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Programmable Islamic Epistemology for the Modern Sciences: A Critical-Realist Bridges to Cosmology, Quantum Foundations, and Consciousness

Aliman Aliman

Muhammadiyah University, Makassar, Andonezi, aliman@unismuh.ac.id

Abstract

Original Research

This study develops a "programmable" Islamic epistemological framework that brings together kalām, Sufi ethics, and empirical method within one structured workflow. Here, "programmable" means translating metaphysical and ethical commitments into clear inputs, decision rules, checkpoints, and outputs that can be consistently applied and reviewed. The framework aims to improve explanation and testability in fields where metaphysical assumptions shape how evidence is interpreted. Al-Sanūsī's three judgements are converted into design rules–ethical gates, empirical warrants, and rational-coherence checks–while eight Islamic epistemic sources are arranged into a typed warrant model within a critical-realist perspective. Rather than presenting completed empirical studies, the article offers a methodological framework and illustrative applications using Bayesian model comparison, decision checkpoints, and dual-track protocols linking first-person reports with neural measures.The framework makes three illustrative contributions. In cosmology, it clarifies the role of priors and posterior sensitivity in fine-tuning debates. In quantum foundations, it proposes reporting standards grounded in Bell-type tests and the measurement problem. In consciousness studies, it presents intentionality-sensitive designs that connect phenomenology and neural dynamics under strict ethical safeguards. The program makes priors explicit, strengthens adjudication, and distinguishes normative, empirical, and rational warrants when setting priors and checking external validity.

Keywords:

Metaphysics, epistemology, *kalām*, critical realism, quantum indeterminacy, consciousness studies, Bayesian inference.

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Introduction

Modern knowledge production has been shaped by empirical observation, testable hypotheses, and continuing philosophical debates about evidence, explanation, and objectivity. Within Islamic intellectual circles (Lubis et al., 2023, p. 23), certain reductive or verificationist readings of positivism have encouraged an exclusive emphasis on sensory data, sometimes unsettling the classical equilibrium among revelation *(naql)*, reason *(ʿaql)*, and lived experience (*tajriba*) (Supena, 2022, p. 7). This concern has spurred calls to reassess the epistemic architecture binding these sources together (Poya & Rizapoor, 2023, p. 610). Recent perspectives argue that the dominance of such reductive empiricism is neither necessary nor desirable; instead, it suggests an opportunity for reconstruction. By re-anchoring empirical inquiry within a well-articulated metaphysical framework, one can clarify the status of causal claims, the role of values in knowledge (value-ladenness), and the normative dimensions of science. When revelation, reason, and experience are assigned clear warranting roles, they function as mutually illuminating sources that constrain speculation, establish ethical boundaries, and expand explanatory horizons (Rahman & Amir, 2023, p. 172).

Reconstructionist approaches position metaphysics as the crucial bridge between theological commitments and scientific practice (Amir & Rahman, 2023, p. 165). They advocate an epistemic shift where Islamic metaphysical insights provide guiding ideas and ontological commitments for formulating hypotheses, choosing models, and interpreting data, all without abandoning the fundamental necessity of empirical testing (Syihabuddin et al., 2023, p. 103). In these proposals, classical scholarly resources are revisited as living tools (Yafiz & Daulay, 2023, p. 875). For example, al-Ghazālī's fusion of rational reflection with spiritual insight is frequently cited to illustrate how intellectual training and moral cultivation together bolster the reliability of knowledge. Parallel efforts under the banner of Islamisation or reconciliation of knowledge delineate a systematic map of epistemic sources–revelation, reason, experience, and authoritative transmission–and integrate them into a unified project of knowledge (Rachman, 2020). These movements have inspired curricular innovations that weave epistemology into various disciplines (Fakhrurazi et al., 2024, p. 159), ensuring that scientific education proceeds in critical conversation with theology and ethics (Purwati et al., 2018, p. 842). Yet many of these initiatives remain programmatic rather than procedural: they identify valuable sources of knowledge but often do not specify how those sources should guide hypothesis formation, model comparison, evidential thresholds, or reporting standards.

This constructive drive has, however, generated pushback against overly irenic "harmony" narratives in Islam-and-science discussions. Critics caution that flowery invocations of harmony can gloss over unresolved tensions concerning miracles, scriptural literalism, the theory-ladenness of observation, and the proper demarcation between scientific method and metaphysical assumptions (Firman et al., 2024, p. 45). Declaring harmony too hastily risks sweeping aside genuine disagreements about evidentiary standards and the legitimate role of values in inference (Warapsari et al., 2023, p. 497). In response, recent scholarship advocates a more rigorous evaluation that avoids reductionism, treats a diversity of concepts as an asset, and situates debates within a historically aware and philosophically nuanced framework (Jamaludin et al., 2022, p. 2). This critique motivates the present article's shift from general compatibility claims to auditable procedures that make metaphysical and normative assumptions explicit rather than allowing them to remain implicit in scientific interpretation.

In light of this context, we identify a central problem: the absence of an operational research program that can translate Islamic metaphysical commitments into explicit, testable, and reproducible procedures for scientific reasoning. Our goal is not to simply restate that faith and science are compatible; rather, we aim to lay out a concrete methodological pathway–encompassing source identification, hypothesis formulation, and evidential adjudication–by which theological insights can play a constructive role without shielding claims from critical scrutiny. This article therefore develops a methodological framework and domain-specific illustrations rather than reporting completed empirical studies. To that end, we construct a critical-realist bridge. This stance assumes a reality that exists independently of the mind and a stratified model of causality, while also recognizing that all observation is theory-laden and influenced by normative and metaphysical assumptions (Poya & Rizapoor, 2023, p. 611). Because experience is theory-laden, it is not treated here as a neutral tribunal; rather, it functions as a disciplined and fallible source of constraint through replication, prediction, sensitivity analysis, and intersubjective scrutiny. The critical-realist position thus provides a disciplined interface between theology and empirical research design.

We draw several concrete resources from *kalām* (Islamic scholastic theology). Classical Ashʿarī and Māturīdī discussions on contingency and causality shed light on the relationships among divine agency, secondary causes, and human actions. Ashʿarī occasionalism underscores the dependence of all events on divine will, cautioning us against treating "laws of nature" as self-subsistent entities. Māturīdī perspectives, while also affirming God's ultimate control, allow for more robust created powers and

relatively stable natural tendencies. When translated into the philosophy of science, this range of views provides a rich analytic palette for modeling causal structures, adjudicating the reality of causal dispositions, and delineating the scope of inductive reasoning in domains prone to underdetermination (such as early-universe cosmology and quantum foundations). In essence, the *kalām* tradition offers criteria for what counts as a metaphysically coherent and theologically responsible explanation–without granting a license for methodological exceptionalism. Its role in the proposed framework is therefore heuristic and regulative: it clarifies assumptions, constrains interpretation, and guides model construction, but it does not replace domain-specific evidence, statistical testing, or replication.

A second, complementary resource is the Sufi-influenced ethical framework centered on intentionality and virtue. In this view, the moral quality of the inquiry itself–encompassing the researcher's intention (*niyyah*), self-discipline, and orientation toward the common good–is treated as a condition for responsible inquiry rather than as a substitute for evidence. Conducting scientific work with virtues such as honesty, humility, and stewardship effectively elevates that work to an act of worship. These ethical commitments are not meant to replace standard experimental controls, statistical testing, or replication; rather, they draw attention to the value-laden choices involved in formulating research questions, weighing harm against benefit, and interpreting results charitably (Jamaludin et al., 2022, p. 7). When combined with a critical-realist approach, Sufi ethics validate the practice of openly setting priors and being transparent about normative assumptions as ethical constraints, utility considerations, or decision thresholds rather than as hidden influences on evidential interpretation. This integration helps prevent hidden ideological biases and aligns scientific inference with the aims of human and environmental well-being by requiring researchers to specify how values such as privacy, harm minimization, stewardship, and public benefit shape research design and interpretation.

Adopting a comparative epistemological lens further reinforces our approach. By placing Hume's empiricism alongside Ṭabāṭabāʾī's Islamic epistemology, we expose the blind spots inherent in each. Hume's skepticism about necessary causal connections and his analysis of induction highlight the challenge of extrapolating universal laws from limited observations. By contrast, Ṭabāṭabāʾī positions empirical generalization within a metaphysical framework that upholds an intelligible order guided by the divine, thus steering clear of both naïve rationalism and corrosive skepticism (Warapsari et al., 2023, p. 494). This kind of comparison enriches our toolkit for defining evidentiary norms that are

neither reductionist nor arbitrary. It also clarifies how metaphysical commitments influence model selection and the theory-laden nature of observation. For the present framework, the implication is not that observation becomes neutral once it is placed within an Islamic metaphysical order. Rather, experience remains conceptually mediated, instrument-dependent, and fallible; its evidential force comes from disciplined procedures such as replication, predictive testing, robustness checks, and explicit comparison with rival models.

The most closely related literature to our approach tends to chart out the various epistemic sources, articulate a blend of theocratic and humanistic ethics, and describe curricular reforms. However, it usually falls short of outlining a complete research pipeline. For instance, Islamisation and reconciliation initiatives often fail to specify exactly how these diverse sources should constrain the generation of hypotheses, their operationalization, or their testing in public scientific settings (Yafiz & Daulay, 2023, p. 872). Similarly, calls for harmony between science and Islam or for broad metaphysical overhauls do not directly translate into concrete protocols for adjudicating between competing models in cases of underdetermination, nor do they produce falsifiable heuristics for setting priors or conducting measurements (Fakhrurazi et al., 2024, p. 163). In short, a gap persists between high-level conceptual calls for integration and the detailed methodological blueprints required in fields like cosmology, quantum physics, and consciousness studies. The present article addresses this gap by specifying inputs, decision rules, warrant types, checkpoints, and possible outputs through which Islamic epistemic sources can guide scientific reasoning without exempting claims from public scrutiny.

In response, we propose an operational critical-realist methodological framework designed to make Islamic metaphysics both methodologically productive and empirically accountable. The innovation here is moving from mere position-taking to active model-building through procedures that can be inspected, repeated, and revised. We outline a pipeline that starts with identifying relevant sources (such as revelation, reason, experience, and scholarly authority), then goes through typing judgements and selecting a stance on causality, and finally leads to domain-specific design templates and adjudication rules through which metaphysical presuppositions directly shape the handling of evidence. Because this article is primarily methodological, its central claim is not that the framework has already generated confirmed empirical findings, but that it provides a disciplined procedure for making metaphysical assumptions explicit and testable. We therefore propose the guiding expectation that this program can enhance both explanatory power and ethical consistency in

areas characterized by underdetermination and theory-laden observation. The scope of our approach is deliberately cross-disciplinary–encompassing cosmology, quantum foundations, and neuropsychology–bounded by the insistence that all metaphysical commitments be made explicit, made operational, and subjected to testing.

Method

Operationalizing al-Sanūsī's Tripartite Judgements

In this study, we translate al-Sanūsī's threefold classification of judgements–legal (*sharʿī*), nomic (*ʿādī*), and rational (*ʿaqlī*) - into a programmable set of design principles for empirical research. By "programmable," we mean that each judgement is converted into explicit inputs, decision rules, checkpoints, and outputs that can be applied consistently across studies. The legal judgement acts as a normative gateway that establishes what is permissible and sets ethical boundaries before any data are collected or analyzed. In practical terms, this corresponds to rules for things like obtaining informed consent, performing risk–benefit assessments, managing the stewardship of data and materials, and protecting vulnerable populations - ensuring that scientific rigor unfolds within Islamic ethical limits (Malik, 2025, p. 4). We implement these rules by requiring preregistration of ethical commitments, oversight by an ethics board versed in both Sharīʿah and research ethics, and explicit reporting of any value assumptions that impact the choice of research questions or measurements (Rahman & Amir, 2023, p. 164). The output of this stage is a proceed, revise, or reject decision before empirical work begins.

The nomic judgement pertains to natural regularities and insists on validation and reproducibility appropriate to each field. We assign levels of warrant to claims based on factors like observational consistency, measurement reliability, and successful external replication, while carefully documenting local contingencies to avoid overgeneralization. The rational judgement imposes overarching standards of logical consistency and transparency in inference. For example, any hypothesis must have deducible consequences that we can trace, must spell out its auxiliary assumptions, and must allow us to assess how likely the data are under that hypothesis versus competing models (Lubis et al., 2023, p. 22). Taken together, these three types of judgements create a workflow in which ethical permissibility, empirical adequacy, and rational coherence all must be satisfied before a claim receives provisional acceptance. The nomic checkpoint asks whether the

relevant observation is reliable, replicable, and appropriately measured; the rational checkpoint asks whether the inference is coherent, non-contradictory, and adequately compared with rival explanations.

Within this workflow, we set prior probabilities and decision constraints by linking each type of judgement to the corresponding sources of justification. Legal-type judgements do not supply empirical likelihoods; they define normative constraints and utility considerations, which influence what interventions are permissible and how outcomes are valued. Priors informed by nomic-type judgements capture background regularities and are adjusted based on the quality of replication evidence. Priors under the rational-type category represent structural commitments such as favoring simpler explanations (parsimony), avoiding contradictions, and maintaining conservation principles across models. When evaluating results (the posterior stage), our rule is that all three warrants must be met: the finding must be ethically permissible, empirically robust, and rationally coherent (Syihabuddin et al., 2023, p. 101). This adjudication rule is conjunctive rather than compensatory, meaning that no amount of empirical success can make up for an ethical violation, and a result that fails reproducibility tests cannot be saved by mere internal consistency. We enforce this by instituting decision checkpoints at the design, analysis, and interpretation stages of research, and by maintaining deviation logs to ensure the process remains auditable. The general decision sequence is therefore: identify the claim and rival models; apply the sharʿī ethical gate; assess the ʿādī empirical warrant through measurement and replication criteria; test the ʿaqlī rational warrant through coherence and model comparison; and assign the claim the status of accepted provisionally, underdetermined, requiring revision, or rejected.

Typed Evidence-Warrant Model from the Eight Epistemic Sources

We also construct a typed evidence-warrant model to incorporate the various sources of knowledge acknowledged in Islamic thought into research design and interpretation. This model is inspired by evidence-based practice frameworks, but it preserves a pluralistic stance tailored to each domain of inquiry. Revelation is assigned priority in the normative domain rather than in the empirical domain. It does not provide specific empirical claims or replace measurement; instead, it establishes overarching ends, permissible means, and evaluative categories (Yafiz & Daulay, 2023). The next warranting roles are occupied by reason and systematically disciplined experience, which together generate testable hypotheses and empirical data in both laboratory and field contexts. Alongside these sources, we position

authority–which includes scholarly consensus, established methodological standards, and community norms–as a stabilizing prior. Authority shapes our default expectations but is still open to being overridden by new evidence(L. Amir, 2023). Finally, we incorporate historical knowledge, the "signs" of nature, and insights from other civilizations as contextual layers. These layers help gauge how findings might transfer to different settings and bolster external validity by broadening the evidentiary base beyond any single tradition (Fakhrurazi et al., 2024).

In practical terms, we assign each source in this model a specific warranting role. Revelation provides non-negotiable constraints regarding the ultimate ethical goals of inquiry and the means that are off-limits within the normative domain. Reason organizes the space of possible models and the rules of inference. Disciplined experience contributes empirical observations, likelihood estimates, and posterior updating, but it is treated as fallible and theory-laden rather than as a neutral tribunal. Authority offers default standards and quality benchmarks. Meanwhile, historical knowledge and cross-civilizational insights help adjust our priors to account for generalizability. Importantly, this model is not a rigid top-down ranking, but rather a typed network of sources. When conflicts arise, we resolve them using tests appropriate to the type of source involved: conflicts of an ethical nature are addressed through the legal-judgement review process; empirical conflicts are tackled via replication efforts and sensitivity analyses; theoretical or conceptual conflicts are handled through rational adjudication that lays bare its metaphysical assumptions (Yafiz & Daulay, 2023, p. 873). In this way, what started as an abstract Islamisation/reconciliation schema is transformed into a concrete, workable research program instead of remaining a static catalog of ideas (Rachman, 2020) while preventing normative sources from being misrepresented as direct empirical evidence.

Comparative Epistemology Heuristics: Hume and Ṭabāṭabāʾī

We also draw on comparative epistemology to guide our approach to induction and model construction. From David Hume, we take a disciplined attitude toward underdetermination: one should not conclude that there is a metaphysically necessary connection based purely on observing a finite pattern of regularities. Instead, we emphasize performing robustness checks, comparing multiple models, and making our auxiliary assumptions explicit. In practice, this translates into setting predefined stopping rules for data collection, conducting out-of-sample tests, and being very cautious when generalizing findings given the theory-laden nature of observation

(Jamaludin et al., 2022, p. 9). From Ṭabāṭabāʾī, we draw a complementary set of heuristics that are permissive yet structured. According to his view, metaphysical commitments can play a role in informing our priors and guiding model selection–but only if those commitments are openly acknowledged, translated into concrete operational constraints, and subjected to possible refutation when they meet empirical data. Together, these two lines of thought justify a fallibilist procedure: metaphysical assumptions may guide inquiry, but they must be declared, operationalized, compared with alternatives, and revised when they fail to withstand empirical or rational scrutiny.

Domain-Specific Illustrative Applications

Cosmology: Fine-Tuning, Contingency, and Teleology

Applying our research-program pipeline to cosmology, this illustrative application shows how. fine-tuning debates can be recast within a *kalām*-influenced model of contingency, and this reframing need not come at the expense of empirical rigor. Interpreting fine-tuning through the perspectives of thinkers like al-Ghazālī and Ibn Rushd, the notion of contingency serves as a modal backdrop: observed regularities in nature become intelligible by referencing a necessary being. In our evidentiary workflow, this perspective does not determine the empirical result; rather, it specifies one possible family of priors and hypotheses to be compared with rivals. Specifically, a teleology-weighted model can encode teleological explanations as explicitly structured priors in the parameter space–essentially treating life-permitting ranges of physical parameters as intentional (purposive) constraints. Conversely, non-teleological alternatives (such as a multiverse explanation) can be modeled as selection effects emerging from a vast ensemble of possible universes. The outcome of these exercises should not be presented as a definitive "proof" of teleology. Rather, it reframes the problem into one of comparing models: observables (for example, the distribution of certain cosmological parameters or the effects of slight changes in constants on structure formation) have different implications depending on whether one assumes a purposive (teleological) account or a non-purposive one.

1. Bayesian Adjudication under Critical Realism

Working within a critical-realist framework, we propose Bayesian

statistical analysis as a structured way to adjudicate between teleological and non-teleological cosmological hypotheses, explicitly integrating likelihoods with transparent priors. For example, a minimal comparison may define two model families, M_1 as a teleology-weighted model and M_2 as a selection-effect model, and then evaluate them through $P(M_i|D) \propto P(D|M_i)\ P(M_i)$, with the Bayes factor $BF_{12} = P(D|M_1)/P(D|M_2)$ reported together with prior-sensitivity checks. In our approach, Bayes factors should be interpreted as conditional summaries indicating how well each model compresses or explains the data once its underlying metaphysical assumptions are made explicit. We therefore do not treat these Bayes factors as neutral verdicts independent of metaphysics. This method yielded two key insights. First, sensitivity analyses can show that one can adjust teleologically informed priors or multiverse-based priors such that they yield very similar evidential support for their respective models. This means it would be misleading to claim any straightforward "Bayesian confirmation of purpose" or conversely of "pure chance" without conducting extensive robustness checks (Chang et al., 2018, p. 3704). Second, Bayesian model comparison can clarify the division of roles: empirical data serve to constrain the broad families of models, but the choice between a family of teleology-weighted models and a family of selection-weighted (chance-based) models remains in part a rational and metaphysical decision–which needs to be openly acknowledged. We are not suggesting that current Bayesian cosmology literature has resolved these deep questions (Mancini et al., 2018). Instead, we are outlining how analyses should be structured in order to be truly informative and transparently reported in such metaphysically charged contexts.

2. Eight-Source Warrant Pipeline in Cosmological Inference

Integrating our eight-source warrant model into the cosmological context shows how inference can be organized in two notable ways. First, during the design phase of an illustrative study, revelation provides normative goals and evaluative constraints rather than empirical premises (such as emphasizing intelligibility of explanations or principles of stewardship over the cosmos). The layer of reason structures the space of possible models to be considered. The layer of experience contributes empirical observations, likelihood estimates, and posterior updating, and the layer of authority sets baseline standards for data quality and methodological rigor. Second, during the interpretation phase, the layers of historical insight and cross-civilizational knowledge can act as checks on external validity, helping us examine how cosmological explanations might translate across

different conceptual worldviews. Through this pipeline, researchers can produce an audit trail that documents every point at which non-empirical sources influenced theory choices. This documentation ensures that these influences do not shield any claims from being challenged; rather, it allows reviewers to see clearly whether and how particular metaphysical or normative commitments shaped the inquiry and whether those commitments limited the consideration of alternative explanations.

Quantum Foundations: Indeterminacy, Causality, and Judgement Typing

We next use quantum foundations as a second illustrative domain, applying principles from Ashʿarī occasionalism along with al-Sanūsī's scheme of judgement types to develop a structured interpretation of quantum indeterminacy that remains compatible with critical realism. The influence of Ashʿarī occasionalism moderates our language around natural "laws": instead of speaking as if quantum regularities were autonomous, law-like mechanisms, the framework treats such regularities as stable divine customs without denying their empirical regularity. At the same time, drawing on Māturīdī thought–which allows for genuine created causal powers–permits discussion of notions like dispositions or propensities in quantum systems without treating those tendencies as independent, self-sufficient entities. Al-Sanūsī's three-part judgement framework then provides specific criteria for accepting claims in this context: the legal (*sharʿī*) judgement requires that any experimental procedure or interpretation meet ethical standards and handle data responsibly; the nomic (*ʿādī*) judgement requires that statistical patterns observed in experiments be reproducible across different settings; and the rational (*ʿaqlī*) judgement requires consistency with the established mathematics of quantum theory and with general principles like non-contradiction and parsimony.

1. Experimental Criteria: Measurement, Nonlocality, and Bell-Type Tests

We reconsider key experiments in quantum foundations, specifically those related to the measurement problem and quantum nonlocality. Regarding the measurement problem, we emphasize that one's metaphysical stance–whether one leans realist (believing in an underlying reality for quantum states) or instrumentalist (treating the formalism as merely predictive)–needs to be openly stated as part of interpreting experimental results (Guha et al., 2019, p. 57). This is important because the same set of data can lead to very different narratives if interpreted under different ontological assumptions. In the case of nonlocality, Bell-type experiments function as

rigorous tests of our classical intuitions about causality. These experiments produce sets of constraints that any metaphysical account of contingency must accommodate (Boughn, 2022, p. 7). From this analysis, we propose specific reporting standards for quantum foundational research: any claim about propensities (tendencies for outcomes) or about divine action at the quantum level must be linked to concrete model-based predictions that have survived replication in multiple labs and were vetted through pre-registered analysis plans. In short, one's preferred way of interpreting quantum mechanics should not be allowed to disguise itself as the empirical result itself (Malik, 2025, pp. 1-2).

2. Ethical Constraints and Value-Ladenness in Foundational Modeling

Incorporating Sufi-inspired ethics into the proposed approach to quantum modeling makes choices more transparent by explicitly emphasizing research intentions (niyyah) and responsibility. Under the legal judgement category, we treat ethical priors more precisely as ethical constraints and decision thresholds that limit what actions are permissible in experiments (for example, strict standards for data privacy in quantum information experiments and principles of stewardship when running resource-intensive facilities) (Perrier, 2021, pp. 3-4). The rational judgement, meanwhile, requires researchers to state how these ethical constraints influenced model selection, parameter choices, and inferential reasoning. The practical upshot of this approach is greater transparency in the research. Whenever a value-laden decision affects how researchers set a parameter or choose a model, that decision should be documented within the model or accompanying reflexivity report, making it possible for someone else to alter those value assumptions and see how the outcomes change. In this way, ethical commitments become explicit constraints or sensitivity parameters in the models' behavior rather than remaining hidden biases (Rahman & Amir, 2023, pp. 172-73).

Consciousness Studies: Intentionality, Field Models, and Historical Corporealism

When the framework is applied illustratively to the study of consciousness, it yields three design implications. First, by aligning classical Islamic concepts of intentionality and selfhood with contemporary cognitive neuroscience, researchers can formulate dual-track hypotheses that treat subjective first-person reports and objective neural measurements as

complementary sources of warrant rather than interchangeable forms of evidence. In practice, this would involve designing tasks infused with intentional content in order to evoke well-defined phenomenological experiences, while simultaneously recording neural activity time-locked to those experiences. Second, engagement with electromagnetic field theories of consciousness can provide ways to cross-check subjective and objective data (McFadden, 2020, p. 5). It offers a template for experiments that look for correspondences between what people report experiencing and the dynamics of brain-level electromagnetic fields–for example, testing whether shifts in the coherence of these fields align with moments of perceived unity of consciousness or changes in attention. Third, the framework draws on the concept of historical corporealism, illustrated by the work of Ibn Ḥazm, which encourages seeking physical (bodily) correlates of mental states but without assuming that those correlates exhaust the experience. Together, these three design implications show that using an Islamic metaphysical lens can shape how experiments are designed and explanations are formulated in consciousness research, and it does so without forcing us into either Cartesian dualism or eliminative materialism (Haidari, 2024, p. 237).

1. Intentionality-Sensitive Paradigms and Predictive Outcomes

By operationalizing the concept of intentionality in a future experimental design, researchers would be able to formulate preregistered predictions about how the directedness of consciousness (i.e., attention to objects or goals) may influence neural signatures. For example, the framework would allow investigators to hypothesize specific changes in patterns like oscillatory synchrony or event-related potentials corresponding to different intentional states. In carrying out such studies, the legal judgement criterion would require very strict protocols for obtaining informed consent and protecting the privacy of participants providing first-person data. The nomic judgement would require that any observed effects be replicated across different tasks and contexts to count as reliable. The rational judgement would require that the categories used to describe people's phenomenological (first-person) experiences make sense in relation to computational or neural descriptions of those experiences. The key methodological expectation from this part of the framework is that researchers may be able to test whether systematic, task-dependent covariations exist between how participants describe the structure of their intentions and the dynamics of their neural activity. This would support the idea that aspects of conscious experience can be empirically investigated

without reducing consciousness to any single neural measure.

2. Field-Theoretic Cross-Checks and Corporealist Constraints

In examining electromagnetic field theories of consciousness, the framework treats them as empirically testable model classes instead of purely speculative metaphysics. A future registered protocol could specify hypotheses that link the coherence of brain electromagnetic fields to participants' reports of feeling a unified experience or experiencing particular patterns of attentional focus. Such a protocol should also include robustness checks to rule out the possibility that any observed correspondences are simply due to data processing artifacts or issues like volume conduction in neural recordings. At the same time, informed by the principle of corporealism, the framework imposes a requirement that any candidate neural correlate of consciousness suggested by these field models must fit within known neurobiological pathways (for instance, within established thalamocortical loops or midline network dynamics in the brain). This dual approach would yield a refined and constrained hypothesis space: it remains open to non-reductive explanations of consciousness, yet it is still testable and can be falsified using convergent evidence from brain imaging, electrophysiological recordings, and techniques that perturb neural activity.

Cross-Domain Synthesis: Evidentiary Regimes and Adjudication

When the framework is considered across all three domains–cosmology, quantum foundations, and consciousness studies–a common methodological pattern emerges. Making metaphysical commitments explicit, and building them into the proposed workflow as priors, warrants, and formal decision rules, can make the task of empirical adjudication clearer and less driven by rhetoric. For instance, in cosmology, spelling out teleological versus selection-based priors helps prevent researchers from over-interpreting the Bayesian posterior odds that compare these models. In quantum foundations, openly stating the interpretive frameworks and ethics-based constraints can reduce confusion between what the data show and what metaphysical interpretations assume. In consciousness research, using dual-track experimental designs can give proper due to both first-person subjective reports and third-person objective measurements. Importantly, the proposed strict adjudication rule–which demands that any acceptable finding must simultaneously meet ethical permissibility,

empirical robustness, and rational coherence–is designed to be workable as a methodological checkpoint rather than as a report of completed empirical validation. Along the way, some claims may appear empirically promising but fail the ethical gate and therefore require rejection or redesign; other claims may fail once replication is required, and so they too should not be accepted. By recording all of these decisions and their rationales, researchers can create a kind of meta-dataset that can inform future improvements to methodology and can be used in teaching.

Implications and Limits

The preceding illustrative applications imply that Islamic metaphysics may function as an effective research program–one that can enhance transparency and testability in areas where underlying assumptions influence what counts as evidence. When researchers lay out priors and warrants clearly, any potential biases in their approach become visible and open to scrutiny. That said, there are important limitations to acknowledge. For example, Bayesian cosmology remains extremely sensitive to the choice of priors, and the community has yet to agree on standard protocols for comparing teleological and selection-based models (Chang et al., 2018, pp. 3702-03). In quantum foundations, a diversity of metaphysical interpretations continues to exist; our framework helps manage this pluralism, but it does not eliminate the underlying philosophical disagreements. In consciousness research, relying on first-person data introduces significant privacy issues and reproducibility challenges that still need to be addressed with further work. We view these limitations not as flaws in the program, but as the realistic conditions of making honest progress in fields rife with underdetermination and theory-ladenness. These limits also clarify the status of the present article: it offers a methodological framework and worked illustrations, not a completed empirical demonstration of success across the three domains.

Discussion

Overall, the preceding analysis suggests that treating Islamic metaphysics as a hands-on research program may provide greater explanatory depth and stricter methodological discipline in difficult areas of science, all without blurring the line between metaphysical assumptions and scientific methods. By making metaphysical and ethical commitments explicit and formally building them into a proposed workflow as priors, warrants, and decision

rules, the framework aims to curb tendencies toward rhetorical excess and to sharpen the process of judging between competing models. These methodological implications bolster the case for moving away from merely declaring a "harmony" between Islam and science and instead moving toward making that harmony procedurally accountable and open to testing (Aprillianti et al., 2024). Our approach effectively merges systematic methods from both the scientific tradition and the Islamic scholarly tradition–such as formulating clear hypotheses, using operational definitions, and declaring priors openly. The result is a model for producing knowledge claims that are replicable, open to audit, and subject to revision. Crucially, this approach remains true to the inherently multi-source nature of Islamic epistemology (Syihabuddin et al., 2023).

Our approach offers two particularly noteworthy methodological advantages. First, it maintains a clear division of labor in the research process: empirical data serve to constrain and inform the range of possible model families, while metaphysical commitments guide the interpretation and comparison of those families by clarifying research aims, evaluative criteria, and underlying ontological assumptions. This dynamic is especially valuable in contexts like the fine-tuning debate in cosmology, where a teleology-oriented model and a chance-oriented (selection-based) model might both fit the data reasonably well but remain partially underdetermined by the available evidence. By treating Bayes factors as conditional evidence summaries given specific, declared priors, the framework helps avoid overclaiming that the data "prove" one side or the other; instead, it directs attention to robustness checks (Chang et al., 2018). Second, by adopting al-Sanūsī's conjunctive rule for adjudication–which requires ethical permissibility, empirical soundness, and rational coherence all at once–the framework raises the bar for what counts as an acceptable finding. This reduces the chance that a result which is ethically problematic but statistically persuasive could slip through, or that a model which is elegant but non-reproducible could avoid scrutiny (Lubis et al., 2023).

At the same time, the proposed framework complicates any simplistic view that the integration of Islamic perspectives with science must either overtake scientific practice or remain entirely separate from it. In the quantum foundations case, for example, the framework suggests that being upfront about interpretive priors and ethical constraints need not diminish empirical rigor. On the contrary, it can clarify how researchers link data to claims by preventing any covert, implicit importation of ontological assumptions into conclusions. Bell-type experiments still challenge the limits of classical ideas of causality, but this approach cautions against overinterpreting violations of Bell inequalities as if they were grand

metaphysical revelations (Guha et al., 2019). By keeping those findings framed under the nomic judgement category, the framework emphasizes that their evidential value comes from reproducibility and agreement across different labs. Meanwhile, the rational judgement criterion requires consistency and parsimony in how researchers theorize about those results (Boughn, 2022)

By infusing the research process with Sufi-inspired ethics, the framework converts what would normally be hidden value judgments into explicit ethical constraints, decision thresholds, and reflexivity statements. The Sufi principle of ihsan (excellence and virtue) can be made operational by guiding both the goals of the research and the means by which researchers pursue those goals in a spirit of responsibility. For instance, when researchers preregister ethical constraints–such as commitments to privacy, stewardship of resources, or minimizing harm–those constraints can be explicitly linked to how data are gathered and models are built (Lumina, 2021). This approach means that different value frameworks can be examined through sensitivity analysis or alternative decision scenarios, allowing researchers to compare outcomes under alternative ethical assumptions. Importantly, this method does not lead to relativism; rather, it adds a level of self-awareness (reflexivity) that guards the integrity of the inquiry against veering into myth-making or identity politics. In other words, it helps prevent science from being used merely as a tool for boosting group reputation or making civilizational statements (Manzari et al., 2024). In environments where there might be pressure to tout a monolithic "Islamic science" brand, this program responds by emphasizing methodological transparency and encouraging rigorous cross-examination (Wahyudi et al., 2022).

The normative stance of our program finds common ground with reformist ideas influenced by Māturīdī theology and with modern human-rights principles. Māturīdī thought emphasizes the use of reason and a strong sense of ethical accountability, which aligns well with values of human dignity, personal freedom, and equality (Khandakar et al., 2025). Translating these values into practice would require standards aimed at protecting research participants, respecting individual agency, and ensuring that the benefits of scientific progress are widely accessible. For example, in consciousness studies, dealing with first-person experiential data requires extremely robust privacy protections for participants. In the realm of quantum information science, the framework highlights that issues of data governance and distributive justice should be considered alongside technical metrics of performance (Rambe, 2025). The overarching effect is to create a research environment in which achieving explanatory power and maintaining ethical legitimacy go hand in hand.

We must also frankly acknowledge the methodological limitations of our

approach. Introducing metaphysical commitments into scientific protocols carries a risk: it might bias how researchers interpret results by overemphasizing certain expected outcomes or by underplaying random variation and context-specific factors. As Hochstein noted in the context of biology, having a preconceived notion that systems should behave in a strongly deterministic, mechanism-driven way can lead researchers to overlook the importance of noise or contextual influences that are actually integral to how those systems function (Hochstein, 2019). This insight applies to the present framework as well. Phenomena like quantum indeterminacy and contextuality inherently resist being neatly subsumed under a deterministic framework, so any metaphysical viewpoint introduced into the analysis must be constantly tested against stubborn data that do not fit (Jaksland, 2024). One promising way to deal with this is through what has been termed "naturalized metaphysics": that is, researchers should continuously expose metaphysical assumptions to empirical tests, adjust them when they fail to match reality, and tie each assumption to specific model classes that come with clear, testable predictions (Gantt & Williams, 2019). The decision checkpoints and deviation logs proposed in this methodology are intended to facilitate exactly these kinds of iterative learning loops, ensuring that the framework remains responsive to what the data are telling us.

Looking beyond the specific context of Islam and science, our approach shows promise for broader application. The multi-source warrant model proposed here could potentially be adapted to other cultural or civilizational knowledge frameworks. For instance, one might consider an approach analogous to ours in the context of "Africa as method," which aims to elevate indigenous African ways of knowing and practices alongside more formal academic standards (Bridewell & Isaac, 2021). Successfully transferring the framework to a different context would involve redefining the map of knowledge sources for that context, assigning appropriate warranting roles to those sources and specifying procedures for resolving conflicts among them, and developing similar audit trails to document how normative, empirical, and rational warrants enter the inquiry. Embracing this kind of pluralism in method is not just about being inclusive or ecumenical–it can offer a methodological edge when dealing with complex social–ecological systems that cannot be adequately described from a single knowledge source or perspective (Jiang, 2024). The challenge in doing so is to preserve scientific rigor–keeping falsifiability, replicability, and rational scrutiny front and center–while also respecting and incorporating the unique intellectual traditions involved.

One key to striking this balance is to treat the evidence hierarchy as a dynamic network of typed warrants rather than as a simple ranking of

stronger and weaker evidence, and to channel any disagreements or conflicts toward tests that are appropriate for the domain or type of evidence in question. Thus, normative conflicts should be handled through ethical review, empirical conflicts through replication and sensitivity analysis, and conceptual conflicts through rational adjudication and comparison with rival models.

Finally, the longevity and impact of this research program will depend on establishing clear benchmarks and standards for replication. As the illustrative applications indicate, Bayesian approaches in cosmology require thorough sensitivity analyses to be credible. Likewise, experiments that use Bell-type setups in quantum physics or intentionality-sensitive paradigms in neuroscience should be replicated across multiple laboratories to ensure their findings are solid. On a broader level, ensuring the robustness of scientific results calls for practices like preregistering study protocols, sharing materials openly, and engaging in adversarial collaborations. Ensuring reproducibility will involve conducting independent replication studies that use registered reports and calibrating how large effects need to be for us to take them seriously (Taylor, 2020). Ensuring transparency about the research process will involve compiling reflexivity reports that detail metaphysical priors, ethical constraints, auxiliary assumptions, and key analytic decisions (Overgaard, 2021). If researchers adopt these measures, then the progress of the program can be measured not just by traditional metrics like effect sizes or citation counts, but by the degree to which researchers can agree on what constitutes an adequate test at the intersection of science and metaphysics.

Conclusion

This study shows that Islamic metaphysics can be developed as a "programmable" methodological research program that strengthens both the explanatory scope and methodological rigor of science, especially in fields where background assumptions strongly shape how evidence is interpreted. Here, "programmable" means translating metaphysical and ethical commitments into clear inputs, warrant types, decision rules, checkpoints, and auditable outputs. We argue that scientific judgement becomes clearer when these commitments are openly encoded as priors, evidential warrants, and guiding rules. The value of this framework appears across the three domains examined. In cosmology, it recasts fine-tuning as a structured comparison between teleology-weighted and selection-weighted model families, clarifying what observational data can constrain

and what remains tied to deeper rational commitments. In quantum foundations, it offers an acceptance criterion based on al-Sanūsī's tripartite judgement framework–legal/sharʿī, nomic/ʿādī, and rational/ʿaqlī–so that reporting standards emphasize ethical permissibility, reproducibility, and logical coherence. In consciousness research, it proposes dual-track designs that connect first-person experience with third-person neural data while maintaining strong protections for privacy and informed consent.

Conceptually, the study brings eight epistemic sources into a typed evidence-warrant framework that shows where non-empirical inputs, including normative and metaphysical principles, influence theory choice without protecting scientific claims from empirical testing. Methodologically, it turns abstract metaphysical guidance into concrete and auditable research practices, such as preregistering priors, conducting sensitivity analyses, defining replication thresholds, and preparing reflexivity dossiers. Practically, it recognizes that science is value-laden–especially when research intentions are shaped by Sufi ethics–and treats this not as a weakness, but as a reason to make values visible as ethical constraints, decision thresholds, and sensitivity parameters rather than leaving them hidden in the background. Instead of using rhetoric to claim an "Islamic" standpoint, the framework invites peer scrutiny by making those value influences open to review. Its broader lesson is that metaphysics and scientific method can be integrated without merging them uncritically or separating them completely; they can be brought into conversation through procedures that remain transparent, testable, and open to challenge. Future work should develop standardized priors for comparing teleological and selection-based hypotheses in cosmology, expand registered-report replication for Bell-type experiments and intentionality-focused neuroscience, and improve privacy protections for first-person data. These steps will also help adapt the program to other civilizational contexts while preserving core scientific values such as falsifiability and reproducibility.

Conflict of Interest

The author declares no competing interests.

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