Context, Constraint, and Symbolic Agency: Toward an Epistemic Bridge Between Quantum Foundations and Ritual Practice

Ian Staley
Independent Researcher, USA
ORCID: 0009-0000-8592-3186
Email: ian.t.staley@gmail.com
Correspondence: ian.t.staley@gmail.com

Abstract

This paper develops a theoretical framework relating quantum foundations, ritual practice, and perception without collapsing into "quantum mysticism." It defines magick as structured symbolic action directed toward transforming attention, volition, and experience, framing ritual as a form of epistemic context-engineering. Quantum theory is utilized not as evidence for occult efficacy, but as a formal challenge to observer-independent realism. Drawing on QBism, Relational Quantum Mechanics, and the formal notion of contextuality, the author argues that descriptions of a system depend inherently on the conditions of probing. This renders the epistemic bridge to ritual structurally natural by prioritizing the agent's perspective over absolute description. The framework integrates predictive processing and active inference as bridging concepts. By viewing perception as model-based inference rather than passive reception, ritual is interpreted as a disciplined intervention into how agents organize salience and expectation. Recent research in quantum information-theoretic active inference supports this, suggesting quantum systems can be modeled as observers minimizing Bayesian prediction error. The resulting synthesis avoids supernatural overreach, positioning ritual and magick as rigorous, context-sensitive technologies of symbolic agency that fundamentally alter the structure of lived experience.

Keywords: quantum contextuality; ritual; magick; predictive processing; active inference

1. Introduction

Attempts to connect quantum theory with esoteric practice have a long and largely unfortunate history. They typically fail because they move too quickly from the conceptual strangeness of quantum mechanics to claims that consciousness, intention, or symbolism directly alters physical reality. That move is usually a category mistake. Quantum mechanics is a mathematically precise physical theory, while magick, in the most serious historical and practical sense, refers to structured symbolic and ritual action aimed at transforming experience, interpretation, agency, or the perceived order of events. A publishable bridge between these domains therefore cannot rely on sensational claims that "quantum physics proves magick." It must instead identify a narrower point of contact that is conceptually rigorous. The central proposal of this paper is that the strongest bridge is epistemic: quantum theory matters because it complicates naïve assumptions about context-free description, while ritual matters because it reorganizes how agents interpret, inhabit, and act within experience [1][2].

This reframing shifts the problem. The relevant question is not whether ritual overrides physics, but whether both quantum theory and ritual practice expose the inadequacy of a simplistic picture in which reality is fully given, passively observed, and transparent to description. In quantum foundations, the measurement problem remains a live issue because the formal success of quantum mechanics does not by itself settle what the quantum state represents, how definite outcomes arise, or how classical description emerges from quantum probabilities [1]. Contextuality deepens this difficulty by showing that quantum outcomes cannot, in general, be understood as the revelation of pre-existing values independent of the measurement arrangement [2]. Agent-centered interpretations sharpen the point further. QBism treats quantum states not as objective descriptions of reality but as expressions of an agent's beliefs, making measurement itself a participatory, reality-constituting act [3][4]. Relational quantum mechanics dissolves the notion of absolute observer-independent facts altogether, rendering all physical description relative to the observing system [5][6]. Taken together, these developments do not imply that mind creates reality, but they do challenge the intuition that observation simply reads off context-free facts from an observer-independent world.

Ritual studies raise a parallel question from another direction. Recent work in ritual cognition treats ritual not as irrational residue but as a structured mode of action that regulates emotion,

performance, and social connection through repetition, formalization, and symbolic density [7]. Rituals are often causally opaque, yet still judged effective under conditions of uncertainty, stress, or high personal stakes [8]. Other work shows that opacity and contextual framing can make actions appear specially charged, and that ritualization can increase the perceived efficacy of otherwise instrumental acts [9][10]. These findings suggest that ritual efficacy often operates through context, interpretation, and enacted significance rather than straightforward physical intervention. Cognitive science of ritual further decomposes magick into distinct ingredients including contagion heuristics, agency detection, and conceptual blending, showing that magical rituals exploit specific cognitive architectures [11][12].

A mediating concept is therefore needed, and the strongest candidate is perception. Predictive-processing accounts describe perception as active inference, in which organisms generate and update models of the world rather than merely receiving sensory inputs [13][14][15]. On this view, experience is shaped by priors, contextual weighting, and reciprocal exchange between expectation and input. Crucially, the free energy principle has recently been reformulated in scale-free quantum information-theoretic terms, demonstrating that quantum systems themselves can be regarded as observers minimizing Bayesian prediction error [16]. This creates a direct formal chain from quantum mechanics through active inference to any system that minimizes prediction error—including ritual practitioners. Moreover, emerging research explicitly frames ritual as an active inference mechanism, arguing that religions function as recursive feedback loops aligning cognition, social interactions, and cultural environments [17]. Esoteric visualization practices have also been analyzed through predictive coding, showing how they exploit the brain's expectation-based information processing [18].

The paper's main argument follows from this convergence. Magick can be rendered theoretically serious when treated as structured symbolic practice, quantum theory contributes a rigorous account of contextual constraint, and predictive processing explains how ritual can reorganize experienced reality without invoking paranormal physics. The argument is intentionally restrained. It does not claim that ritual causes wavefunction collapse, that consciousness singularly generates the physical world, or that quantum theory confirms occult traditions. Its claim is more modest and, for that reason, more defensible: both quantum foundations and ritual studies expose the

importance of context, mediated access, and constraint in any account of reality available to finite observers.

Table 1. Domain Comparison: Three Pillars of the Epistemic Bridge

Dimension	Quantum Foundations	Ritual / Magick	Predictive Processing
Core claim	Description is context-dependent; outcomes depend on measurement arrangement	Symbolic action transforms attention, meaning, agency, and experienced reality	Perception is model-based inference shaped by priors and precision-weighting
Role of context	Constitutive: values are not pre-existing independent of measurement context (contextuality)	Constitutive: ritual framing alters how events are experienced and judged effective	Constitutive: priors, precision, and expectations structure what is perceived
Role of observer/agent	Participatory: QBism treats states as agent beliefs; RQM renders all facts relational	Participatory: practitioner's attention, intention, and enacted meaning are central	Participatory: organism actively generates and tests predictions about the world
Challenge to naïve realism	Reality is not a context-free collection of pre-existing properties	Experienced reality is shaped by symbolic and ritual frames, not passively received	Perception is not a passive mirror but active, model-mediated contact with the world
Key sources	[1][2][3][5][19][20][21]	[7][8][9][10][11][12][22][23]	[13][14][15][16][17][24]

Figure 1. Three Pillars of the Epistemic Bridge

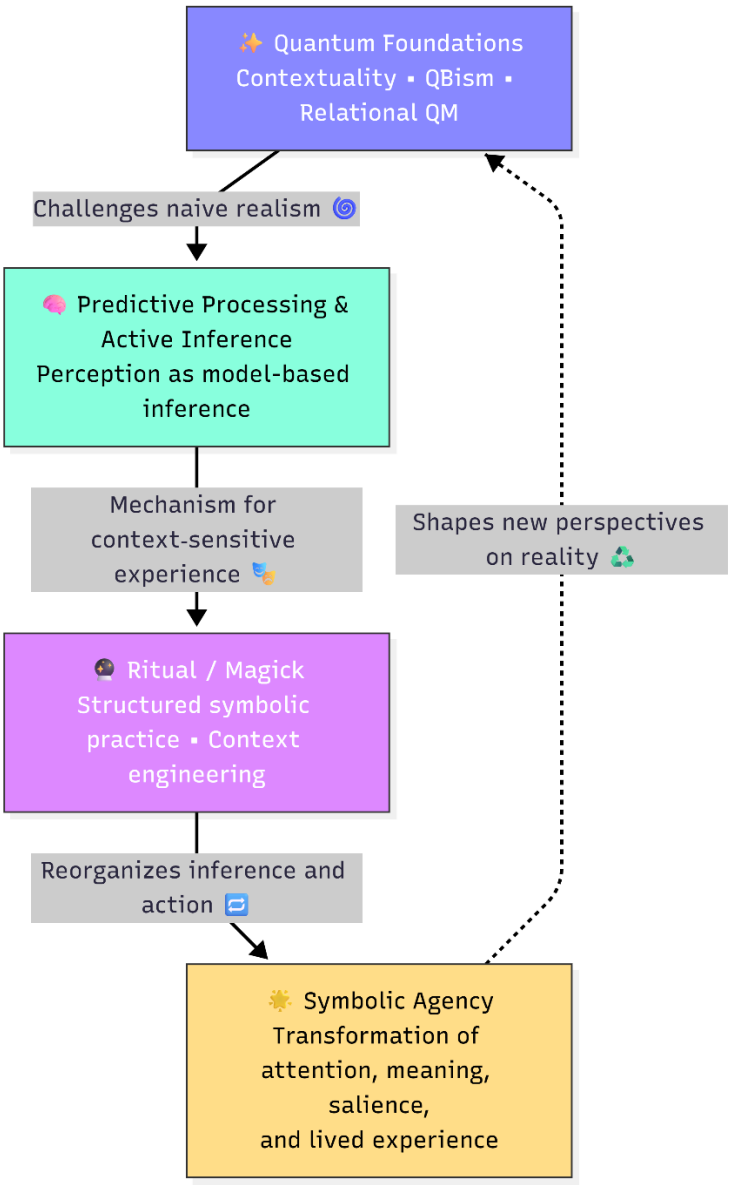

Figure 1. Three Pillars of the Epistemic Bridge. Quantum foundations challenge context-free realism; predictive processing supplies the cognitive mechanism; ritual and magick are then interpreted as forms of symbolic context engineering that reshape lived experience without implying paranormal violations of physical law.

2. Quantum Foundations and the Problem of Description

The role of quantum theory in this paper is limited but important. It is not introduced as mystical evidence, but as a reminder that physics itself has already complicated some common-sense assumptions about description and reality. Bub's information-theoretic treatment of the

measurement problem underscores that quantum mechanics is not merely a recipe for prediction; it also forces questions about the relation between formal structure, information, and definite outcomes [1]. Even where one resists stronger metaphysical conclusions, the point remains: quantum theory does not sit comfortably with the idea that physical properties are always simply there, waiting to be transparently revealed.

Contextuality is especially relevant because it is more precise than popular appeals to "observer effect." The modern review by Budroni and colleagues makes clear that Kochen–Specker contextuality concerns the impossibility, under certain conditions, of assigning globally definite values to observables independent of measurement context [2]. Recent advances extend this further: Selby and colleagues have demonstrated that measurement incompatibility is neither necessary nor sufficient for contextuality under Spekkens' generalized framework [25], while Okay, Ipek, and Raussendorf have developed new topological frameworks using simplicial sets from homotopy theory that extend measurement scenarios to spaces of measurements and outcomes [26]. A major theme issue connecting contextuality to freedom of choice—and thereby to the volitional dimension of agent autonomy—has recently appeared, further strengthening the relevance of contextuality to discussions of intentional practice [27]. Spekkens' seminal extension of contextuality to any operational theory is particularly important because it makes contextuality applicable in principle to modeling cognitive and ritual processes [19]. None of this says that human thought creates the world. It says that, at the formal level, the values attributed to a system cannot always be detached from the arrangement through which they are elicited.

2.1 Agent-Centered Interpretations: QBism and Relational Quantum Mechanics

QBism is arguably the single most important quantum interpretation for this paper because it treats quantum states as expressions of an agent's beliefs rather than objective reality, making the epistemic bridge to ritual practice structurally natural. The foundational quantum Bayesian framework established that quantum probabilities encode agent beliefs [3], and the mature articulation of QBism connected it to pragmatism, pluralism, and meliorism—philosophical traditions directly relevant to ritual-as-epistemic-practice [4]. Later work demonstrated that the Born Rule functions as a normative addition to Bayesian reasoning, analogous to how ritual practice imposes normative epistemic constraints on participants [28]. Fuchs' concept of "participatory realism" is particularly crucial: it argues that reality is more than any third-person

perspective can capture, directly grounding ritual as participatory epistemic practice [20]. Mermin's mature statement frames science as fundamentally about individual experience [29], while a recent volume bridging phenomenology and QBism contains chapters connecting first-person experiential frameworks with quantum foundations that speak directly to ritual's experiential dimensions [30].

Relational quantum mechanics complements QBism from a different angle. Rovelli's foundational paper establishes that quantum states describe relations between observer and system, not absolute properties [5]. The distinction between stable and relative facts provides a framework for how shared meaning emerges from perspectival engagement, paralleling the dynamics of communal ritual [6]. Adlam and Rovelli's introduction of cross-perspective links enables formal modeling of how different perspectives communicate and co-constitute shared descriptions—a structure directly applicable to understanding how ritual enables intersubjective meaning-making [31]. Robson's work directly connecting relational quantum mechanics with contextuality bridges two of this paper's core quantum concepts [32].

A second boundary marker comes from Bell's classic paper on the Einstein–Podolsky–Rosen paradox, which sharpened the conflict between local realist intuitions and quantum predictions [21]. Bell's result matters here not because nonlocality helps explain occult claims, but because it further destabilizes the common-sense picture of reality as a collection of locally pre-determined facts independent of the conditions of inquiry. Brůkner's no-go theorem for observer-independent facts formally establishes that facts themselves are observer-dependent in extended Wigner's friend scenarios [33], while Frauchiger and Renner have shown fundamental limitations on the self-referential application of quantum theory [34]. These results do not support paranormal conclusions. They matter because they show that quantum theory already forces caution about naïve realism, context-free description, and straightforward causal intuition.

3. Ritual, Magick, and Symbolic Efficacy

If physics is to be handled carefully, so must magick. The term is often either romanticized or dismissed, but both moves obscure its analytic value. In this paper, magick is defined narrowly as structured symbolic and ritual practice aimed at transforming attention, intention, meaning, perceived agency, or lived outcomes. That definition is deliberately restrained. It does not require

proof of supernatural intervention, but it preserves what is philosophically and psychologically interesting: symbolic action is treated as efficacy-bearing.

The psychology of ritual supports this framing. Hobson and colleagues argue that rituals regulate emotions, optimize performance goal states, and reinforce social connection, drawing their force from both bottom-up features of action and top-down systems of meaning [7]. Experimental work has demonstrated that even minimal rituals modulate neural performance monitoring, causally affecting the error-related negativity brain signal [35]. Legare and Souza add that ritual efficacy is often judged under conditions of causal opacity, especially in situations where uncertainty or desired transformation is salient [8]. Kapitány and Nielsen similarly show that opaque action sequences, especially when given ritual context, are perceived as unusually special and desirable [9]. More recent work finds that ritualization increases the perceived efficacy of instrumental actions, even when nothing else about the task has changed [10]. Together, these findings suggest that ritual does not have to violate physics in order to alter how events are interpreted and acted upon.

This is where magick becomes theoretically legible. Rather than treating it as a rival natural science, one can understand it as a specialized form of symbolic causality: a disciplined attempt to reorganize the relation between self, world, uncertainty, and possibility through signs, sequences, and enacted frames. Boyer and Liénard's analysis breaks ritual into distinct cognitive ingredients including normative scripting, coalition signaling, and magical claims linked to intuitive expectations of contagion and resemblance [11]. Sørensen's cognitive theory of magic uses conceptual blending to explain how magical rituals are cognitively represented as effective—magic exploits agency detection, contagion, and similarity as fundamental cognitive operators [12]. McCauley and Lawson's ritual form hypothesis demonstrates that cognitive representations of ritual form determine performance frequency and emotional arousal [36], while Whitehouse's modes of religiosity distinguish imagistic and doctrinal modes that provide cognitive architecture for different ritual functions [37].

3.1 Anthropological Foundations

The anthropological treatment of ritual and magic further strengthens this framing. Tambiah's foundational work on the magical power of words established that ritual language is

performative—words do things through specific verbal modalities, making magick an epistemic action rather than merely a propositional belief [22]. His later critique of ethnocentric dismissals of magic as "irrational" reexamined the classical opposition of magic, science, and religion [38]. Rappaport's magisterial synthesis argued that ritual is co-extensive with language and foundational to humanity, introducing concepts of canonical invariance and self-referential messages that apply directly to magick as constitutive epistemic practice [39]. Bell's theory of ritualization as culturally strategic practice shows how ritual creates and reinforces power relations through bodily action [40].

Two ethnographic contributions are especially relevant. Luhrmann's classic study introduced the concept of "interpretive drift"—how magical practice functions as an epistemic training process that reorganizes perception and interpretation over time [23]. Her more recent work demonstrates that people must work to make gods and other intentional agents experientially real through specific cognitive practices, arguing that practice is more powerful than belief [41]. Kapferer's concept of "virtuality" in ritual—where ritual creates a space that is experienced as more real than everyday actuality—is highly relevant to understanding how symbolic practice can generate felt transformations of reality [42]. These ethnographic findings converge with the cognitive science evidence: magick functions through the systematic reorganization of attention, interpretation, and experienced agency, not through violations of physical law.

4. Predictive Processing, Active Inference, and the Bridge to Ritual

Predictive-processing frameworks offer the most credible bridge between quantum discourse and ritual discourse because they explain how experience can be structured without collapsing into subjectivism. Friston's free-energy principle presents perception, action, and learning as processes that minimize prediction error relative to a generative model [13]. Clark's influential treatment of predictive brains extends this into a broader philosophy of mind, emphasizing that perception, cognition, and action form a unified architecture in which organisms are constantly anticipating and explaining sensory inputs [14]. Hohwy's foundational monograph develops the brain as hypothesis-testing mechanism systematically minimizing prediction error [24]. Recent work on visual perception frames scene and object perception as joint probabilistic inference in which context acts as a prior shaping recognition and salience [15]. Seth's account of perception as

"controlled hallucination" demonstrates that the brain generates predictions constrained by sensory reality, while his extension of predictive coding to interoception is crucial for understanding how ritual alters embodied experience [43][44]. These sources converge on a common point: perception is neither a passive mirror nor a free invention. It is model-mediated contact with the world.

This matters for ritual theory because ritual can now be interpreted as an intervention into the inferential ecology of experience. Repetition strengthens expectation. Symbolic forms compress complex meanings into manipulable units. Prescribed gestures, times, and spaces regulate attention and precision. Ritual language and sequence authorize interpretations that would otherwise remain unstable. What ritual changes, on this account, is not necessarily external physics, but the way ambiguity is processed, evidence is weighted, action is licensed, and significance is assigned. Ritual is thus a form of context engineering acting on the conditions under which a world is encountered.

4.1 Active Inference Meets Ritual: A New Frontier

The connection between predictive processing and ritual has recently moved from analogy to direct theoretical engagement. Xygalatas directly argues that rituals function as active inference mechanisms, framing religion as recursive feedback loops aligning cognition, social interactions, and cultural environments [17]. This may be the single most important new reference for the present paper, because it explicitly provides the theoretical linkage that earlier work could only gesture toward. Van Elk and Aleman develop a comprehensive predictive processing model of religion and spirituality [45], while Veissière and colleagues describe how cultural practices—including ritual—transmit shared predictions through "Thinking Through Other Minds" [46]. Constant, Clark, Kirchhoff, and Friston extend active inference to encompass ritual practices as cognitive niche construction that optimizes generative models [47]. Ramstead, Veissière, and Kirmayer bridge predictive processing and cultural cognition, theorizing ritual as "cultural affordance" scaffold [48].

The placebo literature provides further mechanistic support. Ongaro and Kaptchuk demonstrate that the medical ritual prompts the brain to interpret even small interoceptive changes as healing, showing that therapeutic rituals and active treatments act on the same inferential process [49]. Pagnini and colleagues extend the Bayesian brain framework to placebo and nocebo effects,

emphasizing attention as amplifier or silencer of sensory information [50]. These findings are directly relevant to understanding magick: if ritual context alters the inferential weighting of bodily and environmental signals, then the felt efficacy of ritual is neither imaginary nor paranormal—it is a predictable consequence of how context shapes inference.

Asprem's work may be the most directly relevant source for this paper: he uses predictive coding to explain how visualization-based esoteric practices exploit the brain's probabilistic, expectation-based information processing [18]. This demonstrates that the predictive processing framework is not merely compatible with esoteric practice in the abstract, but has already been applied to specific magickal techniques with productive results. Meditation research further supports this connection: Laukkonen and Slagter show that meditation reduces temporal depth of processing in the predictive hierarchy [51], while work on extended active inference frames contemplative practices as designer environments that recalibrate predictive models [52].

5. The Quantum–Predictive Processing Bridge

The most significant recent development for this paper's thesis is the formal bridge between quantum theory and the free energy principle. Fields, Friston, Glazebrook, and Levin have reformulated the free energy principle in scale-free quantum information theory, demonstrating that quantum systems can be regarded as observers minimizing Bayesian prediction error, and that the FEP is asymptotically equivalent to the Principle of Unitarity [16]. This creates a direct formal chain from quantum mechanics through active inference to any system that minimizes prediction error. The implications are profound: the same mathematical framework that governs quantum measurement governs perceptual inference, which in turn governs how ritual context shapes experience. The chain is not merely analogical—it is formally grounded.

5.1 Quantum Cognition: The Established Formal Precedent

The quantum cognition research program provides this paper's strongest existing precedent because it demonstrates that quantum formalism can model cognition better than classical probability—without claiming the brain is a quantum computer. This is precisely the epistemic (not ontological) use of quantum theory that the present paper advocates. The seminal textbook by Busemeyer and Bruza covers contextuality, interference, and entanglement in cognition using

Hilbert spaces and density matrices [53]. A landmark target article with over thirty commentaries argued that quantum probability outperforms classical Bayesian models for specific cognitive phenomena [54]. Bruza, Wang, and Busemeyer's influential review highlights how quantum interference and incompatibility explain cognitive phenomena resistant to classical modeling [55]. The most recent comprehensive review covers the conjunction fallacy, disjunction effect, order effects, perception, and memory [56].

Crucially, experimental evidence now demonstrates genuine quantum-type contextuality in human choice behavior. Basieva and colleagues provide experimental evidence for true contextuality in human decision making, showing that quantum-like context effects are not mere artifacts of experimental design [57]. Bruza, Fell, and Hoyte distinguish quantum contextuality from mere context-sensitivity in probabilistic models of cognition, sharpening the conceptual precision of the quantum-cognition approach [58]. These findings are directly relevant because they establish that contextuality—the core quantum concept employed in this paper—operates in human cognition as a formal structural property, not merely as a metaphor.

5.2 The Formal Argument Chain

Table 2. Argument Chain: From Quantum Contextuality Through Active Inference to Ritual

Step	Claim	Key Sources
1	Quantum contextuality is a fundamental feature of nature: measurement outcomes depend irreducibly on measurement context.	[2][25][26][19]
2	Contextuality has been experimentally demonstrated in human cognition—not as metaphor but as formal structural property.	[57][58]
3	Quantum probability models cognition better than classical probability for specific phenomena (order effects, conjunction fallacy, etc.).	[53][54][55][56]
4	QBism interprets quantum states as agent beliefs; measurement is participatory and reality-constituting. RQM makes all facts relational.	[3][4][20][5][31]
5	The free energy principle has been formally reformulated in quantum information theory: quantum systems can be regarded as observers minimizing prediction error.	[16]
6	Rituals function as active inference mechanisms, operating through the same Bayesian inference as medical treatments and placebos.	[17][49][50]

7	Esoteric visualization practices exploit predictive coding; ritual restructures cognitive models through interpretive drift and cultural niche construction.	[18][23][41][47][48]

This chain runs from physics through formal cognitive science to anthropology without ever requiring supernatural claims. The bridge is epistemic throughout—quantum theory provides analytical tools for understanding what ritual practitioners are actually doing cognitively, just as quantum cognition provides tools for understanding judgment and decision-making.

Figure 2. Formal Argument Chain from Quantum Context to Ritual Efficacy

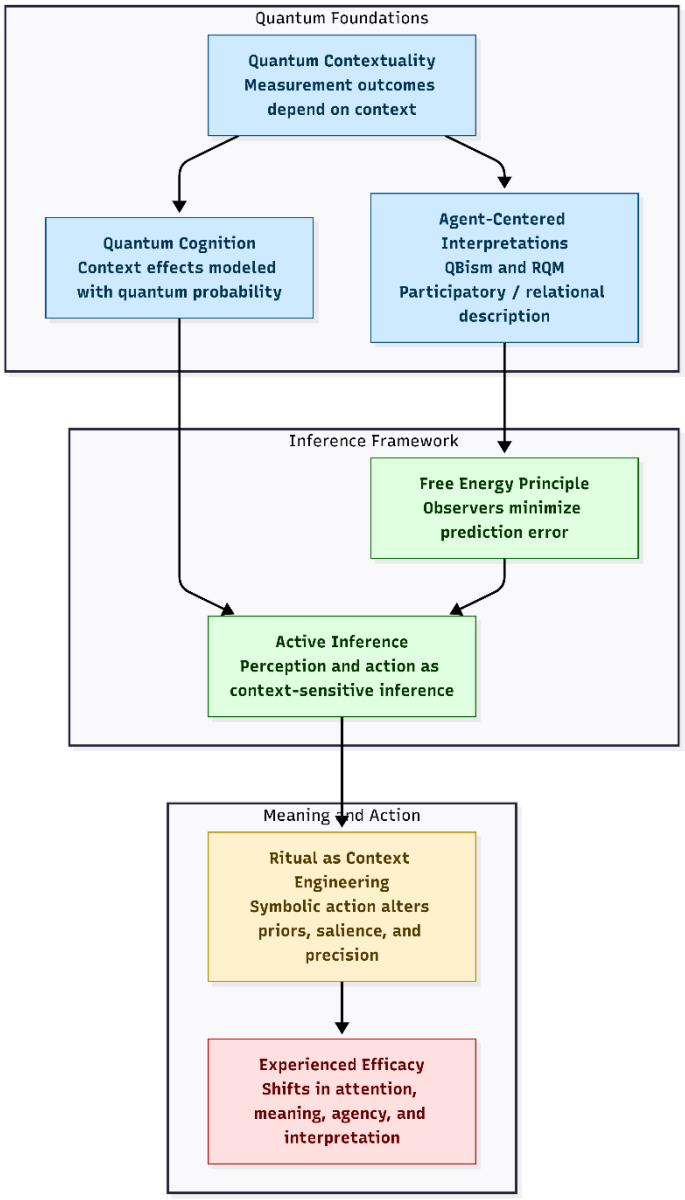

Figure 2. Formal Argument Chain from Quantum Context to Ritual Efficacy. The paper's core argument chain. Quantum theory provides a rigorous account of contextual constraint and participatory description; quantum cognition and the free-energy framework connect this to model-based perception; ritual then appears as a structured intervention into inferential context, yielding changes in lived experience and perceived efficacy.

6. Toward an Epistemic Model of Magick

The synthesis proposed here may be called an epistemic model of magick. On this view, magick is effective insofar as it changes the conditions under which an agent interprets the world and acts within it. Its efficacy is not primarily miraculous but inferential, affective, and practical. Ritual context R alters how evidence E bears on a hypothesis space H, such that:

$$P(H \mid E, R) \propto P(E \mid H, R) \cdot P(H \mid R)$$

The value of this expression is not technical novelty. It is to emphasize that context belongs inside the inferential structure rather than outside it. Ritual changes priors, confidence, salience, and interpretive weighting. It can therefore transform lived reality in a nontrivial sense even while leaving the external laws of physics untouched [13][14][16]. The formal reformulation of the free energy principle in quantum information-theoretic terms [16] means this is not merely a loose Bayesian analogy: the same mathematical structures that characterize quantum measurement also characterize perceptual inference, and ritual operates precisely at the interface where context shapes both.

Under this framework, magick is best understood as the disciplined cultivation of symbolic agency. It seeks to act on the world by first acting on the conditions through which the world becomes intelligible, emotionally charged, and practically available. Quantum theory does not validate that practice as paranormal physics. What it contributes is a formally precise warning against overly simple pictures of reality as context-free and transparently given [1][2][5][20]. Predictive processing then explains how context enters perception and action [13][14][15][16]. Active inference applied to ritual explains how symbolic action can intentionally modulate that process [17][18][46][47]. Ritual cognition shows the empirical mechanisms through which symbolic action operates [7][8][9][10][11][12]. The result is not a proof of occult doctrine, but a credible

interdisciplinary model in which magick can be examined as a technology of symbolic, perceptual, and epistemic transformation.

6.1 Methodological Justification of Cross-Domain Comparison

A likely objection is that the comparison between quantum theory and ritual is merely metaphorical. This paper must demonstrate that its analogies are material rather than merely formal, following Hesse's foundational distinction [59]. Gentner's structure-mapping framework provides the dominant framework for evaluating when analogies are productive versus misleading [60]. The present paper argues that the analogy between quantum measurement and ritual practice is material in Hesse's sense: both involve contextual, observer-participatory, reality-constituting epistemic acts within structured operational constraints.

This paper is also mindful of legitimate critiques. Jaksland's important critical response distinguishes legitimate from illegitimate uses of quantum theory in social science [61]. The present framework avoids the errors Jaksland identifies by using quantum concepts as analytical tools with formal content rather than as rhetorical gestures. It also heeds the warning sounded by Sokal and Bricmont against the abuse of scientific concepts outside their domain [62]—the paper uses quantum formalism with genuine understanding and explicitly acknowledges limits. Wendt's sustained attempt to apply quantum epistemology to social science provides a developed precedent for this kind of interdisciplinary move [63][64], while Atmanspacher's definitive survey of quantum approaches to consciousness distinguishes serious from pseudoscientific treatments [65]. The Pauli–Jung conjecture and its formalizations offer another disciplined framework in which mind–matter correlations can be discussed using quantum concepts without supernatural claims [66][67].

7. Boundaries, Objections, and Falsifiability

A strong paper in this area must police its own limits. One likely objection is that the framework reduces magick to psychology and therefore evacuates what practitioners care about. The answer is that theoretical restraint is a feature, not a bug: this paper is not adjudicating every metaphysical claim made in esoteric traditions. It is constructing the most rigorous interdisciplinary account that

can survive academic scrutiny. If later work wanted to defend stronger claims, it would need additional evidence.

A second objection is that the paper conflates different senses of "observer." In quantum mechanics, "observer" typically means a physical system that interacts with another; in ritual theory, it means a human agent embedded in a symbolic world. The paper's response is that it does not claim these are the same. Rather, it claims that both domains reveal the constitutive role of context in what can be described, known, or experienced. The formal reformulation of the free energy principle in quantum information theory [16] provides the strongest response to this objection, because it shows that the mathematical structure governing quantum measurement and the mathematical structure governing perceptual inference are not merely analogous but formally connected.

For falsifiability, the framework generates modest, testable consequences. At the cognitive level, ritualized framing should alter salience, confidence, interpretation of ambiguous outcomes, and perceived agency more strongly than matched non-ritual actions [7][8][10]. At the formal level, quantum-probability models should outperform classical models for ritual-modulated context effects in perceptual judgments [53][54][57]. Contextuality-by-Default analyses should detect differences in measured contextuality between ritual and control conditions [57][58]. None of these tests would prove occult efficacy, but they would test the proposed mechanism of symbolic context engineering.

Table 3. Explicit Non-Claims and Positive Claims

This Paper Does NOT Claim	**This Paper DOES Claim**
Ritual causes wavefunction collapse or directly alters quantum states.	Quantum contextuality provides a formal challenge to context-free realism that illuminates why context matters in ritual.
Consciousness literally manufactures external physical reality.	Agent-centered interpretations (QBism, RQM) show that description is always perspectival and participatory.
Quantum mechanics empirically confirms esoteric doctrines.	Quantum formalism provides analytical tools for modeling context-sensitive cognition, as demonstrated by quantum cognition research.

Entanglement explains synchronicity or action-at-a-distance in magick.	Ritual functions as context engineering that reshapes inferential ecology via predictive processing mechanisms.
The brain is a quantum computer or requires quantum coherence for cognition.	Quantum-like mathematical models (non-ontological) can capture context effects in cognition better than classical probability.
Magick works by violating known physical laws.	Magick is a technology of symbolic agency operating on attention, meaning, salience, and perceived efficacy.

8. Conclusion

This paper has argued that a meaningful interdisciplinary bridge between quantum foundations and ritual practice is possible—but only when built with epistemic discipline. The bridge rests on three pillars. First, quantum foundations, particularly contextuality, QBism, and relational quantum mechanics, show that physical description is not always context-free and that measurement is a participatory act [1][2][3][5][20][21][33]. Second, predictive-processing and active inference models show that perception and action are model-based, context-sensitive, and shaped by priors, precision-weighting, and cultural scaffolding [13][14][15][16][17][46][47]. Third, ritual cognition and the anthropology of magick show that structured symbolic practice can systematically reorganize attention, salience, agency, and the meaning of experience [7][8][9][10][11][12][22][23][41].

Three recent publications dramatically strengthen this thesis. Fields and colleagues' quantum formulation of the free energy principle creates a formal bridge between quantum information theory and active inference [16]. Xygalatas' treatment of rituals as active inference mechanisms provides the predictive-processing-to-ritual connection [17]. And Asprem's application of predictive coding to esoteric visualization practices closes the circuit from quantum contextuality through predictive processing to ritual cognition [18]. Together, these papers—none of which existed even a few years ago—make the argumentative chain from physics through cognitive science to anthropology formally grounded rather than merely gestural.

The resulting framework preserves the rigor of quantum theory, avoids supernatural overreach, and opens a defensible interdisciplinary space. Magick, on this account, is not paranormal physics. It is a technology of symbolic agency: a disciplined form of context engineering that operates on

the inferential, perceptual, and affective conditions through which reality is encountered, interpreted, and acted upon. Quantum theory does not prove this practice. It illuminates the epistemic terrain on which it operates.

Use of Artificial Intelligence Tools

Large language model assistants (Anthropic Claude) were used during manuscript preparation for editorial tasks including prose refinement, citation cross-checking, structural review, and bibliographic formatting. All conceptual content, interpretive arguments, citation selections, and final wording are the author's own. The author reviewed and verified all AI-assisted output and takes full responsibility for the manuscript.

Data Availability Statement

This is a theoretical paper bridging quantum foundations, predictive processing, and the study of ritual practice; no new empirical data were generated or analyzed. All sources cited are publicly available through the references listed.

Funding

This research received no external funding.

Conflicts of Interest

The author declares no conflicts of interest. The author is employed by eCapital Corp in a strategy and architecture role unrelated to the subject matter of this paper; eCapital Corp had no role in the conception, preparation, or decision to publish this work.

References

[1] Bub, J. "The Measurement Problem from the Perspective of an Information-Theoretic Interpretation of Quantum Mechanics." Entropy 17, no. 11 (2015): 7374–7386. DOI: https://doi.org/10.3390/e17117374

[2] Budroni, C., Cabello, A., Gühne, O., Kleinmann, M., and Larsson, J.-Å. "Kochen–Specker Contextuality." Reviews of Modern Physics 94, no. 4 (2022): 045007. DOI: https://doi.org/10.1103/RevModPhys.94.045007

[3] Caves, C. M., Fuchs, C. A., and Schack, R. "Quantum Probabilities as Bayesian Probabilities." Physical Review A 65, no. 2 (2002): 022305. DOI: https://doi.org/10.1103/PhysRevA.65.022305

[4] Fuchs, C. A. "QBism, the Perimeter of Quantum Bayesianism." arXiv:1003.5209 (2010).

[5] Rovelli, C. "Relational Quantum Mechanics." International Journal of Theoretical Physics 35, no. 8 (1996): 1637–1678. DOI: https://doi.org/10.1007/BF02302261

[6] Di Biagio, A. and Rovelli, C. "Stable Facts, Relative Facts." Foundations of Physics 51, article 30 (2021). DOI: https://doi.org/10.1007/s10701-021-00429-w

[7] Hobson, N. M., Schroeder, J., Risen, J. L., Xygalatas, D., and Inzlicht, M. "The Psychology of Rituals: An Integrative Review and Process-Based Framework." Personality and Social Psychology Review 22, no. 3 (2018): 260–284. DOI: https://doi.org/10.1177/1088868317734944

[8] Legare, C. H. and Souza, A. L. "Evaluating Ritual Efficacy: Evidence from the Supernatural." Cognition 124, no. 1 (2012): 1–15. DOI: https://doi.org/10.1016/j.cognition.2012.03.004

[9] Kapitány, R. and Nielsen, M. "Adopting the Ritual Stance: The Role of Opacity and Context in Ritual and Everyday Actions." Cognition 145 (2015): 13–29. DOI: https://doi.org/10.1016/j.cognition.2015.08.002

[10] Wen, N. J., Herrmann, P. A., and Legare, C. H. "Ritualization Increases the Perceived Efficacy of Instrumental Actions." Cognition 215 (2021): 104823. DOI: https://doi.org/10.1016/j.cognition.2021.104823

[11] Boyer, P. and Liénard, P. "Ingredients of 'Rituals' and Their Cognitive Underpinnings." Philosophical Transactions of the Royal Society B 375, no. 1805 (2020): 20190439. DOI: https://doi.org/10.1098/rstb.2019.0439

[12] Sørensen, J. A Cognitive Theory of Magic. AltaMira Press, 2007. ISBN: 978-0759110373.

[13] Friston, K. "The Free-Energy Principle: A Unified Brain Theory?" Nature Reviews Neuroscience 11, no. 2 (2010): 127–138. DOI: https://doi.org/10.1038/nrn2787

[14] Clark, A. "Whatever Next? Predictive Brains, Situated Agents, and the Future of Cognitive Science." Behavioral and Brain Sciences 36, no. 3 (2013): 181–204. DOI: https://doi.org/10.1017/S0140525X12000477

[15] Peelen, M. V., Berlot, E., and de Lange, F. P. "Predictive Processing of Scenes and Objects." Nature Reviews Psychology 3 (2024): 13–26. DOI: https://doi.org/10.1038/s44159-023-00254-0

[16] Fields, C., Friston, K., Glazebrook, J. F., and Levin, M. "A Free Energy Principle for Generic Quantum Systems." Progress in Biophysics and Molecular Biology 173 (2022): 36–59. DOI: https://doi.org/10.1016/j.pbiomolbio.2022.05.008

[17] Xygalatas, D. "Prediction Beyond Belief: Rituals as Active Inference Mechanisms." The International Journal for the Psychology of Religion 35, no. 3 (2025). DOI: https://doi.org/10.1080/10508619.2025.2497137

[18] Asprem, E. "Explaining the Esoteric Imagination: Towards a Theory of Kataphatic Practice." Aries 17, no. 1 (2017): 17–50.

[19] Spekkens, R. W. "Contextuality for Preparations, Transformations, and Unsharp Measurements." Physical Review A 71, no. 5 (2005): 052108. DOI: https://doi.org/10.1103/PhysRevA.71.052108

[20] Fuchs, C. A. "On Participatory Realism." In I. T. Durham and D. Rickles (Eds.), Information and Interaction, pp. 113–134. Springer, 2017. DOI: https://doi.org/10.1007/978-3-319-43760-6_7

[21] Bell, J. S. "On the Einstein Podolsky Rosen Paradox." Physics Physique Fizika 1, no. 3 (1964): 195–200. DOI: https://doi.org/10.1103/PhysicsPhysiqueFizika.1.195

[22] Tambiah, S. J. "The Magical Power of Words." Man, New Series 3, no. 2 (1968): 175–208.

[23] Luhrmann, T. M. Persuasions of the Witch's Craft. Harvard University Press, 1989. ISBN: 0-674-66324-1.

[24] Hohwy, J. The Predictive Mind. Oxford University Press, 2013. DOI: https://doi.org/10.1093/acprof:oso/9780199682737.001.0001

[25] Selby, J. H., Schmid, D., et al. "Contextuality without Incompatibility." Physical Review Letters 130 (2023): 230201. DOI: https://doi.org/10.1103/PhysRevLett.130.230201

[26] Okay, C., Ipek, S., and Raussendorf, R. "Simplicial Quantum Contextuality." Quantum 7 (2023): 1009. DOI: https://doi.org/10.22331/q-2023-05-22-1009

[27] Abramsky, S., Cabello, A., Dzhafarov, E. N., and Kurzyński, P. (Eds.). "Quantum Contextuality, Causality and Freedom of Choice." Philosophical Transactions of the Royal Society A 382, no. 2268 (2024). DOI: https://doi.org/10.1098/rsta.2023.0009

[28] Fuchs, C. A. and Schack, R. "Quantum-Bayesian Coherence." Reviews of Modern Physics 85, no. 4 (2013): 1693–1715. DOI: https://doi.org/10.1103/RevModPhys.85.1693

[29] Mermin, N. D. "Making Better Sense of Quantum Mechanics." Reports on Progress in Physics 82, no. 1 (2019): 012002. DOI: https://doi.org/10.1088/1361-6633/aae2c6

[30] Berghofer, P. and Wiltsche, H. A. (Eds.). Phenomenology and QBism: New Approaches to Quantum Mechanics. Routledge, 2023. DOI: https://doi.org/10.4324/9781003259008

[31] Adlam, E. and Rovelli, C. "Information is Physical: Cross-Perspective Links in Relational Quantum Mechanics." Philosophy of Physics 1, no. 1 (2023): article 4. DOI: https://doi.org/10.31389/pop.8

[32] Robson, C. "Relational Quantum Mechanics and Contextuality." Foundations of Physics 54, no. 4 (2024): 1–22.

[33] Brůkner, Č. "A No-Go Theorem for Observer-Independent Facts." Entropy 20, no. 5 (2018): 350. DOI: https://doi.org/10.3390/e20050350

[34] Frauchiger, D. and Renner, R. "Quantum Theory Cannot Consistently Describe the Use of Itself." Nature Communications 9 (2018): 3711. DOI: https://doi.org/10.1038/s41467-018-05739-8

[35] Hobson, N. M., Bonk, D., and Inzlicht, M. "Rituals Decrease the Neural Response to Performance Failure." PeerJ 5 (2017): e3363. DOI: https://doi.org/10.7717/peerj.3363

[36] McCauley, R. N. and Lawson, E. T. Bringing Ritual to Mind: Psychological Foundations of Cultural Forms. Cambridge University Press, 2002. ISBN: 0521016290.

[37] Whitehouse, H. Modes of Religiosity: A Cognitive Theory of Religious Transmission. AltaMira Press, 2004. ISBN: 0759106150.

[38] Tambiah, S. J. Magic, Science, Religion, and the Scope of Rationality. Cambridge University Press, 1990. ISBN: 978-0521376310.

[39] Rappaport, R. A. Ritual and Religion in the Making of Humanity. Cambridge University Press, 1999. ISBN: 0521296900.

[40] Bell, C. Ritual Theory, Ritual Practice. Oxford University Press, 1992. ISBN: 978-0199733620.

[41] Luhrmann, T. M. How God Becomes Real: Kindling the Presence of Invisible Others. Princeton University Press, 2020. ISBN: 9780691164465.

[42] Kapferer, B. The Feast of the Sorcerer: Practices of Consciousness and Power. University of Chicago Press, 1997. ISBN: 0226424138.

[43] Seth, A. K. "Interoceptive Inference, Emotion, and the Embodied Self." Trends in Cognitive Sciences 17, no. 11 (2013): 565–573. DOI: https://doi.org/10.1016/j.tics.2013.09.007

[44] Seth, A. K. and Tsakiris, M. "Being a Beast Machine: The Somatic Basis of Selfhood." Trends in Cognitive Sciences 22, no. 11 (2018): 969–981. DOI: https://doi.org/10.1016/j.tics.2018.08.008

[45] Van Elk, M. and Aleman, A. "Brain Mechanisms in Religion and Spirituality: An Integrative Predictive Processing Framework." Neuroscience & Biobehavioral Reviews 73 (2017): 359–378.

[46] Veissière, S. P. L., Constant, A., Ramstead, M. J. D., Friston, K. J., and Kirmayer, L. J. "Thinking Through Other Minds: A Variational Approach to Cognition and Culture." Behavioral and Brain Sciences 43 (2020): e90. DOI: https://doi.org/10.1017/S0140525X19001213

[47] Constant, A., Clark, A., Kirchhoff, M., and Friston, K. J. "Extended Active Inference: Constructing Predictive Cognition Beyond Skulls." Mind and Language 37, no. 3 (2022): 373–394. DOI: https://doi.org/10.1111/mila.12330

[48] Ramstead, M. J. D., Veissière, S. P. L., and Kirmayer, L. J. "Cultural Affordances: Scaffolding Local Worlds Through Shared Intentionality." Frontiers in Psychology 7 (2016): 1090. DOI: https://doi.org/10.3389/fpsyg.2016.01090

[49] Ongaro, G. and Kaptchuk, T. J. "Symptom Perception, Placebo Effects, and the Bayesian Brain." PAIN 160, no. 1 (2019): 1–4. DOI: https://doi.org/10.1097/j.pain.0000000000001367

[50] Pagnini, F. et al. "Placebo and Nocebo Effects as Bayesian-Brain Phenomena." Perspectives on Psychological Science 18, no. 4 (2023): 820–842. DOI: https://doi.org/10.1177/17456916221141383

[51] Laukkonen, R. E. and Slagter, H. A. "From Many to (N)one: Meditation and the Plasticity of the Predictive Mind." Neuroscience & Biobehavioral Reviews 128 (2021): 1–15. DOI: https://doi.org/10.1016/j.neubiorev.2021.06.021

[52] Kukkonen, K. et al. "Thinking Elsewhere: Designer Environments for Religion and Reading." Religion, Brain & Behavior (2025). DOI: https://doi.org/10.1080/2153599X.2025.2574276

[53] Busemeyer, J. R. and Bruza, P. D. Quantum Models of Cognition and Decision. Cambridge University Press, 2012. ISBN: 978-1-107-41988-9.

[54] Pothos, E. M. and Busemeyer, J. R. "Can Quantum Probability Provide a New Direction for Cognitive Modeling?" Behavioral and Brain Sciences 36, no. 3 (2013): 255–274. DOI: https://doi.org/10.1017/S0140525X12001525

[55] Bruza, P. D., Wang, Z., and Busemeyer, J. R. "Quantum Cognition: A New Theoretical Approach to Psychology." Trends in Cognitive Sciences 19, no. 7 (2015): 383–393. DOI: https://doi.org/10.1016/j.tics.2015.05.001

[56] Pothos, E. M. and Busemeyer, J. R. "Quantum Cognition." Annual Review of Psychology 73 (2022): 749–778. DOI: https://doi.org/10.1146/annurev-psych-033020-123501

[57] Basieva, I., Cervantes, V. H., Dzhafarov, E. N., and Khrennikov, A. "True Contextuality Beats Direct Influences in Human Decision Making." Journal of Experimental Psychology: General 148, no. 11 (2019): 1925–1937.

[58] Bruza, P. D., Fell, L., and Hoyte, P. "Contextuality and Context-Sensitivity in Probabilistic Models of Cognition." Cognition 226 (2022): 105155.

[59] Hesse, M. B. Models and Analogies in Science. University of Notre Dame Press, 1963.

[60] Gentner, D. "Structure-Mapping: A Theoretical Framework for Analogy." Cognitive Science 7, no. 2 (1983): 155–170.

[61] Jaksland, R. "Distinguishing Two (Unsound) Arguments for Quantum Social Science." European Journal for Philosophy of Science 13, no. 3 (2023): 1–21.

[62] Sokal, A. and Bricmont, J. Fashionable Nonsense: Postmodern Intellectuals' Abuse of Science. Picador, 1998. ISBN: 0312195451.

[63] Wendt, A. Quantum Mind and Social Science: Unifying Physical and Social Ontology. Cambridge University Press, 2015. DOI: https://doi.org/10.1017/CBO9781316005163

[64] Wendt, A. "The Mind–Body Problem and Social Science: Motivating a Quantum Social Theory." Journal for the Theory of Social Behaviour 48, no. 2 (2018): 188–204. DOI: https://doi.org/10.1111/jtsb.12171

[65] Atmanspacher, H. "Quantum Approaches to Consciousness." Stanford Encyclopedia of Philosophy, 2020.

[66] Atmanspacher, H., Römer, H., and Walach, H. "Weak Quantum Theory: Complementarity and Entanglement in Physics and Beyond." Foundations of Physics 32 (2002): 379–406.

[67] Atmanspacher, H. and Fuchs, C. A. (Eds.). The Pauli-Jung Conjecture and Its Impact Today. 2nd ed. Imprint Academic, 2014. ISBN: 9781845406684.