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WHY THE CURRENT SETI PROTOCOL WILL FAIL

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ABSTRACT. In this work arguments are taken from Theology, Philosophy and Astrophysics/Physical Cosmology; license taken because of perceived conceptual overlap. In a highly speculative chapter in the monograph *The Holographic Anthropic Multiverse*, it was postulated that the current SETI protocol could fail. One of the main metaphors, was that aiming a telescope/microscope at someone's head would yield very little information about the content of their mind relative to the current standard model. It was postulated that some form of microscopic to cosmic conformal scale-invariance applied, which allowed a simple postulate that dark energy/matter was a gravitational effect from the rest of the causally separated multiverse beyond our observed finite Hubble sphere. Causal separation from the rest of the multiverse seems evident in 4-space; but in the echelons of 3rd regime unified field mechanics (UFM), a weak causal connection is manifest. A radical prediction extrapolated from $E = mc^2$, that the mass-equivalence of the earth is tantamount to the mass of intelligence of the Earth over its 5-billion-year history. Surprisingly, putting this supposition in a simple proportionality equation along with the mass of the sun, the result was the Hubble radius, or 'local' limit of observation. In terms of the anthropic multiverse model, this meant that one could postulate an infinite number of nested Hubble spheres each with their own fine-tuned the laws of physics beyond the event horizon. Several other details are examined. But what led to the possibility of a rigorous investigation of the proposal that the current SETI protocol will fail came via a surprising insight regarding the Poincaré dodecahedral $AdS^5-dS^5 \times S^5$ wraparound universe cosmology. We already had in place the idea that additional dimensions (XD) were not of the microscopic Kaluza-Klein form, invisible because they are curled up at the Planck scale; but rather of infinite size (LSXD) and not seen because of a process called subtractive interferometry related to the virtual nature of 'observer

BINARY NECKLACE SYSTEMS

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A REPORT ON WORK IN PROGRESS

ABSTRACT: A novel algebraic system of Binary Necklaces, which is non-Archimedean normed, non-associative, and non-distributive, is introduced, explored and developed. An application to Binary Cellular Automata is noted.

NECKLACES

The popular notion (in Combinatorial Theory) of a necklace is that it is a 'canonical representative' of an equivalence class of 'bitnecklaces' which can be visualised as 'strings-of-black-and-white-beads' subject to certain symmetry rules.

As a string-of-beads a bit necklace can be associated with a plane polygon whose vertices are the beads. Such a bitnecklace laid on a flat surface is not changed by rotating it; the associated polygon has cyclic rotational symmetry about its centre.

[Note that a bitnecklace may be changed by 'flipping it over' — raising it off the table, turning it over, and replacing it. It is not changed by flipping if and only if the associated polygon has dihedral (reflection) symmetry about one of its diagonals (i.e. if and only if it exhibits 'mirror-symmetry', *alias* 'handed-ness', 'chirality', or 'enantiomorphism'). Plane polygons can be deemed to be equivalent under rotations and reflection, i.e. 'dihedral symmetry equivalence'

PIONS IN NUCLEONS

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The magnetic moments of the proton and neutron have long been considered anomalous. It is proposed that such anomalies might be explained by the presence of pions in nucleon structures.

1 THE HISTORY.

The history of experiments and theoretical studies into nuclear magnetic moments is long. The anomalously large magnetic moment of the proton was first observed by Stern in 1933 in Hamburg, using a much modified and more sensitive apparatus than that used with Gerlach to resolve beam splitting due to electron spin.

The nuclear magneton, the magnetic moment one might expect from a nucleon, is given by

$$\mu_N = \frac{e\hbar}{2M_p},$$

where μ_N is the nuclear magnetron, and M_p is the mass of the proton. The Stern experiment showed that the measured magnetic moment of the proton was larger than this value by a factor of almost three. (Note: the magnetic moment of a particle generally varies reciprocally with particle mass. Hence, the magnetic moment of the electron is some three orders of magnitude greater than that of the proton).

In 1934, Stern, (Pittsburg), and Rabi, (New York), measured the magnetic moments of both the proton and the deuteron, and deduced

ORDER AND DISORDER IN THE TORAH.

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We propose to transform the characters of a small part of the Torah into the binary domain. We intend to sequence the resulting bit arrays and place them in a logical order, then reflect that ordering within the original Hebrew domain. We will examine the order and disorder of these bit arrays and sequences using the BiEntropy function in order to test for useful properties and to develop heuristics to possibly assist this cryptographic project.

1 INTRODUCTION

We have long held a working hypothesis [Croll, 2007b] that the Torah – the first five books of the Hebrew Bible – is a cryptogram. More specifically, we assume that the Torah is a transposition cipher. Our use of the Koren digital edition of the Torah [Computronic, 1997] is axiomatic. We have previously demonstrated, at least in principle [Croll 2007a], that it is possible to algorithmically permute a small part of the Torah into multiple alternate readable sequences. Some of these derivative Biblical Hebrew sequences were commercially translated into English, however they lacked lucidity and end-to-end readability. Nevertheless, in our view, the entire Torah is a long anagram that is intended to be decoded. We have identified some circumstantial evidence to support our point of view [Croll, 2011]. Furthermore, there is a long tradition that the letters of the Torah should one day be placed into an alternative disposition, thereby creating a New Torah.

Our previous work came to an end some years ago due to insurmountable combinatorial complexity. We had intended to use the small part of the Torah located between the inverted letter nuns (Numbers 10, 35&36), which we have named T2, as a key library. Our plan was to permute T2 using our Algorithm Three and then apply the parameters used to generate any lucid permutations of T2 – the keys - to the entire Torah (denoted T1T2T3) in the hope of achieving a plain text decryption. We were able to plan to do this because the dimensionality of T2

COSMOLOGICAL THEORIES OF THE EXTRA TERMS

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Introduction

This paper purports to have: Introduced a new formulation of Quantum Mechanics, explained the apparent disconnect between Quantum Mechanics and General Relativity, explained the observed far field expansion of the Universe (Dark Energy), supplied an argument which goes towards explaining away Dark Matter (there are modelling difficulties) and not explained, on the basis of gravitational theory, the Voyager Anomaly.

0. Concepts

Constraints Theory (CT) [22, 23] is a branch of theoretical physics. It begins with Quantum Mechanics (QM) but has connections with Classical Mechanics (CM) and Cosmology. Its original purpose was to explain why certain structures appear in CM on the basis that QM is fundamental; and why these structures are often successful as a basis for predictive/ descriptive quantum calculations about the real world. But the applications of CT are even wider.

CT is based on a formulation of QM that replaces scalar observables by Hermitian operators and differentials of scalar observables by commutators. It thereby uses the Schrodinger [1] method rather than the path integral method developed by Feynman [2]. But CT does not use the structures found in a Lagrangian or a Hamiltonian

ALPHAGO AND FRIENDS — IN CONTEXT

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*For the AI that is mankind's best hope for progeny,
and the survival of our endeavours and quests*

1 THE DEVELOPMENT OF MINDS ON EARTH

The accretion disk from which Earth condensed already included amino acids. We do not yet know whether it also contained Viruses, Archaea, Bacteria, or even Tardigrades which are Eukaryotic, and Multicellular. If it did, then items 1 and 2, and if Tardigrades, then even 3 and 4 below need to be altered.

1. Before Life or Minds were on Earth: Earth had RNA and Proteins.
2. Life on Earth begins with Viruses, Archaea, and Bacteria.
3. The Oxygenation; Minds on Earth began with the Eukaryotic Cells.
4. Cell Differentiation Genes, gave us all the multicellular Phyla.
5. Arthropoda, Mollusca, and Chordata rising; The coming ashore;
6. The End Permian; the breakup of Gondwanaland; Arthropoda rising;
7. Farming; Flowering Plants, Aphids, Eusociality; and Dinosaurs;

FORMAL REPRESENTATION OF "PROCESS & REALITY" IN THE METAPHYSICAL LANGUAGE OF CATEGORY THEORY: WHITEHEAD'S RELATIONAL THEORY OF SPACE

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ABSTRACT: Category theory was not sufficiently developed in his lifetime for Whitehead to apply to his speculative metaphysics of *Process & Reality*. The natural (assumption-free) topos as a cartesian closed category is now able to conceptualise formally the inherent space-time structure of Whitehead's extensional space that he appreciated is beyond the metrics of the classical mathematics he helped to develop. This paper examines the background to a possible formal representation using Category Theory for Whitehead's metaphysical cosmology starting with his notion of extensional space which is beyond finitary mathematics.

1 BACKGROUND

Alfred North Whitehead was one of few to appreciate 'the theory of linear extension'¹ [21] of the eminent philologist Hermann Grassmann (1809-1877). 'Unfortunately, when it was published', observes Whitehead², 'nobody understood it; he was a century ahead of his time.'. Nevertheless that publication was to lead to linear algebra, vector spaces, differential geometry and the mathematics that underpinned much of 20th century science ([42] at pages 203 *et seq*). Grassmann's studies contained a germ of category theory to be pursued here for in the meantime it has led to mathematical topics like universal algebra, topology and homotopy all of which are subsumed in category theory.

¹ *Die Lineale Ausdehnungslehre, ein neuer Zweig der Mathematik*

² [64] *Essays in Science and Philosophy*, Part I, Personal, Autographical Notes at p 12

ITERANTS, BRAIDING AND THE DIRAC EQUATION

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1 INTRODUCTION

The simplest discrete system corresponds directly to the square root of minus one, when the square root of minus one is seen as an oscillation between plus and minus one. This way thinking about the square root of minus one as an *iterant* is explained below. More generally, by starting with a discrete time series of positions, one has immediately a non-commutativity of observations and this non-commutativity can be encapsulated in an iterant algebra as defined in Section 2 of the present paper. Iterant algebra generalizes matrix algebra and we shall see how it can be used to formulate the algebra of the framed Artin Braid Group, the Lie algebra $\mathfrak{su}(3)$ for the Standard Model for particle physics, the framed braid representations for Fermions of Sundance Bilson-Thompson and the Clifford algebra for Majorana Fermions. This paper is a sequel to [9] and [6, 7, 8, 9] and it uses material from these papers. This paper incorporates new results of the author that first appear in the joint paper of the author and Rukhsan Ul-Haq [10].

Distinction and processes arising from distinction are at the base of the described world. Distinctions are elemental bits of awareness. The world is composed not of things but processes and observations. We will discuss how basic Clifford algebra comes from very elementary processes such as an alternation of $+ - + - + - \dots$ and the fact that

THE INTRODUCTION AND DEVELOPMENT OF SYMBOLIC REPRESENTATION IN MATHEMATICS DURING THE LATE RENAISSANCE

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This paper was to be presented by its author Martin Lowe at the Post-ANPA meeting in August 2017, Anstruther, Fife. Martin died shortly before that meeting took place. The original typescript of this and other archived papers by Martin were bequeathed to his friend and colleague Nicola Graves-Gregory with a view to making them eventually accessible to the ANPA membership.

To be able to include this present paper into these proceedings it has been transliterated into the standard LaTeX format. Whilst this transliteration has been denied the opportunity of being checked by its author it has been done with care to ensure it can be an accurate record of one of Martin's contributions to the Alternative Natural Philosophy Association.

JOHN AMSON, ST ANDREWS UNIVERSITY, 2018

1 INTRODUCTION

The central thesis of this essay is that the introduction of symbolic mathematics was a result of a new understanding of the essential nature of mathematics. Simultaneously there emerged a new conception of nature and the knowledge that could be obtained about it. This 'symbolic science' required the key of mathematics, not as previously conceived however, but as a 'science of symbols'. Rather than it being an innovation of content - a new branch of mathematics or a new technique - it provided a new *fora* to mathematical knowledge as a whole.

To arrive at a symbolic mathematics required an enormous conceptual leap. Nevertheless the transition can be traced through the relatively short period of a few decades, on either side of the year 1600. The speed with which this new mode of thought came to be adopted and uncritically accepted within seventeenth century science and mathematics was largely because the

AWARENESS LIES OUTSIDE TURING'S BOX

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ABSTRACT: The idea of computation as formulated by Alan Turing in the 1920's dominates the contemporary discussion of the mechanism(s) underlying awareness. Unfortunately, the very semantics of computation, as standardly defined, seem namely to *exclude* awareness. Furthermore, this paradigm's descriptions of Nature in general are - for all their utility - conceptually barren in their fundamental sequentiality. We therefore replace Turing's automata-based semantic model with a multi-dimensional vector algebra, namely W.K. Clifford's *geometric algebra*. In our novel *automata-free* re-framing, it is obvious that Turing's semantics is inherently *time-like*, and that geometric algebra's *space-like* semantics provide a fertile foundation for the phenomenon of awareness. The new computational model of distributed systems has the global mathematical form $U(1) \times SU(2) \times SU(3) \times SO(4)$, ie. the Standard Model of physics augmented with 3+1d.

1 INTRODUCTION

The advent of computers has given us the opportunity to study *processes* to unprecedented and - as I will show - unexpected depths. Alan Turing, who invented an eponymous abstract universal computer, showed that its *sequential* computations (ie. *processes*) possess great power, but also tantalizing limitations.

As an example of the latter, he proved that multiple "Turing machines", working together in parallel, even non-deterministically, have the same ultimate computational power as a single machine working alone! This result - sequence is sufficient - has profound and far-reaching implications: it enshrines a functional point-of-view, it blesses strong reductionism, it is fundamentally classical (Isaac & Albert) in its reach, and it has stubbornly resisted

MONADIC DESIGN FOR UNIVERSAL SYSTEMS

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ABSTRACT: The work described here builds on recent work presented at ANPA on structure and process in the universe. The internal structure of the topos is explored further with particular emphasis on the nature of the pasted pullback, including the conditions for a pasting to be valid and the inherent recursive nature of pullback structures. Dolittle diagrams are employed for representing the intension/extension relationships. A banking example is explored, leading to the nature of the external processes acting upon the topos such as transactions. These processes are represented by monads, giving a three-level closure on the activity. The nature of monads is explored. The T-algebra enables changes to be made in the monad structure, giving the potential for adaptability. Monads, that have been strengthened by the Kleisli lift to the Cartesian form, can be composed naturally, facilitating the construction of large-scale information systems with reliability, as required for transactions in the banking world.

1 INTRODUCTION

The fundamental categorical facilities identified for a Universe, whether from any Universe of Discourse up to the Universe, is primarily the Topos as a structural data-type including the Monad for process. The application of the monad to a topos gives the operation of a process on data at the highest level, defined as a unique solution up to natural isomorphism. We will demonstrate such an application, explore how its performance relates to alternative techniques and discuss further work required.

3-DIMENSIONALITY

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ABSTRACT. 3-dimensionality is one of the most important and profound ideas in the whole of physics. The fact that space is 3-dimensional gave us a special insight into Nature from an early period because it set us the problem of explaining why this counterintuitive structure was so prevalent in natural systems. Part of the answer was revealed by the discovery of quaternions by Hamilton in 1843, although this spectacular insight was not followed up with the thoroughness it deserved. Since then we have found that Nature requires two 3-dimensionalitys to define all the important structures in physics, chemistry and biology, as well as those of algebra and geometry. Here, we will largely discuss the importance of 3-dimensionality in physics.

Introduction

3-dimensionality is one of the most important concepts in physics. It is also one of the most important breakthroughs in the whole of human knowledge. It presents us with an extraordinary and non-obvious fact which challenges interpretation. That space is 3-dimensional has probably been known in some form for millennia. But, as we shall see, the concept extends beyond space, and the spatial example leads us to other ones which are equally important in physics. In addition to the fact that 3-dimensionality has such a special and peculiar signature that it provides one of the main access routes to unravelling Nature's most fundamental secrets, it is also important for

FUNDAMENTAL ERRORS IN PHYSICS.

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ABSTRACT. Physics at the fundamental level seems currently to be in a situation where theory and experiment are frequently in direct contradiction. Theories are being produced which cannot possibly be correct as they already contradict well-established results from high-energy physics experiments. One of the reasons for this is the fact that alternative theories seem to be in short supply due to the downgrading of conceptual thinking over the last forty years. This has been responsible for the perpetuation of several fundamentally erroneous ways of theorising which seem to stand in the way of achieving a deeper understanding of the most significant fundamental ideas.

Introduction: Pointless theoretical pursuits

Many books, papers and web sites – with genuinely mainstream connections – make categorical statements about physical truths which are actually often highly questionable. In my view, this shows a lack of true physical insight, often reflecting a formulaic approach to physics education. It is damaging because major physics advances often require deeper physical insights. The present impasse in fundamental physics, which can be dated back to the completion of the main features of the Standard Model around 1973, is to my mind a symptom of the dominance of a ‘shut up and calculate’ approach and the downgrading of conceptual thinking as irrelevant and even trivial.

THE CAUSAL (DETERMINISTIC) APPROACH TO QUANTUM MECHANICS

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ABSTRACT: In the present work, the causal (deterministic) approach to quantum mechanics is developed. The critical analysis of D. Bohm's work *A suggested interpretation of the quantum theory in terms of 'Hidden Variables'* is given. Using the causal approach, it is proven that Schrödinger equation is a necessary condition of stability of the motion of a particle. For the case of the hydrogen atom this approach gives a mathematical base with which to suggest that (1) the electron's spin in an atom is precessing; (2) the energy of the precessional motion on Bohr orbits satisfies Rydberg's formula. and (3) structures are formed in the physical vacuum that stabilize the motion of an electron on Bohr orbits.

1 INTERPRETATION CRISIS OF QUANTUM MECHANICS

Currently, there exists an interpretation crisis in quantum mechanics which is, in essence, due to the lack of comprehension of the underlying physics hidden behind the equations. While the mathematical formalism of quantum mechanics describes many experiments well there are heated discussions among scientists about its physical interpretation. The various interpretations offer different approaches to the issues that arise, such as: "collapse of the wave function", "paradoxes such as EPR", and etc. However, at the present time there is no any physical interpretation of quantum formalism that would not have contradictions within it or with accepted ideas and theories.

To support this statement let us consider two interpretations: the Copenhagen interpretation and the causal interpretation. Followers of the Copenhagen interpretation insist on the point of view that physics is the science

COHERENCE DOMAINS IN WATER. CHANGE OF WATER PROPERTIES IN LIVING ORGANISMS.

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ABSTRACT: There is evidence for quantum coherence in water that is supported not only experimentally but also theoretically. In the current work, a unique experiment by H. Hu and M.Wu that demonstrates quantum properties of water is presented and analyzed. They observed that the pH value of water and its temperature in one reservoir can be non-locally affected through manipulating water in another remote reservoir (at first all water was in the same closed reservoir). Another equally interesting series of experiments, performed by E. Macovschi, studied the change of the quantum properties of water inside living tissue.

1 QUANTUM COHERENCE OF WATER

In the beginning of 1990s Warren and collaborators detected a high degree quantum coherence in liquids using nuclear magnetic resonance (NMR) [1]. They examined the effects of spin concentration, temperature, chemical exchange, and other variables on the formation of coherences in simple liquids. Their experimental result was unexpected from the standpoint of the conventional NMR theory.

About the same time G.Preparata and Del Giudice [2, 3] showed theoretically on the basis of the theory of quantum electrodynamics (QED) that *water* at room temperature and normal pressure organizes itself in *Coherence Domains*. In such a domain, all molecules are in a coherent state described by the same wave function. The diameter of the coherence domain (which has a spherical shape) is about 100 nm. According to Preparata, the coherence domains have the following properties: within a domain, the quantum energy

ENCOUNTERING BIRDS: A PHENOMENOLOGY OF JIZZ.

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I describe how my encounters with birds illustrate the ornithological notion of ‘jizz,’ the characteristic way a bird appears to the watcher. I argue that jizz captures the notions of the ‘inscape’ and ‘instress’ proposed by the 19th century poet Gerard Manley Hopkins. In turn, Hopkins’ terms provide the basis for the triad of identity, as proposed by philosopher and polymath John Bennett.

Encounters

Let me introduce three different birds which I have been lucky enough to encounter in the field. The first is a kingfisher (cf. Figure 1, top) that I saw on the river Avon in Bathampton flying away across the way the surface of water, as a flash of iridescent blue sapphire.¹ The second is the hoopoe (cf. Figure 2), which I saw on a trip into the Luberon. My wife and I were trying to drive through the town of Apt to return home and as Fate would have it, we were forced outside the town and into the woods. We saw this lovely bird flying over the road, with its black and white rounded wings and orange head. Straight away I was reminded of the description I had read as a boy, “a huge black-and-white butterfly or moth” (Fitter & Richardson, 1966, pp. 86-87).

¹ As I learned in a book from the local library when I was a child: “A flash of sapphire is all that is needed to identify the kingfisher as it streaks downstream or bellyflops to catch a minnow” (Fitter, 1974, p. 178).