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Tawḥīdī Epistemology: Uniting Rationality, Empiricism, and Transcendence within the Framework of Islamic Science

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Abstract: This article proposes an integrative epistemology model based on *tawḥīd* (Tawḥīdī Epistemology) that synthesizes three main frameworks: Burhān al-Ṣiddīqīn (Ibn Sina's ontological argument about *Wājib al-Wujūd*); the Scientific Method (logico-hypothetico-verification), and the Revelation Guides Science paradigm from UIN Sunan Gunung Djati Bandung. Through philosophical analysis and multidisciplinary case studies, this research demonstrates that this integration not only overcomes the science-religion dichotomy but also offers a structured methodology for dual validation (empirical and normative). This article enriches the discourse of contemporary Islamic philosophy by actualizing Ibn Sina's legacy in the context of modern science, while also addressing postmodern critiques of the objectivity of science.

Keywords: *Tawḥīdī Epistemology, Burhān al-Ṣiddīqīn, Revelation Guides Science, Knowledge Integration, Islamic Philosophy.*

Introduction

An unparalleled epistemological problem is confronting contemporary human civilization. A fragmentation of knowledge that threatens the ontological unity of reality has resulted from the division between the empirical sciences and transcendental sciences (religion/humanities). This issue has its origins in the 17th-century European Scientific Revolution, when Comte's positivism (1830) and the Newtonian mechanical paradigm dominated scientific discourse and asserted that only quantifiable and observable knowledge is acceptable. Nature was reduced to an object of exploitation and humans to mere homo economicus as a result of the exclusion of the philosophical, ethical, and spiritual aspects from the academic sphere.

This contradiction is a historical irony in the perspective of Islam. Through the writings of philosophers like Al-Kindi (d. 873 CE), who wrote *Risāla fī al-ʻAql* (Letter on the Intellect), and Ibn Sina (d. 1037 CE), who combined Islamic theology and Aristotelian logic in *Kitāb al-Sifā*, Islamic civilization was actually a pioneer in the integration of knowledge in the eighth to thirteenth centuries CE. However, this legacy was marginalized as a result of post-Renaissance epistemic colonialism, which replaced it with a secular worldview that kept the laboratory and the mosque apart.

The modern scientific paradigm, rooted in post-Enlightenment rationalism and empiricism, has achieved remarkable technological progress but remains fraught with philosophical and ethical limitations. The separation of "facts" from "values"—a hallmark of secular epistemology—has led to a fragmented understanding of reality, where scientific inquiry often operates independently of

moral or metaphysical considerations. This divide is particularly evident in fields like cosmology, bioethics, and environmental science, where empirical discoveries (e.g., the Big Bang, CRISPR gene editing) raise profound existential questions that science alone cannot answer.

For instance, Stephen Hawking's famous declaration that "science can explain the universe without the need for a Creator" exemplifies the materialist reductionism dominating contemporary discourse. Yet, this perspective fails to address why the universe exists or how ethical boundaries should govern scientific advancements—questions that have traditionally been the domain of theology and philosophy. The resulting epistemic vacuum has spurred a resurgence of interest in integrative models that reconcile empirical science with transcendent truths, particularly in Muslim intellectual circles.

Scientific reductionism creates a conundrum in the field of ethics: while biotechnology breakthroughs like CRISPR-Cas9 help treat genetic illnesses, they also pave the way for eugenics and "designer babies" that compromise human dignity. The inadequacy of the anthropocentric paradigm, which disregards the Islamic tenet of khalīfah, is evident in the ecological catastrophe, which ranges from mass extinction to global warming.

There are two equally problematic extreme poles in modern Western epistemology: (i) Logical Positivism, which holds that only statements that can be verified by empirical means are meaningful and is enmeshed in scientism; and (ii) Postmodern Relativism, which rejects grand narratives and claims of universal truth, which breeds nihilism and the lack of an objective ethical foundation. These two poles are reflected in the current debate between science and religion: on the one hand, scientists like Richard Dawkins (2006) argue that religion is an illusion, while on the other side, religious fundamentalists reject scientific findings.

Islamic civilization has a long tradition of harmonizing revelation with reason, dating back to the classical period (8th–14th centuries). Scholars like Ibn Sina (Avicenna, d. 1037) and Al-Ghazali (d. 1111) developed sophisticated epistemological frameworks that positioned divine revelation (wahy) as the ultimate source of certainty while employing logic (mantiq) and empirical observation (tajriba) to explore the natural world. Ibn Sina's cosmological argument—Burhān al-Siddīqīn—demonstrated God's existence through necessary (wājib) vs. contingent (mumkin) existence, bypassing temporal causality. Unlike Thomas Aquinas' later adaptation (the "Five Ways"), Ibn Sina's proof was purely metaphysical, aligning with the Qur'anic view of a universe sustained by divine will (Qur'an 55:29). Ibn Sina builds a rigorous rational argument to prove God as Wājib al-Wujūd (The Necessary Being) while also integrating physics, metaphysics, and ethics into a single framework. His work not only predates Thomas Aquinas (d. 1274 AD), but it's still relevant in the modern era. While Al-Ghazali famously critiqued philosophers in Tahafut al-Falasifa, he affirmed the compatibility of reason and revelation when properly balanced. His "Deliverance from Error" argued that intuition (dhawq) and divine illumination (kashf) complement rational inquiry.

In the late 20th century, Muslim scholars like Syed Muhammad Naquib al-Attas and Ismail Raji al-Faruqi pioneered the "Islamization of Knowledge" (IoK) movement, seeking to reform modern education by infusing it with Islamic values. While groundbreaking, IoK faced criticism for (i) Overemphasis on rheoretical reform: Al-Attas's focus on metaphysics (e.g., Prolegomena to the Metaphysics of Islam) lacked concrete methodologies for scientific disciplines. (ii) Neglect of Empirical Verification: Al-Faruqi's curriculum reforms (e.g., Islamization of Knowledge: General Principles and Workplan) prioritized ethical frameworks but did not engage deeply with experimental science. (iii) Cultural Imposition: Attempts to universalize IoK often ignored local knowledge systems. Scholars like Syed Muhammad Naquib Al-Attas (1995) and Osman Bakar (2008) have started the IoK project that aims to free science from the secular-materialist paradigm, but is frequently criticized for being overly theoretical and lacking in operational methodology.

In order to tackle the aforementioned challenge, this article proposes a new epistemological concept in three steps: (i) reconstructing the legacy of classical Islamic philosophy, especially Ibn Sina, in the context of contemporary science; (ii) designing an integrative methodology that combines revelation, empiricism, and rationality; and (iii) providing examples of multidisciplinary applications (cosmology, bioethics, ecology) to demonstrate the relevance of the proposed epistemological concept in contemporary scientific issues. The methodology applied to synthesize

the new epistemology concept is by comparing three frameworks, namely Burhān al-Ṣiddīqīn of Ibn Sina, the scientific method (logico-hypothetico-verification), and the "Revelation Guided Knowledge" (WMI) paradigm from UIN Sunan Gunung Djati Bandung. Next, the strengths and weaknesses of each of these frameworks are reviewed to identify the gap that will be filled by the proposed new epistemology. The next stage is to design the necessary steps in the new epistemology so that it can be applied to contemporary cases.

Method

This study employs a qualitative-philosophical approach using library research and content analysis. The primary sources include classical works of Islamic philosophy, particularly Ibn Sina's *Kitāb al-Shifā*, alongside contemporary literature on the philosophy of science and the *Revelation Guides Science* (WMI) paradigm developed at UIN Sunan Gunung Djati Bandung. The research process was conducted in three stages. First, literature exploration was carried out to reconstruct Ibn Sina's *Burhān al-Ṣiddīqīn*, the modern scientific method (logico-hypothetico-verification), and the WMI paradigm. Second, a comparative analysis was applied to evaluate the strengths and limitations of each epistemological framework. Third, a conceptual synthesis was formulated by integrating rationality, empiricism, and revelation, resulting in the proposed *Tawḥīdī* Epistemology. The findings were then applied to selected multidisciplinary case studies (cosmology, bioethics, and environmental ethics) in order to test the relevance and consistency of the proposed framework. Accordingly, this methodology is not only descriptive-analytical but also normative, as it examines the coherence of the epistemological synthesis with the principles of *maqāṣid al-sharīʿah* and the values of *tawḥīd*.

Results and Discussion

The new epistemological idea called Tawḥīdī, emphasizing *Tawḥīd* (divine unity) as the basis for epistemology. This epistemology is not merely a conceptual synthesis, but a response to three global challenges: (i) degradation of meaning: Postmodern society loses its telos (purpose of life) due to the reduction of science to pragmatism,(ii) ambivalent technological advancement, for example, genetic engineering requires ethical guidance based on revelation, (iii) ecological crisis: the exploitation of nature based on the secular anthropocentric paradigm contradicts the concept of khalīfah in Islam (Qur'an 2:30). For that reason, this new epistemology offers a holistic solution that combines philosophical rationality in the form of logical consistency; scientific empiricism in the form of data verification, and the transcendence of revelation in the form of teleological values. Tawḥīdī Epistemology represents a mature synthesis of Islamic intellectual heritage and modern science. By systematically integrating revelation, logic, and verification, it overcomes the limitations of both secular materialism and rigid traditionalism. Its structured yet flexible approach makes it uniquely suited to address 21st-century challenges. This epistemology combines the frameworks of Burhān al-Ṣiddīqīn, Scientific Method (logico-hypothetico-verification), and "Revelation Guided Knowledge" (WMI). Each concept will be discussed in the following subsections.

Burhān al-Ṣiddīqīn: The logical basis of Islamic thought

In his monumental work *Kitāb al-Siſā*, Ibn Sina (980–1037 AD) formulated the Burhān al-Ṣiddīqīn or *Proof of the Truthful*, which has become one of the most influential arguments in Islamic philosophy. Building upon al-Farabi's conception of the hierarchy of existence, Ibn Sina refined it through a rigorous syllogistic framework that sought to establish God's necessary existence (*wājib al-wujūd*) without recourse to temporal or empirical premises (Gutas, 2014). The core of his argument rests on two main premises. *First*, that all entities in the universe are contingent (*mumkin al-wujūd*), meaning their existence depends on causes external to themselves. *Second*, that an infinite regress of causes (*tasalsul*) is impossible, which necessitates the existence of a first cause that is not contingent but necessary in itself (*wājib al-wujūd*) (Griffel, 2009).

Through this ontological proof, Ibn Sina provided a logical foundation for the unity of being, linking metaphysics with theology in a way that deeply influenced both Islamic and Western thought. Unlike arguments that rely on cosmological temporality, his reasoning emphasized the inherent dependency of contingent existence, thereby offering a timeless demonstration of divine necessity.

This logical architecture not only shaped subsequent Muslim philosophers such as al-Ghazali and Fakhr al-Din al-Razi but also resonated with later Western scholastic traditions, particularly in the works of Thomas Aquinas (Craig & Copan, 2017).

Ibn Sina's argument is based on the premise of universal causality, which David Hume (1779) rejects in *Dialogues Concerning Natural Religion* (Hume, 1907). Hume argues that the idea that "everything requires a cause" is merely habitual and cannot be empirically demonstrated. Ibn Sina's metaphysical rationalism is seriously challenged by this criticism. In contemporary quantum physics, where atomic decay and other phenomena are random, Ibn Sina's principle of causality—that "every contingent requires a cause"—is called into question. Mehdi Golshani (2003) contends, however, that quantum indeterminism demonstrates the limits of human knowledge rather than rejecting God (Mehdi, 2000). In order to be more scientifically acceptable in the contemporary era, Ibn Sina's argument can be re-expressed mathematically through Predicate Logic as follows (Groenendijk & Stokhof, 1991).

Table 11.
Predicate Logic Representation of Ibn Sina's Argument

Category	Formal Expression	Explanation
Symbols	C(x): x is contingent (mumkin al-wujūd) N(x): x is necessary (wājib al-wujūd) E(x,y): x is the cause of y	Definitions of the logical symbols used.
Axiom 1: Universality of Contingency	$\forall x\ (C(x) \rightarrow \exists y\ (E(y,x)))$	Every contingent entity requires a cause.
Axiom 2: Finiteness of Causal Chains	$\neg\exists f\ (f: N \rightarrow \text{Domain}, \forall n \in N\ (C(f(n)) \land E(f(n+1), f(n))))$	No infinite chain of contingent causes exists.
Axiom 3: Classification of Causes	$\forall x\ (C(x) \rightarrow \exists y\ (E(y,x) \land (C(y) \lor N(y))))$	The cause of a contingent entity is either contingent or necessary.
Conclusion	$\exists n\ (N(n) \land \forall x\ (C(x) \rightarrow E(n,x)))$	There exists a necessary entity that causes all contingent entities.

Ibn Sina's ontological defence of God's existence as *Wājib al-Wujūd* (The Necessary Being) is known as Burhān al-Ṣiddīqīn. This argument is based on the distinction between contingency (dependence) and necessity (independent existence). This argument can also be applied to contemporary science, such as in (i) cosmology, where the Big Bang theory (Contingent) cannot explain the initial singularity without the help of an external cause (Necessary); and (ii) biology, where biological life (contingent) depends on necessary natural laws (Necessary).

Ibn Sina's inspiration for the proposed Tawḥīdī Epistemology includes (i) Deductive Logic: Ibn Sina's syllogism structure serves as a framework for constructing coherent scientific hypotheses. (ii) Ontology of Tawḥīd: The concept of Wājib al-Wujūd integrates the essence of divinity into the scientific methodology. For example, n cosmology, Ibn Sina's contingency premise can be used to reconstruct modern cosmological arguments.

Western Philosophy of Science: Adaptation of the Scientific Method

The adaptation of the scientific method within Western philosophy, particularly the Baconian tradition, provides a critical foundation for modern empirical inquiry. Francis Bacon (1561–1626), often regarded as the father of modern science, introduced what later became known as the Baconian method, which emphasized observation, experimentation, and inductive reasoning as the primary means of acquiring knowledge (Bacon, 1878). His approach stood in sharp contrast to the medieval scholastic reliance on Aristotelian deduction, which began from axioms and moved toward conclusions without adequate empirical grounding. Although Bacon himself never used the term *logico-hypothetico*, his epistemological vision directly influenced the development of the hypothetico-deductive model that dominates contemporary philosophy of science (Groenendijk & Stokhof, 1991). Central to his method are three principles: first, empiricism, the belief that reliable knowledge must be derived from observation and experimentation rather than speculation; second,

systematic data collection, where facts are gathered meticulously before theories are constructed; and third, inductive reasoning, which proceeds from particular observations toward general scientific laws.

When situated within the framework of *Tawḥīdī Epistemology*, the Baconian legacy is reinterpreted in a manner that integrates rationality, empiricism, and revelation. The *logico* element reflects the development of coherent logical arguments, such as the principle of causality that grounds both metaphysics and science. The *hypothetico* dimension corresponds to the formulation of scientific hypotheses—such as the Big Bang theory—that are not divorced from, but rather aligned with, Qur'anic insights, exemplified in Qur'an 21:30 which describes the heavens and the earth as once a joined entity before being parted. Finally, the *verification* process in *Tawḥīdī Epistemology* goes beyond empirical validation alone, requiring also a normative verification in accordance with *maqāṣid al-sharīʿah* to ensure that scientific knowledge remains ethically and theologically sound (Ridwan et al., 2022). In this way, the adaptation of the scientific method is not merely imported from Western epistemology but transformed into a holistic framework that bridges empirical rigor with divine guidance.

Revelation Guided Knowledge (WMI) as a teleological guidance

The paradigm of *Revelation Guided Knowledge* (Wahyu Memandu Ilmu, WMI) emerged from UIN Sunan Gunung Djati Bandung as a response to the growing secularization of modern science. At its core, WMI positions the Qur'an not only as a theological text but also as an epistemological framework that establishes revelation as the source of axioms and ethical guidance. This approach highlights two central principles: first, that revelation provides the foundational truths upon which scientific inquiry must rest; and second, that scientific activity is obligated to strengthen faith (*īmān*) and generate tangible benefits (*manfaʿah*) for humanity (Ridwan et al., 2022). In this sense, WMI does not stand in opposition to empirical science; rather, it seeks to reframe scientific discoveries within the teleological horizon of *tawḥīd*, ensuring that knowledge serves not only instrumental purposes but also spiritual and ethical ones.

The contribution of WMI to the development of *Tawḥīdī Epistemology* lies primarily in its teleological orientation, emphasizing that the ultimate purpose of scientific endeavors is *taqarrub ilā Allāh* (closeness to God), rather than the exploitation of nature for material gain. Furthermore, WMI provides an ethical compass that safeguards scientific practice from detachment and value-neutrality, rooting it instead in the higher objectives of Islamic law (*maqāṣid al-sharīʿah*). When integrated with Ibn Sina's *Burhān al-Ṣiddīqīn* and the modern scientific method (logico-hypothetico-verification), WMI completes a triadic synthesis that unites revelation, reason, and empirical verification. This synthesis, which culminates in the formulation of *Tawḥīdī Epistemology*, offers a comprehensive framework capable of addressing the epistemological fragmentation of modernity while restoring the unity of knowledge under the principle of divine oneness (*tawḥīd*) (Bakar, 1991).

Tabel 12. Comparison of three frameworks.

Aspect	Burhān al-Ṣiddīqīn (Ibn Sina)	Scientific Method (logico-hypothetico-verification)	Revelation Guided Knowledge (WMI)
Definition	Rational demonstration to prove God's existence via contingency and necessity.	A framework analogizing logical deduction, hypothesis-building, and verification.	Integration of revelation (Qur'an/Sunnah) as the ethical and teleological guide for science.
Epistemological Basis	Pure rationalism (Aristotelian logic adapted to Islamic metaphysics).	Hybrid: Combines rational deduction (logic) and empirical verification (science).	Revelation-guided rationality (integration of *aql* (reason) and *naql* (revelation)).

Role of Revelation	Indirect: Revelation aligns with rational conclusions but is not central to the method.	Absent: Focuses on secular logic and empiricism unless integrated with external frameworks.	Central: Revelation defines axioms, ethics, and the purpose of knowledge.
Verification Method	Logical consistency (syllogistic certainty).	Empirical/rational verification (experiments, coherence with natural laws).	Dual verification: Empirical/rational + normative (Qur'anic alignment).
Strengths	- Provides metaphysical certainty. - Cohesive logical structure.	- Bridges philosophy and science. - Adaptable to empirical inquiry.	- Prevents ethical detachment. - Unifies science and spirituality.
Weaknesses	- Relies on unproven axioms (e.g., causality). - Limited empirical engagement.	- Lacks transcendental framework. - Vulnerable to materialist reductionism.	- Potential conflict between scripture and scientific claims. - Subjective interpretation.

If each conceptual framework is applied independently, based on the above comparison, there will be the following shortcomings. Burhān al-Ṣiddīqīn is strong logically but needs adaptation to modern science. Scientific Method offers a methodological structure but is weak in transcendental value (normative verification). Whereas WMI provides ethical guidance, it risks being dogmatic if not critiqued.

Integration of the three frameworks with clear epistemological stages

Tawḥīdī epistemology emerges from a critical dialectic between rationality, empiricism, and transcendence, offering a framework that addresses modern intellectual challenges by harmonizing these dimensions. At its core, the Tanzīlī step establishes revelation as the foundational axiom of knowledge. Derived from the Arabic root *nazala*—meaning "to descend"—Tanzīlī signifies knowledge sent down by God, embodied in the Qur'an and Sunnah, which provides ultimate truth beyond human subjectivity (Nasr, 1989). This step asserts that certain metaphysical and ethical principles are non-negotiable, guiding rational and empirical inquiry within a moral and transcendent framework. For instance, the Qur'anic declaration, "We created the heavens and earth in truth" (Qur'an 44:38), affirms the purposeful design of the universe as a premise that informs scientific exploration rather than being subordinate to it. Tanzīlī thus challenges secular approaches that separate facts from values, insisting that revelation defines the boundaries and aims of knowledge.

In practice, Tanzīlī functions as a normative filter for all inquiry. Scientific or philosophical hypotheses are assessed against Qur'anic axioms to ensure alignment with ethical and metaphysical truths. In bioethics, the principle of human dignity (*karamah insāniyyah*) derived from Qur'an 17:70 forbids practices such as human cloning that violate intrinsic human worth (Kamali, 2008). Likewise, Qur'an 7:56's injunction against environmental corruption (*fasād*) directs ecological research toward sustainability and stewardship. Classical Islamic scholarship, particularly Ibn Taymiyyah's *Dar' Ta'āruḍ al-'Aql wa al-Naql*, illustrates how apparent conflicts between reason and revelation are resolved by prioritizing divine texts (Taymiyyah & bin'Abd al-Halim, 1980). Tanzīlī does not oppose critical inquiry; rather, it ensures that investigation remains anchored in transcendent truth, safeguarding against both the relativism of postmodernism and the materialism of secular scientism. By grounding knowledge in revelation, this step provides coherence and moral clarity, framing scientific pursuit as an act of worship (*'ibādah*) that uncovers God's signs (*āyāt*) in nature. Ultimately, Tanzīlī exemplifies the Islamic vision of integrated knowledge, wherein rational and empirical methods serve, but do not supersede, divine wisdom.

The second stage of Tawḥīdī Epistemology is Burhānī, which serves as the intellectual engine of the entire framework. Derived from the Arabic term *burhān*, meaning "clear proof," this phase channels the revelation acquired in the Tanzīlī stage into a dynamic dialogue with human reason. Burhānī employs systematic logic to examine how Qur'anic axioms manifest in human experience and natural phenomena, constructing sound arguments through syllogistic reasoning while remaining grounded in Islamic metaphysics (Nasr, 1989). For instance, the Qur'anic assertion that "Everything will perish except His Face" (Qur'an 28:88) provides a philosophical basis for arguments about contingency, affirming the existence of a Necessary Being (God) sustaining all existence. Through Burhānī, scriptural truths are transformed into intellectual propositions that can be analyzed, fostering a harmonious relationship between faith and reason.

Burhānī's methodology is both deductive and exploratory. It begins with revealed truths but expands them through logical frameworks such as *qiyās* (analogical reasoning) and *istiqrā'* (induction). In cosmology, it bridges Qur'anic descriptions of the origins of the universe (Qur'an 21:30) with modern astrophysical theories, such as the Big Bang, not by conflating the two but by demonstrating conceptual alignment. In bioethics, Qur'anic principles can be extrapolated into ethical guidelines, such as prohibiting the commodification of genetic material based on the concept of *karamah* (human dignity) (Kamali, 2008). Burhānī avoids both rigid literalism and uncritical empiricism, recognizing that while revelation sets non-negotiable boundaries, understanding the "how" of natural phenomena demands intellectual rigor. This stage is also inspired by Al-Ghazali's *Mi'yār al-'Ilm* (The Criterion of Knowledge), which established rules for valid inference while cautioning against excessive speculation (Richmond, 2021). By maintaining this balance, Burhānī ensures that Muslim thought remains intellectually vibrant yet theologically grounded, capable of engaging with modern science without succumbing to materialist assumptions. This is where Tawḥīdī Epistemology distinguishes itself from secular rationalism—making reason a tool for comprehending divine wisdom, not a replacement for it.

The third stage of Tawḥīdī Epistemology is Tahqīqī, which represents the culmination of the framework by integrating empirical and divine verification. Derived from the Arabic term *taḥqīq*, meaning verification or realization, this phase subjects hypotheses developed from the Tanzīlī (revelation) and Burhānī (logic) stages to rigorous dual validation. Unlike secular scientific approaches that rely solely on observable evidence, Tahqīqī incorporates a normative dimension, aligning empirical findings with *maqāṣid al-sharīʿah* (the higher objectives of Islamic law) to ensure that knowledge is ethically and theologically sound (Kamali, 2008). For example, medical innovations such as CRISPR gene editing must undergo clinical trials for empirical validation while also receiving ethical approval from religious authorities to comply with principles like *ḥifẓ al-nasl* (protection of lineage). This dual approach safeguards against the risks of amoral scientism, where technological capability alone dictates ethical limits.

Tahqīqī follows a structured evaluative process across disciplines. In environmental science, Qur'anic directives on stewardship (Qur'an 2:30) and the prohibition of waste (Qur'an 7:31) inform hypotheses, which are then tested empirically and measured against Islamic juridical rulings. Renewable energy projects, such as solar power initiatives, exemplify this integration: their effectiveness in reducing carbon emissions (empirical) aligns with fatwas recognizing renewable energy as fulfilling the principle of *khilāfah* (normative) (Nasr, 1989). This stage also addresses apparent tensions between scripture and science through *ijtihād* (scholarly reinterpretation), allowing Muslim scientists to reconcile evolutionary biology with Qur'anic creation narratives by distinguishing material mechanisms from divine causality. The intellectual heritage of Tahqīqī traces back to Ibn Khaldun's *Muqaddimah*, which emphasized empirical observation while situating it within a metaphysical framework (Khaldūn, 2005). By demanding both material proof and transcendental alignment, Tahqīqī elevates scientific inquiry beyond utilitarian outcomes, framing it as a sacred pursuit to uncover God's signs (*āyāt*) in the universe.

Collectively, the three stages of Tawḥīdī Epistemology offer a holistic scientific paradigm: (i) Tanzīlī, where revelation serves as the ontological and ethical foundation; (ii) Burhānī, where logic structures rational arguments; and (iii) Tahqīqī, where empirical and normative verification ensure coherence between scientific investigation and divine guidance. This integrated framework positions Tawḥīdī Epistemology as a higher unity, uniting measurable evidence and transcendental truth in the pursuit of knowledge.

The novelty and uniqueness of Tawḥīdī Epistemology

Tawḥīdī Epistemology represents a novel synthesis, even though its foundational components have long existed within the Islamic scientific tradition. Firstly, Tawḥīd as the Basis of Epistemology is not a new concept. The principle that Tawḥīd serves as the foundation for the integration of knowledge has been articulated by Syed Muhammad Naquib Al-Attas (1995), who emphasized the unity of knowledge under divine guidance (al-Attas, 1995). Similarly, Ismail Raji al-Faruqi (1982) advanced the notion of the "Islamization of Knowledge," highlighting the integration of intellectual pursuits with spiritual principles (al-Faruqi, 1982). In addition, Osman Bakar (2008) explored Tawḥīdic Science, explicitly linking scientific inquiry with the principle of Tawḥīd, thereby reinforcing the inseparability of metaphysical unity and knowledge (Bakar, 2012).

Secondly, the integration of revelation and reason has been a central theme in classical Islamic philosophy. Al-Ghazali (1987) in the 11th century grappled with harmonizing rational inquiry and revealed knowledge, establishing a foundation for an epistemology that respects both empirical investigation and divine truth (Griffel, 2009). Likewise, Ibn Rushd (2000) in the 12th century attempted to reconcile philosophical reasoning with Islamic revelation, contributing to the classical discourse on epistemic harmony (Muwaffiqillah et al., 2025).

The distinctiveness of Tawḥīdī Epistemology lies in its synthesis of three frameworks: Ibn Sina's Burhān al-Siddīqīn representing classical rationalism, the logico-hypothetico methods of modern science, and the Revelation-Guided Knowledge model developed at UIN Sunan Gunung Djati Bandung (Ridwan et al., 2022). Its uniqueness is further reflected in the structured integration of its steps: Tanzīlī, where revelation functions as an axiom; Burhānī, which emphasizes logic and hypothesis; and Tahqīqī, which employs dual verification encompassing empirical and normative validation. While the individual elements of Tawḥīdī Epistemology are grounded in historical and contemporary scholarship, the deliberate combination and ordered structure present an innovative approach, particularly relevant in contemporary epistemological discourse.

Application of Tawḥīdī Epistemology: Detailed Case Studies

Several examples illustrate the application of Tawḥīdī Epistemology across diverse fields, each following the three steps of Tanzīlī, Burhānī, and Tahqīqī. In the domain of cosmology and the origin of the universe, the Tanzīlī step begins with the Qur'anic foundation. For instance, Qur'an 21:30 states, "Do the disbelievers not see that the heavens and earth were a closed mass, then We split them apart?" This verse is often interpreted as describing the Big Bang, where the universe originated from a singular, dense point (ratqan) that subsequently expanded (fataqnahumā). Classical exegetes such as Al-Tabari understood ratqan as a unified entity, while contemporary scholars like Maurice Bucaille associate it with cosmic expansion (Jarir & al-Thabarî, 1997). Another verse, Qur'an 3:190, asserts, "In the creation of the heavens and earth are signs for people of reason," emphasizing that the universe's design reflects intentionality and purpose, which invites rational inquiry (Nasr, 2006). From these verses, two axioms are derived: the universe had a definite beginning, rejecting the notion of eternalism, and its design implies a transcendent Creator (Khāliq).

The Burhānī step involves logical deduction and hypothesis, structured in a syllogistic manner inspired by Ibn Sina's *Burhān al-Siddiqīn*. The first premise asserts that every entity that begins to exist (ḥādith) requires a cause, supported by Qur'an 52:35, "Were they created by nothing, or are they the creators?" as well as Ibn Sina's philosophical exposition in *Kitab al-Sifa*, which posits that contingent beings (mumkin al-wujūd) cannot exist without a necessary cause (Kirchner & Amirshahi, 2023). The second premise maintains the impossibility of an infinite regress of causes, reinforced by Ibn Sina's cosmological argument that an infinite chain would prevent actualization, and Al-Ghazali's critique in *Tahafut al-Falasifa*, which similarly rejects infinite causal chains as absurd (al-Ġazzālī, 1887). Together, these premises exemplify how Tawḥīdī Epistemology integrates revelation and rational inquiry to form a coherent cosmological framework.

Premise 3 of the argument asserts that the universe began to exist, as supported by empirical observations such as Hubble's Law (1929), which demonstrates the expansion of the universe, and the discovery of cosmic microwave background (CMB) radiation (Hubble, 1929). Theoretical

physics, particularly the singularity theorems, further indicate that spacetime has a finite past (Penrose & Hawking, 1970). From these premises, the hypothesis emerges that a Necessary Being (*Wājib al-Wujūd*), uncaused and eternal, initiated the universe. Logically, the universe's contingency (*mumkin al-wujūd*) and finite past necessitate a transcendent, non-contingent cause, which is identified as God (Nasr, 2006).

In the Tahqīqī step, dual verification is applied. Empirical verification includes multiple lines of evidence for the Big Bang: redshift observations showing galaxies receding (Hubble, 1929), CMB radiation as a residue from the early universe (Penzias & Wilson, 1965), and nucleosynthesis data confirming the predicted abundances of hydrogen and helium. The fine-tuning argument highlights that physical constants, such as the gravitational constant (G) and cosmological constant (Λ), are precisely calibrated to allow life, implying purposeful design (Rees et al., 2000). Normative verification aligns these observations with Qur'anic revelation: Qur'an 21:30 depicts a "cosmic splitting" consistent with the Big Bang, and Qur'an 41:11 describes the universe's formation from "smoke" (*dukhān*), paralleling early post-Big Bang plasma (Jarir & al-Thabarî, 1997). Furthermore, this argument supports the *maqāṣid al-sharīʿah* by affirming *tawḥīd* (the Oneness of God) as the universe's originator and reflecting divine justice (*'adl*) through the universe's fine-tuned structure (Al-Ghazali, 1987).

Critiques are addressed rigorously. Some argue that the Big Bang is merely a natural process, questioning the need for God. However, while the Big Bang explains how the universe began, it does not address why it exists, which the *Wājib al-Wujūd* addresses as the ultimate metaphysical cause (Sînâ, 2004). Others suggest that infinite regress might be possible in quantum physics, yet even quantum fluctuations presuppose a contingent quantum vacuum requiring a cause, consistent with Ibn Sina's principle that all contingent entities demand a necessary ground (Nasr, 2006).

Synthesis within Tawḥīdī epistemology demonstrates a coherent methodology: Tanzīlī anchors inquiry in divine revelation, ensuring the pursuit of knowledge remains God-centric; Burhānī employs rigorous logic to derive God's existence, echoing Ibn Sina's approach while integrating modern cosmology; and Tahqīqī validates conclusions through both empirical science and Islamic theology, thereby preventing reductionist secular-materialist interpretations (Nasr, 2006).

This model resolves the "God of the gaps" fallacy by positioning revelation as the foundation of inquiry rather than a gap-filler (al-Attas, 1995). It also bridges the Islamic Golden Age's rationalism with contemporary science, offering a holistic framework for cosmological study (al-Faruqi, 1982). This example demonstrates how Tawḥīdī Epistemology integrates revelation, philosophy, and science to address one of humanity's oldest questions: why does the universe exist? (Royat, 2015).

Tawḥīdī Epistemology resolves the tension between the Qur'anic narrative of creation and scientific theories like the Big Bang. The Tanzīlī phase anchors the inquiry in Qur'an 21:30, which describes the heavens and earth as once a "closed mass" that was "split apart"—a description strikingly aligned with the Big Bang's singularity and expansion (Peebles, 2020). The Burhānī phase then employs Ibn Sina's contingency argument (Burhān al-Siddīqīn) to logically deduce that the universe, as a contingent entity, requires a Necessary Being (Wājib al-Wujūd) (Al-Ghazali, 1987). This philosophical reasoning is further substantiated in the Tahqīqī phase through empirical evidence such as cosmic microwave background radiation (CMB) and the fine-tuning of physical constants, which collectively support the idea of a designed cosmos (Misner, 1973).

Unlike purely materialist cosmologies that dismiss the question of a Creator, or rigid scriptural interpretations that reject scientific consensus, Epistemologi Tawḥīdī synthesizes both realms, affirming that the Qur'an's metaphysical claims and astrophysical discoveries are mutually reinforcing (Tipler, 1986). This integrative approach not only enriches Islamic theological discourse but also positions Muslim scientists to contribute meaningfully to cosmological research without compromising faith (al-Faruqi, 1982).

In the field of bioethics and genetic engineering, the Tanzīlī phase positions revelation as the foundational axiom guiding ethical inquiry. The Qur'an establishes core principles that inform Islamic perspectives on biotechnology. For instance, Qur'an 17:70 asserts, "We have honored the children of Adam," which underscores the concept of *karāmah insāniyyah* (human dignity) and

prohibits the commodification or unethical manipulation of human life (ibn ʿUmar Ibn Kathir, 2000). Classical exegetes highlight that this honor applies universally, irrespective of race, ability, or genetic makeup. Complementing this, Qur'an 2:195 admonishes, "Do not throw yourselves into destruction," emphasizing the obligation to preserve life (*ḥifẓ al-nafs*), a central tenet in Islamic bioethics (Al-Qur'an, 2:195).

Contemporary scholars interpret this principle as extending to the protection of future generations from potential harms associated with emerging technologies, such as eugenics (Ismail et al., 2008). From these scriptural foundations, two axioms emerge: first, the inviolability of human dignity, mandating that genetic engineering must never reduce humans to mere objects or enable discriminatory practices; and second, the preservation of life, which requires that technological interventions prioritize therapeutic benefits over non-essential enhancements (al-Attas, 1995). These Qur'anic and philosophical principles provide a coherent framework for ethical decision-making in genetic research and biotechnology (al-Faruqi, 1982).

In the Burhānī phase, ethical reasoning is derived through logical deduction and hypothesis formation. The sanctity of human life serves as the first explicit premise, asserting that human life is sacred and must not be commodified or harmed unnecessarily. This principle is supported by Qur'an 5:32, which states, "Whoever kills a soul… it is as if he has killed all mankind" (Al-Qur'an, 5:32), and reinforced by rulings of the Islamic Fiqh Academy (IFA) that prohibit interventions threatening human dignity. The second premise recognizes the scientific capability of genetic engineering technologies, such as CRISPR-Cas9, which can modify DNA to cure diseases or enhance traits (Doudna & Charpentier, 2014). Evidence from clinical trials demonstrates successful treatment of sickle-cell anemia, yet studies on "designer babies" highlight potential risks of social inequality and ethical dilemmas (Savulescu, 2015). The third premise addresses moral risks, noting that unregulated genetic modification can lead to eugenics, ecological harm, and disruption of lineage (*ḥifẓ al-nasl*), as illustrated by historical precedents such as Nazi eugenics programs and ecological studies on gene-drive organisms (Bioethics, 2018). From these premises, the hypothesis emerges that genetic engineering is permissible only for therapeutic purposes under strict ethical guidelines that preserve human dignity and ecological balance (Esvelt et al., 2014). The logical conclusion follows that therapeutic applications align with *maṣlaḥah* (public good) by curing diseases like cystic fibrosis, whereas non-therapeutic interventions, such as cosmetic enhancements, violate principles of *karāmah* and the broader objectives of *maqāṣid al-sharīʿah* (al-Attas, 1995).

Step 3 of Tahqīqī emphasizes the importance of dual verification, integrating empirical evidence with normative ethical considerations to ensure responsible application of genetic technologies. The first component, empirical verification, examines both medical efficacy and ecological impact. For example, CRISPR therapy for β-thalassemia successfully restored hemoglobin levels in 90% of patients, demonstrating significant therapeutic potential. Similarly, gene therapy has shown promising outcomes in treating inherited blindness. Beyond medicine, ecological studies reveal that gene drives in engineered mosquitoes can reduce malaria transmission in controlled laboratory settings. However, these interventions are not without risk, as potential horizontal gene transfer to non-target species raises ecological concerns that require careful management.

Complementing empirical assessment, normative verification evaluates these technologies against Islamic ethical frameworks. The Islamic Fiqh Academy (IFA) permits somatic cell editing for therapeutic purposes but explicitly forbids germline modification due to the risk of altering hereditary lines. Likewise, the Egyptian Dar al-Ifta prohibits genetic enhancement as taghyīr khalq Allāh (altering God's creation). These rulings align with the maqāṣid al-sharī'ah, where curing genetic diseases fulfills hifẓ al-nafs (preservation of life), whereas germline interventions could compromise hifẓ al-nasl (protection of lineage). By situating scientific practices within these normative boundaries, Tahqīqī ensures that innovations do not violate divine or moral principles.

Critics of these limitations often argue that prohibiting genetic enhancement may hinder scientific progress. However, Tawḥīdī epistemology emphasizes maṣlaḥah (public welfare) over unchecked innovation. The Hadith principle *"No harm shall be inflicted or reciprocated"* underscores the necessity of caution. Moreover, historical precedents such as the 1975 Asilomar

Conference demonstrate that ethical self-regulation in genetics is essential, and Islamic ethics further introduces accountability to divine guidance (Fisher, 2021). Similarly, some argue that secular ethical frameworks can sufficiently address these dilemmas. Yet, without metaphysical grounding, approaches like utilitarianism may prioritize temporary outcomes, such as maximizing happiness, at the expense of human dignity (karamah). Sheikh Abdullah bin Bayyah asserts that Islamic ethics transcends temporal trends, anchoring morality in divine wisdom (Bhat & ., 2024).

Finally, the synthesis within Tawḥīdī epistemology ensures a balanced and coherent approach. Tanzīlī establishes inviolable boundaries that uphold human dignity and ecological stewardship. Burhānī applies logical reasoning to weigh scientific potential against moral and societal risks. Tahqīqī then verifies that therapies, such as CRISPR for sickle-cell anemia, are not only empirically effective but also normatively compliant. By combining these layers of verification, Tahqīqī provides a comprehensive framework that harmonizes innovation, ethics, and spiritual accountability in contemporary biotechnology (Padela, 2025).

This model exemplifies how Tawḥīdī Epistemology prevents the instrumentalization of humans, such as the creation of "designer babies," while simultaneously advancing medical progress. By integrating revelation and reason, Islam's holistic epistemology provides a framework where ethical boundaries and scientific innovation are not in opposition but mutually reinforcing. This demonstrates Tawḥīdī Epistemology's capacity to navigate complex bioethical dilemmas, harmonizing cutting-edge science with enduring Islamic principles (AlJahsh, 2024).

In the context of bioethics, particularly debates surrounding CRISPR-Cas9 gene editing, Tawḥīdī Epistemology offers a clear ethical framework that neither uncritically embraces technological advancement nor rejects it outright. During the Tanzīlī phase, Qur'an 17:70 ("We have honored the children of Adam") is invoked to affirm the inviolability of human dignity (karamah insāniyyah). This principle establishes firm boundaries against exploitative practices such as eugenics or non-therapeutic genetic modifications (Valdés, 2021).

The Burhānī phase then applies logical reasoning to distinguish permissible therapeutic interventions from ethically impermissible enhancements. For example, while the editing of genes to cure sickle-cell anemia aligns with Islamic ethical principles, modifications that alter human nature (taghyīr khalq Allāh) remain prohibited. By structuring ethical deliberation through syllogistic reasoning, this phase ensures that scientific possibilities are evaluated in light of moral risks and objectives (Zollo et al., 2017).

Finally, the Tahqīqī phase subjects these principles to dual verification. Empirical validation is achieved through clinical trials, such as Frangoul et al.'s 2021 study on CRISPR therapies for blood disorders. Normative alignment is ensured by consulting Islamic jurisprudential authorities, such as the Islamic Fiqh Academy, which permits somatic cell editing but bans germline modifications (Frangoul et al., 2021). This method guarantees that scientific progress remains subordinate to higher ethical objectives (maqāṣid al-sharīʿah), especially the preservation of life (ḥifẓ al-nafs) and lineage (ḥifẓ al-nasl).

In contrast, secular bioethical frameworks often encounter challenges with moral relativism. Utilitarianism might justify genetic enhancement if it maximizes overall happiness, while libertarian perspectives could permit it based solely on individual autonomy (Lubis & Azhami, 2025). Tawḥīdī Epistemology avoids these pitfalls by grounding ethical judgments in immutable divine principles, all the while remaining adaptable to emerging scientific data (Malik, 2025). This approach exemplifies how Islamic epistemology can guide responsible innovation without compromising core moral commitments.

Tawḥīdī Epistemology provides a structured framework for addressing environmental ethics and climate change, integrating revelation, reason, and empirical verification (Choudhury, 2024). The Tanzīlī phase establishes the Qur'anic foundation for environmental stewardship. Qur'an 7:56 admonishes humans not to corrupt the earth after its restoration, while Qur'an 16:3 emphasizes that the universe was created with balance (mīzān), which humans are obligated to maintain. Classical exegetes, such as Ibn Jarir al-Tabari, interpreted fasād (corruption) to include environmental degradation, and contemporary scholars like Fazlun Khalid extend this to modern challenges like anthropogenic climate change (Nur et al., n.d.). Derived from these principles are axioms of stewardship (khilāfah) and prohibition of excess (isrāf), establishing the ethical

obligations humans hold toward the natural world.

During the Burhānī phase, logical reasoning connects human responsibility with observable environmental crises. The premise that humans are accountable for maintaining Earth's balance is supported by Qur'an 55:7–9 and the prophetic tradition describing humans as stewards over a green and beautiful earth. The causal link between human activity—such as fossil fuel consumption and deforestation—and global warming is reinforced by IPCC AR6 data and CO_2 measurements exceeding 420 ppm. Intergenerational justice further strengthens the argument, drawing on Qur'an 31:33 and ethical guidance from scholars like Yusuf Al-Qaradawi. Consequently, the hypothesis emerges that transitioning to renewable energy is an ethical obligation under khilāfah to prevent fasād, positioning fossil fuel reliance as incompatible with maqāṣid al-sharīʿah (Al-Qaradawi, 2010).

The Tahqīqī phase verifies this ethical prescription through dual validation. Empirically, renewable energy projects such as UAE's Masdar City and Iceland's geothermal and hydropower initiatives demonstrate both feasibility and ecological benefits. In contrast, fossil fuel use contributes to air pollution and biodiversity loss, violating mīzān (Khan, 2024). Normatively, declarations like the Islamic Declaration on Global Climate Change (2015) and the Fatwa Number 86/2023 from Majelis Ulama Indonesia reinforce the moral imperative to protect the environment. Aligning with maqāṣid al-sharīʿah, these frameworks prioritize preserving life (ḥifẓ al-nafs) and protecting resources (ḥifẓ al-māl).

Potential critiques, such as concerns over economic disruption from renewable transitions or claims that climate change is a natural cycle, are addressed through a combination of ethical reasoning, empirical evidence, and Qur'anic guidance (Al-Jayyousi et al., 2023). The Qur'an emphasizes that Allah does not burden a soul beyond its capacity (Qur'an 2:286), supporting gradual energy transitions, while IPCC AR6 confirms the overwhelming human contribution to recent warming. Furthermore, Qur'an 30:41 highlights human responsibility for environmental corruption, reinforcing the call for proactive stewardship.

In synthesis, Tawḥīdī Epistemology anchors environmental ethics in divine mandates, applies logical reasoning to connect human actions with ecological consequences, and validates interventions through empirical data and normative frameworks. This integrative approach demonstrates how revelation and reason collaboratively guide ethical action in addressing climate change (Todd & O'Brien, 2016).

This model resolves the secular divide between ecology and spirituality by framing environmentalism as both an act of worship ('ibādah) and an ethical obligation (Rozaq & Zain, 2024). Tawḥīdī Epistemology demonstrates its relevance to climate change by synthesizing Qur'anic stewardship, empirical science, and Islamic jurisprudence, offering a comprehensive alternative to secular environmental frameworks. For instance, the Tanzīlī phase draws on Qur'an 7:56 ("Do not corrupt the earth after its reformation") to articulate ecological balance (mīzān) as a divine mandate, while Qur'an 55:7–9 emphasizes measurement and sustainability, grounding environmental responsibility in spiritual principles.

Building upon this revelation-based foundation, the Burhānī phase develops logical hypotheses linking human activity, such as fossil fuel combustion, to climate disruption. These hypotheses are substantiated with empirical evidence, including reports from the Intergovernmental Panel on Climate Change (IPCC), which confirm the anthropogenic drivers of global warming (IPCC, 2021). The Tahqīqī phase then subjects these hypotheses to dual verification: scientific observation and normative compliance with Islamic declarations, such as the 2015 Islamic Climate Change Declaration, which advocates for fossil fuel phaseouts and sustainable practices. By contrast, secular environmentalism often emphasizes survivalist imperatives without a moral or spiritual dimension, and traditionalist approaches may overlook empirical data (Öhlmann & Swart, 2022). Tawḥīdī Epistemology integrates both moral and empirical dimensions, presenting sustainability as an ethical and devotional responsibility, which has motivated countries like Indonesia to enact green initiatives and fatwas against deforestation while aligning with global climate goals (Kolkailah, 2023).

The broader efficacy of Tawḥīdī Epistemology is evident in its structured methodology, encompassing Tanzīlī (revelation as axiom), Burhānī (logical deduction), and Tahqīqī (dual

verification). Applied across cosmology, bioethics, and environmental ethics, this framework bridges the historical gap between Islamic theology and contemporary science. By integrating divine guidance, rational inquiry, and empirical-normative validation, Tawḥīdī Epistemology provides a cohesive methodology for addressing complex ethical and existential dilemmas. The examples discussed—cosmology, bioethics, and environmental ethics—illustrate how this epistemological model harmonizes transcendent truths with scientific rigor while maintaining moral accountability, offering a dynamic and holistic alternative to secular and reductionist paradigms (Miao & Nduneseokwu, 2024). Consequently, Tawḥīdī Epistemology serves as a critical framework for both Muslim and global academic communities seeking ethically grounded and scientifically informed solutions to contemporary challenges.

Conclusion

These examples demonstrate how Tawḥīdī Epistemology effectively bridges revelation, logic, and empirical inquiry across diverse disciplines. By anchoring hypotheses in Qur'anic axioms (Tanzīlī), rigorously applying syllogistic reasoning (Burhānī), and validating through dual methods of observation and normative assessment (Tahqīqī), it provides a comprehensive framework for addressing contemporary challenges while maintaining Islamic ethical and metaphysical coherence. In doing so, this model honors the legacy of Ibn Sina while revitalizing it for modern academic and policy contexts.

Tawḥīdī Epistemology offers clear advantages compared to alternative frameworks. Against secular scientism, which excels in empirical rigor but often dismisses metaphysical questions such as the ultimate purpose of the universe, Tawḥīdī provides a method to integrate such questions through Burhānī logic and Tanzīlī axioms. In contrast to religious literalism, which may reject scientific evidence and thus fail the Tahqīqī phase, Tawḥīdī reconciles scripture with empirical findings through contextual ijtihād. Similarly, against postmodern relativism, which risks ethical subjectivity, this epistemology anchors moral reasoning in revelation, ensuring consistent ethical guidance.

Despite its strengths, the framework faces notable challenges. Interpretive flexibility is required to balance adherence to scripture with evolving scientific knowledge, necessitating ongoing ijtihād. Moreover, interdisciplinary training is essential, as scholars must possess fluency in both Islamic jurisprudence and contemporary science to avoid oversimplification or misapplication.

The implications for Islamic scholarship are significant. Tawḥīdī Epistemology elevates the Qur'an as a meta-theory for scientific inquiry, encourages Muslim scientists to treat revelation as a source of hypotheses, and equips fatwa councils with tools to assess emerging technologies responsibly. Across cosmology, bioethics, and environmental ethics, the framework transcends traditional dichotomies of faith versus reason or tradition versus modernity, providing actionable, ethically grounded solutions.

By combining structured methodology with flexible applicability, Tawḥīdī Epistemology positions itself as a transformative paradigm for 21st-century knowledge production—one that honors Islamic intellectual heritage while engaging contemporary challenges. In a world facing existential threats such as climate collapse and genetic manipulation, this approach offers a third way: neither purely secular nor rigidly dogmatic, but integrative, ethical, and empirically sound.

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