

# Mythology as Encoded Neurological History

*Regional Folklore as the Cultural Record of Localized Neurological Events*

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## ABSTRACT

We propose that regionally specific mythology — leprechauns in Ireland, vampires in the Balkans, the Oracle at Delphi, werewolves in Central Europe, Bigfoot in the Pacific Northwest — represents the encoded cultural record of localized, organic neurological events: outbreaks of hallucination caused by identifiable regional pathogens, environmental neurotoxins, or geological phenomena. Individual connections between specific mythologies and specific medical conditions are documented in the prior literature (Caporael, 1976; Gomez-Alonso, 1998; de Boer et al., 2001; Dolphin, 1985). What has not previously been proposed is the general principle: that this mechanism applies systematically to all regional mythology, that mythological content functions as a diagnostic fingerprint of the causative neurological agent, and that the lifecycle of a mythological tradition tracks the lifecycle of the underlying cause. We apply the History-Encoding Principle (Goss, 2026e) to mythology as Scale 16 of the framework, demonstrating that the myth satisfies all four structural components: signal, history payload, temporal marker, and tamper-evidence mechanism. We survey the prior art, engage the comparative mythology scholarship of Joseph Campbell and Alan Watts as

partial precursors, and propose three falsifiable predictions testable against existing historical, epidemiological, and archaeological records.

## 1. THE PROBLEM

Every culture on earth has produced regionally specific mythology. The leprechaun is Irish. The Jinn is Arabian. The Dreamtime beings are Australian. Bigfoot is Pacific Northwestern. The vampire is Balkan. These are not universal figures with local variations — they are genuinely specific to particular geographies, appearing densely in those regions and sparsely or not at all elsewhere.

The dominant scholarly explanations for mythology have been psychological and structural. Campbell (1949) proposed that the deep structure of mythology — the monomyth, the hero's journey — is universal because it maps the psychological process of individuation, arising from a collective unconscious common to all humans. Watts (1960, 1962) argued that mythological and mystical experiences constitute genuine data about the nature of consciousness. Both frameworks have significant explanatory power for the universal *structure* of mythology. Neither addresses the regional specificity of mythological *content*. Campbell documented the grammar of mythology. He did not explain the vocabulary.

The medical literature has approached regional mythology from the opposite direction, identifying specific disease-to-myth connections case by case. These individual connections are well established. What is absent is a unifying framework that treats them not as interesting anomalies but as instances of a general principle. The present paper proposes that framework.

We advance three claims, in increasing order of novelty:

1. **First:** the individual myth-to-disease connections documented in the literature are not coincidences. They are instances of a single general mechanism.
2. **Second:** the specific content of each regional mythology functions as a diagnostic fingerprint of the specific causative neurological agent — the hallucination type, the sensory modality, the perceived entity's behavior, and the conditions of its appearance are all determined by the pharmacology or pathophysiology of the cause.
3. **Third:** the lifecycle of a mythological tradition — when it appears, how intensely it propagates, the geographic boundaries it observes, and when it fades — tracks the lifecycle of the underlying neurological event.

## 2. THE HISTORY-ENCODING FRAMEWORK APPLIED TO MYTHOLOGY

The History-Encoding Principle (Goss, 2026e) identifies four structural components that appear wherever meaningful signals carry embedded representation of their own prior history. We apply these to mythology as follows.

*The signal* is the mythological tradition itself — the transmitted cultural narrative, the story as told and retold across generations. It is the object that crosses the boundary from one generation to the next, encoding something that was experienced.

*The history payload* is the specific neurological event: the hallucination, its content, its sensory character, its shared quality across the affected community. The community experiencing an ergot outbreak in medieval Ireland did not fabricate the small figures they reported encountering. They genuinely experienced them, encoded them, and transmitted the encoding. The leprechaun is the history payload.

*The temporal marker* is the geographic and cultural specificity of the tradition.

Leprechauns emerge from a specific region, a specific climate, a specific grain-growing culture, a specific historical window. These markers timestamp the origin event with the precision of a geographic coordinate and a climatic season — wet Irish winters, rye and barley contaminated by *Claviceps purpurea* — the same conditions that produced documented ergot outbreaks across Northern Europe.

*The tamper-evidence mechanism* is the internal consistency of the mythology. The leprechaun's specific appearance — small, dressed in green or red, associated with hidden treasure, mischievous but not malevolent — is too specific to be the product of pure cultural invention. The level of detail, reproduced consistently across independent tellings across centuries, indicates that the description was constrained by something. That constraint is the original neurological experience. The tamper evidence is the specificity itself.

### 3. PRIOR ART AND WHAT IT ESTABLISHES

The following individual connections are documented and constitute the evidential base upon which the unified framework rests. We do not claim credit for these individual observations. We claim that they are instances of a general principle not previously articulated.

#### *Ergot and witchcraft*

Caporael (1976) provided the first systematic evidence that the Salem witch trials of 1692 followed an outbreak of ergot contamination of rye. Ergot (*Claviceps purpurea*) produces alkaloids that act on serotonin and dopamine receptors, causing hallucinations, convulsions, crawling sensations, and paranoia. The geographic correlation is precise: witch trials were historically rare in regions that did not grow rye. Matossian (1989) extended this analysis across seven centuries of European demographic data. At least 83 documented outbreaks of ergotism occurred in European history, with a catastrophic French outbreak in 944 AD

affecting half the population of Aquitaine. The witch craze peak of 1560–1630 coincides with documented ergot outbreak peaks across Northern Europe.

Notably, Matossian's research establishes that the mythological encoding shifted while the biological cause remained constant. In medieval plague years, ergot symptoms were encoded as the Dance of Death. In the 16th and 17th centuries, as the same symptoms recurred, they were encoded as witchcraft. In the 18th century Age of Rationalism, the same symptoms became holy possession. The chemistry was stable. The mythology was the era-specific label applied to it.

### *Geological gas and the Oracle at Delphi*

De Boer, Hale, and Chanton (2001) published geological and chemical evidence that two fault systems intersect beneath the Temple of Apollo at Delphi, releasing ethylene and other hydrocarbon gases. Ethylene produces a trance state in which subjects remain conscious, can answer questions, and subsequently experience amnesia. This matches ancient accounts of the Pythia precisely. The Oracle of Apollo — consulted by generals, lawmakers, and rulers for 1,200 years — was operating above a confirmed geological gas source. Because the source was continuous, the myth became a permanent institution rather than a transient folk tradition.

### *Rabies, vampires, and werewolves*

Gomez-Alonso (1998) documented the match between rabies symptomatology and vampire folklore: nocturnal agitation, aggression, transmission by bite, hypersensitivity to light and sensory stimuli, salivation. A major rabies outbreak in Hungary in the 1730s coincided precisely with the most intense historical vampire panic on record — the panic that reached the Austrian imperial court and prompted official investigations and state-sanctioned stakings. The outbreak and the myth explosion are the same event described in two languages.

Porphyria (specifically congenital erythropoietic porphyria) adds a second signal: photosensitivity, reddish-brown teeth, and in acute forms, hallucinations and paranoia —

encoding the visual signature of the vampire figure. The vampire tradition thus carries signatures of two distinct causative agents. The myth is a composite fingerprint.

#### 4. THE DIAGNOSTIC FINGERPRINT PROPOSITION

The novel contribution of the present paper is the claim that mythological content is systematically diagnostic of the causative neurological agent.

CAUSATIVE AGENT	NEUROLOGICAL SIGNATURE	MYTH GENERATED
Ergot (Claviceps purpurea)	Visual hallucinations of small figures; flying sensations; convulsive dancing; paranoid ideation	Witches (flying, persecuting); Fair Folk / leprechauns (small inhuman figures); Dancing Mania
Ethylene gas (geological)	Responsive trance; prophetic quality; subsequent amnesia; occasional violent reaction	Oracle / Apollo speaking through a mortal vessel; divine prophesy requiring priestly interpretation
Rabies	Nocturnal aggression; transmission by bite; aversion to light and water; hypersalivation	Vampires and werewolves; nocturnal creatures created by bite, repelled by light and sensory stimuli
Porphyria (genetic)	Photosensitivity; reddened teeth; avoidance of sunlight; pallor; hallucinations in acute forms	Vampiric visual signature: pale, nocturnal, aversion to sunlight, blood-stained teeth

This correspondence is tight enough to propose that a skilled reader of the mythology — knowing nothing of the underlying medicine — could predict the biological signature from

the myth. Equally, a skilled epidemiologist knowing nothing of the folklore — given only the disease profile — could predict the mythological figure it would generate in a pre-scientific community. The myth is the disease, encoded in narrative. The disease is the myth, decoded by medicine.

## 5. THE LIFECYCLE MECHANISM

Regional myths do not appear randomly. They appear when the causative agent appears. They intensify when exposure intensifies. Their geographic range tracks the geographic range of the agent. And they fade when the agent fades.

The ergot-witch correlation follows agricultural and climatic cycles. Cold winters followed by wet springs produce ergot; the behavioral anomalies and hallucinations follow; the myth intensifies; the season changes, the contamination resolves, the manifestations subside. The tradition persists in cultural memory long after the acute phase, becoming folklore — the encoded residue of the episode.

The vampire panic of the 1720s–1740s tracks a rabies outbreak with epidemiological precision. When the outbreak resolved, the vampire hysteria subsided. The tradition persisted as folklore.

The Oracle of Delphi ran continuously for 1,200 years because the geological gas source ran continuously. The myth did not fade. It was institutionalized — and was ended only by external suppression (Theodosius I, 392 CE), not by fading of the cause. **When the causative agent is continuous, the myth becomes an institution. When it is episodic, the myth becomes folklore.**

## 6. CAMPBELL, WATTS, AND THE SYNTHESIS

Campbell (1949) proposed the monomyth: that the deep structure of mythology is universal because it maps universal psychological processes. The present framework offers a more parsimonious explanation for the same universality: all human brains share the same neurological hardware. When that hardware is overwhelmed by a neurological insult, it generates experiences that follow universal structural patterns — departure from ordinary perception, encounter with overwhelming forces, return to ordinary consciousness changed. The monomyth structure is the universal hallucination architecture. Campbell documented it exhaustively. He attributed it to the collective unconscious when the shared neurology of the species is sufficient to explain it.

But Campbell could not explain regional specificity. The collective unconscious, being universal, cannot explain why leprechauns are Irish and Jinn are Arabian. The present framework can: the regional vocabulary is determined by regional neurological agents, while the universal grammar is determined by universal brain architecture. Campbell explains the structure of mythology. The present paper explains the content.

Watts (1960, 1962) argued that altered states — however induced — provide genuine data about the nature of consciousness and should not be dismissed as aberrations. The communities generating the leprechaun tradition were not lying, confabulating, or being superstitious. They were accurately reporting genuine neurological experiences and encoding them in the only symbolic system available to them. The hallucinations were real. The causal attribution was wrong. The experience was genuine data, encoded faithfully. The myth is the encoding. Watts' framework is the philosophical foundation the present argument requires.

Together, Campbell and Watts provide partial anticipations of the present framework without arriving at it. Campbell had the myths without the medicine. Watts had the philosophy of experience without the mechanism. The present paper provides the mechanism.

## 7. FALSIFIABLE PREDICTIONS

**Prediction 1 — Geographic correlation.** The geographic distribution of specific mythological traditions should correlate with the historical geographic distribution of the proposed causative agents. Ergot-dependent traditions should be dense in rye-growing regions with documented cold-wet climatic cycles and absent or sparse in regions where rye was not cultivated. The Mediterranean, where rye was rarely grown, should show low witch-trial density — and this is historically confirmed. This prediction can be tested against Berezkin's database of 2,000+ mythemes across 781 worldwide traditions, crossed with historical agricultural records and climate reconstructions.

**Prediction 2 — Temporal correlation.** The appearance and intensity peaks of specific mythological traditions should correlate with datable outbreaks. Vampire hysteria should peak at rabies outbreak times. Witch-trial intensity should peak at ergot-favorable climatic moments. Where crop records, climate proxies, and mythological documentation overlap, these correlations should be recoverable with the tools of historical epidemiology.

**Prediction 3 — Content specificity.** For any regional mythology whose causative agent can be plausibly identified, the specific behavioral and visual details of the mythological figure should match the specific neurological signature of the agent. Where the match is poor, the proposed causative agent is wrong and a different agent should be sought.

## 8. LIMITATIONS AND OPEN QUESTIONS

Not all mythology is generated by this mechanism. Cosmological myths — accounts of the origin of the sun, the moon, natural phenomena — do not require neurological events as a causal explanation. The present framework does not claim to explain all mythology. It claims to explain regionally specific creature and entity mythology: the figures that appear to people, communicate with them, afflict or assist them, and are geographically bounded.

The individual connections are not all equally established. The ergot-witch and ethylene-Oracle connections rest on substantial published evidence. The porphyria-vampire connection has been challenged on technical grounds (Dolphin's original proposal was never formally published and has been criticized for confusing folkloric with fictional vampires). The present framework does not depend on any single connection being correct; it requires only that the general pattern holds across sufficient cases.

The diagnostic fingerprint proposition has not been formally tested. Working backwards from mythological content to causative agent requires a methodology for mythological content analysis combined with a database of neurological hallucination signatures that does not currently exist in integrated form. This is a research program, not a completed demonstration.

Several major mythological traditions have no identified causative agent. Bigfoot, the Dreamtime beings, the Jinn — the proposed causes remain speculative. These are open questions the framework identifies without resolving. They are listed in Appendix A.

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## 9. CONCLUSION

Regional mythology is not noise. It is signal — specifically, it is history-encoded signal carrying the compressed neurological history of communities that experienced anomalous shared states they could not otherwise explain. The myth is the signal. The neurological event is the history payload. The geographic and cultural specificity is the temporal marker. The internal consistency of mythological detail is the tamper-evidence mechanism.

The individual connections between specific mythologies and specific medical conditions are prior art, well established in the literature. What is proposed here for the first time is the general principle: that this is the mechanism for regional entity mythology across cultures, and that the content of each tradition is a diagnostic fingerprint of the causative agent, readable in

principle by any investigator with sufficient knowledge of both mythological detail and neurological hallucination signatures.

Campbell documented the grammar of mythology without explaining what generated the vocabulary. Watts validated the evidential reality of altered experience without providing the mechanism. The History-Encoding Principle provides both: the myth is a history-encoded signal, the community is the transmitter, the neurological event is what was being encoded, and the fading of the tradition tracks the fading of the cause.

*Mythology is not what we thought the world was before we knew better.*

*Mythology is what we encoded about what actually happened, in the only language we had.*

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## APPENDIX A

### Mythology–Causative Agent Grid — Outbreak Timeline vs. Myth Explosion

This appendix presents the comparative evidence survey. Cases are organized into three tiers: Confirmed (outbreak documented, timeline correlation established), Probable (strong circumstantial correlation), and Open (mechanism hypothesized, causative agent unconfirmed).

**Mechanism types:** **Type 1** — the community IS the patient (shared hallucinations from shared exposure). **Type 2** — the community OBSERVES the patient (encodes a mythological explanation for witnessed symptoms). Many traditions encode both.

#### TIER 1 — CONFIRMED CASES

##### Ergot (*Claviceps purpurea*) → Witches, Fairies, Dancing Mania

Type 1 · Northern & Central Europe, New England

SUBSTRATE

Cold winters + wet springs; rye and barley crops

DOCUMENTED  
OUTBREAKS

83+ European outbreaks. France 944 AD (half population of Aquitaine). France 1100 AD (~20,000 deaths). Salem 1692. Saint-Esprit, France 1951.

NEUROLOGICAL  
SIGNATURE

Visual hallucinations of small/inhuman figures; flying sensations; convulsive dancing; paranoid ideation; crawling sensations

MYTHOLOGY GENERATED

Witches (flying, persecuting); Fair Folk / leprechauns (small figures); Dancing Mania / St. Vitus Dance; demonic possession

MYTH EXPLOSION

Witch craze peaked 1560–1630. Fairy lore dense in wet rye-growing regions of Ireland and Britain

TIMELINE VERDICT

**OUTBREAK PRECEDED AND DROVE MYTH EXPLOSION**

CRITICAL OBSERVATION

The mythological label changed across eras (demonic → witchcraft → holy possession) while the neurological fingerprint remained constant. Same chemistry. Different cultural encoding.

Ethylene Gas (geological) → Apollo, The Oracle

Type 1 · Delphi, Greece

SOURCE

Two fault systems beneath Temple of Apollo releasing ethylene, ethane, and methane through bituminous limestone (confirmed: de Boer et al., 2001)

NEUROLOGICAL  
SIGNATURE

Trance with maintained consciousness; ability to respond; subsequent amnesia; occasional violent reaction; "sweet smell" (Plutarch, 1st century CE)

MYTHOLOGY GENERATED

Apollo speaking through a mortal vessel; divine prophecy requiring priestly interpretation; the Oracle as permanent institution

DURATION

Active ~800 BCE – 392 CE (1,200 years). Ended by imperial suppression, not by fading of cause.

TIMELINE VERDICT

**CONTINUOUS CAUSE → PERMANENT INSTITUTION**

## Rabies → Vampires & Werewolves

Type 2 · Central & Eastern Europe, Balkans

### NEUROLOGICAL SIGNATURE

Nocturnal agitation; extreme aggression; transmission by bite; hypersensitivity to light and water; hypersalivation; neurological degeneration

### MYTHOLOGY GENERATED

Vampires (nocturnal, created by bite, repelled by light and sensory stimuli); werewolves (animalistic aggression, bite transmission)

### DOCUMENTED CONCURRENT OUTBREAK

Major rabies outbreak in Hungary, 1730s — precisely contemporaneous with vampire panic peak

### TIMELINE VERDICT

**OUTBREAK COINCIDED EXACTLY WITH MYTH EXPLOSION**

## Porphyria (genetic) → Vampire Visual Signature

Type 2 · Balkans, European aristocracy (consanguineous clustering)

### SIGNATURE

Extreme photosensitivity; reddish-brown teeth; nocturnal lifestyle necessity; in acute forms: hallucinations, paranoia

### MYTHOLOGY GENERATED

Vampiric appearance: pallor, avoidance of sunlight, reddened appearance, nocturnal habit, garlic sensitivity (exacerbates porphyria)

### TIMELINE VERDICT

**GENETIC CLUSTER, NOT EPIDEMIC** — persistent low-frequency visual signal, not outbreak-driven

### NOTE

Vampire tradition is a composite fingerprint: porphyria encodes appearance; rabies encodes aggression and transmission. One tradition, two independent biological signals.

## TIER 2 — PROBABLE CASES

## Lead Poisoning → Roman Gods Speaking Directly to Humans

Type 1 · Roman Empire, urban centers

SOURCE	Chronic lead exposure via infrastructure (pipes, wine vessels, cooking pots)
NEUROLOGICAL SIGNATURE	Hallucinations; cognitive deterioration; erratic behavior; mood instability
MYTHOLOGY GENERATED	Roman gods communicating personally with humans; divine madness as a category; documented "madness" of multiple emperors recorded as divine intervention
TIMELINE VERDICT	<b>PROBABLE</b> — correlation testable against archaeological records of Roman water systems

**Case 1: Ergot (Slavic) → Domovoi, Kikimora, Holy Fools**

Type 1 · Russia, Slavic regions

NEUROLOGICAL SIGNATURE	Visual hallucinations of small presences; tactile sensations of being touched; perceived domestic intrusions
MYTHOLOGY GENERATED	Domovoi (household spirit); Kikimora (nocturnal female spirit); Yurodivye (holy fools — hallucinating wanderers treated as sacred)
TIMELINE VERDICT	<b>PROBABLE</b> — requires archival cross-reference of Russian harvest records, climate data, and mythology density

**TIER 3 — OPEN CASES**

MYTHOLOGY	REGION	CANDIDATE AGENT	WHAT WOULD CONFIRM
Leprechauns / Fair Folk	Ireland / Celtic Britain	Ergot on barley/rye in wet climate	Pre-modern Irish weather records + fairy sighting density maps
Bigfoot / Sasquatch	Pacific Northwest	Amanita muscaria (endemic to PNW forests); or	Fungal habitat maps vs. sighting geography; indigenous oral history epidemiology

MYTHOLOGY	REGION	CANDIDATE AGENT	WHAT WOULD CONFIRM
		undiscovered regional pathogen	
Jinn	Arabian Peninsula	Extreme heat hallucination; endemic viral encephalitis; desert-specific pathogen	Historical temperature records; endemic disease maps; water source analysis
Dreamtime Beings	Australia	Unidentified regional neurological event	Indigenous oral history; geological/biological survey of endemic organisms
Wendigo	Northern Canada / Great Lakes	Starvation-induced hypoglycemic hallucination; endemic subarctic pathogen	Correlation with documented famine periods; Algonquian territory range
Kappa	Japan	Unknown	Requires dedicated research
Norse Trolls / Giants	Scandinavia	Ergot variants; genetic conditions causing acromegaly (Type 2)	Rye cultivation records; clinical lycanthropy documentation

**Summary observation:** The Tier 3 open cases are not failures of the framework. They are its research program. For each open case, the grid provides the specific type of evidence needed to confirm or refute the proposed agent; the geographic and historical sources where that evidence would be found; and the falsification condition. This is what a falsifiable framework looks like in practice.

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