinsic to human beings. It was additionally discerned that the outcome of free willed actions denoting acts of conduct should, in turn, demonstrate to be congruently relevant to the behavioral faculties inherently associated to the social nature solely intrinsic to human beings.

Along this order, four characteristic operations were selected to best describe the functional parameters of each one faculty which could, in turn, be inherently associated to the four characteristic operations that were selected to suitably describe what have been termed as the structural parameters of human nature. The following eight characteristic operations were distinguished to respectively correspond:

<table>
<thead>
<tr>
<th>Structural Parameters</th>
<th>Rational + Emotional + Physical → (Social Nature)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>↓</td>
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<tr>
<td>Characteristic</td>
<td>REASON SENSATION MOTION COMMUNICATION</td>
</tr>
<tr>
<td>Operations</td>
<td>↑</td>
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<tr>
<td></td>
<td>COGNITION PERCEPTION ACTION INTERACTION</td>
</tr>
<tr>
<td>Functional Parameters</td>
<td>↑ ↑ ↑ ↑</td>
</tr>
<tr>
<td>Faculties</td>
<td>↑ ↑ ↑ ↑</td>
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</tbody>
</table>

Cooperative Activity→Acts of Conduct  Connective Activity→Acts of Behavior (Free willed actions)
As such, the structural parameters of human nature could be feasibly proposed as the genetic foundations intrinsically supporting the functional parameters of human faculties. In addition, it could be furthermore proposed that while the connective activity between the mental, sensorial and volitional faculties (inherently associated to that between the rational, emotional and physical nature) intrinsically delineates the biological ‘nature’ of human behavior, the cooperative activity between the mental, sensorial and volitional faculties (inherently associated to that between the rational, emotional and physical nature) intrinsically delineates both; the biological and individual ‘nature’ of conduct/‘duality’ of free willed actions.

Where, the biological and individual nature of human beings would be accordingly represented by the composition/structure of free willed actions whose agency/function is to denote acts of conduct (their correlation). Therefore, it was determined that the outcome of free willed actions would be responsible of marking the reality of conduct -not of behavior-, as an activity solely intrinsic to individual human beings.

Upon further analysis, the biological and individual nature of human beings (‘duality’ of free willed actions) were additionally recognized to best represent what sociologists have acknowledged as the two main determinants/duality of social phenomena and to, perhaps, be capable of reconciling the structure versus agency debate, presently understood as an issue of socialization against autonomy in determining whether an individual acts as a free agent or in a manner dictated by social structures. As it stands, the two main determinants of social phenomena have been acquiesced as follows:

1. ‘Social’ structure – the recurrent patterned arrangements which influence or limit the choices and opportunities available.

2. ‘Human’ agency – the capacity of individuals to act volitionally and make their own free choices.
It was first taken into account that when sociologists discuss main determinants of social phenomena, they are referring to social human phenomena. Bearing this in mind, the term ‘social human phenomena’ would imply the outcome of those occurrences brought forth by that human activity identified to consequentially convey distinctive patterns of socialization. In other words, social structures would be entirely dependent on human activity/free willed actions.

So that, although it might seem that social structures have influenced the socialization of human beings, upon scrutiny, the emergence and establishment of dissimilar social structures were -in fact- observed to have been influenced by the operative socialization of human beings; this, in accordance to the evolutionary development of their nature/faculties in function of their environmental/surrounding circumstances/events. Thus, social structures do not shape human behavior; social structures are shaped by the progressive outcome of free willed actions denoting the advancement of personal/interpersonal conduct. In other words, individual human beings act as both: a free agent (individual ‘nature’) and in a manner dictated by their genes (biological ‘nature’); i.e., the complementarity of structure and agency.

As such, the two main determinants of social human phenomena have been tentatively defined as follows:

1. ‘Social’ structure – the biological ‘nature’ delineating the outcome of free willed actions denoting recurrent patterned arrangements of social conduct.

2. ‘Human’ agency – the individual ‘nature’ delineating the outcome of free willed actions denoting dissimilar patterned arrangements of social conduct.
III. Correlated evolutionary developments of human nature and faculties

It has been acknowledged that the evolution of animal species ensues in strict relevance to the structural maturation of those specific brain regions and connective pathways required for the successful development of more elaborate modes of receiving, integrating and responding to external stimuli/information.

As such, the evolution of animal/pre-hominid species could be feasibly proposed to have ensued in strict relevance to the progressive diversity of neural entities (structural maturation of specific brain regions and connective pathways), marking the development of characteristic operations of sensation and motion (structural parameters of emotional and physical nature) that would, in turn, inherently convey the progressive complexity of neural processes (functional maturation of receiving, integrating and responding modes), delineating the development of characteristic operations of perception and action (functional parameters of sensorial and “volitional” faculties). And, the evolution of animal/hominid species (human beings) could be feasibly proposed to have ensued in strict relevance to the additional progressive diversity of neural entities marking the onset/development of characteristic operations of reason (structural parameters of rational nature) that would, in turn, inherently convey the additional progressive complexity of neural processes delineating the onset/development of characteristic operations of cognition (functional parameters of mental faculties), along their congruent relevance to the evolutionary development of volition (functional parameters of volitional faculties).

Therefore, the distinctive particularities that could be identified to suitably delineate their correlated development would have to concurrently ensue along the four hierarchical time frames -of seven years each-, that have been acquiesced to substantially distinguish the biological evolvement of those specific neural entities/processes genetically defining the systematic organization of all evolutionary developments of human nature and faculties from birth to 28 years old; developments along what has been herein theoretically proposed as the Framework of Human Development.
It should also be noted that due to recent scientific research, neural processes between specific brain structures/regions have been identified to be intrinsically related to the outcome of volitional actions. So that after ‘millenniums’ of blissful unaccountability the reality of volition (referred to as free-will), has been finally validated and defined as a series of mental/volitional choices on: a. whether to act (prepared actions volitionally inhibited), b. what actions to perform (new volitionally prepared actions) and c. when to perform them (their ordered outcome). In other words, there are no volitionally prepared actions, without mental choices.

Although neuroscientists continue to furthermore identify the correlations between specific brain structures/regions and the different neural processes/brain systems inherently associated to the integration of executive functions, it has been acquisced that these structural/functional abilities/capacities ensue/develop at different rates over time. Thus, a developmental framework was established as the means to properly delineate their periodical evolvement which, in turn, was observed to correspond to the same four age time frames that have been herein proposed to constitute the framework of Human Development. These being: Early Childhood (Birth-7 yrs old), Pre-adolescence (7-14 yrs old), Adolescence (14-21 yrs old) and Adulthood (21-28 yrs old). Thereby, given that in accordance to previous data the development of one’s mental faculties do not ensue until +/-3 yrs old, so would the development of one’s volitional faculties ensue.

It would then follow to identify those distinctive particularities of sensorial faculties (inherently associated to those of emotional nature) from birth to 7 yrs old (1st time frame), that could be perceived to suitably concur with those distinctive particularities of mental and volitional faculties (inherently associated to those of rational and physical nature) from +/-3 to 7 yrs old. Where, those distinctive particularities identified to delineate the evolvement of the volitional faculties could be additionally recognized to genetically retain a similar inhibitory/excitatory circuitry to that in closely related primates.
At some point, the evolution of Emotional/Sensorial Nature/Faculties was discerned to have brought forth characteristic operations capable of defining/imprinting the external stimuli/information being experienced/received in order for all living entities to accomplish their fundamental purpose: the survival and reproduction of the species in accordance to the environmental circumstances of their natural habitat. Consequentially, the realities known as the survival (sustenance/protection) and reproduction (mating/nurturing) instincts were perceived as the first characteristic operations of Emotional Nature (sensations) capable of unconsciously defining the external stimuli being experienced and, the realities of contextual imageries (‘reading’/stamping the moment associated to the external stimuli being experienced) were perceived as the first characteristic operations of Sensorial Faculties (perceptions) capable of unconsciously imprinting the external information being received.

So that, although sensations (external stimuli) have been generally accepted to be the a-priori causation of all living entities’ actions/responses, their inherent association to perceptions (external information) substantiates that the distinctive particularities defining the environmental circumstances of their natural habitat/surroundings could be their ‘true’ a-priori causation. In other words, that the stimulus is conveyed in accordance to the surroundings; or, what probably brought forth the simple idea that human beings are but the product of their circumstances.

In respect to the emotional nature of sensations, it should be noted that thanks to new computational and fmri technology, specific -left/right- brain structures/regions have been identified to symmetrically ‘fire’ by the input of either positive or negative correlated sensations. Where, the realities of intrinsically opposite positive and negative feelings, emotions and virtues/VICES have been finally validated to exist in accordance with the herein proposed structural parameters of Emotional Nature. In order to further support the above arguments, two sets of explanatory outlines have been included; but, due to the overwhelming scope of analogous data, only those few distinctive particularities recognized to most relate to each time frame (Annex A) and to best delineate the evolvement of correlated +/- sensations (Annex B) were tentatively identified.
IV. Correlation between the evolutionary development of the mental/sensorial/volitional faculties, their cooperative activity and the evolitional outcome of four distinct sets of free willed actions.

It was deemed of utmost significance to, at this time, reiterate that that the outcome of free willed actions has been acquiesced to be contingent on the cooperative activity between the mental, sensorial and volitional faculties inherently associated to the rational, emotional and physical nature solely intrinsic to human beings.

The presence of the cooperative activity between the mental, sensorial and volitional faculties was found to have been -so far- identified to manifest, as specific resonance oscillations in brain activity solely audible along high frequencies in the gamma band (resonance oscillations recently proposed to be entrained by both the frequency and amplitude modulation in the stimulation/activity). Whereby, it could be tentatively proposed that the interactivity marking the correlated development of the mental, sensorial and volitional faculties exclusively relevant to each one time frame of human development, would correspondingly convey the dynamics of four specific resonance oscillations/manifestations of cooperative activity that could be perceived to intrinsically support the evolitional outcome of four distinct sets of free willed actions which would, in turn, be capable of denoting the gradual advancement of conduct.

It then followed to search for those four ‘realities’ that could be perceived to suitably comply with the above arguments. At some point, many of the characteristics that purport to explain the phenomenon of Consciousness were noted to suitably concur with those delineating the correlated evolutionary development of the mental, sensorial and volitional faculties (inherently associated to those delineating that of the rational, emotional and physical nature) in the 1st time frame of human development. Upon further research, so did those characteristics found to describe the phenomenons of Conscienceness/(conscience), Conscientiousness and Matureness/(maturity) with those delineating the correlated evolutionary development of the mental, sensorial and volitional faculties (inherently associated to those delineating that of the rational, emotional and physical nature) in the 2nd, 3rd and 4th time frames.
It should first be considered that two premises were found to be indispensably required in order to duly validate the phenomenon of Consciousness as an objective reality. As such, it could be said that the same would be required in order to duly validate the phenomenons of Conscienceness, Conscientiousness and Matureness as objective realities. The following elements were determined to suitably abide by both premises:

1st premise: Their existence would have to be supervenient on the existence of physical forms.

The existence of Consciousness, Conscienceness, Conscientiousness and Matureness as invariant manifestations of the cooperative activity between the mental, sensorial and volitional faculties (inherently associated to the connective activity between the rational, emotional and physical nature), would be supervenient on the progressive brain diversity of mental, sensorial and volitional physical forms herein termed as ‘neural network constructs’ (inherently supervenient on the existence of rational, emotional and physical forms herein termed as ‘neural circuit schemas’), which have been herein proposed to periodically evolve along the four time frames of human development.

(Please note that although there are still no definite answers to the questions regarding the relationships between structural and functional asymmetries in the brain, in order to differentiate physical forms of structural nature from those of functional faculties while conserving their natural-law symmetries, the terms ‘neural circuit schemas’ and ‘neural network constructs’ were herein chosen to best comply.)

2nd premise: Their existence would have to emerge due to complexity of brain operations.

The existence of Consciousness, Conscienceness, Conscientiousness and Matureness as invariant manifestations conveyed along the correlated evolutionary development of the mental, sensorial and volitional faculties (inherently associated to that of the rational, emotional and physical nature), would indeed emerge due to the progressive brain complexity of those functional neural processes/operations (inherently associated to that of those structural neural connective pathways), which have been herein proposed to periodically evolve along the four time frames of human development.
In addition, the ‘realities’ of Consciousness, Conscience, Conscientiousness and Matureness - as cooperative activities - would have to be demonstrated to intrinsically support the evolitional outcome of four distinct sets of free willed actions bearing the biological and individual nature of human beings/conduct, and capable of denoting the gradual advancement of conduct. Due to the extent of information involved, it was decided that the conjectures that were elucidated to accordingly sustain the above arguments would be best explained along the following outlines:

A. Consciousness

(Please note that in order to conceptualize the ‘reality’ of consciousness as being herein proposed, it was deemed essential to mark a terminological distinction between conscious and consciousness. Where, the definition of conscious, as the state of being awake and aware of one’s surroundings should be disassociated from the definition of consciousness, as the state of having awareness of one’s own thoughts, feelings and actions (in accordance to one’s surroundings). In other words: while one can be conscious without having consciousness, one cannot have consciousness without being conscious. Also note that the different characteristics found to describe the phenomenon of consciousness, were perceived to feasibly sustain its existence as an objective reality of neural dynamics.)

Consciousness was identified as the invariant manifestation of the specific resonance oscillations conveyed by the cooperative activity between the mental, sensorial and volitional faculties from +/-3 to 7 yrs old of age, as follows:

1. “the state of having awareness of one’s own thoughts, feelings and actions”

   In this particular description, the existence of consciousness would be gradually conveyed in accordance to the cooperative activity between those distinctive particularities delineating the correlated evolutionary development of the mental, sensorial and volitional faculties (inhomogeneously associated to those delineating that of the rational, emotional and physical nature), along the 1st time frame (more precisely from +/-3 to 7 yrs old) of human development.

2. “the state of having a sense of self-hood”

   This particular description of consciousness was discerned to concretize the state
of *having awareness of one’s own thoughts, feelings and actions* with that of having an “inner sense of self-awareness” (the recognition of that awareness). Where, self-hood -as their resulting integration- would specifically refer to the means by which to recognize one’s own individual identity; being an individual distinct from other individuals and separate from the environment.

### B. Conscieness

(Please note that in order to conceptualize the ‘reality’ of conscieness as being herein proposed, it was deemed essential to acknowledge the parity between the terms conscience and conscieness. For, the definition of conscieness was found to have been purposely precluded and consistently compromised to the definition of conscience; yet, the different characteristics found to describe the phenomenon of conscieness/conscience, were perceived to feasibly sustain its existence as an objective reality of neural dynamics.)

Conscieness was identified as the invariant manifestation of the specific resonance oscillations conveyed by the cooperative activity between the mental, sensorial and volitional faculties from 7 to 14 yrs old of age, as follows:

1. “the state of having awareness of the guiltiness of one’s own thoughts, feelings and actions”

   In this particular description, the existence of conscieness (as an aspect of extended consciousness) would be gradually conveyed in accordance to the cooperative activity between those distinctive particularities delineating the correlated evolutionary development of the mental, sensorial and volitional faculties (inherently associated to those delineating that of the rational, emotional and physical nature), along the 2nd time frame of human development.

2. “the state of having a sense of self-judgment”

   This particular description of conscieness was discerned to concretize the state of *having awareness of the guiltiness of one’s own thoughts, feelings and actions* with that of having an “inner sense of self-evaluation” (the recognition of that awareness). Where, self-judgment -as their resulting integration- would
specifically refer to the means by which to recognize one’s own individual guiltiness; distinct from the guiltiness of others’ thoughts, feelings and actions.

C. Conscientiousness

(Please note that in order to conceptualize the ‘reality’ of conscientiousness as being herein proposed, it was deemed essential to consider that although it has been conventionally acquiesced as a personality trait, it is herein proposed as an additional constitutional element whose function is to furthermore capacitate the advancement of conduct. Where, the different characteristics found to describe the phenomenon of conscientiousness, were perceived to feasibly sustain its existence as an objective reality of neural dynamics.)

Conscientiousness was identified as the invariant manifestation of the specific resonance oscillations conveyed by the cooperative activity between the mental, sensorial and volitional faculties from 14 to 21 yrs old of age, as follows:

1. “the state of having awareness of the responsibility of one’s own thoughts, feelings and actions”

   In this particular description, the ‘reality’ of conscientiousness (as an aspect of extended consciousness and conscientiousness) would be gradually conveyed in accordance to the cooperative activity between those distinctive particularities delineating the correlated evolutionary development of the mental, sensorial and volitional faculties (inherently associated to those delineating that of the rational, emotional and physical nature), along the 3rd time frame of human development.

2. “the state of having a sense of self-discipline”

   This particular description of conscientiousness was discerned to concretize the state of having awareness of the responsibility of one’s own thoughts, feelings and actions with that of having an ‘inner sense of self-accountability’ (the recognition of that awareness). Where, self-discipline -as their resulting integration- would specifically refer to the means by which to recognize one’s own individual responsibility; distinct from the responsibility of others’ thoughts, feelings and actions.
D. Matureness

(Please note that in order to conceptualize the ‘reality’ of matureness (i.e., maturity) as being herein proposed, it was deemed essential to emphasize that its presence has been acquiesced as “the state of being mature”. As such, the ‘reality’ of matureness/maturity would foundationally ensue and evolve in accordance to the full (functional) maturation of the mental, sensorial and volitional faculties (inherently associated to the full (structural) maturation of the rational, emotional and physical nature). Where, the different characteristics found to describe the phenomenon of matureness, were perceived to feasibly sustain its existence as an objective reality of neural dynamics.)

Matureness was identified as the invariant manifestation of the specific resonance oscillations conveyed by the cooperative activity between the mental, sensorial and volitional faculties from 14 to 21 yrs old of age, as follows:

1. “the state of having awareness of the purpose of one’s own thoughts, feelings and actions”

   In this particular description, the ‘reality’ of matureness (as the coalescence of consciousness, conscienteness and conscientiousness) would be gradually conveyed in accordance to the cooperative activity between those distinctive particularities delineating the correlated evolutionary development of the mental, sensorial and volitional faculties (inherently associated to those delineating that of the rational, emotional and physical nature), along the 4th time frame of human development.

2. “the state of having a sense of self-fulfillment”

   This particular description of matureness was discerned to concretize the state of having awareness of the purpose of one’s own thoughts, feelings and actions with that of having an “inner sense of meaningfulness” (the recognition of that awareness). Where, self-fulfillment -as their resulting integration- would specifically refer to the means by which to recognize one’s own individual purpose; distinct from the purpose of others’ thoughts, feelings and actions.
V. Difference between the outcomes of free willed actions capable of denoting the gradual advancement of conduct and those actually denoting it

It could be said that, in spite of their foundational differences, the fundamental objective of free willed actions -in all four sets- is to denote the gradual advancement of conduct. It has also been professed that, in spite of their foundational differences, the fundamental objective of the phenomena known as Consciousness, Conscieness, Conscientiousness and Matureness is to impel one towards right/positive actions. Hence, it could be consequentially deduced that while the progressive outcome of free willed -right/positive- actions will denote the gradual advancement of conduct, the progressive outcome of free willed -wrong/negative- actions will denote the gradual detriment of conduct.

So that, although Consciousness, Conscieness, Conscientiousness and Matureness have been herein tentatively proposed as the ‘realities’ intrinsically supporting the evolutorial outcome of four distinct sets of free willed actions, their presence does not ensure the outcome of free willed -right/positive- actions. Hence, the evolutionary outcome of these four sets of free willed actions would be capable of denoting either the gradual advancement of conduct, or its gradual detriment.

It would then follow to properly distinguish between the evolutionary outcomes of free willed actions that are capable of denoting the gradual advancement of conduct, from those that actually do denote it. Or, what was perceptibly compared to the difference between one’s assets and one’s liabilities (as the difference between abilities/capacities ‘owned’ by human beings and the responsibility/obligation ‘owed’ by human beings having these abilities/capacities). In other words, the difference between the evolutionary outcome of free willed actions capable of denoting the gradual advancement of conduct as the abilities/capacities ‘owned’ by human beings, and the progressive outcome of free willed actions actually denoting the advancement of conduct as the responsibility/obligation ‘owed’ by human beings having these abilities/capacities.
Upon further reflection, the specific sequence of those neural processes/operations which, in strict relevance to the successful development of more elaborate modes of receiving, integrating and responding to external stimuli/information, have been -so far- acknowledged to be implicitly required for the outcome of free willed actions, was perceived to be of the essence in order to properly distinguish their differences.

So that, in an attempt to furthermore support the feasibility of the above proposition, a ‘rough’ summary detailing the specific sequence of those neural processes/operations that were tentatively recognized to best comply, was construed as follows:

1. **Receiving**
   - External stimuli → transduction of external stimuli (inputs) into circuit -emotional- sensation schemas
   - External information → interpretation of external information (inputs) as network -sensorial- perception constructs
   
   Encoding and storage of new engram cells → imprints of memory traces (circuit sensation schemas and network perception constructs)

2. **Integrating**
   - External stimuli → association of circuit -emotional- sensation schemas (inputs) with pertinent circuit –physical -motion schemas (outputs) (sensation-motion coupling process)
   - External information → association of network -sensorial- perception constructs (inputs) with pertinent network -“volitional”- action constructs (outputs) (perception-action coupling process)

   Encoding and storage of new engram cells → imprints of memory traces (circuit sensation/motion schemas and network perception/action constructs)

3. **Responding**
   - External stimuli → involuntary retrieval of pertinent circuit sensation/motion/ communication schemas from stored genetic*/implicit memories
   - External information → involuntary retrieval of pertinent network perception/action/ interaction constructs from stored genetic/implicit memories
Involuntary assembling of communication/interaction arrangements delineating pertinent genetically instinctive/adaptive behavior patterns (motion-action response)

a) ‘non-volitional’ triggering of excitatory-principal neural circuitry required to bring forth the outcome of genetically instinctive/reactive behavior patterns;
b) ‘non-volitional’ triggering of inhibitory-principal neural circuitry required to stop the outcome of genetically instinctive/reactive behavior patterns;
c) ‘non-volitional’ (yet goal oriented) triggering of excitatory-secondary neural circuitry required to bring forth the outcome of informally learned/adaptive behavior patterns (non-volitional (yet goal oriented) actions).

Encoding and storage of new engram cells → imprints of memory traces (communication/interaction arrangements of informally learned/adaptive behavior patterns.)

*Upon further analyzing the reality of genetic memory, it was perceived to consist of engrams/memory traces encoding those network perception/action/interaction constructs (inherently associated to those circuit sensation/motion/communication schemas) which consistently delineated the repetitive outcome of specific pre-patterned arrangements of communication/interaction, by either one or both parents, at the time of conception. As such, these particular engrams/memory traces would most probably relate to behavior patterns fundamentally associated to the survival and/or reproduction of singular species -in accordance to the distinctive particularities of the environmental circumstances of their natural habitat-, and would be generationally passed on to their offspring’s genetic memory. Where, over long spans of time, the evolution of singular species could be said to be biologically sustained in accordance to the on-going development of their behavior patterns.)

(Please note that although the specific sequence of the above neural processes/operations intrinsically delineates the outcome of ‘non-volitional’ actions (from birth to +/-3 yrs old), the same specific sequence of neural processes/operations was ratified to intrinsically ensue prior to the outcome of free willed actions (from +/-3yrs old on).)

4. Receiving

External stimuli → transduction of received circuit -emotional- sensation schemas into circuit -rational- reason schemas
External information → interpretation of received network -sensorial-perception constructs as network -mental- cognition constructs

Encoding and storage of new engram cells → imprints of memory traces (circuit reason schemas and network cognition constructs)
5. Integrating

External stimuli → association of received and/or chosen circuit -rational- reason schemas with pertinent and/or chosen circuit -physical- motion schemas (reason-motion coupling process)

External information → association of received and/or chosen network -mental- cognition constructs with pertinent and/or chosen network -volitional- action constructs (cognition-action coupling process)

Encoding and storage of new engram cells → imprints of memory traces (circuit reason/motion schemas and network cognition/action constructs)

6. Responding

External stimuli → voluntary retrieval of pertinent circuit reason/motion/communication schemas from stored implicit/explicit memories

External information → voluntary retrieval of pertinent network cognition/action/interaction constructs from stored implicit/explicit memories

Voluntary assembling of communication/interaction arrangements delineating pertinent and/or chosen formally learned/constructive conduct patterns (motion-action response)

a) volitional triggering of inhibitory-instructed neural circuitry required to stop the outcome of informally learned/adaptive behavior patterns
b) volitional triggering of excitatory-instructed neural circuitry required to bring forth the cognitively chosen outcome of formally learned/constructive conduct patterns (free willed actions).

Encoding and storage of engram cells → imprints of new memory traces (communication/interaction arrangements of formally learned/constructive conduct patterns.)

(Please note, that the time it takes neural processes/operations from the income of external stimuli/information to the outcome of ‘non-volitional’ actions has been acquiesced to be +/- 20,000 milliseconds; whereas those neural processes/operations intrinsically delineating the outcome of free willed actions from the income of external stimuli/information, have been acquiesced to take +/-300,000 milliseconds. Also note that the repetitive outcome of free willed actions induced by the same external stimuli/sensation progressively diminishes the time from their input(s) to their output(s). Their increased speed was thought to imply the evolvement from ‘innate’ to ‘learned’ emotions/sensations, when -in reality- these are all biologically innate and externally triggered. The speed of their outcome increases due to repeatedly exercising them.)
In accordance to the above summary, the outcome of free willed actions will -invariantly- be involuntarily induced in accordance to the distinctive particularities defining the emotional/sensation(s) and sensorial/perception(s) (inputs) being experienced/received; which, in association with the distinctive particularities delineating their pertinent physical/motion(s) and “volitional”/action(s) (outputs), will -invariantly- involuntarily assemble and set forth the outcome of non-volitional actions (1-2-3). Yet, in spite of being incapable of -at any time- voluntarily changing the distinctive particularities defining the emotional/sensation(s) and sensorial/perception(s) (inputs) as being experienced/received, due to the evolvement of the rational/physical and mental/volitional nature/faculties (from +/-3 yrs old on), human beings become increasingly able/capable of voluntarily changing the outcome of non-volitional actions into free willed actions (4-5-6).

It should also be considered that, upon further analyzing the specific sequence of the above neural processes/operations, the properties of two different kinds of will power were recognized to be fundamentally required for the outcome of free willed actions. These being: a) the mental will power required to cognitively ascertain/choose their outcome (4,5) and, b) the volitional will power required to voluntarily assemble/bring it forth (6). Where, in order for human beings to duly exercise their ‘free will’ entails the well-being/functional potential of both, their mental and volitional faculties (inherently associated to the well-being/structural potential of both, their rational and physical nature).

In addition, the above summary -most significantly- establishes that the progressive biological diversity/complexity of neural entities/processes (herein proposed to sustain the correlated evolutionary development of characteristic operations of sensation/perception, reason/cognition and motion/action along the four time frames of human development) would not, in any way nor at any time, howsoever alter the specific sequence of those neural processes/operations herein tentatively recognized to be implicitly required for the outcome of free willed actions.
Upon further research, the composition/structure of free willed actions was found to have been consensually acquiesced to consist of three fundamental elements that were, in turn, perceived to congruently relate to the functional parameters of the mental, sensorial and volitional faculties (inherently associated to the structural parameters of the rational, emotional and physical nature) solely intrinsic to human beings, as follows:

Composition/structure of free willed actions:

- Motive(s)
- Reason(s)
- Intention(s)

Congruently relative to functional parameters:

- Sensorial Faculties
- Mental Faculties
- Volitional Faculties

Inherently associated to structural parameters:

- Emotional Nature
- Rational Nature
- Physical Nature

As such, it could be feasibly deduced that the Motive(s) of free willed actions would be congruently relative to characteristic operations of perception inherently associated to those of sensation (defining/imprinting the external stimuli/information being experienced/received); the Reason(s) of free willed actions to characteristic operations of cognition inherently associated to those of reason (understanding/acknowledging the external stimuli/information being experienced/received); and, the Intention(s) of free willed actions to characteristic operations of action inherently associated to those of motion (moving/acting in response to the external stimuli/information being experienced/received); in that order.

It should also now be considered, that of the eight characteristic operations herein proposed to best describe the structural/functional parameters of human nature/faculties (reason/cognition, sensation/perception, motion/action and communication/interaction), only the transduction of neural circuit-schemas defining the specific sensation(s) -external stimuli/inputs- being experienced/received, have been scientifically demonstrated to carry/convey either a positive or negative grade of electrical polarity (and to, in addition, carry/convey either a high or low level of force intensity).
As such, human beings would -invariantly- be biologically predisposed to the transduction of the positive or negative grade of electrical polarity conveyed by the external stimuli being experienced into either good/positive or bad/negative sensation(s) (with either a high or low level of force intensity). Where, due to the external stimuli/information interrelationship, human beings would also -invariantly- be biologically predisposed to interpret the external information being received -in association to the grade of the experienced external stimuli-, as either good/positive or bad/negative perception(s). Therefore, it could be said that human beings would -invariantly- be biologically predisposed to the evolutional outcome of either right/positive or wrong/negative actions which would, in turn, be capable of respectively denoting either the gradual advancement or detriment of conduct.

It would then follow to elucidate the manner in which the evolutionary development of the rational/mental and physical/volitional nature/faculties (from +/-3 yrs old on), intrinsically able/capacitate human beings to cognitively/volitionally change the outcome of wrong/negative actions -in spite of having been biologically induced by bad/negative sensation(s)/perception(s)- into right/positive actions.

Along this order, it was noted that in accordance to the specific sequence of the neural processes/operations previously proposed, the ‘thinking process’ would first entail to rationally determine (via transduction of circuit sensation schemas into appropriate circuit reason schemas) whether the external stimuli being experienced is being conveyed by distinctive particularities defining either good/positive or bad/negative sensation(s); this, as the only biological means enabling human beings to suitably identify whether what one is about to do/doing (the outcome of one’s involuntarily induced actions) is right or wrong; simply because bad/negative sensation(s)/Motives could not the outcome of good/positive actions/Intentions induce.
So that, given the fact that due to new scientific data, specific -left/right- brain areas/regions identified to be intrinsically triggered by either good/positive or bad/negative emotionally correlated sensation(s) have been acknowledged to be structurally/symmetrically opposite, one’s mental will power was perceived to feasibly support the means by which to cognitively choose either: a) the outcome of those involuntarily induced actions ascertained to have been intrinsically triggered by good/positive sensation(s) or, b) the outcome of those actions that have been previously acknowledged to be intrinsically triggered by the good/positive grade of the sensation(s) symmetrically opposite to the bad/negative grade of the sensation(s) being experienced.

Due to the phenomenal speed of neural processes/operations, this ‘thinking’ process seems to concurrently entail to cognitively ascertain (via interpretation of received network perception constructs as appropriate network cognition constructs) whether the external information being received is being conveyed by distinctive particularities defining either good/positive or bad/negative perception(s); this, in order to suitably identify the prevailing characteristics of the surrounding circumstances/moment associated to the external stimuli being received, in spite of the good/positive or bad/negative grade of the sensation(s) being experienced.

In addition, those circuit reason schemas and network cognition constructs herein proposed to have been voluntarily delineated along the ‘thinking’ processes inherently associated to neural -receiving- operations (4), would consequentially trigger those circuit motion schemas and network action constructs herein proposed to have been voluntarily delineated along the reason-motion and cognition-action coupling processes tentatively demonstrated to be inherently associated to neural -integration- operations (5).

Where, at this point, it could be said that the force of one’s mental will power has achieved to cognitively ascertain and choose which circuit motion schemas and network action constructs would best delineate the outcome of right/positive actions under the same set of surrounding circumstances.
It would then follow to, in accordance to the above summary, voluntarily retrieve the (previously encoded and stored) pertinent circuit motion/communication schemas and network action/interaction constructs from one’s implicit/explicit memories; this, in order to volitionally assemble those communication/interaction arrangements (motion-action response), cognitively chosen to accordingly delineate the appropriate formally learned/constructive conduct patterns tentatively demonstrated to be inherently associated to neural -responding- operations (6).

Where, at this point, it could be said that the force of one’s volitional will power has achieved to volitionally assemble and bring forth the outcome of those free willed -right/positive- actions that would, consequentially, actually denote the advancement of conduct under the same set of surrounding circumstances.

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It was deemed most important to now consider that in addition to the evolutionary development of the sensorial, mental and volitional faculties in each one time frame, the cooperative activity between their distinctive particularities (in each one time frame) has been herein proposed to respectively manifest as the ‘realities’ of Consciousness, Conscieness, Conscientiousness and Matureness. Where, their manifestations were elucidated to intrinsically convey the evolutilonal outcome of four distinct sets of free willed actions bearing both, the biological and the individual nature of human beings/conduct. And, where, the distinctive particularities defining the structure/composition -Emotion(s), Reason(s) and Intention(s)- of one’s free willed actions actually denoting the advancement of conduct, would be entirely up to each one human being.

Therefore, it could be said that from +/-3 yrs old on, human beings become increasingly able/capable to cognitively and volitionally bring forth the progressive outcome of those free willed -right/positive- actions that would actually denote the gradual advancement of conduct, in each one time frame.
VI. Fundamental role of formal education in the advancement of conduct and pursuit of moral rectitude

It should be noted that in accordance to the previous summary, the evolutionary development of human nature and faculties -from +/-3 yrs old on-, marks the evolvement from the outcome of informally learned/reactive behavior patterns to the outcome of formally learned/constructive conduct patterns. This foundational distinction was perceived to infer the significant difference between informal and formal education. Where, while formal education describes the learning of academic facts and concepts through a formal curriculum, informal education describes the learning of cultural, religious and parental norms outside the classroom.

It is known that the professionally/intellectually claimed absence of universal values/axioms and principles/maxims capable of sustaining the existence of Moral as an objective reality, was responsible for making our educational school systems wary of using schools for moral conduct/character education from the 1960’s on. This state of affairs rendered the existence of Moral as a relative concept, not up to national academic standards. Consequentially, both ethical and moral facts/concepts became invisible issues in our school systems.

With time, the definition of Ethics was circumscribed to pertain to rules of good/bad behavior/conduct by an external source and the definition of Moral, to an individual’s own principles of righteous/virtuous conduct/character. As such, ethical rules of good/bad behavior/conduct were consensually prescribed to be dependent on the prevailing cultural/religious standards in each society; and, moral principles were consensually prescribed to be dependent on one’s own ‘moral compasses’. Thereby, the omission of ethical/moral behavior/conduct/character education from our school systems relinquished this responsibility/obligation to non-academic informal teaching/learning. Needless to say, it only took no more than two generations of students without any formal education on ethical/moral behavior/conduct/character, to generate an ever increasing number of morally corrupted individuals throughout all spectrums of society.
It doesn’t take much research to find the numerous articles/essays by professionals in all fields of social/cognitive/affective neuroscience (starting from the late 80’s), that substantiate the urgent need to implement courses on moral conduct/character in our school systems, for they all agree that one’s character is the foundation and common denominator for pro-social behavior (character in action). The persistent denial by our academic institutions to do so instilled the imminent obligation to procure an overall consensus on the universal, not relative, and objective, not subjective, reality of Moral.

Upon further analysis and in lieu of the scientific breakthroughs in the identification of emotional and volitional neural markers, the distinctive particularities delineating the correlated evolutionary development of the rational/mental, emotional/sensorial and physical/volitional nature/faculties along the four age-time frames as depicted in the herein proposed Framework of Human Development, were appraised to possibly serve as the basic parameters of those academic facts and concepts on human behavior/conduct that should be formally taught to students in the curriculum of their respective age school grades.

For example, students from each age-time frame would have the capacity (in accordance to their scope of comprehension), to progressively learn how to identify the characteristics defining the specific sensation(s)/perception(s) being experienced and their inherent relevance to the outcome of either positive or negative behavior/conduct. So that, in spite of the limited understanding of the cause-effect interrelationship of all actions in their early childhood, students would begin to assimilate the sensation/perception-behavior/conduct interrelationship of their own actions.

If students are concurrently taught the ingrained dynamics of Consciousness, Conscienceness, Conscientiousness and Matureness, they would increasingly gain awareness of each one’s intrinsic relationship with: a) the well being of the rational/mental, emotional/sensorial and physical/volitional nature/faculties, b) the foundational potential underlining the evolitional outcome of free willed actions, c) the gradual advancement of conduct, and d) the pursuit to achieve moral conduct/character rectitude.
Where, ideally, by the time students graduate from High School (+/-18 yrs old), they would have been formally educated to suitably acknowledge the bulk of information required in order to successfully pursue/achieve the advancement of one’s moral conduct/character and to have, most of all, acknowledged their imperative responsibility to do so; hence, generating individuals of moral rectitude in our societies.

In addition, the reciprocity between the implementation of academic standards regulating the education of moral conduct and that of international standards regulating the administration of justice in civilized societies was notoriously evidenced. Of all the researched information to this effect, a consensus between the most advanced nations in 1943 (prior to the academic institution of any parameters of neuroscience), as to how the criminality of human actions should be judged/sentenced by universal canons of Justice Law (intentionally disassociated from cultural traditions and religious dogmas), was singularly noted to have established them -along the same herein proposed age time frames-, as follows: a) Birth to 7 yr olds would be referred to as “The Innocents” - the criminality of their actions could not be judged/sentenced by any Court of Law; b) 7 to 14 yr olds would be referred to as “The Children” - the criminality of their actions could only be judged/sentenced by Minor Courts of Law; c) 14 to 21 yr olds would be referred to as “The Adolescents” - the criminality of their actions could only be judged/sentenced by Juvenile Courts of Law; and d) 21+ yr olds would be referred to as “The Adults” - the criminality of their actions were to be judged/sentenced by Criminal Courts of Law.

As such, it is highly reproachable that at the present time advanced civilized nations are repeatedly and impudently judging/(lower)sentencing adolescents and even children(!) as adults; especially, when they have failed the institutional responsibility to formally teach their youth on how to successfully pursue the advancement of moral conduct/character.

It then follows to accordingly substantiate the philosophical concept of Moral as the existence of a universal objective reality, in order to furthermore procure the overall consensus academically required for the much needed implementation of moral conduct/character education courses in the curriculum of our school systems.
VII. The philosophical concept of Moral as the existence of a universal objective reality

The phrase “objective reality” has been consensually acquiesced to mean a reality that exists independent of our minds. Or, as things really are; or, as that which exists where one's belief systems do not change it. Yet, the independent existence of any one singular reality can only be fittingly inferred due to the abilities/capacities of the human rational/mental nature/faculties; our minds.

It has also been consensually acquiesced that the innate quest of human beings to search for the truths/facts that could verifiably establish the independent existence of any one singular reality -their insatiable pursuit for knowledge-, brought forth the development of Science. The word science comes from the Latin “scientia”, meaning knowledge, and it has been defined as the intellectual and practical activity encompassing the systematic study of the structure and behavior/(function) of the physical and natural world through observation and experiment. Where, in order to properly validate the conception of any one subjective reality (inside of one’s brain-Virtual World), as an objective reality would entail to scientifically substantiate that it exists independent of our minds (outside of one’s brain-Real World).

Taking this into account, it became essential to first consider that conduct (and its foundational role to one’s character), has been the only substantial reality consensually agreed to be fundamentally entwined with the original philosophical conceptualizations of Moral. Therefore, it was determined that in order to propose the philosophical concept of Moral as the existence of a universal objective reality, required the relentless endeavor to search for the scientific data validating the existence of those invariant manifestations of human structure and behavior/(function), that could possibly be elucidated to intrinsically sustain the outcome of human/free willed actions capable of denoting the optimum excellence of conduct/character: moral rectitude.

Along this search, the distinctive particularities that were chosen to best mark the correlated evolutionary development of the mental, sensorial and volitional human
faculties (inherently associated to those marking that of the rational, emotional and physical human nature), in addition to those tentatively recognized to mark the cooperative activity between these three faculties along the four hierarchical time frames defining their systematic organization (Framework of Human Development), were perceived as those invariant manifestations of human structure and behavior/(function) that could be feasibly proposed to be foundationally intrinsic to the evolutorial outcome of human/free willed actions capable of denoting the gradual advancement of conduct; actions, whose ultimate goal would determinately be to denote the optimum excellence of moral conduct/character: moral rectitude.

It was precisely due to the universality of these distinctive particularities/invariant manifestations (inherently delineating the gradual advancement of conduct as a fundamental province of the biological/individual nature solely intrinsic to human beings), that the Framework of Human Development was deemed as the universal path to moral conduct/character (inherently delineating the gradual advancement from Egoism/selfishness to Altruism/selflessness). As such, it could be said that its conclusive reality would accordingly substantiate the philosophical concept of Moral as the existence of a universal objective reality. Therefore, the Framework of Human Development was tentatively identified as: The Universal Moral Framework.

At some point along this endeavor, ‘moral axioms’ were found to be defined as those realities that dictate values of moral conduct. They have also been defined as those foundations/values of moral conduct where the action itself comes from the essence of being itself and/or stems from our existence itself. Where, the essence of being itself has been defined as «of a primary substance to our human nature». Yet, in spite of having conceptualized the definition of such things as ‘moral axioms’, their existence has been determined to be impossible since it is argued that there can’t be anything that is of value in itself, because values cannot be derived from any factual description of nature. This line of thought was perceived as one of the culprits underlining the persistent denial of Moral as the existence of a universal objective reality.
Consequentially, it became of utmost importance to procure the identification of those invariant manifestations of human structure and behavior/(function) that could be recognized as foundations/values of moral conduct; where, the action itself would come from the essence of being itself and/or would stem from our existence itself as a primary substance to our human nature, and whose values could be additionally recognized to derive from factual descriptions of human nature.

Along this order, it should be noted that in accordance to the Framework of Human Development, the outcomes of free willed actions capable of denoting moral conduct have been established to be foundationally conveyed in accordance to the evolvement of the four specific sensations herein identified to mark the evolutionary development of the emotional nature of human beings from 21 to 28 yrs old of age (inherently associated with the full structural/functional maturation of one’s rational/mental, emotional/sensorial and physical/volitional nature/faculties). These four sensations were identified as the ‘cardinal/moral’ virtues known as Prudence, Justice, Fortitude and Temperance (as the synthesis of Prudence, Justice and Fortitude). Where, only the progressive outcome of free willed actions cognitively and volitionally induced/motivated by all four ‘cardinal/moral’ virtues could feasibly substantiate to denote the optimum excellence of moral conduct/character (possibly achievable only after 28 yrs old of age). Nobody ever said that this would be easy; in fact, it is extremely difficult.

Thereby, the invariant manifestations of these four ‘cardinal/moral’ virtues were recognized to makeup the interlocking set of foundations/values of moral conduct intrinsically supporting the outcome of those actions that could, in turn, be consequentially recognized to have stemmed from our existence itself/as a primary substance to our human nature. In addition, the (positive) values of these four virtues (foundations) have been accordingly demonstrated to indeed derive from factual descriptions of human (emotional) nature. As such, it could be said that their invariant manifestations would accordingly substantiate the philosophical concept of Moral as the existence of a universal objective reality. Therefore; Prudence, Justice, Fortitude and Temperance were tentatively identified as: The Universal Moral Axioms.
Upon further research, ‘moral maxims’ (self-evident principles; recognized truths), were found to be defined as those realities that dictate rules of moral conduct. They have also been defined as those principles/rules of moral conduct where the action is said to have “moral worth” if the maxim on which the agent/person acts cites/exemplifies that the purpose conforms to a moral requirement/axiom. In addition, ‘moral maxims’ were found to be described as those realities that dictate principles/rules of right conduct and/or as those realities pertinent to the distinction between right and wrong conduct. Yet, after due reflection, it was determined that ‘moral maxims’ -in their strictest sense- should only be defined as those realities that dictate principles/rules of moral conduct and/or as those realities pertinent to the distinction between moral and immoral conduct.

Hence, it followed to procure the identification of those invariant manifestations of human structure and behavior/(function) that could be recognized as principles/rules of moral conduct, and to be exclusively pertinent to the distinction between moral and immoral conduct. The phenomenons/‘realities’ of Consciousness, Conscienceness, Conscientiousness and Matureness, as herein proposed, were perceived to duly comply.

Upon further analysis, the distinctive particularities/invariant manifestations describing their singular existence were elucidated to suitably impel one towards acts of moral conduct and, to accordingly conform to the proposed four ‘moral axioms’ as follows:

a) Consciousness → intrinsically bears the essence of Truthfulness as the self-evident principle/rule impelling one towards acts of moral conduct exemplifying that their purpose conforms to the ‘moral axiom’ of Prudence;

b) Conscienceness (as an aspect of extended consciousness) → intrinsically bears the essence of Goodness as the self-evident principle/rule impelling one towards acts of moral conduct exemplifying that their purpose conforms to the ‘moral axiom’ of Justice;

c) Conscientiousness (as an aspect of extended consciousness and conscienteness) → intrinsically bears the essence of Rightfulness as the self-evident principle/rule impelling one towards acts of moral conduct exemplifying that their purpose conforms to the ‘moral axiom’ of Fortitude;
d) Matureness (as the coalescence of consciousness, conscieness and conscientiousness) → intrinsically bears the essence of Synergy as the self-evident principle/rule impelling one towards acts of moral conduct exemplifying that their purpose conforms to the ‘moral axiom’ of Temperance (as the synthesis of Prudence, Justice and Fortitude).

Thereby, the invariant manifestations of these four ‘realities’ were recognized to makeup the interlocking set of principles/rules of moral capable of impelling one towards acts of moral conduct exemplifying that their purpose conforms to the herein proposed four ‘moral axioms’. As such, it could be said that their invariant manifestations would accordingly substantiate the philosophical concept of Moral as the existence of a universal objective reality. Therefore; Consciousness, Conscieness, Conscientiousness and Matureness were tentatively identified as: The Universal Moral Maxims.

At this point it was considered that in order to furthermore sustain the objective reality of Moral in accordance to its original philosophical conceptions, it followed to elucidate the manner in which its foundations/values and principles/rules could be discerned to be fundamentally essential to human happiness.

It was deemed essential to first and foremost consider that the terminology ‘human happiness’ -when in reference to the concept of Moral-, was intuitively perceived to infer the existence of a universal sense of harmony, as an emotional state equally experienced by all human beings of moral rectitude. In other words, ‘human happiness’ does not refer to any one human being’s particular ideas of happiness; but to the existence of that one reality capable of encompassing the ‘happiness/harmony’ of humanity.

In accordance to Aristotle’s conceptualizations, the objective reality of Moral was proposed to be fundamentally essential to ‘human happiness’ and, he also declared that its existence depended on the cultivation and exercise of “complete virtue”. Whereby, he discerningly implied that ‘human happiness’ depends on the cultivation and exercise of moral conduct/character.
It should then be noted that in accordance to previous arguments, only the progressive outcome of free willed actions cognitively and volitionally induced/motivated by all four ‘cardinal/moral’ virtues, could substantiate to duly denote the optimum excellence of moral conduct/character. Whereby, a congruent relevance between the cultivation and exercise of all four ‘cardinal/moral’ virtues and the cultivation and exercise of “complete virtue” could be feasibly contemplated. Hence, the existence of ‘human happiness’ (as a universal sense of harmony) could be suitably proposed to depend on the cultivation and exercise of “complete virtue” - all four ‘cardinal/moral’ virtues - moral conduct/character.

It was also found that Aristotle primarily enshrined the achievement of ‘human happiness’ as a central purpose of human life and a goal in itself. Where, given that ‘human happiness’ is to be experienced by all human beings of moral rectitude, the pursuit/achievement of moral rectitude -as per the Framework of Human Development- could indeed be primarily enshrined as a central purpose of human life/a goal in itself.

Along this order, it could be feasibly proposed that while the cultivation and exercise of one’s moral conduct/character progressively convey one’s moral rectitude/‘human happiness’/universal sense of harmony, its cultivation and exercise by all human beings would progressively encompass the ‘happiness/harmony’ of humanity. Thus, the universal objective reality of Moral could be perceived to consist of those «invariant manifestations upholding the integral paradigm sustaining the evolution of humankind». Where, the evolution of humankind would require the development of invariant manifestations of human nature/faculties, as the constituent parts essential to its attainment. It could then be said that the objective reality of Moral has been logically/intellectually sustained in accordance to the premises of its original philosophical conceptions, as follows:

a) exclusively intrinsic to individual human beings → (dual biological/individual nature);
b) naturally inherent to cognitive, volitional and virtuous conduct → (free willed actions);
c) foundationally upholds the validity of human excellence → (optimum excellence of conduct/character);
d) fundamentally essential to human happiness → (universal sense of harmony).
**Conclusion**

After the +/- 10 years of relentless endeavor that took to -as concisely as possible- conclude the presentation of this proposal, moral corruption seems to have furthermore enthroned its presence without any foreseeable resolutions at hand. In addition, the term ‘moral corruption’ continues to be reputably used in reference to the criminality of adult human being’s actions/conduct/character. Where, by accepting the existence of such a thing as ‘moral corruption’ (inferring the presence of acts denoting immoral conduct/character), the existence of such a thing as ‘moral rectitude’ (inferring the presence of acts denoting moral conduct/character) is being implicitly conceded; this, in spite of the fact that the existence of Moral -as a universal objective reality-, persists to be academically disdained and scientifically disclaimed.

Please consider that ‘true’/innate philosophers revel on their freedom from any academic constraints (which do not, howsoever, influence the scientific feasibility of philosophical discernments), that could possibly deter their intellect from intuitively navigating above their inflexible compartmentalization of knowledge and terminology. Yet, in order for a theoretical philosophical proposal to even be slightly considered by academia, the sequential (top/bottom and down/up) logic of those arguments sustaining the feasibility of its premises would have to intellectually bridge the apparent void between Philosophy and Science.

This new theoretical perspective on the philosophical concept of Moral as the existence of a universal objective reality, urges professionals in all the pertinent fields to bear in mind the overbearing hurdles that scientific facts impose on intellectual discernments of philosophical concepts, in order to lurk beyond its academic limitations and to -in concert- procure the overall consensus being required for the implementation of moral conduct/character education courses in the curriculum of our school systems; which, on the long run, could be capable of conveying the moral rectitude herein proposed to sustain the comprehensive evolution of humankind. It would definitely be worth the effort.
**Annex A**

**Evolutionary Development of Human Nature and Faculties**

(Please note that the more extensively I researched for the scientific information pertinent to this outline, the more difficult it became to identify those distinctive particularities of reason, sensation and motion that could be properly elucidated to be inherently associated to those of cognition, perception and action that could, in turn, correspondingly delineate their correlated evolvement along the herein proposed four time frames of human development. Never the less, an attempt to try do so was considered to be worthwhile in order to plausibly demonstrate, that the gradual advancement of conduct is foundationally supported in accordance to the evolutionary development -Birth to 28 yrs old-, of the biological and individual dual nature solely intrinsic to human beings.)

<table>
<thead>
<tr>
<th>Time Frame</th>
<th>Nature/Faculties</th>
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<tbody>
<tr>
<td><strong>1st Time Frame:</strong></td>
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<tr>
<td>a) Birth - 3 yrs old</td>
<td>Rational/Mental Nature/Facilities / Emotional/Sensorial Nature/Faculties / Physical/Volitional Nature/Faculties</td>
<td>Primal /Unconscious Instincts / Reflex / Instinctive Motion(s) Action(s)</td>
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<td></td>
<td>Primal /Unconscious</td>
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<td>Instincts / Reflex</td>
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<td>Impulse / Reactive</td>
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<td><strong>2nd Time Frame:</strong></td>
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<tr>
<td>b) +/-3-7 yrs old</td>
<td>Transductive/Pre-operational</td>
<td>Raw / Pictorial</td>
<td>Compulsive/Goal-oriented</td>
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<td></td>
<td>Reasoning / Pre-operational</td>
<td>Emotions / Imagery</td>
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<td>Thinking / Reasoning</td>
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<td><strong>3rd Time Frame:</strong></td>
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<tr>
<td>7-14 yrs old</td>
<td>Deductive / Concrete</td>
<td>Basic / Symbolic</td>
<td>Coordinated / Associative</td>
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<td></td>
<td>Reasoning / Concrete</td>
<td>Emotions / Imagery</td>
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<td><strong>4th Time Frame:</strong></td>
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<tr>
<td>14-21 yrs old</td>
<td>Analytical / Abstract</td>
<td>Virtues / Conceptual</td>
<td>Introspective / Constructive</td>
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<td>Reasoning / Abstract</td>
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<tr>
<td>21-28 yrs old</td>
<td>Inquisitive / Reflective</td>
<td>Cardinal/Moral / Insightful</td>
<td>Intuitive / Selective</td>
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<td>Reasoning / Reflective</td>
<td>Virtues / Imagery</td>
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<td>Thinking / Reasoning</td>
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*(Please note that the presence of mirror neurons was identified to fire upon both: the observation of an action/(s) and the subsequent implementation of that action/(s). As such, they were acquiesced to manifest the reality of sensory motor/action associative schemas/constructs (perception-action coupling process), as the genetic adaptation for action understanding by evolution to fulfill specific ‘socio-cognitive’ functions in primate species as well as in human beings; and was perceived to have conveyed the capacity of mimicry, as an additional genetic tool for the development of ‘informal’ learning in animal species.)*
Annex B
Correlated Evolutionary Development of Emotional Nature/Sensations

(Please note that all research tests on the identification of emotion(s)/sensation(s) in the human brain have been performed on adult study subjects. Where, in order to further sustain the feasibility of their age time frame correlated evolvement, entailed to tentatively identify those +/- distinctive particularities that could best comply until tests on children, pre-adolescents and adolescents provide the required scientific validation. Also note that those whose specific neural signatures were found to have been scientifically identified are followed by an asterisk.)

First Time Frame:
a) Birth - +/-3 yrs old

Primal Instincts: Survival Reproduction
Core Sustenance Protection Mating Nurturing
Feelings: Pleasure/Displeasure Security/Insecurity Attraction/Aversion Affection/Disaffection
↓ ↓ ↓ ↓

b) +/-3-7 yrs old

Raw Emotions: Calmness / Anger* Confidence / Fear* Desire / Disgust* Empathy / Apathy
↓ ↓ ↓ ↓

Second Time Frame: 7-14 yrs old

Basic Emotions: Happiness* / Sadness* Courage / Cowardice Content / Discontent Love / Hate
↓ ↓ ↓ ↓

Third Time Frame: 14-21 yrs old

Virtues/ Vices: Patience / Wrath Integrity/Duplicity Abstinence/Gluttony Diligence / Sloth
Humility / Pride Charity / Avarice Chastity / Lust*

Fourth Time Frame 21-28 yrs old

Cardinal/Moral Virtues: Prudence Justice* Fortitude Temperance

⁑ (Please note that the vice of Lust was found to be the only sensation with a unique neural signature; distinct from all others. Upon further analysis, this uniqueness could -perhaps- be due to the intense drive force of the human libido, inherently associated to the Reproduction Mating Instinct. Where it could, in turn, prove to be the most difficult sensation for human beings to cognitively and volitionally control.)
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Dissecting Decentralization

By Ashraya Ananthanarayanan

https://www.dailydot.com/debug/decentralized-internet-future/

February 28, 2017
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v. Part 5 - References
Part 1 - What is decentralization?

A complex term for a complex concept, decentralization represents the redistribution or reallocation of powers, of functionalities, or of an “x-entity”.¹ There is a plethora of manners in which decentralization can be interpreted, though, different fields mandating its implementation in diverse manners. However, in order to completely form a singular, conceptual thought of what decentralization truly represents, its usages in numerous respects must be observed. Management science is one area where decentralization is greatly emphasized. Where management science is described as an area covering the overarching areas of human interlinked interactions, decentralization is a key component to ensure the efficiency of operation of any organization, privately operated.² The x-entities described as privatized institutions have intersections with respective y-functions, necessitating efficiency to be of the essence in operations management.

The extent of decentralization stretches far past simply group dynamics, however. Decentralization can be heavily related to fields ranging from governmental task forces to technological appropriation. Implementing this as a


² Lancaster University. "What is Management Science?" Management Science I Lancaster University Management School.
process within an x-entity provides for subdivisions of that entity to then have power to operate upon individualized rules and regulations. The tendency for the power, once decentralized, to become uncontrollable, exists, though, and is a challenge debated by individuals in the field. The value of operational freedom is weighted against that of allocative efficiency to assess the true additive capacities of decentralization, as a process. Complete decentralization causes institutions to struggle in finding a balance between the operational ease of having the powers of redistribution in one body’s control, while consequently assuring minimal interference and minimal overstepping in the fields of responsibility of each branch. Indeed, decentralization, as a concept, and as an implemented structure, necessitates careful study and adaptations to fit a given environment.

https://dinmerican.wordpress.com/2013/04/01/decentralization-for-democracy-and-good-governance/

3 "Restructuring Local Government." Restructuring Local Government.
Part 2 - Why is decentralization vital for corporate entities?

Since there are obvious dangers associated with the concept of decentralization, why is it vital that corporate entities ensure the presence of it within their frameworks? Indeed, decentralization is key for the efficient management of a corporate structure, in that branches require the ability to function independent of overseeing bodies. Nonetheless, there must be a comparison base to ensure that the operations are not conducted haphazardly, thus rendering that communication still be considered as pertinent amongst branches. The distinction between communication and domineering is, then, mandated. As cited by the Harvard Kennedy School in a published article, “decentralization is a relative concept, [so] each dimension should be measured” in terms of involvement.⁴

The multitude of dimensions which impact decentralization, for the purposes of this publication, are inclusive of levels of communication and

⁴ Schneider, Aaron. "Decentralization: Conceptualization and Measurement."
autonomy amongst branches of the overarching entity. Corporates benefit from decentralization because it allows for focused efforts to be dedicated by individualized departments towards individual purposes, therefore easing the ability for a multilayered institution to function. “Illinois Tool Works” has been cited as “the most decentralized company in the world.”\textsuperscript{5} The corporation functions through entirely dedicated, sectioned units, which combine their efforts to form astounding results, communicating with one another, while ensuring complete autonomy in each branch’s functions. The underlying design of the organization is that results must be seen relative to results of other entities performing similar functions, rather than in conjunction or in comparison to separate framework entities of the company.\textsuperscript{6}

Perhaps the most apparent institution which implements decentralization is that of the Internet, which allows for this publication to be spread, and allows for communication as well as functions to occur on a worldwide basis, daily. Modifications can be made by all users, each viewed as an independently acting entity in the large structure that constitutes the Internet. Information technology, then, is one field in which decentralization is the backbone of operations. Wherein

\textsuperscript{5} "The Most Decentralized Company in the World." \textit{Forbes}.

\textsuperscript{6} Ibid.
multiple products and clients are concerned, decentralization allows for the organization to dedicate itself to individualized tasks and architecture of their workload.
Observations of decentralization extend to governmental structures, as well.

The conceptualization of a decentralized government is one which performs efficient tasks with respect to dedicating distinct sectors of the government towards independent means. Governmental bodies incorporate decentralization through political means, but also through economic and environmental goals. Each area reserves individual methods of implementation of the concept, but the essence requires that existing systems, such as checks and balances, be used as manners of communication in place of overviewing bodies. Amongst the plethora of governmental areas necessitating decentralization, the distribution of funds, the fiscal aspect, presents the greatest complexity.⁷

In order for fiscal decentralization to occur, responsibility as well as funds must be decentralized, accounting for all imbalances which occur through federal oversight.⁸ The devolution of such great levels of power mandates that one

⁷ Neyapti, Bilin. "Equalization via Fiscal Decentralization."

⁸ Ibid.
consider the decentralization incentives proposed through urban power, and through ideologies such as picket-fence federalism. Each method of creative federalism, indeed produces its set of merits and negatives, though. While each level of government may, indeed, reserve importance through creative federalism, one must consider the amount of necessitated cooperation amongst governmental bodies to have this occur. Urban power has been an extremely controversial area of decentralization discussion, because of the examples of results which arise, such as those of the theoretical Green Metropolis, which would be practically infeasible, and resource draining.⁹

Nonetheless, the simple counterargument to this can be observed in decentralization being seen as a benefit in areas such as economically capacitating areas within accurate measure. Without methods such as decentralized economic planning, there is a dearth of sufficient urban planning, unable to account for each aspect of economic funding necessitated by an operation as grand scale as an urban environment. This is seen through “The People’s Planning in Kerala”, whereby it was concluded that “political society will have to not only recognize but

⁹ "Garden City, the Green Metropolis." Artifact.
help the development of a civil society where the contributions of independent and collective initiatives are valued and countervailing institutions respected.”

Decentralized governments function efficiently because they are able to satisfy a multitude of needs with apt resource management. The individualized operational forces are mandated components of an optimally functional society. Although quite the conundrum, decentralization is necessitated. The question, then, becomes, “To what extent is decentralization needed within the frameworks of a corporate or a government?” For the purposes of this publication, a definition of the extent is to be arrived at with a careful consideration of the existing and theoretical possibilities to compare extents. What role, then, do the Starfish, the Spider, and the Honeycomb play in determining these measures?

10 Kannan, K. P. "485 K.P.Kannan, People's Planning, Kerala's Dilemma."

11 Brafman, Ori, and Rod A. Beckstrom. The Starfish and the Spider The Unstoppable Power of Leaderless Organizations.
Part 4 - The Starfish, the Spider, and the Honeycomb

For most individuals, the starfish and the spider seem to be individual entities, creatures of their respective environments. As argued by Ori Brafman and Rod Beckstrom, though, there is a greater level of significance to be attributed to the mentions of these representations of leadership styles. Indeed, these are descriptive titles assigned to the methods of decentralization versus that of a centralized society. Within this representation, centralization is shown as the spider, which, despite having a multitude of branches (legs), is easily crippled, and is dependent upon the centralized entity that is its head.\textsuperscript{12} The starfish, on the other hand, is not quite as limited, and has the ability to operate its branches independently, even able to regenerate itself without a dependency upon its other branches and central entity.

In this manner, the starfish is the ideal representation of decentralization. Although it is able to operate entirely independently, it maintains a mode of

\textsuperscript{12} Ibid.
communication with the entirety of its composition, in order to be able to conduct operations. While the starfish may appear to have the optimal formula for operating in a decentralized fashion, one must question the ability for starfish interactions amongst one another. Seeing as they are mostly solitary creatures, their lack of interlinks raise questions for the comparisons to interactions amongst large groups of corporations or governmental bodies. In this way, the decentralization of a starfish lacks the balance to ensure communication between groups within an entity.

The honeycomb provides an intriguing solution for this comparison. The honeycomb is one of the most complex structures known, and its operations, although not entirely understood, represent the balance sought between centralization and decentralization in an organization. Within a honeycomb or a colony of bees, each individual serves a vital purpose. Each group, each branch, one may say, needs to cooperate and communicate for the colony’s tasks to be completed and for sustenance, but individualized tasks ensure that there is no interference between the groups. To specifically elaborate, within a colony, the workers, often known as the common “bee”, serve the purpose of completing general tasks for the sustenance of the entire population. Consequently, the drone
bees, specifically the male honey bees, serve the purpose of ensuring that the colony spreads with a new queen. The queen bees themselves, appear to be the moderation for centralized management. While they hold the power to make the greatest level decisions for the colony, their power is limited in extent over the remainder of the branches.\(^\text{13}\)

In addition, the process of metamorphosis shows the evolution that each entity, corporate or governmental, requires its branches to go through, to become adequately decentralized. Going through the stages of maturity, the members of the colony, here representing branches, evolve until they are able to perform specialized tasks.\(^\text{14}\) Decentralization is a process which will necessitate tremendous levels of cooperation between branches, to maintain operational success; however, that is the key term—cooperation. Cooperation over control, communication over order. Indeed, a seemingly tedious task necessitating toil, modeling the honeycomb will essentially lead to decentralized balance. The spider is crippled, the starfish is isolated—but the honeycomb is intact.


\(^\text{14}\) Ibid.
Part 5 - References

Text References:


Schneider, Aaron. "Decentralization: Conceptualization and Measurement."


Image References:


Over the past few years I have written articles about WHOI [Woods Hole Oceanographic Institution], detailing its history, some of the research vessels they use, some of its research, and my personal involvement with WHOI.

In this article I would like to tell you about an event held every year in the small village at Woods Hole, Mass. USA. This event is called The Woods Hole Science Stroll. It not only involves WHOI, but the MBL [Marine Biological Laboratory], and NOAA [National Oceanic & Atmospheric Administration] as well as numerous other Woods Hole organizations. Details on the event and all the participating organizations are located at the website http://woodsholesciencestroll.org/.

This link shows last year's date, the new link for this year is not ready yet, but the organizations, and program will be very similar: The Stroll is intended to enlighten and educate the general public on the important work that is done daily by these fine institutions. It's also fun for the kids and a great way to spend an afternoon with the family.

They have splash labs, which is a demonstration of ocean acidification. The kids love watching the color of the dyed sea water change while they blow into a straw, and make bubbles. A good portion of the exhibits and talks are on the WHOI docks. Last year we had the Henry B. Bigelow, a NOAA research vessel, in port for guided tours of the ship. This year we will have the WHOI research vessel Atlantis in port for the tours. We are hoping to have the Alvin sub there, as the Atlantis is Alvin's host ship. The date this year will be on a

Atlantis R/V with Alvin sub.
Saturday August 12th. I'll be there, not sure what I will be doing this year, as last year I was doing photo-ops, and answering questions on the Alvin sub while standing next to the last Alvin sphere. See picture of me with the old Alvin shroud we used for photo-ops. Since the current Alvin will be in port we will have some of the divers, engineers, scientists, and people that work on the sub daily, so who better to give talks than these fine people.

A little history on the MBL and NOAA—two of the organizations represented on the Science Stroll. The MBL, like WHOI, is a nonprofit institution founded in Woods Hole in 1888, and dedicated to exploring areas of biology, the environment, understanding biodiversity thru research, and education. Again, like WHOI, the MBL has educational programs including internships, graduate-level courses, workshops, and conferences. Based on 2016 numbers, almost 550 of the best students in the world, from over 300 institutions in some 58 countries, are attracted to the MBL and share in the latest technology and equipment being used today. Since 1929, MBL scientists, faculty, and students have produced 56 Nobel Peace Prize winners. From the 1960's till today they have 263 members of the National Academy of Sciences, and many other award winners. The library in the MBL’s “Little Building” is a joint venture with WHOI, and houses an unsurpassed collection of electronic, and printed biological, ecological, and oceanographic sciences. Some of the over 5000 volumes of books dating from the 16th century include a first edition of Newton's Optick from 1704, detailing his experiments on the properties of light. While onsite study is available to local scholars at the library, the collections are also available to researchers around the world on line. During the Science Stroll the MBL staff and scientists will be available for questions, and demonstrations. Meet some of the top minds in their fields.

NOAA's history dates back to the 1800's, although not formally formed and called NOAA until 1970. Some of the agencies involved are the Coast Guard 1807, the Weather Bureau in 1870, and the Bureau of Commercial Fisheries in 1871. Much of America's scientific heritage revolves around these agencies, as they were the first specifically dedicated to atmospheric sciences. e Woods Hole Science Stroll.
NOAA's timeline from the 1800's include such events as follows:

- 1814 the Surgeon General orders surgeons to keep weather diaries,
- 1842 James P. Espy appointed first official U.S. Government meteorologist,
- 1848 and 1849 Smithsonian recruits volunteer weather researchers, and in 1849 supplies weather instrumentation to telegraph companies to establish weather observation network.
- 1853 first tide prediction table published,
- 1875 permanent fisheries lab structure erected in Woods Hole [updated complete lab not finished for another 10 years in 1885].
- 1885 U.S. Fish Commission established as independent agency of the federal government.

These first ever events we now take for granted have evolved into our daily weather forecasts, permanent fisheries, hurricane forecasts and, if you get the paper and live anywhere near the coast, a daily tide chart. Exploration and studies by NOAA are so vast, and so much of our daily lives, they have become almost an afterthought to most. Stop by the Woods Hole Science Stroll and say thanks to these fine dedicated people. I know I will.

I do hope you liked my article, and if you are in the States in August this year, plan on attending Aug. 12th for the Woods Hole Science Stroll. You will not be disappointed, and I would love to see you!
Brush or pen?

Or “Find the right pressure valve”

As you walk into the room, you see your peers discussing a new approach and immediately you see all the faults and problems, which undoubtedly will occur very soon. You want to interfere, but you know from the past that you will only be laughed at, after all they are seniors and you are junior. It is very frustrating, but you just bite it back and go about your work.

At lunch time you meet a friend and think of an experience, which is sort of private, but you think you might bring it to the discussion - we are talking about a longtime friend, after all. But then, warning bells start to sound, it could backfire in the future, and you bite it back and keep it for yourself.

On the way home you see prices of new apartments going through the roof and think, how can a young person afford a place, when the rent for a small apartment is more than the average salary of a young person in their twenties? Prices are pushed up by foreign investors, who are allowed to invest in real estate that should be reserved for residents of the country. Young people are frustrated and use drugs to cope with the situation, which leads to serious consequences which the media and government officials blame on a little pill. No question, their bank accounts are growing from foreign investors buying real estate and the outlook for citizens, especially the young, is grimmer and grimmer. Well, you just bite it back and turn your thought to what’s for dinner.

After you get home, you are asked, “How was your day at work?”. You do not want to get your family involved in grim thoughts and try to keep the atmosphere calm and comfortable. You bite it back and pronounce it another great day. In fact, nothing worse than usual means it is still a good day.

Familiar?

Everyone has a thought or idea, which seems to be great to talk about at first, but either not having enough confidence to present it to anyone or feeling, that others might think it is foolish and silly, the talk doesn’t happen and the thought will not come out, thus sits in the brain, always on the surface with no prospect of giving peace and relaxation. Then there are thoughts, we believe, are shameful or degrading and those definitely never come out as well, since it would be social disaster, if they did. These also repeatedly rise to the surface of our conscious mind.

It is certainly not a modern phenomenon. From the time, when the first group or society of people lived together, members of the group had these thoughts or events, they felt uncomfortable talking about with others and so they kept them to themselves. There might have been occasions, where they wanted to, but did not have a chance to express thought, a fascinating idea or a troubling mind-eating thought and had to keep it for themselves - and
after all, it is hard to find a friendly, listening ear. That goes equally for the past, present and future, I am sure.

We all have these sort of thoughts, sitting in the thinking bubble of our conscious, awake brain and sooner or later we need to let them go, into the space of our community or into any suitable spot or, what might seems strange but is not, even into a thing, such as a toy, tree, rock, dog and many more. Otherwise these undercover thoughts will grow from a small bubble to a large balloon or even a blimp. Unless we say it out loud to someone or something or express it in some way, out of our mind, it will always bother us and interrupts daily events. It is very easy to say “just forget about it and it is gone”, but that has been proven thousands of times, not to work.

Since ancient times there have been stories, about people coming often to a special place in nature, a tree, a rock or even an animal to talk about all those things sitting in their thinking bubble. There is a story I remember from my childhood about a king, who visited his chosen tree every day to tell it his troublesome thoughts and things he would never mention to anyone else. One day a shepherd made a whistle from a branch of that tree and when he tried to play a tune, the whistle would sing all the king’s secrets instead of his intended tune. In the end, the embarrassed King was glad it happened, because he realized that, now, when everyone knew, his shameful thoughts were not so shameful anymore, because everyone has similar thoughts. Not that we would like to experience anything similar, but in the story it humbles the most powerful person of the country, which makes readers feel somewhat fortunate. After all, it happened to a King. And, I suppose, that is, why these stories are called fairytales.

In the twenty first century, just about all people in the World suffers from some sort of stress coming from daily goals we need to achieve, the requirements of business society. There are offers we would like, but can’t always get, and many other negative situations. Daily tasks we have to attend to, and always feel we would love to be doing something else. Not that, this something else would necessarily change our life to a better one, but we do like to believe it would. Which adds up to the already mentioned shameful or neglected and rejected thoughts.

Starting in our childhood, just about all of us had a favorite stuffed toy to tell all our secrets to, a never-complaining playmate who we know, will not abandon us and will always be on our side. Some have a diary later in their youth, to write and draw things in that, they would never tell or show anyone. We like to find a beautiful spot in the park with distant views and sit there, thinking and trying to make sense of all the events and things we have heard and experienced, which we are trying to understand. Part of the modern family are household pets; they belong to the category of most important companions in our life, right after family members, even though in some cases, they are the most important support in our daily life. Household pets are getting more and more popular for adults and children alike for another important reason. As we all know, they are ever-present, uncomplaining listeners. They are our counsellors, always ready to listen, never saying, “You are wrong”, always agreeing with you. In fact, not much different from a professional counsellor. Dogs have a special position in our life
as ours defender and especially our children’s defenders. After all, the feeling of being safe is one of the most important and relaxing emotions for our survival.

In adult life we believe that we do not need any of that stuff, after all we are intelligent, reasoning adults, and we can deal with all daily hardship. We conquered and rule our mind and feelings, we are in charge of our actions and we do not need any of that childish stuff, except pets naturally, but that is only to help them, because we are compassionate people after all, they are just poor pets and would not survive without our help. “Right, more likely egoistic ignorance”.

Well, “in charge”? Unfortunately, we are not. We are very good at hiding uncomfortable thoughts and feelings at least at the beginning of our adult life, but after twenty or more years of hiding, all the hidden uncomfortable thoughts will become stressors. Not dangerous, thinking at first, nothing we could not resolve with a glass of wine or beer, but that does not last for very long. In time it will change into brandy or liquor and sooner or later we will find out, that is not the best solution, because it is not helping anymore and we are less and less in charge of our thoughts and life in general.

So we get to the point, when 90 seconds or fifteen deep in and out breaths won’t help and where, usually with professional help, we start helping ourselves from the inside, using our own power by talking our troublesome thoughts out to a listener, preferably a professional one. Since it can get quite costly, we try to find another way and fortunately there are a few.

Using a little bit of inventiveness and cognitive effort, we can rid our mind of all the troublesome thoughts through creativity. All that stuff, our mind is weighed down with and stressed by, is taking over needed space in our brain and will not leave much room for other thoughts and ideas. To shrink this obstruction, we need help. It is not enough to focus on different thoughts; that is never strong enough. The best help is the combined force of visual, physical, psychic and even auditory senses.

When strong anxiety strikes and a response cannot be postponed, we often need help to find the best way to relax. Walking is a great relaxation activity, but in the case of acute anxiety it might not take us far enough and may still allow enough space for stressful thoughts, just as listening to music is a great way to relax, but at a time of stress we might not be able to break away from the stressor and fully focus on music. To play a musical instrument is great solace, but unfortunately it requires learning, which could be difficult when in the stress and help is needed immediately.

So there is writing and reading, which require only the basic education, most of us have, making it excellent weapon against stress, available at any time or moment. Painting too, is something we all can quite reasonably achieve, if we are not after realistic images. To take a brush and smudge or paint colors on a canvas or board in abstract fashion, is achievable by just about anyone and again, as with writing, is available at any time and moment, making it an excellent weapon against stress and depression. When writing or painting, we need to focus physical, psychological and visual senses, and if we have a radio, TV or music player in the
The great fun of writing is that in our story we can punish people who hurt us, and in fact do with them anything we want. We can bring to light thoughts, which in daily life no one is listening to. We can bring out into the open all those shameful and uncomfortable thoughts and events by assigning them to another person in our story. We can create a life where we are in charge and everything turns out the way we wish. So to speak, our wish is our command. The wishes of others are not part of this creative endeavor; only we, our thoughts and space are needed for our story and our relief. Even though it might seem to be stressful and look foolish at times, by rereading and rewriting we eventually achieve satisfactory results and turn stress at the beginning into healthy stress, which takes us away from the initial mental pressure and diverts our mind from long periods of anxiety and tension, bringing out solutions and thus relaxation. After all, we can do it for ourselves and show it to no one. Well, it is not so bad to have a diary, even later in adult life.

Now, to do away with our negative feelings is not as easy in writing, unless you are gifted in poetry, as it is in color. It has been known for ages that the emotional brain and lately found enteric nervous system react to colors very similarly for all of us. So you might say, colors do represent our feelings. One does not have to draw like an experienced artist-painter to be able to use colors to convey uncomfortable feelings. You take paints and compose them onto a canvas or paper until it correlates to what you feel and makes you feel better. You know instantly when the final result is accomplished, because it brings a satisfactory smile on your face, seemingly from nowhere and all of a sudden. That way the negative feeling is taken from your mind, like a healer’s touch takes away pain, which is now embedded in your painting.

So in conclusion, it does not really matter if we take to paint or writing, but we should do whichever comes to our mind without being concerned with results or what others might say; After all, we do this for ourselves, meaning, it is only we who have to be pleased with it. Because if we are happy with it, others (even though never all) might - or I should say will - be happy with it as well. At the same time, we should not forget there are those who will always express their negative view, not because your work is bad, but because they feel bad.

Conclusion of conclusion; naturally, not all of us need or experience emotions in the same way. Some of us will not even register an assault, which others will get upset about. Many people will not even understand why anyone would need psychotherapy. For them, life is perfect the way it is and they reject everything contrary to what they believe in. But I do believe that a great many of us are going through, at some level, stressful lives and do need help to keep good homeostasis and a healthy psychological life. This article written with those people in mind.
Fine Arts

poetry, music, paint, print, photography, writing.
Music compositions by

Louis Sauter
http://imslp.org/wiki/Category:Sauter,_Louis

Kit O’Saoraidhe (Paul Freeman)
http://theprofman.wix.com/profcompositions

Jason Munn
http://www.jasemunn.net/
Prélude for solo flute starts with a rising, irregular sequence of notes emerging from darkness into brilliant light. The songs of several birds mingle in the light, some melodious, some soft, some strident. The piece uses some extended techniques (sing & play, wind tones, multiphonics).

Scherzando for solo alto flute alternates between impatience, doubt and interjections which eventually lead to some angry flutter-tongues. The piece finally ends in a happy mood. Intermèdes for solo alto flute begins with a nostalgic melody that is interrupted by a more rhythmic fragment. Both alternate, giving way to an incisive staccato passage, followed by a melodic series of arpeggios. Things calm down and the piece ends in a dialog between registers.

The three one-minute miniatures have been recorded by flautist Iwona Glinka for her CD entitled One Minute (Sarton Records). It is available at iTunes, Qobuz and other platforms.

iTunes: https://itunes.apple.com/fr/album/one-minute/id1226096458
Pour Iwona Glinka

TROIS MINIATURES POUR FLÛTE

LOUIS SAUTER

1. Prélude

pour flûte traversière

Moderato $\frac{\text{q}}{\text{4}} = 92$

Flûte

Voix (Voice)

* Si besoin, les multiphoniques peuvent être remplacés par des appogiatures - If necessary, multiphonics can be replaced by grace notes.

© 2017 Louis Sauter
avec du souffle

with wind

Voix (Voice)
2. Scherzando

pour flûte alto (ou flûte traversière)
3. Intermèdes

pour flûte alto (ou flûte traversière)

Allegro $\frac{\text{f}}{\text{mp}} = 124$

poco rit. A tempo

poco rit. Più mosso

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Tempo primo

\[ \text{\textcopyright \textregistered} \]
Fugue on FACADE

By Kit O'Saoraidhe
Score

Fugue on FACADE

Kit O'Saoraidhe (2014)
Video and Musical Composition by Jason Munn

watch video at https://vimeo.com/212572757

Listen at https://soundcloud.com/jase-munn/red-cedar-embers
POETRY
by
Lao-Tzu 500BCE
Late T. S. "Tong" Hadley
Tao Te Ching
Lao-Tzu source

The heavy is the root of the light.
The unmoved is the source of all the movement.

Thus the Master travels all day
without leaving home.
However splendid the views,
she stays serenely in herself.

Why should the lord of the country
flit about like a fool?
If you let yourself be blown to and fro,
you lose touch with your root.
If you let restlessness move you,
you lose touch with who you are.
Babyears

bloodwarmbreathing
trapped snuggly in cottonpopcornblankey
softsilkysating bunting soothing
redlight gloaming through eyelids
flutt’ring in warmdream cloudy sleeping
babyears hear
mama an’ friends just there
in livingroom sofas ensconced
their “roucoulement* at tea-time”
robins’ calling-joy
willowleaves’ susurration
boys shoutsplash from the dock.
sunlight soothing tickles nose
badpain night’s gone
back to Heaven
little i go
sleepdreaming

*To cut the Frenchified English with which the poem is printed, it is unnecessary to remark that roucoulement is the French word for the song of the robin. So much for the etymology of the word.
Photography by
Mark van Vuuren
“Africa”
Art from the past
Ship of Fools 1490-1500
Hieronymus Bosch
Watercolor by Marilyn Grimble
Morning walk
Photo by Stan Riha
“Rocking chair”
Photography by Stan Riha
“Windows”
Puzzles, Riddles & Brainteasers

Next three months calendar
IQNJ is encouraging readers to take interest in 

**Numerical Sequences Contest, by T. Prousalis**

**Lasting Until December 31st, 2017**

**link:** [https://hriqtests.com/insc-2017/](https://hriqtests.com/insc-2017/)

There is free submission for verified Isi-s members on T. Prousalis’ new verbal test, VRA-F. In addition, for verified Isi-s members that will take part in INSC 2017, no further identity verification will be needed.
Solution of killersudoku from IQN Journal Issue Vol 9 no 1
Rules
As in regular sudoku, every cell in each row, column, and nonet must contain a unique digit. In other words, each row, column, and nonet must contain all the digits from one to nine.
The values of the cells a cage must sum up to the total for that cage.
The values of the cells in a cage must be unique.

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Solution to this puzzle will be published in the next issue of the IQ Nexus Journal
August

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September

Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday
---|---|---|---|---|---|---
1 | 2 | 3 | 4 | 5 | 6 | 7
8 | 9 | 10 | 11 | 12 | 13 | 14
15 | 16 | 17 | 18 | 19 | 20 | 21
22 | 23 | 24 | 25 | 26 | 27 | 28
29 | 30

September equinox

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