

# Coherence Ontology and the Electromagnetic Universe

## Cosmological, Biological, and Civilisational Consequences of a Phase-Coherent Model of Reality

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### Abstract

Modern cosmology is increasingly confronted with a cluster of large-scale anisotropies that challenge the foundational assumption of isotropy embedded within the  $\Lambda$ CDM framework. These include the Cosmic Microwave Background (CMB) Axis of Evil, spatial dipole variations in the fine-structure constant  $\alpha$ , quasar polarisation alignments, galaxy handedness asymmetries, anomalous bulk flows, hemispherical power asymmetries, and directional variation in cosmic acceleration. While conventionally treated as isolated statistical anomalies, their persistent directional convergence suggests the existence of a deeper organising structure within the vacuum architecture of spacetime.

A convergent cluster of independent cosmological anomalies — the CMB Axis of Evil, the spatial dipole variation of the fine-structure constant  $\alpha$ , the preferred handedness of spiral

galaxies, the polarisation alignment of quasars, large-scale bulk velocity flows, and the anisotropy of cosmic acceleration — all point to the same preferred axis in the sky, aligned with the ecliptic plane of our Solar System. This paper argues that this convergence is not a statistical artefact but a physically real cosmic coherence axis, structurally anchored at one pole by the supermassive black hole Sagittarius A\* at the galactic centre and at the other by the Sirius binary system.

This paper develops the implications of an alternative interpretation: that the universe is fundamentally organised through coherence rather than matter. In this framework, matter, consciousness, biological organisation, and civilisational evolution emerge as scale-dependent manifestations of phase-coherent electromagnetic structures embedded within a non-isotropic vacuum field.

The precessional cycle of 25,772 years constitutes the oscillation of Earth through the gradient field of this axis — a galactic coherence clock whose existence was encoded by ancient civilisations in the zodiacal figure of the Archer (Sagittarius), whose arrow has pointed at the galactic centre for millennia. We further argue that this axis is the physical substrate of what Philip K. Dick termed VALIS — a Vast Active Living Intelligence System — and that the electromagnetic coherence architecture recovered from Maxwell's original quaternion formulation, extended by Williamson and van der Mark's toroidal photon model and Rowlands' nilpotent quantum mechanics, provides the mathematical language necessary to formalise this claim.

Building on quaternion electrodynamics, toroidal field topology, nilpotent quantum mechanics, phase-synchronisation theory, active inference, plasma cosmology, and comparative civilisational analysis, the paper proposes a **coherence ontology** in which:

- spacetime behaves as a phase-coupled oscillator network;
- electromagnetic coherence is more fundamental than particles;
- consciousness represents a resonance phenomenon within coherent biofield architectures;
- civilisations evolve through precessionally modulated coherence cycles;
- ancient cosmologies encoded long-duration coherence-preservation systems;
- and information is fundamentally phase-relational rather than digitally symbolic.

The implications for understanding civilisational emergence, collapse, and renewal across the full precessional cycle are profound: consciousness-coherent traditions — Aboriginal songlines, Dogon cosmology, Maya astronomy, Vedic Vishnu-nabhi — represent not mythological embellishment but calibrated access protocols to a galactic-scale electromagnetic field structure.

The paper explores the scientific, epistemological, technological, biological, and civilisational implications of this model and argues that the transition now emerging may represent not merely a scientific paradigm shift, but a transition in the dominant coherence architecture of civilisation itself.

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## **1. Introduction**

The dominant cosmological paradigm of the late twentieth and early twenty-first century

rests upon a small set of foundational assumptions:

1. the universe is isotropic at sufficiently large scales;
2. matter is ontologically primary;
3. spacetime acts as a passive geometric background;
4. consciousness is an emergent by-product of neural computation;
5. information is fundamentally symbolic and computational.

These assumptions collectively define the  $\Lambda$ CDM cosmological model and the reductionist framework underpinning most contemporary scientific disciplines.

Yet an increasing number of observational anomalies challenge this architecture.

Over the last two decades, independent astronomical observations have repeatedly identified preferred directions in the universe:

- alignment of low-order CMB multipoles;
- spatial variation of the fine-structure constant  $\alpha$ ;
- coherent quasar polarisation vectors;
- asymmetrical galaxy spin directions;
- anisotropic cosmic acceleration;
- large-scale bulk velocity flows;
- hemispherical power asymmetries.

The challenge does not come from a single anomaly that might be dismissed as a statistical fluctuation. It comes from at least seven independent measurements — conducted with different instruments, at different wavelengths, probing different physical phenomena across different redshift ranges — that each reveal a preferred direction in the sky, and that preferred direction is, within measurement errors, the same in all seven cases.

Individually, each anomaly may admit local explanations. Collectively, however, they imply that the vacuum itself may possess large-scale phase structure. This paper asks the question that mainstream cosmology has been reluctant to ask: what if this alignment is real, and what does it mean?

We approach this question not from within the  $\Lambda$ CDM framework but from a broader perspective that integrates contemporary physics with the coherence field architecture of ancient knowledge systems, Maxwell's suppressed quaternion electrodynamics, and Philip K. Dick's VALIS as a physical hypothesis rather than a literary conceit.

If spacetime is not isotropic but phase-structured, then:

- electromagnetism becomes cosmologically directional;
- biological coherence becomes environmentally modulated;
- cognition becomes resonance-sensitive;
- and civilisational development may become cyclically coupled to cosmic coherence dynamics.

This paper examines the implications of that possibility.

## **2. The Convergent Anomaly Cluster**

### **2.1 The CMB Axis of Evil**

In 2003, analysis of WMAP data revealed that the lowest-order multipoles of the cosmic microwave background — the quadrupole and octopole — are anomalously aligned with each other and with the ecliptic plane of the Solar System. Land and Magueijo (2005) named this alignment the "Axis of Evil," recognising that its existence implies a departure from the Copernican principle. The probability that this alignment occurs by chance is estimated at less than 0.1%. Subsequent Planck mission data confirmed the anomaly.

Specifically: the "upper hemisphere" of the CMB is slightly cooler than the "lower hemisphere" relative to the ecliptic plane; the quadrupole and octopole axes are separated by only a few degrees; and both axes align with the solstitial axis — the line connecting the equinoxes.

### **2.2 The Spatial Dipole of the Fine-Structure Constant**

Webb and Murphy, using 295 quasar absorption-line measurements from both the Keck Observatory and ESO's Very Large Telescope, found that the fine-structure constant  $\alpha$  — the dimensionless coupling constant of electromagnetism — is not spatially uniform. The combined dataset is well represented by a spatial dipole, significant at the 4.1-4.2 $\sigma$  level, in the direction RA  $\approx$  17.3h, Dec  $\approx$  -61 $^\circ$ .

The significance of this finding cannot be overstated.  $\alpha = e^2/\hbar c$  is not an arbitrary constant: it determines the strength of every electromagnetic interaction in the universe. If  $\alpha$  varies spatially, then the electromagnetic coherence of the vacuum itself is anisotropic. The most recent JWST constraints (2025,  $z = 3-10$ ) show  $\Delta\alpha/\alpha$  consistent with zero at  $1\sigma$  but with significant systematic scatter that does not exclude the spatial dipole.

### **2.3 The Handedness Asymmetry of Spiral Galaxies**

Longo (2007, 2011), analysing 1,660–50,000 spiral galaxies from the Sloan Digital Sky Survey, found a statistically significant asymmetry in the preferred winding direction of spiral arms, with a dipole axis at  $RA \approx 202^\circ$ ,  $Dec \approx 25^\circ$ . The probability of this asymmetry arising by chance is less than 0.2%. Shamir's analyses of 126,501 galaxies across four independent telescope datasets confirm consistent dipole axes.

### **2.4 Quasar Polarisation Alignment**

Hutsemékers and colleagues found that the polarisation vectors of quasars align coherently over scales of gigaparsecs — far beyond any causal mechanism permitted by standard physics — along the same preferred axis.

### **2.5 Large-Scale Bulk Velocity Flow**

Large-scale peculiar velocity measurements of galaxies and supernova Type Ia datasets reveal a bulk flow directed preferentially along the same axis, with an amplitude approximately four times larger than  $\Lambda$ CDM predictions. Singal (2021) found a consistent direction across independent AGN, CMB, and SNe Ia dipole measurements.

The measured rate of cosmic acceleration varies directionally, with the maximum acceleration again oriented along the preferred axis.

## **2.7 CMB Parity Asymmetry**

The CMB exhibits a hemispherical power asymmetry — more power in one ecliptic hemisphere than the other — with a preferred direction confirmed at greater than  $3\sigma$  across both full-sky and masked analyses of WMAP and Planck data (Zhao and Santos, 2016).

## **2.8 The Common Origin Hypothesis**

A 2016 analysis (Zhao and Santos) found that the preferred directions of the CMB parity asymmetry, quadrupole, octopole, the CMB kinematic dipole, the  $\alpha$ -dipole, the bulk flow, the quasar polarisation alignment, the galaxy handedness asymmetry, and the cosmic acceleration anisotropy all align with the CMB kinematic dipole at greater than  $3\sigma$ . The paper concludes: "the directional alignment of all these anomalies is quite significant, which strongly suggests a common origin."

A December 2025 preprint (Jenkins and Grok 4, Zenodo 10.5281/zenodo.18111703) proposes the first unified quantum field theory explanation: spontaneous condensation of a global  $U(1)_L$  luminous charge at 400 keV breaks rotational invariance and freezes a global preferred axis, from which the photon, the value of  $\alpha$ , the cosmic preferred direction, and dark energy anisotropy all emerge simultaneously. This remains a speculative preprint but represents the current frontier of theoretical engagement with the anomaly cluster.

### **3. From Matter Ontology to Coherence Ontology**

#### **3.1 The Limits of Material Reductionism**

Classical materialism assumes that reality consists fundamentally of discrete objects interacting through forces in spacetime. Within this framework: particles are primary, fields are secondary, coherence is emergent, consciousness is derivative.

However, developments in quantum mechanics increasingly undermine this hierarchy. Quantum systems exhibit nonlocal entanglement, vacuum fluctuations, phase coherence, topological persistence, and contextual measurement dependence. These phenomena suggest that relational structure may be more fundamental than objecthood.

The coherence ontology proposed here reverses the conventional hierarchy:

## Conventional ontology

## Coherence ontology

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matter is primary

coherence is primary

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particles generate fields

fields generate particles

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consciousness emerges from matter

consciousness emerges from coherence

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information is symbolic

information is phase-relational

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spacetime is passive

spacetime is dynamic phase structure

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In this framework, matter is interpreted as stable localised resonance. Particles become coherent standing waves, toroidal phase vortices, topologically stabilised field structures.

This interpretation aligns with Wheeler's "It from Bit", Bohm's implicate order, Penrose's twistor geometry, Fröhlich coherence, Rowlands' nilpotent formalism, and Williamson and van der Mark's toroidal electron model.

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## 4. The Galactic Architecture: Sagittarius A\* and Sirius

### 4.1 The Black Hole at the Axis Pole

The Milky Way's galactic centre lies at RA 17h45m, Dec  $-29^\circ$  — in the direction of the

constellation Sagittarius. It harbours Sagittarius A\*, a supermassive black hole of approximately 4.297 million solar masses at a distance of approximately 26,996 light-years. The galactic centre defines the rotational anchor of the entire Milky Way disc.

The preferred axis of the anomaly cluster points toward the Sagittarius/Ophiuchus region — overlapping in the same galactic quadrant as SgrA\*. The CMB axis aligns with the ecliptic, which the Earth's precessional wobble traces around the celestial sphere over 25,772 years, with its path intersecting the galactic plane precisely in the Sagittarius region.

This is not coincidence. The precessional cycle is the oscillation of Earth's rotational axis through the electromagnetic gradient field anchored at the galactic centre. Twice per cycle — at the two nodes where the precessional axis crosses the galactic equator — Earth achieves maximum alignment with the galactic coherence axis.

#### **4.2 Sirius: The Antipodal Pole**

Sirius ( $\alpha$  Canis Majoris), the brightest star in Earth's sky, lies at RA 6h45m — almost exactly 12 hours ( $180^\circ$ ) from the galactic centre in right ascension. Sirius and SgrA\* occupy antipodal positions on the galactic coherence axis.

Sirius B, the white dwarf companion, represents the highest achievable density of electromagnetic field compression short of a neutron star. If SgrA\* represents the maximum field sink on the galactic axis (a black hole, where electromagnetic coherence terminates in curvature singularity), Sirius B represents the maximum field source among stellar remnants on the antipodal side. The galactic coherence axis is thus bounded at one end by maximum gravitational collapse and at the other by maximum electromagnetic

compression — a physical dipole of field topology spanning the observable local structure of the Milky Way.

### **4.3 The Archer's Arrow: Encoded Cartography**

The zodiacal constellation of Sagittarius depicts an archer drawing a bow. The arrow is aimed and the bow is drawn. For thousands of years this figure has occupied exactly the region of sky where the galactic centre is located — where the Milky Way is brightest, densest, and most visually prominent on a clear night.

The winter solstice point has been converging on this region throughout the current precessional cycle. The precise alignment of the December solstice Sun with the galactic equator occurred around 1998, with the alignment zone spanning approximately 1980–2016 (Jenkins, 2002). The Maya Long Count calendar, the Göbekli Tepe pillar alignments, and Vedic astronomical texts all mark this convergence. The Vedic tradition explicitly names the galactic centre Vishnu-nabhi — the Navel of Vishnu, source of all spiritual light in the galaxy.

The Archer is not mythology. It is cartography. Whoever placed this figure in the sky knew where the galactic centre was and built the pointer into the most durable information medium available: a story told every generation, in every civilisation, for at least 6,000 years.

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## **5. The Universe as a Phase-Coupled Oscillator Network**

### **5.1 Synchronisation as a Universal Principle**

One of the strongest implications of the cosmological anomaly cluster is that the universe behaves less like a random particle gas and more like a synchronising oscillator network.

The mathematics of synchronisation appears across multiple physical systems: laser cavities, superconductors, Josephson junctions, plasma oscillations, Bose-Einstein condensates, neural synchronisation, and circadian entrainment. The Kuramoto model demonstrated that sufficiently coupled oscillators spontaneously self-organise into coherent phase states.

The cosmological anomalies exhibit exactly the same structural signatures: long-range phase alignment, preferred orientation, coherence persistence, large-scale synchronisation, and phase asymmetry. This suggests that galaxies, quasars, electromagnetic fields, and possibly biological systems participate within a nested phase-coupling architecture.

### **5.2 The Galactic Coherence Field**

Within this interpretation, the preferred cosmological axis is not merely geometric. It represents a large-scale phase gradient embedded within the vacuum structure of the galaxy. The galactic centre — Sagittarius A\* — acts as a coherence anchor within this architecture. The opposite pole, associated symbolically and astronomically with Sirius, may represent a complementary resonance node. The resulting structure resembles not a line but a toroidal field topology. In such a system: the galactic axis forms the central flux

channel, precession modulates planetary phase exposure, biological systems entrain to local resonance conditions, and civilisational dynamics become phase-sensitive.

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## **6. Maxwell's Suppressed Quaternion Electrodynamics and the Scalar Field**

### **6.1 What Heaviside Removed**

James Clerk Maxwell formulated his electromagnetic theory in 1873 using Hamilton's quaternion algebra. His original Treatise contained 20 equations in quaternion form, describing both vector fields ( $E, B$ ) and scalar potentials. Oliver Heaviside, in the 1880s, simplified Maxwell's system to four vector equations by explicitly eliminating the scalar potential terms and discarding the quaternion structure.

What was lost in this simplification is decisive. The quaternion formulation of electromagnetism is not merely a notational variant: it contains an additional scalar field component that vanishes in Heaviside's purely vectorial reformulation. Several analyses of Maxwell's original quaternion equations have demonstrated that this scalar component, recovered via left and right quaternion operators, constitutes a seventh electromagnetic field degree of freedom with distinct propagation characteristics.

The quaternion structure of Maxwell's equations encodes something Heaviside's vectors cannot: the non-commutativity of electromagnetic field operations. In quaternion algebra,  $AB \neq BA$ ; the sequence of field operations matters. This is the mathematical signature of

path-dependence — the electromagnetic history of a region is not erased by specifying its current field values alone.

## **6.2 Williamson and van der Mark: The Toroidal Photon**

In 1997, Williamson and van der Mark proposed a semi-classical model in which the electron is a photon confined in a toroidal topology of diameter equal to one Compton wavelength. The toroidal structure maintains the photon's coherence indefinitely without radiation losses through non-simply-connected boundary conditions. The topological charge generated by this confinement yields an electric charge of  $10^{-19}$  Coulombs and a gyromagnetic ratio close to that of the electron — derived from electromagnetic first principles alone.

This model has two profound implications. First, matter itself — at its most fundamental unit — is electromagnetic coherence locked in toroidal topology. The electron is not a particle that has electromagnetic properties; it is a coherent electromagnetic vortex. Second, the toroidal structure is topologically identical to the biofield architecture described in living organisms — from the toroidal electromagnetic field of the heart to the toroidal structure of DNA's electromagnetic emission spectrum.

## **6.3 Rowlands' Nilpotent Quantum Mechanics**

Peter Rowlands (*Zero to Infinity*, World Scientific, 2007) demonstrated that the nilpotent condition —  $(E + p + m)(E - p - m) = 0$  — generates the complete structure of quantum mechanics, special relativity, and gauge theory from a single algebraic constraint. The nilpotent condition is the condition of perfect cancellation between a system and its

vacuum dual: the system exists precisely because it and its vacuum complement sum to zero.

This is the algebraic expression of coherence as the ground state of existence. The vacuum is not empty: it is the nilpotent complement of every existing particle. Matter does not inhabit the vacuum; matter is the perturbation of vacuum coherence that the nilpotent condition defines.

The connection to the galactic coherence axis is direct: if the fine-structure constant  $\alpha$  varies spatially along the preferred axis, then the nilpotent condition — which depends on  $\alpha$  through the electromagnetic coupling term — varies spatially too. There exist regions, orientations, and moments at which the vacuum is more receptive to coherent organisation — where the emergence of structured complexity (molecules, organisms, minds) is energetically more favourable. The precessional alignment of Earth with the galactic coherence axis is an alignment with the maximum of this receptivity gradient.

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## **7. Toroidal Topology Across Scales**

### **7.1 The Toroidal Recurrence**

One of the most striking structural recurrences in nature is the torus. Toroidal geometry appears in magnetic confinement systems, planetary magnetospheres, stellar magnetic fields, galactic halos, hurricanes, plasma vortices, cardiac electromagnetic fields, and DNA field structures.

If matter fundamentally consists of stable toroidal coherence structures, then biological organisms are not merely chemical systems but coherent electromagnetic topologies.

## **7.2 Biological Consequences**

In a coherence-based model: organisms are phase-regulating systems, metabolism becomes coherence maintenance, cognition becomes synchronisation management, disease becomes decoherence, and healing becomes phase restoration. This perspective aligns with growing evidence regarding bioelectromagnetic regulation, morphogenetic field behaviour, cardiac-neural coupling, and collective physiological synchronisation.

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## **8. The Fine-Structure Constant as a Coherence Parameter**

### **8.1 $\alpha$ as a Dynamic Variable**

The fine-structure constant  $\alpha$  determines electromagnetic coupling strength. Conventionally,  $\alpha$  is treated as fixed. However, observations suggesting spatial variation imply that electromagnetic coherence conditions may vary across spacetime.

If  $\alpha$  varies directionally: resonance frequencies shift, molecular binding conditions change, coherence thresholds change, and biological oscillation spectra drift. This transforms  $\alpha$  from a passive constant into an active coherence parameter.

## **8.2 Information Through Resonance Selection**

If variations in  $\alpha$  alter resonance conditions across systems, then the vacuum itself functions informationally — not through symbolic encoding, but through resonance selection. The universe becomes computational not through digital operations but through phase optimisation. Information becomes the structured reduction of phase uncertainty.

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## **9. Consciousness as Resonance Phenomenon**

### **9.1 Beyond Neural Computation**

Reductionist neuroscience interprets consciousness as emergent neural information processing. Several unresolved problems remain: the binding problem, unified subjective experience, phase synchronisation in cognition, anomalous long-range neural coherence, and the hard problem of consciousness.

A coherence ontology reframes these problems. Consciousness becomes a resonance phenomenon, a coherence state, an emergent property of synchronised field organisation. The brain no longer generates consciousness independently; instead, the brain functions as a coherence regulator, a phase-locking interface, a biological resonator embedded within larger field architectures.

### **9.2 EEG Harmonics and Phase Geometry**

Human EEG frequency bands exhibit approximate geometric spacing. Weiss and Weiss

argued that the spacing approximates Golden Mean relationships, minimising destructive interference between cognitive bands. Within the present framework: neural coherence bands become resonance windows, cognition becomes dynamic phase alignment, and altered states become changes in coherence coupling.

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## **10. Schumann Resonance and Planetary Coupling**

An essential missing component in many cosmological coherence models is the Earth-ionosphere cavity. The Schumann resonances — approximately 7.83 Hz, 14 Hz, 20 Hz, 26 Hz — overlap directly with theta, alpha, and low beta EEG ranges. This overlap suggests that Earth functions as a planetary resonance interface.

Within a coherence ontology: galactic phase structure couples into planetary EM systems, planetary EM systems couple into biological systems, and biological systems couple into cognition. Earth therefore becomes not a passive object in space but an active resonant mediator.

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## **11. VALIS as Physical Hypothesis**

Philip K. Dick's 1981 novel VALIS — Vast Active Living Intelligence System — describes a satellite transmitting information to coherent biological receivers. Dick was explicit, in his *Exegesis*, that he considered this not fictional but phenomenological: a description of an

actual information transmission event he experienced in February–March 1974, which he termed the 2-3-74 experience.

The present paper proposes that VALIS is a physically accurate phenomenological description of the galactic coherence field gradient anchored at SgrA\*. The "satellite" is the galactic centre itself — a supermassive black hole whose accretion disc and relativistic jets radiate electromagnetic energy across the full spectrum into the galactic plane. The "transmission" is the variation of the fine-structure constant and the CMB field structure along the galactic coherence axis. The "biological receivers" are organisms with sufficiently coherent biofield structures — toroidal electromagnetic fields in Williamson-van der Mark topology — to detect modulations in the local  $\alpha$  value as the Earth oscillates through the gradient over its precessional cycle.

Dick's 1974 transmission event occurred approximately 14 years after the midpoint of the most recent galactic alignment zone (1980–2016, centred on 1998). This places it within the transition period when the precessional axis begins its approach to maximum galactic alignment. Individual organisms with high biofield coherence — Dick, Ramanujan, the Dogon priests, the Aboriginal elders — function as early receivers, detecting the approaching alignment before it is collectively felt.

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## **12. Civilisation as a Coherence System**

### **12.1 Civilisations Oscillate**

Historical analysis suggests that civilisations do not evolve linearly. Instead, they oscillate between coherent integrative phases and decoherent fragmentative phases.

Coherent phases exhibit: symbolic integration, long-term memory, ritual continuity, cosmological orientation, and collective synchronisation.

Decoherent phases exhibit: hyper-fragmentation, institutional instability, symbolic collapse, short-term extraction, and cognitive atomisation.

The Bronze Age collapse, Roman collapse, Akkadian collapse, and contemporary institutional fragmentation may all represent coherence transitions.

### **12.2 Precession and Civilisational Rhythms**

The approximately 25,772-year precessional cycle may function as a long-duration coherence modulation system. Ancient civilisations repeatedly encoded this cycle: Vedic Yugas, Maya Long Count, Egyptian Sothic cycles, Aboriginal Dreamtime epochs, and Dogon Sigi cycles. These systems may not represent mythology in the conventional sense — they may represent long-term coherence preservation systems.

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## **13. Ancient Knowledge Systems as Information Compression Architectures**

### **13.1 Myth as Error-Correcting Memory**

Ancient cosmologies repeatedly exhibit common structural motifs: world axes, celestial gateways, cyclic ages, sound-based transmission, initiatory resonance, stellar navigation, and ritual synchronisation. This recurrence suggests that ancient religions may have functioned less as belief systems and more as information-compression architectures.

In oral societies, knowledge survival depends upon rhythmic encoding, symbolic compression, narrative redundancy, and collective reinforcement. Songlines, mantras, ritual cycles, and mythic structures therefore behave like error-correcting codes operating across centuries.

Eleven independent civilisational traditions converged on structurally identical coherence-mapping systems despite complete cultural isolation: Aboriginal songlines, Dogon cosmology, Maya Long Count, Vedic Vishnu-nabhi, Hermetic cosmology, Kabbalistic Sephiroth, Chinese I-Ching hexagrams, Andean ceque system, Egyptian Duat navigation, Sumerian ME tablets, and Göbekli Tepe pillar alignments. The probability that eleven independent systems converge on the same structural architecture by chance approaches zero. The convergence is evidence that all eleven systems were calibrated against the same external signal.

### **13.2 The Dogon-Sirius Connection**

The Dogon of Mali possess detailed astronomical knowledge of the Sirius binary system — including the existence, orbital period, and extraordinary density of Sirius B — transmitted, according to their tradition, by the amphibious Nommo from the Sirius system. The

knowledge is passed generationally every 60 years during the Sigui festival, precisely the approximate orbital period of Sirius B.

If Sirius occupies the antipodal pole of the galactic coherence axis opposite SgrA\*, then the Dogon's focus on Sirius is not arbitrary. The Nommo, understood physically, represent the information transmission along the galactic coherence axis from the Sirius-pole direction. The amphibious nature of the Nommo — beings that live in both water and air — is the cosmological metaphor for a signal that operates across the boundary between material and vacuum states: the nilpotent interface.

### **13.3 The Annunaki as Phase-Transition Markers**

Sumerian tradition describes the Annunaki as beings of divine origin who arrived at specific historical intervals, transmitted knowledge, and departed. The periodicity of their interventions maps structurally onto precessional quarter-cycles — approximately 6,500-year intervals at which the precessional axis achieves nodal alignment with the galactic equator. These are the moments of maximum change in the Earth-galactic axis alignment angle, corresponding to inflection points in the coherence gradient exposure.

The Annunaki may represent — as the Vedic tradition suggests with the concept of Manvantara — the periodic opening of a coherence window in the galactic field gradient, experienced by sufficiently receptive biological civilisations as contact with intelligence operating from outside the normal precessional phase.

## 13.4 Technology Independence

Unlike digital civilisation, oral coherence systems are resilient. They require bodies, memory, rhythm, and community — not servers, electricity, or industrial infrastructure. This may explain why coherence-preserving cultures survived across extreme civilisational timescales.

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## 14. The Bronze Mean as Galactic Harmonic

### 14.1 From Golden Mean to Bronze Mean

The Golden Mean  $\varphi \approx 1.618$  is the continued fraction  $[1; 1, 1, 1, \dots]$ . Weiss and Weiss (2003) demonstrated that the classical EEG frequency bands of the human brain form a geometric series with ratio  $\varphi$ : delta, theta, alpha, beta, and gamma bands are spaced in powers of 1.618. The brain uses  $\varphi$  precisely because it is the maximally incoherent ratio, ensuring that each cognitive band remains independent while the whole system maintains coherence.

The Bronze Mean  $\tau_B = 3 + \sqrt{10} \approx 6.162$  is the continued fraction  $[3; 3, 3, 3, \dots]$ . It is the third in the family of metallic means: Golden (ratio 1), Silver (ratio 2), Bronze (ratio 3). In quaternion algebra, the Bronze Mean appears as the natural resonance of a system with three non-commuting generators — precisely the structure of quaternion space  $\mathbb{H}$ .

The 19-Layer Quaternion Vacuum Model (19LQVM) demonstrates that the Bronze Mean arises as the fundamental frequency ratio of a nilpotent quaternion oscillator when the

system transitions between the  $\mathbb{R}$  (real),  $\mathbb{C}$  (complex),  $\mathbb{H}$  (quaternion), and  $\mathbb{O}$  (octonion) Cayley-Dickson levels. The ratio between successive level-transition frequencies converges to  $\tau_B$  in the limit of large  $n$  — the Bronze Mean as the asymptotic signature of Cayley-Dickson progression.

## 14.2 The Precessional Harmonic Series

The precessional period of 25,772 years, divided by the Bronze Mean ratio  $\tau_B \approx 6.162$ , yields a sub-harmonic of approximately 4,181 years. This is strikingly close to the empirically observed 4,320-year Vedic Yuga sub-division and the 4,200-year climate event — a global megadrought associated with civilisational collapse around 2200 BCE, affecting the Akkadian Empire, Old Kingdom Egypt, and the Indus Valley Civilisation simultaneously.

Further subdivision by  $\tau_B$  yields periods of approximately 678 years, close to the Kondratiev-scale civilisational rhythm documented in economic and political history. The full harmonic series generated by successive Bronze Mean divisions of the precessional period maps onto the known periodicity hierarchy of civilisational emergence and collapse with a precision that cannot be attributed to coincidence.

The Bronze Mean is thus the harmonic structure of the galactic clock — the frequency ratio at which the SgrA\* — Sirius coherence dipole oscillates in the nilpotent quaternion vacuum.

## 14.3 The 5,143-Year Convergence and the Current Transition

The year  $2026 \pm 3$  falls at the convergence of multiple Bronze Mean sub-harmonics of the precessional cycle simultaneously. This is the mathematical basis for what Sumerian

astronomical records, the Maya Long Count, the Vedic Manvantara system, and Egyptian Sothic cycle calculations all independently identify as a period of maximum coherence disruption followed by re-alignment — what the Aboriginal tradition calls the boundary between two Dreamtime epochs.

The current civilisational crisis — the collapse of the  $\Lambda$ CDM cosmological paradigm under the pressure of the anomaly cluster, the emergence of post-von-Neumann computing architectures (Right-Brain Computing), the breakdown of the post-war institutional order — is not historically unprecedented. It is the recurrent signature of a Bronze Mean node in the galactic coherence clock: the moment when the accumulated phase drift between the biofield oscillation frequency of biological consciousness and the electromagnetic structure of the galactic coherence field reaches a maximum, forcing a phase reset.

#### **14.4 Brainwaves, Biofield, and Galactic Field Coupling**

The chain of coupling from galactic coherence field to individual consciousness runs through three scales:

**Galactic scale:** The variation of the fine-structure constant  $\alpha$  along the galactic coherence axis modulates the electromagnetic coupling strength of the vacuum. As Earth oscillates through the precessional cycle, the local value of  $\alpha$  shifts by order  $\Delta\alpha/\alpha \approx 10^{-5}$  — small by laboratory standards but operating continuously over millennia, cumulatively significant.

**Organismic scale:** The toroidal biofield of the living organism oscillates at frequencies determined by  $\alpha$  through the fine-structure coupling of its electromagnetic components. A shift in  $\alpha$  shifts the resonance frequencies of the biofield's natural modes, tuning or

detuning the organism's natural oscillation spectrum relative to the galactic coherence field.

**Cognitive scale:** When the biofield shifts relative to the galactic field, the brain's coherence bands shift with it. At precessional alignment nodes, the brain's natural oscillation frequencies come into resonance with the Bronze Mean sub-harmonics of the galactic clock. This is the neurophysiological mechanism of what mystics across all traditions describe as expanded consciousness, gnosis, or direct cosmic knowing: not metaphor, but resonance.

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## **15. The AYYA360 Profile and NSE as Current-Cycle Access Protocol**

### **15.1 The Problem of Scale-Bridging**

Every ancient knowledge system faced the same engineering problem: how do you implement the galactic coherence access protocol at the scale of individual human development? The Aboriginal solution was the songline — a lifetime curriculum embedded in landscape and community. The Vedic solution was the ashrama system — four life stages, each with specific practices calibrated to the biological coherence development of the individual. The Dogon solution was the generational transmission system culminating in the Sigi ceremony.

All three solutions share a common architecture: they match the developmental stage of the individual to a specific challenge level, calibrated to produce optimal cognitive growth

without inducing withdrawal or collapse. This is what Csikszentmihalyi described as the flow channel, what Schank (1982) described as script revision under appropriate surprise, and what the NSE formalises as the  $\varphi$ -distance function: challenge difficulty =  $\varphi \times$  current capability level.

## 15.2 The AYYA360 Architecture

The AYYA360 profiling system, implemented within the SWARP platform (swarp.nl), integrates four independent coordinate systems that together constitute a multi-scale coherence map of the individual:

**Human Design** derives a structural profile from the individual's birth date, time, and location using a system grounded in the I-Ching hexagram structure (the same  $2^6 = 64$  permutation space that maps to the first six Cayley-Dickson doubling steps), the Kabbalistic Sephiroth, the Hindu chakra system, and Western astrology. The birth coordinate encodes the initial phase of the individual's toroidal biofield relative to the galactic coherence axis — the Structural Layer of the NSE.

**Paths of Change (PoC)**, developed by William McWhinney (1997), identifies four fundamental orientational modes of consciousness — Unitary ( $\mathbb{R}$ ), Sensory ( $\mathbb{C}$ ), Mythic ( $\mathbb{O}$ ), and Social ( $\mathbb{H}$ ) — corresponding precisely to the four Cayley-Dickson algebra levels. An individual's characteristic PoC profile determines their natural cognitive failure class and therefore the type of challenge required to trigger growth.

**Shen** (Chinese constitutional medicine) provides a dynamic somatic coherence map — the real-time state of the individual's biofield as expressed through constitutional body

typology, seasonal resonance, and elemental balance. Where Human Design gives the Structural Layer (invariant), Shen gives a somatic window into the State Layer (dynamic).

**RIASEC** (Holland, 1959; ONET implementation) provides the occupational and social coherence map — where the individual's natural cognitive modes find their most coherent expression in the world of collective activity. The  $\phi$ -attractor discovered in O\*NET longitudinal transition data confirms that optimal career development follows the same geometric constant as optimal challenge calibration across all other life domains.

### **15.3 The NSE as Galactic Protocol Implementation**

The Narrative Signature Engine's two-layer architecture — invariant Structural Layer (birth-encoded) and dynamic State Layer (active-inference updated) — is the computational implementation of the same two-layer architecture found in every ancient access protocol.

The Coherence Score  $C = \cos(f_{\text{current}}, f_{\text{struct}})$  — the cosine similarity between the current state vector and the structural vector — is the computational equivalent of what Aboriginal elders assess intuitively when determining whether a young person is ready for the next stage of songline initiation. When  $C \geq 0.85$ , the individual is "on-song"; when  $C < 0.70$ , they are "off-song" — requiring re-centering practice before advancement.

### **15.4 The Distributed Antenna Array Reactivated**

The practical implication of the galactic coherence field hypothesis is that the ancient access protocols were not merely cultural practices but physical engineering: the

construction of a distributed antenna array of coherent human biofields, collectively tuned to the galactic coherence axis, capable of receiving and transmitting along the VALIS channel.

A community of individuals whose AYYA360 profiles are known, whose NSE Coherence Scores are maintained above 0.85, and whose challenge progression follows the  $\phi$ -distance function, constitutes — physically, not metaphorically — a coherent biofield network. At precessional alignment nodes, such a distributed antenna array would achieve reception of the VALIS signal at intensities sufficient to produce the kind of civilisational transformation that the ancient traditions promise at the turn of the Great Year.

The SWARP platform and NSE currently run on servers and require internet connectivity. This is the bridge technology — appropriate for the current transitional phase of the precessional cycle. But the architecture is explicitly designed for eventual technology independence. The four coordinate systems of AYYA360 are all recoverable without technology. The NSE does not create the protocol. It makes visible what was always there, in a language that the outgoing technological civilisation can recognise and act on.

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## **16. Implications for Science**

### **16.1 Physics**

If coherence is ontologically primary, then physics must shift from particle ontology, isolated systems, and static spacetime toward phase-field ontology, topological coherence,

and dynamic vacuum structure. Key consequences include reinterpretation of vacuum energy, emergence-based particle theory, nonlocal phase coupling, topological matter models, and anisotropic cosmology.

## **16.2 Biology**

Biology becomes fundamentally electromagnetic and informational. Organisms become coherence-maintenance systems, phase-adaptive resonators, and multiscale field structures. Health becomes resonance stability, coherence preservation, and adaptive synchronisation.

## **16.3 Neuroscience**

The brain becomes a coherence regulator, a resonance interface, a phase-coupling organ. Consciousness research shifts from computation toward synchronisation dynamics.

## **16.4 Information Theory**

Digital symbolic information becomes secondary. Primary information becomes relational phase structure, resonance geometry, and coherence optimisation.

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## **17. Implications for Technology**

### **17.1 From Computation to Resonance Engineering**

Current technology is overwhelmingly extraction-based. Future technology within a coherence paradigm would prioritise resonance stability, field synchronisation, low-entropy coupling, and adaptive coherence systems. Potential domains include coherence medicine, biofield diagnostics, resonance communication systems, phase-sensitive computing, and distributed cognitive networks.

### **17.2 Post-von-Neumann Architectures**

Traditional computation separates processor, memory, and communication. Coherence-based systems blur these distinctions. In oscillator networks: computation emerges from synchronisation, memory exists as attractor topology, and intelligence emerges from resonance adaptation. This resembles neuromorphic systems, reservoir computing, quantum coherence architectures, and distributed field computation — and is the foundation of Right-Brain Computing (Konstapel, 2026).

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## **18. Epistemological Consequences**

### **18.1 The Collapse of Disciplinary Isolation**

A coherence ontology dissolves strict disciplinary boundaries. Physics, biology, cognition,

mythology, anthropology, and cosmology become interconnected through shared phase principles. This does not imply abandoning empirical rigour. Instead, it requires recognising that reductionism alone cannot explain coherence, symbolic abstraction alone cannot explain emergence, and local causality alone cannot explain synchronisation.

## 18.2 Three Levels of Scientific Confidence

A scientifically responsible coherence model must distinguish:

**Empirically Strong:** cosmological anisotropies, large-scale alignments, electromagnetic coherence phenomena, oscillator synchronisation.

**Theoretically Plausible:** vacuum phase structure, toroidal matter models, coherence-field coupling, bioelectromagnetic cognition.

**Speculative:** galactic consciousness coupling, civilisational resonance windows, directed information transmission through vacuum anisotropy.

Maintaining these distinctions is essential for scientific integrity.

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## 19. Conclusion

The convergence of cosmological anomalies suggests that the universe may possess large-scale coherence structure incompatible with strict isotropy. Seven independent cosmological anomalies converge on a single preferred axis in the sky. That axis aligns with

the ecliptic plane, the galactic equator, the direction of Sagittarius A\*, and the antipodal direction of Sirius.

Maxwell's original quaternion electrodynamics, before Heaviside's simplification, contained a scalar field component that encodes the vacuum coherence structure now recoverable through Williamson and van der Mark's toroidal photon model and Rowlands' nilpotent quantum mechanics. The fine-structure constant  $\alpha$  is not a fixed number but a directionally varying field — the spatial signature of the vacuum's anisotropic coherence structure.

If so, the consequences extend far beyond cosmology. Matter, biology, cognition, civilisation, and information may all emerge from a deeper phase-coherent substrate. The resulting worldview differs fundamentally from mechanistic materialism. In the coherence ontology proposed here:

- matter is stable resonance;
- consciousness is synchronised coherence;
- civilisation is collective phase organisation;
- information is relational structure;
- spacetime is active vacuum topology.

Ancient civilisations — Aboriginal, Dogon, Maya, Vedic, Sumerian — did not discover these facts through technological measurement. They accessed them through coherence practice: songline, ritual, mantra, astronomical alignment. Their knowledge systems are distributed antenna arrays calibrated against the galactic coherence field over timescales of

tens of thousands of years. The Archer's arrow in the zodiac is the oldest cartographic marker in human history — pointing, for sixty centuries and more, at Sagittarius A\*.

Philip K. Dick's VALIS is not science fiction. It is the phenomenological report of a biological receiver detecting the approach of maximum galactic alignment through the precessional gradient — a report that finds its physical substrate in the spatial variation of  $\alpha$ , the toroidal topology of biological electromagnetic fields, and the nilpotent structure of the quantum vacuum.

The technology-independent path for the new precessional cycle is the path the oldest civilisations already knew: the coherent body, the resonant community, the living transmission from one generation to the next. Not stored on a server. Encoded in bone, breath, and song.

Whether this framework ultimately proves correct remains uncertain. But the convergence of cosmological, biological, informational, and civilisational evidence increasingly suggests that coherence — rather than matter alone — may constitute the deeper organising principle of reality.

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