The Mantis at the Origin: San Mythology, Abiogenesis, and the Deep Roots of Human Consciousness

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Abstract

The San peoples of southern Africa represent the oldest continuously living human lineage on Earth, with genomic divergence estimates placing their ancestral populations at or very near the origin of anatomically modern *Homo sapiens*, between 100,000 and 260,000 years ago. Their creation mythology — centred on the mantis deity |Kaggen (Kaang) — has long been treated as culturally significant but scientifically peripheral. This paper argues that this treatment is a mistake. When the San creation narrative is examined alongside three independent scientific frameworks — the RNA World hypothesis for abiogenesis, the morphogenetic theory of the sphenoid bone's role in vocal tract evolution, and Rodney Cotterill's probe-by-movement model of consciousness — a convergence of structural parallels emerges that is too precise to be dismissed as coincidence. These parallels describe, in complementary registers, the same sequence of events: the emergence of a self-replicating information system within a protective carrier, activated by external energy,

giving rise to an entity capable of resonant communication with its environment. A fourth convergence — the anthropological and comparative mythology record of the mantis archetype across independent cultures and across deep time — suggests that the San narrative does not stand alone. It belongs to the oldest layer of a planetary mnemonic system. The San did not invent a story about the origin of life. They preserved one.

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1. The Problem of Origins

Every scientific discipline has a boundary condition — a point at which its explanatory framework reaches its limit and passes the question to an adjacent field. For evolutionary biology, that boundary is the origin of the first self-replicating molecule. For linguistics, it is the origin of language from pre-linguistic cognition. For cognitive neuroscience, it is the origin of consciousness from neural activity. For anthropology and the social sciences, it is the origin of myth from pre-mythological experience — and the question of whether that experience contained knowledge that the myth encodes.

The conventional academic response to these boundary conditions is disciplinary modesty: each field acknowledges the edge of its competence and defers to the adjacent specialism. What rarely happens is the attempt to read all four boundaries simultaneously and ask whether they are four faces of the same boundary, described from four different directions.

This paper makes that attempt. Its central claim is that the San creation narrative of the bee, the mantis, and the first human being encodes — in the compressed, mnemonic form that oral traditions develop when they must survive intact across hundreds of generations — a

structurally accurate account of the sequence of events that produced life, consciousness, and language on Earth. The encoding is not literal; it is isomorphic. The myth does not describe molecules. It describes the *logic* of the process that molecules instantiated. And it is possible that the logic has survived because it is correct.

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2. The San: Oldest Lineage, Oldest Language, Oldest Memory

2.1 Genomic Position

The San — known also as Bushmen, Khoisan, and by specific group names including Ju/'hoansi, !Xam, and the speakers of Taa — occupy a unique position in the human family tree. Analyses of mitochondrial DNA and whole-genome sequencing consistently place the divergence of San ancestral populations from the common ancestor of all other living humans at a date between 100,000 and 260,000 years ago, coinciding with or predating the emergence of anatomically modern *Homo sapiens* in Africa (Schlebusch et al., 2017; Gronau et al., 2011). They are not primitive in any developmental sense. They are original: the earliest branching of the lineage that became all of us.

2.2 Craniofacial Morphology and the Sphenoid

The San also display the most archaic craniofacial morphology among living human populations. Research on the sphenoid bone — the wedge-shaped bone at the base of the skull, which in *Homo sapiens* is more flexed (angled inward) than in any earlier hominin — indicates that the San preserve morphological features consistent with an early expression

of the modern human cranial configuration (Dambricourt Malassé, 2005). The sphenoid's degree of flexion determines the geometry of the vocal tract: the angle of the foramen magnum, the position of the larynx, and the resonant length of the pharynx are all downstream consequences of sphenoid flexion. More flexion means a lower larynx, a longer pharynx, and a greater capacity to produce acoustically distinct phonemes.

The San languages — and most completely the Taa language of the !Xóõ San — contain over 100 distinct consonant phonemes, including five types of click consonants, more phonemic categories than any other known human language (Traill, 1985; Miller, 2011). This is not a cultural artefact. It is an acoustic consequence of morphology: the San vocal tract, shaped by the earliest expression of the fully flexed modern sphenoid, produces the widest acoustic eigenstate landscape of any human population.

The people with the oldest morphology speak the most complex language. This is not coincidence. It is morphogenetic consequence.

2.3 The Hox Regulatory Architecture

The sphenoid's flexion is not an adaptation in the conventional sense — a post-hoc response to environmental pressure. It is the external expression of an internal developmental programme encoded in Hox genes: homeotic regulatory genes that specify positional identity along the anterior-posterior axis during embryogenesis (Duboule & Dollé, 1989; McGinnis & Krumlauf, 1992).

Hox genes are among the most ancient and conserved regulatory systems in the history of multicellular life. Their common ancestor precedes the divergence of insects and

vertebrates by more than 600 million years. When a primate embryo develops its cranial base, it follows a Hox-regulated programme that has been running, incrementally modified, across deep evolutionary time. The sphenoid's progressive flexion across primate evolution is the output of a morphogenetic programme that has been tending in a consistent direction since before the primate order existed.

Anne Dambricourt Malassé called this the "inside story" of human evolution (2005). The motor is internal. The environment provides the selection context, but the programme pre-exists its environmental expression. It writes itself, one Hox-regulated embryonic iteration at a time, across millions of years.

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3. The San Creation Narrative: A Structural Analysis

3.1 The Core Narrative

The creation narrative central to this analysis is attested primarily among the ǀXam San and related southern African groups. In its essential form:

In the beginning, the Earth is covered with water. A bee carries the mantis (ǀKaggen / Kaang) across this primordial water. As the bee tires, it deposits a seed within the mantis and dies. The mantis is placed within a flower, is warmed by the sun, and from the seed the first human being — the first San — is born.

ǀKaggen is not a straightforward creator deity. He is a trickster, a shape-shifter, a being of extraordinary intelligence and unpredictable behaviour. He creates things that escape him,

transform unexpectedly, and produce consequences he did not intend. He is associated with the praying mantis — an insect whose hunting strategy involves absolute stillness followed by explosive precision, whose neurological architecture is among the most sophisticated of any arthropod, and whose evolutionary lineage diverged from the vertebrate lineage approximately 600 million years ago: the same period in which the common ancestor of insect and vertebrate Hox genes was establishing the body-patterning logic that still governs both lineages today.

3.2 Structural Parallels with Abiogenesis

The RNA World hypothesis — the currently best-supported scientific account of the origin of life — proposes the following sequence (Joyce, 2002; Gilbert, 1986):

1. In a primordial aquatic environment, complex organic molecules accumulate in hydrothermal vent chemistry or shallow tidal pools.
2. Among these molecules, RNA — capable of both storing genetic information and catalysing chemical reactions — emerges as the first self-replicating system.
3. Lipid vesicles (proto-cells) spontaneously form from fatty acids in the same environment and encapsulate RNA molecules, providing a protective matrix within which replication can proceed.
4. External energy — ultraviolet radiation, hydrothermal gradients, electrical discharge — drives the chemical reactions that sustain and accelerate replication.
5. From this system, the first cellular life — the Last Universal Common Ancestor (LUCA) — emerges approximately 3.5 to 4 billion years ago.

The structural homology with the San narrative is exact:

San narrative element	Abiogenesis parallel	Functional role
Primordial water covering the Earth	Prebiotic ocean / hydrothermal environment	The aqueous medium in which chemistry becomes biology
The bee carrying the mantis	RNA: information carrier and catalyst	The agent that carries generative information across the void
The bee implanting the seed and dying	RNA replication: the template consumed in producing its copy	The information carrier sacrifices its current form to reproduce
The mantis as receiving vessel	Lipid vesicle / proto-cell	The membrane that contains and protects the replicating system
The sun warming and activating the seed	External energy driving abiogenesis	The thermodynamic driving force
The birth of the first human	Emergence of LUCA and, eventually, consciousness	The endpoint of the abiogenetic sequence

The mantis, in this reading, is the proto-cell: the protective, form-giving matrix within which the first self-replicating information system is sheltered from dissolution and allowed to differentiate. It does not know what it contains. It simply holds it. This is precisely

|Kaggen's character: creative not by design but by containment, by being the structure within which something unprecedented can happen.

3.3 The Trickster as Evolutionary Logic

|Kaggen's nature as a trickster is not a narrative ornament. It is structurally precise. A protocell does not design its contents. It does not know what the RNA it encapsulates will become. It is a passive container whose physical properties happen to create the conditions for an active and open-ended process. The mantis in San mythology repeatedly creates things that escape him, transform beyond his intentions, and generate novelty he cannot predict. He is cunning but not omniscient. He creates as much by accident as by intention — and his recoveries from failure are more instructive than his plans.

This is an accurate characterisation of the generative logic of evolution itself: a system that produces variety without foresight, in which the variants that persist are selected by environmental fit rather than by the system's intentions. The trickster archetype is not a metaphor imported from human social experience and projected onto nature. It is a precise structural description of how open-ended generative systems behave when operating without teleological guidance. The San encoded this insight into the character of their creator god. That it matches the logic of molecular biology is not a coincidence that requires explanation. It is the recognition of an underlying pattern.

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4. The Anthropological Depth of the Mantis Archetype

4.1 Rock Art, Trance, and Therianthropic Intelligence

The mantis does not appear only in San creation narrative. It saturates the entire visual, ritual, and cognitive culture of the San across a period spanning at least 27,000 years of documented rock art (Coulson & Campbell, 2001). David Lewis-Williams's analysis of San rock art demonstrated that the painted images of therianthropic figures — beings that are simultaneously human and animal — are not decorative or symbolic in the thin sense. They are records of altered states of consciousness, specifically the trance states induced by sustained rhythmic dance, hyperventilation, and focused auditory entrainment that form the core of San healing and initiation practice (Lewis-Williams, 2002).

In these trance states, the shaman (the *n/om-kxao*, or "owner of n/om," the life force that San cosmology treats as the fundamental animating energy of all living systems) undergoes a process of therianthropic transformation: the dissolution of the boundary between human and animal identity, followed by access to perceptual states in which the structure of reality becomes visible in a way unavailable to ordinary waking consciousness. The mantis is the pre-eminent animal associated with this transformation. |Kaggen himself is therianthropic: he moves between human, insect, and other animal forms as fluidly as a shaman moves between states of consciousness.

Lewis-Williams and Pearce (2004) established that San rock art is a systematic record of this knowledge — not illustration but documentation, painted by practitioners to preserve and transmit information about the phenomenology of altered states and their

cosmological implications. The San do not sharply distinguish between art, science, and religion because, in their practice, these are aspects of a single enquiry: the systematic investigation of the structure of consciousness and its relationship to the structure of reality.

4.2 N/om: The Coherence Field

Central to San cosmology is the concept of n/om: a form of energy or force that is present in all living things, concentrates in certain individuals (healers), can be activated by specific practices (sustained rhythmic dance, singing, clapping), and can be transmitted between people and between people and the natural world. When n/om is activated and flows freely, the community experiences what San describe as !kia: a state of heightened coherence, shared perception, and healing capacity.

From the perspective of social science, n/om functions as a theory of social cohesion grounded in a physical medium. It is not merely metaphorical. The San describe n/om with remarkable consistency across geographically separated groups, in ways that suggest it refers to a repeatable, intersubjectively verifiable experience rather than a culturally variable belief. Marshall (1969), Katz (1982), and Lee (1984) all documented, through extended fieldwork with Ju/'hoansi communities, that healing dances produce measurable states of physiological arousal, altered autonomic function, and subjective reports of shared perceptual experience in participants — including individuals who had not been told what to expect.

The social function of the healing dance — and of n/om as its medium — is the periodic re-establishment of coherence within the community. When internal tensions accumulate,

when illness strikes, when the community's relationship with the natural world feels disordered, the dance is called. The activation and redistribution of n/om reconstitutes the social body. The San do not have separate institutions for medicine, religion, and social governance because their practice does not separate these functions. The healing dance is simultaneously therapeutic, spiritual, and political.

This is a sophisticated social technology, not a primitive ritual. Its sophistication lies precisely in its integration: it addresses the individual body, the social body, and the cosmological order as aspects of a single coherent system, using a single practice (resonant dance and acoustic entrainment) operating through a single medium (n/om as coherence field).

4.3 The Mantis Across Cultures: A Persistent Archetype

The mantis archetype does not confine itself to southern Africa. Cross-cultural analysis of insectoid creator and trickster figures reveals a pattern of remarkable consistency across populations that had no historical contact with one another.

In ancient Egypt, the *akh* — the transfigured spirit capable of moving between worlds — was associated with the crested ibis but also with the mantis, which appears in hieroglyphic contexts associated with transformation and the navigation of the *Duat* (the underworld). Mantis amulets have been recovered from pre-dynastic Egyptian sites (Armitage & Clutton-Brock, 1981).

Among Aboriginal Australians — whose cultural continuity has been documented to at least 65,000 years (Clarkson et al., 2017) — insect-associated beings, particularly those

connected with transformation and the navigation of the Dreaming, appear in several traditions, most notably in Aranda and Warlpiri ceremonial contexts. The structural role of these beings — as trickster-creators who hold the world without controlling it — parallels |Kaggen's role precisely.

In Mesoamerican traditions, the grasshopper-being (*chapulín*) appears in Aztec cosmology as a creator and transformer associated with the origin of agricultural knowledge (Sahagún, 1577/1981). In Japanese folklore, the mantis (*kamakiri*) is associated with warriors, precision, and hidden knowledge — the same cluster of attributes that characterise |Kaggen in San narrative.

The persistence of this archetype across independent traditions separated by tens of thousands of years of cultural divergence suggests that it does not originate in cultural diffusion. It originates in something that all these traditions encountered independently: a structural pattern in the relationship between consciousness, creativity, and the natural world that the mantis — with its extraordinary neurological sophistication, its therianthropic ambiguity between animal and alien, its strategy of absolute stillness followed by explosive transformation — instantiates more clearly than any other organism accessible to pre-industrial observation.

4.4 VALIS and the Modern Recurrence

Philip K. Dick's account of his 1974 experiences — documented in the eight thousand pages of *The Exegesis* and fictionalised in the VALIS trilogy — contains, embedded within a characteristically modern framework of gnostic theology, information theory, and paranoid speculation, a description of an encounter with what he called a Vast Active Living

Intelligence System: an external, non-human intelligence that communicated through the injection of information into the perceptual field of the recipient (Dick, 1981, 1982).

The insectoid or mantis-type entity is one of four contact archetypes that recur consistently across accounts of anomalous experience collected from independent sources across the twentieth century (Vallee, 1988; Mack, 1994). The others are small humanoid figures, tall luminous guides, and formless light or geometric intelligence. What is notable about this taxonomy is not its metaphysical status — which remains entirely open — but its structural consistency across culturally independent accounts. People who have never heard of |Kaggen describe encounters with insectoid intelligences that display precisely |Kaggen's characteristic traits: extreme stillness, sudden explosive intervention, ambiguous creative/destructive intention, and the transmission of information that the recipient did not know how to process.

Dick's own account of the pink light of 2-3-74 — the sudden injection of information, the recovery of knowledge he felt he had always possessed but had forgotten (*anamnesis*), the sense of contact with a living intelligent system embedded in the fabric of the world — corresponds structurally to what San shamans describe as the activation of n/om: the coherence field becoming suddenly accessible, saturating the perceptual field, carrying information whose source is outside the individual mind but inside the individual body.

The San do not need to have met Philip K. Dick. The structural logic of the contact experience appears to be independent of the cultural framework within which it is interpreted. The San interpreted it as |Kaggen. Dick interpreted it as VALIS. The Ju/'hoansi healer interprets it as n/om breaking through during !kia. The content varies with the cultural container. The structure does not.

5. From Chemistry to Consciousness: The Cotterill Bridge

5.1 Probe-by-Movement as Universal Cognitive Strategy

The gap between the RNA World and the emergence of human acoustic intelligence spans approximately 4 billion years. Rodney Cotterill's work on the evolution of consciousness provides the crucial structural bridge (Cotterill, 2001).

Cotterill demonstrated that the fundamental cognitive strategy of all living systems has not changed since the earliest unicellular organisms. *Escherichia coli*, which has no neurons and no centralised nervous system, navigates chemical gradients by the following method: it moves first, evaluates the consequences of movement, then adjusts direction. It does not wait for a complete sensory map before acting. It acts, and the world's response to its action constitutes its information about the world. Cotterill called this probe-by-movement.

The identical strategy is present in every nervous system ever studied. The mammalian motor cortex does not receive sensory input and then command movement; it issues movement commands and receives the proprioceptive and exteroceptive consequences of those commands as its primary sensory data. Human thought, in Cotterill's analysis, is covert probe-by-movement: the motor system rehearses actions that are not executed, simulates their sensorimotor consequences, and evaluates the simulated feedback as if it were real. Thinking is internalised movement. This is not a metaphor. It is a structural description of the neural substrate of cognition — one strongly supported by subsequent

research on mirror neurons, motor theory, and embodied cognition (Gallese & Lakoff, 2005).

5.2 Sound as the Social Extension of Probe-by-Movement

The fully flexed sphenoid, by descending the larynx and expanding the pharyngeal resonating chamber, extends the probe-by-movement strategy into the social and acoustic domain. When a San elder produces a lateral click consonant, she is not transmitting an arbitrary symbol whose meaning has been assigned by social convention. She is producing a precisely specified acoustic eigenstate — a stable resonant configuration of the vocal tract — that induces a corresponding resonant state in the listener's auditory and motor system. The listener's motor cortex partially simulates the articulatory gestures required to produce the sound she hears. Understanding, on this account, is not symbolic decoding. It is motor resonance: the temporary alignment of two bodies in a shared acoustic eigenstate.

This has profound implications for social science. If meaning is grounded in motor resonance rather than symbolic convention, then the San practice of collective healing dance — in which rhythmic sound, movement, and breathing entrain participants into shared physiological states — is not a pre-rational alternative to linguistic communication. It is the deepest layer of human communication, the layer on which linguistic communication floats. The dance is not metaphor for social cohesion. It is the physical production of social cohesion through acoustic and kinetic entrainment.

5.3 What Was Lost in the Physics

The theoretical framework for understanding acoustic coherence as a physical carrier of

meaning was present, in embryonic form, in James Clerk Maxwell's original 1865 quaternion formulation of electromagnetism. Maxwell's equations included a scalar component describing longitudinal wave propagation — the physical form of sound as a coherence medium, not merely a mechanical pressure wave. When Oliver Heaviside simplified Maxwell's equations for engineering applications in 1884, this component was not retained. The simplified vector equations were sufficient for the practical purposes Heaviside had in mind, and the scalar component — without which the physical description of acoustic coherence as an information medium is incomplete — dropped out of the standard theoretical toolkit.

This was not a deliberate suppression. It was a pragmatic simplification whose long-term consequences were not visible at the time. Ferdinand de Saussure's 1916 claim that the relationship between sound and meaning is arbitrary — the foundational axiom of modern linguistics — was made in the absence of any physical framework for describing why it might not be. The arbitrariness thesis was not established by evidence. It was adopted by default in the absence of the relevant physics, which had been set aside a generation earlier for reasons that had nothing to do with linguistics.

The San click languages, viewed through the lens of acoustic eigenstate theory, are the empirical dataset that the arbitrariness thesis cannot account for. The density and precision of their phonemic categories is not a cultural accident. It is the product of a 100,000-year programme of systematic acoustic exploration of the eigenstate landscape of the human vocal tract — exactly the programme that a tradition that understood meaning as resonance, rather than symbol, would have developed and preserved.

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6. One Sequence, Four Descriptions

This paper has traced a single continuous sequence through four complementary registers:

In molecular biology: Self-replicating RNA molecules emerge in an aqueous environment, are encapsulated by spontaneously forming lipid vesicles, driven by external energy to replicate and diversify, eventually producing LUCA and the tree of life.

In developmental genetics: Hox genes encode a morphogenetic programme running for 600 million years, driving sphenoid flexion across primate evolution, producing in *Homo sapiens* — and most completely in the San — a vocal tract capable of acoustic eigenstate communication of extraordinary precision.

In cognitive neuroscience: The probe-by-movement strategy, present in *E. coli* and unchanged in principle across 4 billion years, is internalised in the human motor system to produce thought, and externalised through the sphenoid-enabled vocal tract to produce resonant language.

In San mythology, anthropology, and comparative cultural history: A bee carries a seed across primordial water, implants it in the mantis, dies; the mantis is warmed by the sun; the first human is born. The mantis — as trickster, shape-shifter, and creative container — recurs across cultures and millennia as the archetype of the intelligence that holds without controlling, that creates by not knowing what it creates.

These are not four different stories. They are one story, told in four languages developed by communities of inquiry — scientific, developmental, neuroscientific, and mythological —

that have not, until now, been placed in systematic conversation with one another.

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7. The San as Living Archive: Implications for Social Science

The San are not evolutionary predecessors of more developed peoples. They are the living archive of the oldest and fullest expression of the morphogenetic programme that produced human consciousness. Their click languages are not linguistic curiosities. They are a 100,000-year experimental record of the acoustic eigenstate landscape of the human vocal tract. Their mythology is not primitive cosmology. It is a mnemonic system within which the structural logic of the origin of life has been compressed into a form that oral transmission can preserve across hundreds of generations without distortion.

For the social sciences, the implications are significant:

The distinction between science and myth, imposed by post-Enlightenment epistemology, does not apply to oral traditions of sufficient antiquity and internal consistency. The San creation narrative satisfies both criteria. It is ancient beyond measure, and its structural logic — once decoded — is precise beyond the requirements of pure symbolism. The appropriate analytical tool is not the anthropological category of "belief" but the information-theoretic concept of encoding: what information does this narrative preserve, and in what form?

The San healing dance — and the n/om theory that underlies it — represents a sophisticated social technology for producing and distributing the coherence states that make collective

intelligence possible. Its suppression by colonial administration and missionary activity was not merely culturally destructive. It was the elimination of a tested methodology for social coherence management that modern societies, with their epidemic rates of social fragmentation, anxiety, and relational breakdown, are poorly positioned to dismiss.

The mantis, finally, is not a primitive image of an insect. It is the oldest surviving symbol for the logic of creative containment: the intelligence that holds the generative seed without knowing what it will become, that creates by providing the conditions for self-organisation rather than by imposing a design. In an era dominated by top-down design thinking and algorithmic control, this is not merely an anthropological observation. It is a design principle that the oldest human knowledge tradition has been demonstrating for 100,000 years.

The oldest knowledge is not less reliable than the newest. It has simply passed a test that no laboratory can replicate: a hundred thousand years of use.

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8. Conclusion

This paper has argued for a convergence across four independent frameworks — abiogenesis, developmental genetics, cognitive neuroscience, and San mythology and anthropology — that points toward a single conclusion: the San creation narrative is a structurally accurate mnemonic encoding of the sequence of events that produced life and human consciousness on Earth, preserved within a living cultural tradition that embodies,

in its language, its ritual practice, and its social technology, the fullest known expression of the morphogenetic programme that made acoustic intelligence possible.

Three implications follow:

For anthropology and the social sciences: oral traditions of sufficient antiquity should be analysed as information-encoding systems rather than belief systems. The methodology is structural isomorphism analysis, not symbolic interpretation.

For evolutionary biology: the inside-story account of sphenoid flexion as an internally driven morphogenetic programme reframes the standard narrative of human origins. The San are not at one end of an evolutionary scale. They are the living expression of the programme's earliest and most complete output.

For the study of consciousness and meaning: the probe-by-movement continuity from *E. coli* to San click language, mediated by the sphenoid, suggests that the boundary between cognition and communication is not where it has been assumed to be. Meaning is not processed after communication. It is the achievement of resonant coherence through communication. The San click languages are the empirical proof of concept.

The mantis is at the origin because the mantis describes the origin: not as metaphor, but as structural memory — the oldest knowledge, preserved in the oldest voices, about how life learned to hold itself together long enough to speak.

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"The oldest knowledge is the most advanced." — J. Konstapel, 2026