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The Informational Universe of Allah: An Islamic Perspective on Quantum Information Theory

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ABSTRACT

This scholarly inquiry initiates a nuanced exploration into the Islamic conceptualization of Allah as 'Al-'Alim (the All-Knowing) and 'Al-Khabir' (the All-Aware), postulating a reconciliation wherein Allah is identified as the quintessential Intelligence and truth. Allah's attributes of divine omniscience and ubiquitous awareness underscore a divine understanding enveloping all of existence, positioning Him as the epitome of All-Information. This paper delves into the intersection of Islamic theological constructs and modern information theory, proposing a novel interpretation that aligns Allah's divine omniscience with the theory's principles. Information theory posits that the foundation of all information is inherently probabilistic, mirroring the probabilistic outcomes observed in quantum mechanics. This seemingly contradicts 'Al-Qadar', an All-Knowing Allah's predetermined will or predestination. However, we can bridge this gap by considering Allah as the embodiment of all information. This paper facilitates a richer understanding of Allah's predetermined will in Islam and builds bridges with the randomness and unpredictable nature witnessed in the quantum world. This research aims to augment Allah as the Infinite Information through an interdisciplinary lens, bridging quantum indeterminacy and Islamic Omnipotence. This quantum-religious interface reconciles quantum information theory with Islamic theological constructs.

Keywords: Allah, All-Aware, All-Knowing, information, Islam, quantum mechanics.

In theological and quantum academic dialogue, exploring the convergence and paradox of the Divine's omniscient nature and the intrinsic uncertainties characteristic of quantum physics is audacious and necessary. This study meticulously embarks on a captivating exploration of the Islamic perception of Allah as 'Al-'Alim (the All-Knowing) and 'Al-Khabir' (the All-Aware), positing a thoughtful reconciliation with the uncertainties and probabilistic outcomes intrinsic to quantum mechanics. "And to Allah belongs the unseen of the heavens and the earth. And the matter of the Hour is but as the twinkling of the eye, or it is nearer. Indeed, Allah is over all things competent" (al-Quran, al-Nahl 16:77). The objective of this scholarly inquiry is to posit the Quran as a repository of knowledge that resonates with the principles of scientific inquiry, positing that

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its revelatory content harbours truths that science may validate or to which it may correspond. "It is not but a revelation revealed" (al-Quran, al-Najm 53:4). The transient nature of scientific discoveries, subject to revision and refutation over time, contrasts with the constancy of divine revelation. This discourse affirms *Wahy*, or divine revelation, as the conveyance of exacting wisdom and words to prophets, reputed within Islamic doctrine to be devoid of error and congruent with the ultimate verities, including empirical facts.

Islamic tradition maintains that *Wahy* constitutes the precise conveyance of divine words, not the musings of the prophets, but revelations of divine origin. This is encapsulated in the Quranic verse from Surah al-Najm (53:3-4), which states, "Nor does he speak from [his own] inclination. It is not but a revelation revealed". This underpins the Islamic view that the Quran is an untainted divine communication.

Furthermore, the scholarly approach to the Quran and Hadith necessitates a contextual interpretation, eschewing overreliance on metaphorical exegesis that could obfuscate intended meanings. On science within the Islamic paradigm, Islamic scholarship has historically acknowledged the value of empirical observation and rational investigation, particularly when not in conflict with Islamic tenets (Guessoum 2015). It has been advocated that authentic scientific knowledge ought to align with Islamic doctrine, with encouragement for Muslims to engage in scholarly pursuits across diverse domains, such as the natural sciences, mathematics, and medicine (Turner 2010), to incite reflection upon the natural world, such as in *Surah Ali 'Imran* (3:190-191), "Indeed, in the creation of the heavens and the earth and the alternation of the night and the day are signs for those of understanding".

However, Islamic scholars have advised against unexamined acceptance of scientific theories that contravene established Islamic beliefs, as per the scriptural injunctions (McGinnis 2003). They propose that scientific findings should be critically evaluated and not be allowed to override the axiomatic truths of religion (Safi 2014). In essence, the nexus of revelation and science, as viewed through Islamic scholarship, strives for an equilibrium that respects the sanctity of scriptural authority while valuing the role of logical analysis and empirical evidence in deciphering the cosmos.

Consequently, this paper endeavours to clarify the congruencies between scientific discoveries and the *Quranic* revelations, contending that scientific investigation encompasses verities which may be substantiated or mirrored by Quranic revelations.

At the heart of this academic endeavour is an in-depth exploration of Islamic theological constructs. The epithets '*Al-'Alim*' and '*Al-Khabir*' embody Allah's absolute comprehension and awareness of all existent matters, envisaging Him as inherently divine omniscient and omnipresent. These divine attributes presuppose Allah's unwavering knowledge and awareness that envelop all creation, cementing His omnipotence and foreknowledge. Concurrently, the dynamic field of quantum physics presents an intriguing, albeit perplexing, landscape riddled with uncertainties and probabilities. Quantum theory is fundamentally anchored in probabilistic outcomes, where the precise states of particles are indeterminate until measured, echoing the Heisenberg Uncertainty Principle (Suppes 1961). This inherent stochasticity and absence of determinism, as perceived by the human observer, notwithstanding, the outcome—irrespective of its nature—is already encompassed within the infallible will and preordained knowledge attributed to an Omniscient Allah. Engaging with quantum indeterminacy and Islamic Omnipotence, this inquiry outlined herein beckons contemplation of human cognition's limitations in comprehending and processing divine information's sheer vastness and complexity. Quantum indeterminacy, a pivotal aspect of quantum mechanics, mirrors human cognitive constraints, manifested as our inability to predict or understand the entirety of probabilistic quantum outcomes definitively (Wang et al. 2014). This fundamental indeterminacy might not indicate randomness per se but rather reflect our limited cognitive grasp on the exhaustive information within the cosmos (Hilbert 2012).

In Islamic theology, Allah's divine omniscient nature as '*Al-'Alim*' and '*Al-Khabir*' implicitly denotes His infinite cognitive capacity, embodying an unbounded repository of information and knowledge encompassing all conceivable and inconceivable dimensions of existence. In contrast, human cognition is invariably finite and constrained despite its remarkable capabilities. Our

cognitive faculties, while sophisticated, are inevitably limited in scope and depth, unable to fathom the divine tapestry of information in its totality and infiniteness (Marois & Ivanoff 2005; Schneider & Shiffrin 1977). A compelling observation surfaces when contemplating 'Al-Khabir' (the All-Aware) in conjunction with 'Al-'Alim' (the All-Aware). Notably, these two names coalesce in every Quranic instance, where the discourse pertains to the manifold facets of human creation, encompassing its tangible and intangible dimensions (Taheri et al. 2022).

Similarly, discussions around the monotheistic essence of *Allah* evoke this pairing (Al-Daghameen, 2016). This is not merely a coincidental recurrence. This specific co-occurrence serves a purpose: to underscore and attest to the unequivocal truth of *Tawhid*, the oneness of Allah.

Simultaneously, notions echoing the sense of unified existence in quantum physics have been articulated, providing a fascinating parallel. One such conception is Bohm's (2002) holomovement theory. According to Bohm (2002), holomovement is a crucial foundational principle that highlights existence's unbroken and undivided totality. Bohm (2002) proposed that the universe, in its entirety, is not a collection of parts but rather an unfragmented whole, consistently flowing and changing. Bohm's (2002) concepts have exerted significant influence and engendered contemplation but have been scrutinised. A fundamental critique of Bohm's holomovement theory revolves around the deficiency of empirical corroboration, prompting contention among scientists (van Strien 2020). Despite Bohm's formulation drawing from philosophical and theoretical underpinnings, van Strien (2020) asserted that the absence of empirical validation or testable prognostications leaves his theory in the realm of speculation.

Moreover, while Bohm endeavoured to harmonize his holomovement theory with quantum mechanics, certain physicists posit that his interpretation of quantum mechanics lacks widespread acceptance within the scientific community. The assumptions inherent in scientific theorizations, such as Bohm's holomovement, are regarded as provisional and subject to revision; Bohm's theorization resonates with the principle of *Tawhid*. In any event, extant propositions regarding the ontology of quantum mechanics either entail speculative assertions surpassing available scientific evidence or relinquish realism concerning substantial aspects of quantum mechanics (Egg 2021).

Further drawing parallels, the field of quantum information theory similarly accentuates a foundational oneness (Benedictus 2012). Quantum information theory suggests that particles do not possess independent existence at the quantum level but are fundamentally interconnected, reflecting a deep, underlying unity (Nielsen & Chuang 2000). The very fabric of reality, as elucidated in quantum theory, is not discrete and separated but integrally connected.

Human cognitive limitation inherently necessitates the presence of indeterminacy and unpredictability within our understanding and interaction with the universe (Crowell 2018). The inability to precisely predict or know is not a reflection of chaos or absence of order in the cosmos but a manifestation of the finitude of human comprehension vis-a-vis the infinitude of divine knowledge. This crucial acknowledgement prompts a re-evaluation and reconceptualization of indeterminacy in quantum mechanics. Instead of perceiving it as an intrinsic characteristic of quantum reality, indeterminacy may be reinterpreted as a cognitive artefact, a shadow cast by the limitations of human understanding attempting to engage with the divine omniscience embodied by Allah. Consequently, this paper fosters a dialogue between Islamic theology and quantum mechanics and embarks on an introspective journey into the nature, limits, and implications of human cognition in deciphering and navigating the intricate web of reality, knowledge, and the divine. Through this lens, the exploration contributes a nuanced layer of understanding to the discourse, presenting a canvas where human cognitive limitations, divine omniscience, and quantum indeterminacy coalesce, converse, and illuminate.

Intricately, the Islamic theological principle of *Tawhid* and the philosophical-scientific concepts of holomovement (Modell 2021) and quantum information theory converge on the idea of an inseparable unity and interconnectedness of all existence. These parallels may not be coincidences but reflect a more profound truth that religious doctrine and quantum physics attempt to articulate and explore. Within this symmetry of ideas, one might suggest that the intentional pairing of 'Al-'Alim and 'Al-Khabir' in the *Qur'an* can be viewed not only as a theological

affirmation of *Allah's* oneness and omnipotence but also as an echo of the universal principles of unity and interconnectedness that underpin the fabric of reality, as conceptualized within the holomovement theory and quantum information theory (Taheri et al. 2022). Engaging with these parallels opens the door for a deeper and more integrated understanding of reality, where theology and quantum physics, seemingly disparate, converge to illuminate the profound oneness that permeates existence.

By integrating these divine names in specific contexts, the Quran invites the reader to a deeper contemplation, emphasizing that the All-Knowing Allah, who understands every intricacy of creation and annihilation, is also the supreme power competent to execute His divine will. The pairing's inherent coherence, particularly of '*Al-'Alim*' and '*Al-Khabir*', reinforces the core Islamic tenet of monotheism and Allah's incontestable power and knowledge.

This paper aims to construct a bridge separating deterministic theology and probabilistic quantum physics. Allah is the supreme embodiment of the ultimate truth, the entirety of information; thus, this study is an innovative interpretation, harmonising the principles foundational to modern information theory with Allah's divine omniscience. With its underpinnings firmly embedded in probabilistic frameworks, information theory offers a plausible lens through which we might decipher the enigmatic dance of predetermined divine will and the probabilistic outcomes resonant in quantum mechanics. This synthesis does not merely facilitate a deepened understanding of Islamic theological postulations regarding Allah's predetermined will; it simultaneously illuminates potential pathways of dialogue and convergence with the randomness and indeterminate nature emblematic of the quantum world. The paper champions a novel conceptualization by adopting an interdisciplinary lens, positing Allah as the Infinite Information—the sublime nexus binding quantum indeterminacy with Islamic Omnipotence.

This study's exploration is grounded in the Islamic attributes of Allah, particularly '*Al-'Alim*' (the All-Knowing) and '*Al-Khabir*' (the All-Aware). It seeks to harmonize these with the probabilistic nature of information as posited by information theory and evidenced in quantum mechanics. The methodological backbone of this research is a rigorous literature review that meticulously gathers and scrutinizes scholarly works spanning quantum theory, Islamic theology, and information science.

Through analogical reasoning between the randomness and unpredictability inherent in the quantum realm and the theological attributes of omniscience and omnipresence, this paper proposes a redefined perspective of Divine intelligence. The randomness and unpredictability observed in quantum phenomena are attributed to humans' finite understanding of the infinite, constrained mainly by cognitive limitations. Acknowledging the potential challenge in comprehending the divine, the study underscores the transcendence and uniqueness of God, as clarified in the Quran. For instance, in Surah al-Hashr (59:22): "He is Allah, other than whom there is no deity, Knower of the unseen and the witnessed. He is the Entirely Merciful, the Especially Merciful. He is Allah, than Whom there is no other Allah, the Knower of the Invisible and the Visible". Also in Surah Faṭir (35:38): "Indeed, Allah is Knower of the unseen [aspects] of the heavens and earth. Indeed, He is Knowing of that within the breasts". This emphasizes the concept of divine omniscience, having full knowledge of all things under heaven and earth, including in humans' hearts, which transcends human understanding. Therefore, by presenting Allah as the epitome of all-encompassing knowledge, this conceptualization enhances our comprehension of predestination within Islam, a concept beyond human grasp. This perspective accommodates the stochastic behaviours witnessed in quantum phenomena, aligning with the Quranic assertion that "No human vision can encompass Him, whereas He encompasses all human vision: for He alone is unfathomable, all-aware" (*Surah al-An'am* 6:103). This suggests that while humans may struggle to fully comprehend the intricacies of predestination and the randomness inherent in quantum phenomena, *Allah's* omniscience and supremacy encompass all understanding. This interdisciplinary approach illustrates how the randomness and indeterminacy characteristic of the quantum world can coexist with the Islamic view of Allah as Infinite Information. This inquiry investigates the congruence between this perception and contemporary scientific knowledge,

analyzing how scientific investigations, revisions, and discoveries correlate with the truths elucidated in the *Quran*.

In summary, the methodology of this paper is characterized by an interdisciplinary synthesis grounded in an extensive literature review aimed at reconciling Islamic theological constructs with the probabilistic nature of information theory, thereby proposing a novel perspective on the Divine attribute of omniscience.

Literature Review

The current scholarly endeavour meticulously interrogates the deliberate juxtaposition of select divine epithets within the sacred text of the *Quran*, underscoring an intricate theological tapestry that weaves through the foundational Islamic scripture. Specifically, the focal point of this analysis pivots on the discerning examination of the consecrated names attributed to *Allah*: '*Al-'Alim* (The All-Knowing) and '*Al-Khabir*' (The All-Aware). In an academic analysis, the *Quran* provides a nuanced and methodical approach to understanding the dynamics of human creation, existence, and eventual cessation. Significantly, the repeated and deliberate juxtaposition of the attributes '*Al-'Alim* (The All-Knowing) and '*Al-Qadir*' (The All-Powerful) in *Quranic* narratives, especially when discussing the intricate processes of human life, offers profound insights. "He creates whatever He pleases. He grants females to whomever He pleases and males to whomever He pleases, or grants them a mix of males and females, and causes whomever He pleases to be barren. He is All-Knowing, All-Powerful" (*Al-Shura* 42:50). This strategic combination of terms within the holy text is not merely a stylistic choice; it emphasizes the deep interconnectedness of divine knowledge and power in every phase of human life, from conception to annihilation.

At the heart of this discourse lies the principle of *Tawhid*, the core Islamic doctrine emphasizing the absolute unity of *Allah*. *Tawhid* transcends mere monotheism, offering insights into the origin and culmination of all entities, whether tangible or abstract, originating from this singular divine source. '*Al-'Alim* (The All-Knowing) and '*Al-Khabir*' (The All-Aware) reaffirm this principle. From a human perspective, every facet of our physical and metaphysical existence, every fragment of knowledge, and every manifestation ultimately emanate from this foundational concept of unity. When viewed through the prism of *Tawhid*, the broader discourse on the various stages of human existence—from inception, through earthly life, to the eventual conclusion—underscores that every event, whether material or spiritual, derives directly from the intrinsic unity of *Allah*; emphasizing that all forms of emergence, whether physical or metaphysical, are rooted in the fundamental belief in the absolute unity and singularity of the divine. This concept resonates with the *Quranic* verse, *Surah al-An'am* (6:102), which states, "That is *Allah*, your Lord; there is no deity except Him, the Creator of all things, so worship Him. And He is Disposer of all things".

Detailed Exploration of '*Al-'Alim*' and '*Al-Khabir*' in Islamic Theology

The concept of *Allah's* divine omniscience is a recurring theme throughout the *Quran*. This omnipresent knowledge, which encompasses every hidden and apparent dimension of existence, establishes *Allah's* supremacy and serves as a reminder of the inherent structure and justice that pervades the universe. The subsequent examination of the provided verses will further delve into this dimension of *Allah's* nature and draw a broader understanding of its implications.

Al-'Alim (the All-Knowing)

Surah & Verse	Meaning	Commentary
<i>Al-Baqarah</i> (The Cow) 2:137	And if [others] come to believe in the way you believe, they will indeed find themselves on the right path; and if they turn away, it is but they who will be deeply in the wrong, and <i>Allah</i> will	This verse makes an assertion about believers and their path, but it concludes by emphasizing <i>Allah's</i> absolute knowledge and ability to hear all things. Here,

	protect thee from them: for He alone is all-hearing, all-knowing.	divine omniscience serves as an assurance to the Prophet, emphasizing that Allah's awareness is supreme and comprehensive.
Al-Baqarah (The Cow) 2:127	And when Abraham and Ishmael were raising the foundations of the Temple , [they prayed:] 'O our Sustainer! Accept Thou this from us: for, verily, Thou alone art all-hearing, all-knowing!	In the context of constructing the <i>Kaaba</i> , the emphasis is on divine guidance and approval. The plea by Abraham and Ishmael underscores a recognition of Allah's all-encompassing knowledge, seeking validation for their actions.
Al-Hujurat (The Dwellings) 49:1	O YOU who have attained to faith! Do not put yourselves forward in the presence of [what] Allah and His Apostle [may have ordained], but remain conscious of Allah: for, verily, Allah is all-hearing, all-knowing!	This verse addresses believers and their conduct, particularly their mindfulness towards Allah's decrees. Allah's divine omniscience here acts as a moral compass, suggesting that one's actions are always under divine scrutiny.
Al-Taghabun (Loss and Gain) 64:4	He knows all that is in the heavens and on earth; and He knows all that you keep secret as well as all that you bring into the open: for Allah has full knowledge of what is in the hearts [of men].	This verse touches on Allah's ability to know external and internal realities, emphasizing His understanding of human intentions and innermost thoughts.
Fatir (The Originator of Creation) 35:44	Have they never journeyed about the earth and beheld what happened in the end to those [deniers of the truth] who lived before their time and were [so much] greater than they in power? And [do they not see that the will of] Allah can never be foiled by anything whatever in the heavens or on earth, since, verily, He is all-knowing, infinite in His power?	This verse encourages introspection and learning from historical precedents, with Allah's divine omniscience and omnipotence underpinning the eventual consequences of one's actions.
Al-Ma'idah (The Table Spread) 5:97	Allah has laid down that the Ka'bah, the Inviolable Temple, shall be a symbol for all mankind; and [so, too, the sacred month [of pilgrimage] and the garlanded offerings [are symbols] meant to make you aware that Allah is aware of all that is in the heavens and all that is on earth, and that Allah has full knowledge of everything.	In the context of pilgrimage and the Ka'bah's significance, this verse accentuates Allah's awareness of cosmic and earthly events, reinforcing the idea that every ritual and symbol is rooted in divine wisdom.
Al-Taghabun (Loss and Gain) 64:11	No calamity can ever befall [man] unless it be by Allah's leave: hence, whoever believes in Allah guides his [own] heart [towards this truth]; and Allah has full knowledge of everything.	While addressing the concept of calamities and misfortunes, this verse emphasizes that nothing escapes Allah's knowledge, with every event occurring by His will.

Ya-Sin (Ya-Sin) 36:38	And [they have a sign in] the sun: it runs in an orbit of its own [and] that is laid down by the will of the Almighty, the All-Knowing	This verse, speaking of the sun's orbit, reflects upon the precision of cosmic order, with the Almighty's divine omniscience guiding each celestial body's path.
Ghafir (The Forgiver) 40:2	The bestowal from on high of this divine writ issues from Allah, the Almighty, the All-Knowing	The introduction of this divine revelation attributes its origin to Allah's omnipotent and omniscient nature, assuring its authenticity and wisdom.
Yusuf (Joseph) 12:100	And he raised his parents to the highest place of honour; and they [all] fell down before Him, prostrating themselves in adoration. Thereupon [Joseph] said: 'O my father! This is the real meaning of my dream of long ago, which my Sustainer has made come true. And He was indeed good to me when He freed me from the prison, and [when] He brought you [all unto me] from the desert after Satan had sown discord between me and my brothers. Verily, my Sustainer is unfathomable in [the way He brings about] whatever He wills: verily, He alone is all-knowing, truly wise!	In the narrative of Joseph, his dreams and their interpretations showcase Allah's divine omniscience. Joseph's acknowledgement of Allah's wisdom underscores the belief that life's events, though perplexing, are part of a divinely orchestrated plan.
Yusuf (Joseph) 12:6	For, [as thou hast been shown in thy dream,] even thus will thy Sustainer elect thee, and will impart unto thee some understanding of the inner meaning of happenings, and will bestow the full measure of His blessings upon thee and upon the House of Jacob -even as, aforetime, He bestowed it in full measure upon thy forefathers Abraham and Isaac. Verily, thy Sustainer is all-knowing, wise!	
Fussilat 41:12	And He [it is who] decreed that they become seven heavens in two aeons, and imparted unto each heaven its function. And We adorned the skies nearest to the earth with lights, and made them secure: such is the ordaining of the Almighty, the All-Knowing.	The process of creation described in this verse emphasizes Allah's meticulous design and infinite knowledge, reflecting upon His ability to assign purpose and function to each creation.
Luqman (Luqman) 31:34	Verily, with Allah alone rests the knowledge of when the Last Hour will come: and He [it is who] sends down rain; and He [alone] knows what is in the wombs: whereas no one knows what he will reap tomorrow, and no one knows in what land he will die, Verily. Allah [alone] is all-knowing, all-aware.	By addressing the uncertainty of the future, this verse juxtaposes human limitations with Allah's boundless knowledge, emphasizing His exclusive awareness of life's mysteries.
Al-Nisa' (The Women) 4:26	Allah wants to make [all this] clear unto you, and to guide you onto the [righteous] ways of life of those who preceded you, and to turn unto you in His mercy: for Allah is all-knowing, wise.	These verses underscore Allah's unique wisdom and insight, suggesting that divine knowledge surpasses human

		understanding, and therefore, divine guidance is paramount.
Al-Nisa' (The Women) 4:70	Such is the bounty of Allah - and none has the knowledge which Allah has.	
Al-Nahl (The Bee) 16:70	And Allah has created you, and in time will cause you to die; and many a one of you is reduced in old age to a most abject state, ceasing to know anything of what he once knew so well. Verily, Allah is all-knowing, infinite in His power!	The verse references human frailty juxtaposed with Allah's infinite knowledge and power. It speaks to the limitations of human beings in their lifecycle, suggesting that, in contrast, Allah remains unchanged in His infinite knowledge and power.
Ya-Sin (Ya-Sin) 36:81	Is, then, He who has created the heavens and the earth not able to create [anew] the like of those [who have died]? Yea, indeed - for He alone is the all-knowing Creator.	This verse emphasizes Allah's omnipotence. The query is rhetorical, emphasizing that if Allah can create the vast expanse of the heavens and earth, He surely can recreate beings.
Al-Hijr (The Rocky Tract) 15:86	Verily, thy Sustainer is the all-knowing Creator of all things!	This verse is succinct but poignant, emphasizing Allah's encompassing knowledge in creating all things.
Saba' (Sheba) 34:26	Say: "Our Sustainer will bring us all together [on Judgment Day], and then He will lay open the truth between us, in justice - for He alone is the One who opens all truth, the All-Knowing!"	The verse speaks of the Judgment Day, suggesting Allah's role as the ultimate adjudicator. Only He, with His all-encompassing knowledge, can truly discern the truth in matters of justice.
Al-Hijr (The Rocky Tract) 15:25	And, behold, it is thy Sustainer who will gather them all together [on Judgment Day]: verily, He is wise, all-knowing!	Allah's wisdom and knowledge are highlighted, particularly in the context of the afterlife and Judgment Day.
Al-An'am (The Cattle) 6:13	Although His is all that dwells in the night and the day, and He alone is all-hearing, all-knowing.	This highlights Allah's encompassing dominion over both day and night, suggesting His constant vigilance and knowledge.
Al-Dukhan (The Smoke) 44:6	In pursuance of thy Sustainer's grace [unto man]. Verily, He alone is all-hearing, all-knowing	Reinforces Allah's attributes of being all-hearing and all-knowing.
Al-Hujurat (The Dwellings) 49:16	Say: "Do you, perchance, [want to] inform Allah of [the nature of] your faith although Allah knows all that is in the heavens and all that is on earth? Indeed, Allah has full knowledge of everything!"	These verses emphasize that nothing is hidden from Allah. The former challenges the audacity of humans trying to inform Allah of their faith, while the latter emphasizes unity and

Al-Hujurat (The Dwellings) 49:13	O men! Behold, We have created you all out of a male and a female, and have made you into nations and tribes, so that you might come to know one another. Verily, the noblest of you in the sight of Allah is the one who is most deeply conscious of Him. Behold, Allah is all-knowing, all-aware.	equality amongst humanity in Allah's knowledge.
Al-Shura (The Consultation) 42:12	His are the keys of the heavens and the earth: He grants abundant sustenance, or gives it in scant measure, unto whomever He wills: for, behold, He has full knowledge of everything.	This verse accentuates Allah's sovereignty, holding the keys to the heavens and the earth and being the granter of sustenance.
Al-Fath (The Victory) 48:4	It is He who from on high has bestowed inner peace upon the hearts of the believers, so that - seeing that Allah's are all the forces of the heavens and the earth, and that Allah is all-knowing, truly wise - they might grow yet more firm in their faith.	This verse underlines Allah's infinite knowledge and wisdom, fostering faith among believers.
Al-Hadid (The Iron) 57:3	He is the First and the Last, and the Outward as well as the Inward: and He has full knowledge of everything.	These verses highlight Allah's encompassing knowledge from the beginning to the end and even the most intimate secrets of human hearts.
Al-Zukhruf (The Gold Adornments) 43:84	For [then they will come to know that] it is He [alone] who is Allah in heaven and Allah on earth, and [that] He alone is truly wise, all-knowing.	Both verses emphasize Allah's supreme wisdom and knowledge over heaven and earth.
Al-Zukhruf (The Gold Adornments) 43:9	Yet thus it is [with most people]: if thou ask them, "Who is it that has created the heavens and the earth?" - they will surely answer, "The Almighty, the All-Knowing, has created them."	
Al-An'am (The Cattle) 6:115	For, truly and justly has thy Sustainer's promise been fulfilled. There is no power that could alter [the fulfilment of] His promises: and He alone is all-hearing, all-knowing.	These verses showcase Allah's omnipotence and omniscience in managing the celestial bodies and ensuring the promise's fulfilment.
Al-An'am (The Cattle) 6:96	[He is] the One who causes the dawn to break; and He has made the night to be [a source of] stillness, and the sun and the moon to run their appointed courses: [all] this is laid down by the will of the Almighty, the All-Knowing	
Al-Hadid (The Iron) 57:6	He makes the night grow longer by shortening the day, and makes the day grow longer by shortening the night; and He has full knowledge of what is in the hearts [of men]	These verses highlight Allah's encompassing knowledge from the beginning to the end and even the most intimate secrets of human hearts.
Al-Rum (The Romans) 30:54	It is Allah who creates you [all in a states of weakness, and then, after weakness, ordains strength [for you], and then, after [a period of] strength, ordains [old-age] weakness and grey hair. He creates what He wills; and He alone is all-knowing, infinite in His power.	Reflects on the stages of human life as ordained by Allah, reaffirming His power and knowledge.

Al-Anbiya' (The Prophets) 21:110	"Verily, He knows all that is said openly, just as He [alone] knows all that you would conceal.	This highlights that nothing escapes Allah's knowledge, whether spoken aloud or concealed.
Az-Zumar (The Groups) 39:7	If you are ingrate behold, Allah has no need of you; none the less, He does not approve of ingratitude in His servants: whereas, if you show gratitude, He approves it in you. And no bearer of burdens shall be made to bear another's burden. In time, unto your Sustainer you all must return, and then He will make you [truly] understand all that you were doing [in life]: for, verily, He has full knowledge of what is in the hearts [of men].	The verse deals with gratitude and human accountability, emphasizing that Allah knows what lies in human hearts.
Saba' (Sheba) 34:3	And yet, they who are bent on denying the truth assert, "Never will the Last Hour come upon us!" Say: "Nay, by my Sustainer! By Him who knows all that is beyond the reach of a created being's perception: it will most certainly come upon you!" Not an atom's weight [of whatever there is] in the heavens or on earth escapes His knowledge; and neither is there anything smaller than that, or larger, but is recorded in [His] clear decree.	It emphasizes the inevitable reality of the Last Hour and Allah's encompassing knowledge of even the minutest of matters.

Al-Khabir (the All-Aware)

Surah & Verse	Meaning	Commentary
Al-An'am (The Cattle) 6:18	For He alone holds sway over His creatures, and He alone is truly wise, all-aware.	From a theological standpoint, this verse emphasizes two interlinked attributes of Allah: His sovereignty and His omniscience. Holding 'sway over His creatures' denotes authority while being 'truly wise, all-aware' pertains to divine intelligence and awareness. Such depictions challenge any contention of limited divine influence or knowledge.
Al-An'am (The Cattle) 6:73	And He who has created the heavens and the earth in accordance with [an inner] truth - and whenever He says, 'Be', His word comes true; and His will be the dominion on the Day when the trumpet [of resurrection] is blown. He knows all that is beyond the reach of a created being's perception, as well as all that can be witnessed by a creature's senses or mind: for He alone is truly wise, all-aware.	This passage underscores the dichotomy between divine and mortal knowledge. Whereas humans are restricted to sensory and cognitive perceptions, Allah transcends these limitations. This thought is reiterated in works such as those by Turner (2019), which delve into the Quranic portrayal of divine knowledge as encompassing all realms.
Al-An'am (The Cattle) 6:103	No human vision can encompass Him, whereas He encompasses all human vision: for He alone is unfathomable, all-aware.	The idea that human comprehension is limited when confronted with the divine has been a long-standing tenet in Islamic scholarship (Wadud, 2004).

		The verse asserts the limitations of human understanding and the boundless nature of Allah's awareness.
Saba' (Sheba) 34:1	All praise is due to Allah, to whom all that is in the heavens and all that is on earth belongs; and to Him will be due all praise in the life to come. For He alone is truly wise, all-aware	This proclamation encompasses Allah's dominion over the entire cosmos and emphasizes His unique position of awareness. Rahman (2009) drew attention to verses like this to highlight the Quran's insistence on Allah's sole possession of absolute knowledge.
Al-Mulk (Dominion) 67:14	How could it be that He who has created [all] should not know [all]? Yea, He alone is unfathomable [in His wisdom], aware!	This rhetorical question serves as a logical assertion of Allah's complete knowledge. The act of creation intrinsically entails comprehensive knowledge of the created.

In Islamic theology, and as illustrated in the above verses, one of the predominant attributes ascribed to Allah is His divine omniscience – the quality of being ‘All-Knowing’. The Quran, the central religious text of Islam, which Muslims believe to be a revelation from Allah, incessantly emphasizes this characteristic of the Divine. This paper seeks to understand the depth of this attribute as expressed in the Quran and analyze its implications regarding epistemology, which is the study of knowledge and belief. The chosen verses, among others in the Quran, collectively portray God as the ultimate Knower. His knowledge is not constrained by time, space, or substance, and it encompasses everything from the tangible to the ethereal, from the past to the future, from the smallest atom to the vastness of the universe.

“Yes—by my Lord, the Knower of the unseen—it will certainly come to you!” Not ‘even’ an atom’s weight is hidden from Him in the heavens or the earth; nor anything smaller or larger than that, but is ‘written’ in a perfect Record (al-Quran, Saba’ 34:3).

This concept of divine omniscience inculcates humility in believers, urging them to recognize their limitations and the boundless wisdom of the Divine. The recurrent emphasis on this attribute throughout the Quran is a testament to its significance in Islamic theology and its centrality in shaping the worldview of its adherents.

It is worth examining the multiple instances in the Quran where Allah’s knowledge is underscored. For example, in Surah al-Baqarah (The Cow) 2:137 and 2:127, Allah is described as ‘all-hearing, all-knowing’. The emphasis here is on Allah's awareness of everything, including what is spoken and what is hidden. This omniscience is further reinforced in Al-Taghabun (Loss and Gain) 64:4, where it is declared that Allah ‘knows all that is in the heavens and on earth; and He knows all that you keep secret as well as all that you bring into the open’. Such verses not only declare Allah's encompassing knowledge but also serve as a reminder of divine omnipresence in the life of a believer. A recurring theme in the verses above, such as Al-Hujurat (The Dwellings) 49:13 and Saba' (Sheba) 34:26, is the unparalleled nature of Allah's knowledge. It is comprehensive, unbounded, and inherently superior to human knowledge. The spectrum of this knowledge ranges from the visible realms of the heavens and earth, as seen in Al-Shura (The Consultation) 42:12, to the intimate and concealed thoughts and feelings of human beings, as articulated in Al-Hadid (Iron) 57:6. Philosophically, these verses posit a significant epistemological claim: the scope and depth of divine knowledge are beyond human comprehension and comparison. This implies a dual reality – the tangible world known to humans, bound by time and space, and the expansive realm of divine knowledge, timeless and all-encompassing.

The notion of *Allah* as the knower and keeper of all information and knowledge, apparent and concealed, is further evident in verses such as Al-Ma'idah (The Table Spread) 5:97, where Allah's awareness is a testament to His all-knowing nature. In an era inundated with data, there is a distinction between possessing fragmented information and understanding it holistically. The Quran's portrayal of Allah's knowledge is analogous to the epitome of holistic information, encapsulating every iota of data in existence.

Furthermore, its dynamic nature is essential to understanding this divine attribute. Allah's knowledge is not portrayed as static or passive. For instance, in the verse Al-Baqarah (The Cow) 2:137, Allah is described as actively protecting and guiding. This proactive dimension underscores the Quran's portrayal of Allah as 'All-Aware', implying continual awareness of all occurrences, intentions, and changes.

These verses have a consistent emphasis on the superlative nature of divine knowledge. The verses repeatedly underscore Allah's unparalleled epistemic supremacy, navigating a theme that transcends mere religious affirmation to touch the broader realm of philosophical epistemology. This paper delves into the epistemological claims presented in these verses, exploring the nuances of Allah's divine omniscience and its analogy with the modern concept of holistic information.

At its core, epistemology grapples with questions about the nature, scope, and limits of knowledge. The Quranic portrayal of divine knowledge presents an epistemological thesis: Allah's knowledge is vast and surpasses all conceivable boundaries. It is not merely an affirmation of His omniscience but a declaration that His knowledge is inherently beyond human comprehension, existing in a realm where typical epistemological constraints do not apply. Thus, when one juxtaposes divine knowledge with human epistemology, the latter appears circumscribed, tentative, and ephemeral.

The Quran's depiction of Allah as 'All-Aware' further enriches this narrative. It suggests Allah's omniscience and emphasises this knowledge's active nature. Unlike human knowledge, which can often be passive or limited to the scope of one's direct experiences, Allah's knowledge is painted as ever-active and all-encompassing. It is not merely a repository of static information; it is an ever-vigilant, dynamic awareness of every occurrence, intention, and change across the expanse of existence. In our data-saturated era, understanding and integrating information, knowledge and data in its complete and unfragmented form are paramount. The paper underscores the significance of grasping information in its complete form by highlighting the concept of holistic information, which seeks to understand and integrate information in its entirety rather than fragmented parts. The Quranic depiction of Allah's omniscience exemplifies this ideal of holistic information, portraying divine knowledge as encompassing every nuance and interrelation. The Quran's depiction of divine knowledge epitomizes this ideal. If holistic information seeks a complete, unbroken comprehension of data, then Allah's divine omniscience, as portrayed in the Quran, represents the zenith of this aspiration.

Moreover, this analogy underscores the profound difference between divine and human knowledge. While modern information systems strive for holistic comprehension, they remain constrained by technological, cognitive, and temporal limits. In contrast, Allah's knowledge, as described in the Quran, is boundless, timeless, and unmediated by any limitations. It is an intuitive, direct, and perfect knowledge that seamlessly integrates every iota of data under heaven.

The scriptural passages from the Quran under scrutiny provide a nuanced epistemic analysis regarding the essence of Divine cognizance. These verses assert that the Almighty's comprehension is unexhaustive, all-encompassing and inherently active, a stark contrast to humanity's bounded cognition, as Hardman & Macchi (2003) noted. Analogizing this with holistic information affords a richer understanding of the expanse and intensity of Divine omniscience. While human pursuit may edge towards a comprehensive grasp of information, the Qur'anic perspective maintains that absolute understanding, in its most authentic form, is a prerogative of the Divine alone.

To encapsulate, the Quran imparts deep-seated examinations into the character of Divine knowledge. This omniscience transcends mere theological abstraction, significantly influencing

the faithful's existential perspective and moral framework. The consciousness of Allah's pervasive knowledge impels believers towards virtuous conduct, with the acknowledgement that no element is beyond Divine observance. At a broader philosophical level, the Quran enjoins individuals to acknowledge the inherent limitations of human understanding and earnestly and humbly submit to Allah's guidance, who is characterized as All-Knowing and Omnipotent in His Divine wisdom. This injunction finds support in Quranic verses such as Surah Al-An`am (6:103), which states, "No human vision can encompass Him, whereas He encompasses all human vision: for He alone is unfathomable, all-aware". Here, the Quran underscores the incomprehensibility of Allah's essence, emphasizing the need for humility in the face of divine wisdom. This perspective highlights the significance of recognizing human limitations and seeking guidance from Allah, thereby aligning with broader Islamic theological principles.

Quantum Information Theory with Islamic Theology

Quantum mechanics and information theory stand as two of the most significant scientific developments of the previous century, each initially forging paths of inquiry that seemed distinct and unrelated. However, subsequent research has uncovered profound connections between the two fields (Vedral 2002). Quantum mechanics and quantum information theory, while sharing a common quantum foundation, diverge significantly in their focus and applications. Quantum mechanics is a fundamental physics theory that describes nature's physical properties at the scale of atoms and subatomic particles (Schlosshauer et al. 2013). It is principally concerned with the behaviour of matter and energy on the quantum scale (Bohm 1990), elucidating phenomena that classical mechanics cannot, such as superposition, entanglement, and uncertainty. On the other hand, quantum information theory is a theoretical framework that arises from applying quantum mechanics to information theory (Bennett & Shor 1998). It extends the classical theory of information by incorporating quantum mechanical principles. While classical information theory is grounded in manipulating and transmitting classical bits, quantum information theory deals with quantum bits, or qubits, which can exist in superpositions of states. This field explores the processing and communication of information in systems that exhibit quantum mechanical behaviour.

The reconsideration of the foundations of quantum mechanics within an information-theoretical context is a profound shift. It stems from recognising that information is not just an abstract concept but a fundamental aspect of physical systems. Quantum mechanics traditionally describes systems in isolation from the observer. In contrast, quantum information theory acknowledges the role of the observer, the act of measurement, and the information gained or lost in this process. From a foundational perspective, this shift suggests that information itself may be a primary constituent of reality, with physical states corresponding to information states. The ramifications of this are manifold, extending to the interpretation of quantum states, the nature of quantum measurements, and the intrinsic limits of knowledge about physical systems. Quantum information theory thus not only provides a new lens through which to view quantum mechanics but implies that information is at the core of physical laws. This information-centric view of quantum mechanics challenges many long-held notions about the separability of physical systems, the objectivity of measurements, and the nature of reality itself. It compels us to consider that the quantum states might be better understood as carriers of information and that the very act of observation is a form of information processing.

On a separate note, genes are often characterized as the quintessential carriers of biological information, encoding the instructions necessary for the organization and functioning of living organisms. This conceptualization aligns with Deacon's (2013) theoretical framework, which articulates a relationship between the arrangement of matter and the abstraction known as information. Deacon (2013) contended that, by the second law of thermodynamics, the inherent tendency of matter is towards a state of maximal entropy or disorder. Conversely, the manifestation of organization within matter is the product of certain constraints that limit its natural propensity towards randomness, effectively embodying a form of information:

This retained foundation of reproduced constraints is effectively the precursor to genetic information (or rather the general property that genetic information also exhibits)...Whether it is embodied in specific information-bearing molecules (as in DNA) or in merely molecular interaction constraints of a simple autogenic process, information is ultimately constituted by preserved constraints (Deacon, 2013, p. 317-318).

Expanding on this premise, Deacon's (2013) interpretation of DNA serves as a foundational illustration. DNA's structure, characterized by its double helix, is not a random assembly of molecules but a highly ordered sequence that dictates the synthesis of proteins and the regulation of various biological processes. This order represents a significant deviation from randomness imposed by the specific bonding affinities of nucleotides and the rules of genetic coding. In this sense, the organized complexity of DNA is a physical manifestation of information, as it imposes a non-random constraint on the sequence of nucleotides that, in turn, directs the development and maintenance of living organisms. Deacon's (2013) perspective contributes to a broader academic discussion that transcends biology and touches upon the philosophical implications of information theory. It suggests that information is not merely a passive sequence of data but an active principle that imposes order on matter, challenging entropy. This viewpoint resonates with broader themes in information theory and thermodynamics, suggesting a universe in which information is as fundamental a component as energy and matter. It prompts a re-evaluation of the role of information in the natural world, from the microscopic genetic scripts of DNA to the macroscopic laws that govern the cosmos.

While quantum mechanics provides the framework for understanding the quantum universe, quantum information theory leverages this framework to understand the role of information within that universe. The fundamental reconsideration of quantum mechanics in the context of information theory may lead to new technological advances and a deeper philosophical understanding of the quantum world.

This review explores how quantum information theory intersects with Islamic perspectives on divine knowledge and omniscience. In scientific inquiry, discoveries and established facts remain tentative until substantiated by further evidence, constituting an ongoing refinement process. Nevertheless, these scientific endeavours often converge with the ultimate truth elucidated in the Quran.

Quantum physics, focusing on the elemental constituents of matter and their enigmatic behaviour at the quantum scale, offers a framework for comprehending the interconnectedness between physical and spiritual realms, a perspective congruent with Islamic doctrines. Surah Al-Mulk (67:1): "Blessed is He in Whose Hand is the dominion of the Universe, and Who has power over everything" extols the omnipotence of Allah, asserting His sovereignty over the universe, while Surah Al-Mulk (67:14): "Would He not know, He Who has created, when He is All-Subtle, All-Aware" underscores His omniscience and subtlety as the Creator. These verses emphasize the impossibility of Allah being unaware of His creation, as He intricately fashioned every aspect of existence, from the human body's inner workings to the subtleties of the cosmos. Thus, Allah's profound understanding encompasses the visible and the concealed, reflecting His omnipotence and omniscience.

While quantum mechanics and information theory face various critiques within the scientific community, such as interpretational issues, the measurement problem, non-locality, and epistemological challenges, these critiques contribute to ongoing discussions concerning the nature of reality and the boundaries of human comprehension. However, it is essential to note that while scientific theories remain provisional pending further evidence, they align with Quranic truths. The Quran, revered for its timeless verities, does not contradict scientific inquiry but enriches it by offering insights into the fundamental essence of existence. Surah Al-Mulk (67:3-4) elucidates this notion: "Who created the seven heavens one above another. You will see no incongruity in the Merciful One's creation. Turn your vision again, can you see any flaw? Then turn your vision again, and then again; in the end, your vision will come back to you, worn out and frustrated". This verse emphasizes Allah's creation's flawless and harmonious nature, suggesting that every element, from the smallest particle to the vast galaxies, is interconnected

and coordinated in perfect harmony. It conveys that the universe is intricately woven together, with no discernible discontinuity or disorder, regardless of how deeply one scrutinises it. This verse also highlights the perfection and coherence in the universe, which can be understood through scientific inquiry and reflection on divine truths. Thus, while scientific theories may evolve, they do not contradict the timeless truths encapsulated in the Quran.

Thus, the Quran offers insights into the incomprehensibility of divine knowledge and the limitations of human perception. For example, Surah Al-An`am (6:103) emphasizes the transcendence of Allah's knowledge beyond human comprehension: "No human vision can encompass Him, whereas He encompasses all human vision: for He alone is unfathomable, all-aware". This verse highlights the parallels between the mysteries of quantum phenomena and the concept of divine omniscience, enriching the discourse on the informational universe of Allah within the framework of quantum information theory. This perspective intimates that the study of quantum phenomena may provide insights into the interconnectedness of existence's physical and spiritual aspects, offering a unique vantage point from which to interface between observable reality and metaphysical dimensions (Jaafar & Wahiddin 2016).

By integrating contemporary critiques of quantum physics and information theory with Islamic perspectives, this paper contributes to a nuanced understanding of the intersection between science and spirituality, fostering interdisciplinary dialogue and advancing knowledge in both domains.

Discussion

In theological discussions, particularly within Islamic metaphysics, the attributes of Allah, such as His all-knowingness (Al-`Alim) and omnipresence, are considered absolute and beyond human comprehension. Quantum information theory, while not a theological construct, provides a parallel in understanding the limits of human knowledge. It suggests that just as there are physical limits to computation imposed by quantum phenomena, there might also be limits to human understanding of the Divine. The Quran repeatedly emphasizes that Allah is beyond human comprehension and transcends all limitations. For instance, Ayat al-Kursi (2:255) states:

"And they will never compass anything of His Knowledge except that which He wills. His Kursi extends over the heavens and the earth, and He feels no fatigue in guarding and preserving them. And He is the Most High, the Most Great".

The notion of Allah's all-encompassing knowledge may find resonance in the way information is processed and understood in the quantum realm. Quantum systems exhibit inherent indeterminacy and interconnectedness, mirroring the complexity and unfathomability of Divine knowledge as portrayed in the Quran. It is crucial to acknowledge that attributing human-like characteristics to Allah, known as anthropomorphism, is prohibited in Islam (Nakissa 2020). However, discussing the parallels between quantum phenomena and Divine knowledge does not entail anthropomorphism. Instead, it serves as a means to deepen our understanding of both the physical and metaphysical realms. Furthermore, the dialogue between quantum information theory and the concept of Divine omniscience and omnipresence prompts a re-examination of the nature of knowledge and existence. While quantum information theory does not explicitly delve into theological concepts, its principles can inspire philosophical and theological reflections on the attributes of Allah vis-à-vis the physical world.

By exploring the limitations of human cognition and the boundless nature of Divine knowledge through the lens of quantum information theory, we can enrich our theological endeavours and metaphysical inquiries. This approach facilitates a holistic understanding encompassing scientific and religious beliefs, fostering interdisciplinary dialogue and advancing knowledge in both domains. Thus, integrating concepts from quantum information theory with *Quranic* teachings provides a unique perspective that enhances our comprehension of the universe and deepens our appreciation for the profound nature of Divine knowledge.

The advent of quantum mechanics heralds a profound re-evaluation of the epistemological underpinnings of physics, particularly regarding the pivotal role of the observer.

Classical physics operates under the premise of an objective reality that can be described independently of observation. Yet, quantum mechanics disrupts this notion, proposing that the act of observation is fundamentally tied to the phenomenon being observed (Bohm et al., 1987). The contention lies in whether it is possible to conceive a complete physical picture from ‘outside’ the observer — a picture in which the observer is part of a reality coherently mapped by mathematical structures (Dieks 1988).

This paradigm shift challenges traditional notions of objectivity and determinism that have long prevailed in classical physics. In the quantum realm, observation is an integral part of the measurement process, influencing the behaviour and properties of quantum systems (Kordeš & Demšar 2021). This phenomenon, encapsulated in the famous Heisenberg Uncertainty Principle, underscores the inseparable connection between the observer and the observed (Home 2013). Furthermore, quantum mechanics introduces the concept of superposition, wherein particles can exist in multiple states simultaneously until measured (Monroe et al. 1996). This inherently probabilistic nature of quantum systems fundamentally alters our understanding of reality, prompting a re-examination of the nature of knowledge and observation in physics. Quantum mechanics precipitates a profound epistemological shift in physics, emphasizing the inseparable relationship between the observer and the observed. This re-evaluation challenges the concepts of objectivity and determinism and opens up a new understanding of the nature of reality and the limits of human knowledge.

However, quantum mechanics posits that any such framework may be intrinsically limited or even fundamentally impossible to attain due to the participatory role of the observer in shaping the physical reality. The ‘relative state’ hypothesis in quantum mechanics, as discussed by (Barnum 2003), presents a paradigm in which all elements of reality are described in terms of a quantum state subjectively experienced by the observer. This approach has garnered scepticism due to its departure from the classical objective view and its implications that reality may be observer-dependent.

However, the conversation shifts to the interpretative frameworks within quantum mechanics that view quantum states not merely as physical entities but as carriers of information — a perspective that aligns with quantum information theory (Peres & Terno, 2004). This theory reflects a broader philosophical shift, suggesting that information is a fundamental component of the quantum world, and our interactions can be understood as informational exchanges that contribute to the definition of reality (Vedral 2018). The ‘informational’ interpretation of quantum states suggests that the outcomes we observe are contingent upon how we interact with the quantum system, which has significant implications for the nature of reality. It challenges the classical notion of a detached observer and implies that our manipulations of the world are not passive but are integral to the outcomes we observe. This conceptualization dovetails with the idea that knowledge of the quantum system and the system itself are co-constitutive.

Thus, quantum mechanics and quantum information theory together compel a reconsideration of the objective reality that physics has long sought to describe, proposing instead a reality that is interactive and malleable by the acts of observation and measurement. This paradigm shift has far-reaching implications for physics and our broader understanding of knowledge, reality, and the limits of human comprehension. The principles of quantum mechanics, namely the observer effect, superposition, and entanglement, have instigated a profound reassessment of the nature of reality as understood within the physical sciences. This reconceptualization challenges the classical view of an objective reality independent of observation and suggests a more fluid and interactive model where observation plays a constitutive role.

In physics, the observer effect is a phenomenon that has profound implications for both the understanding of quantum systems and the philosophical contemplation of reality and consciousness. The principle that the very act of observation can alter the state of a quantum system is emblematic of the intertwined nature of the observer and the observed. In this context, the observer effect is not simply a physical interference but a system transformation through information exchange.

When one considers the theological implications of this principle, particularly with the Islamic belief in Allah as the all-knowing creator, a rich field of discourse is opened. Within this framework, the universe can be perceived as a manifestation of divine omniscience, with the unfolding of reality being a continuous act of divine expression. Human interaction with the world and the knowledge derived is thus inherently limited when contrasted with the infinite knowledge of Allah. In attempting to comprehend the divine unfolding of reality, the observer engages in an act that is both participatory and revelatory, though restricted by human faculties. The observer effect in quantum mechanics challenges traditional notions of passive observation. It suggests that our understanding of reality is co-created through our interactions with the world — a concept that aligns with the view of reality as an emergent process involving both divine will and human participation. However, it is important to note that the observer effect is not universally accepted as a priori valid (Sassoli de Bianchi 2013). Critics have raised diverse concerns about the phenomenon's philosophical, interpretational, and practical aspects. These criticisms underscore the ongoing debate and uncertainty surrounding the interpretation of quantum mechanics. In light of these critiques, it is necessary to reconsider our treatment of the observer effect. Rather than presenting it as an unquestionably valid concept, we must acknowledge its complexities and controversies. Various philosophical interpretations of the observer effect highlight the need for a nuanced understanding, considering its potential implications and limitations. Furthermore, practical challenges in applying the observer effect must be addressed, particularly in relation to its theological implications.

Thus, the observer effect in quantum mechanics offers profound insights into the nature of reality and human participation in the cosmos. However, it is essential to approach this phenomenon with caution and humility, recognizing the ongoing debate and uncertainty surrounding its interpretation. The perceived information is the action of the Divine orchestration of the cosmos (Guessoum 2010; Kauffman 2016).

The reinterpretation of quantum states as subjective information necessitates recalibrating classical information theory. This subjective information, influenced by the observer effect, demands a more dynamic understanding of information as an active participant in shaping reality. In theological terms, this can be seen as analogous to the limited human perception of Allah's will and the unfolding of His creation. Therefore, from this standpoint, this necessitates a more nuanced engagement with the principles of information theory, especially in the quantum domain. The observer effect invites a philosophical inquiry into the nature of consciousness and its role in shaping the physical universe. It raises questions about the extent to which consciousness can influence reality and how this influence is manifested.

Furthermore, the relationship between the observer effect and belief in a divine being suggests a participative model of reality. Moreover, the correlation between the observer effect and the belief in a Divine being implies a participatory paradigm of reality. Within this paradigm, human consciousness interacts with divine omniscience, whereby the former endeavours to interpret and comprehend the latter. Consequently, an emergent conceptualization arises, wherein the structure of reality, as perceived by human observers, represents a composite composition woven from both the strands of divine will and the configurations discerned through human inquiry.

Thus, the observer effect in quantum mechanics transcends its scientific origins, intersecting with theological concepts and enriching the discourse on the interplay between divine knowledge, human understanding, and the nature of reality. This confluence of ideas challenges us to rethink the boundaries of what is observable, knowable, and creatable within the universe as it is understood through scientific inquiry and spiritual belief.

Superposition and entanglement further compound this view. Superposition, where particles exist in multiple states simultaneously until observed, implies a reality that is not fixed but probabilistic and determined by observation. Entanglement, which suggests an intrinsic connection between particles irrespective of distance, challenges the concept of locality and suggests a universe inherently united, perhaps akin to the interconnectedness of all creation as perceived by believers.

In the context of theism, particularly within monotheistic traditions that posit an all-knowing, omnipresent Allah, these quantum phenomena can be interpreted as a microcosmic reflection of divine omniscience and omnipresence. The entangled particles exhibit a unity that transcends space, and the divine presence permeates all aspects of reality, intimately involved with unfolding the cosmos.

The interplay of these quantum phenomena with the belief in Allah suggests a universe that is not statically existent but continuously brought into being through divine will and the participatory act of observation and human actions. Surah Ar-Rahman (55:29) emphasises Allah's continuous and perpetual engagement with the affairs of creation daily: "All those in the heavens and the earth are dependent on Him. Day in and day out, He has something to bring about".

In this view, reality is not a pre-existing stage upon which events unfold but an emergent construct co-authored by the divine and human observers (of information). Surah Al-Baqarah (2:256) emphasizes the freedom of choice in faith, indicating that individuals can believe or disbelieve without compulsion: "Let there be no compulsion in religion, for the truth stands out clearly from falsehood. So whoever renounces false gods and believes in Allah has certainly grasped the firmest, unfailing hand-hold. And Allah is All-Hearing, All-Knowing". Also, Surah Al-Kahf (18:29) reinforces the idea that belief is a matter of individual choice and will: "The truth is from your Lord, so whoever wills - let him believe; and whoever wills - let him disbelieve". It underscores the consequences of one's decisions, indicating that individuals are responsible for their actions and choices. This has profound implications for understanding the act of creation, the nature of existence, and the relationship between the divine and the physical universe.

The paradigm inspired by quantum mechanics introduces a perspective of reality characterized by interactivity and adaptability, suggesting the presence of a participatory divine influence reminiscent of interpretations within Islamic theological principles, particularly the doctrine of the Oneness of God (Tawhid). This perspective fosters a dialogue bridging the realms of physics and spirituality, proposing that advancements in quantum mechanics and information theory may provide scientific insights and metaphysical enlightenment, enhancing our understanding of the universe and the divine. However, it is important to consider Islamic theological principles, particularly the belief in the oneness of God (Tawhid), which emphasizes Allah's transcendence and His distinctiveness from His creation.

This analysis's profound dialogue between quantum physics and Islamic theology invites a multifaceted reflection on the implications of quantum phenomena such as the observer effect, superposition, and entanglement for religious belief and scientific inquiry. In the context of Islamic theological discourse, the analysis contributes a nuanced lens through which to view the attributes of Allah—such as divine omnipresence and omniscience—in light of the participatory nature of reality as suggested by quantum mechanics.

The emergent properties of the quantum world resonate with the Islamic concept of a reality continuously sustained by the Divine Will, where the act of observation and the observed phenomena are aspects of creation, including the phenomena observed in the quantum world, are created and sustained by the Divine Will. Surah Al-Qamar (54:49) underscores the idea that the observed phenomena are part of a larger cosmic plan guided by Allah's decree: "Indeed, all things We created with predestination".

From the broader academic standpoint, the analysis contributes to the intersection of religion and quantum physics by suggesting that the traditional, deterministic view of reality is supplanted by a dynamic, responsive universe coalescing through divine presence and human engagement. They emphasize the interplay between divine decree and human agency, highlighting the active role of both in shaping the unfolding events of the universe. Surah Al-Baqarah (2:286): "Allah does not charge a soul except [with that within] its capacity. It will have [the consequence of] what [good] it has gained, and it will bear [the consequence of] what [evil] it has earned". This verse implies that Allah's decree is responsive to the capacities and actions of individuals. It suggests that the universe operates in a manner that is accommodating and responsive to the needs and capabilities of its inhabitants. The contributions of this analysis are manifold:

1. **Theological Insight:** It enriches Islamic theological discourse with a contemporary understanding of divine action within the cosmos, potentially offering fresh interpretations of Quranic concepts of creation and Divine Will.
2. **Scientific Inquiry:** It provides a paradigm within which scientists and theologians can collaboratively explore the implications of quantum mechanics for the nature of knowledge, the process of scientific discovery, and the very structure of reality.
3. **Philosophical Dialogue:** It encourages a philosophical reconsideration of metaphysical principles, such as causality, determinism, and the nature of existence, from both an Islamic and a scientific viewpoint.
4. **Interdisciplinary Scholarship:** It fosters a multidisciplinary approach to scholarship, where insights from quantum physics can inform and be informed by Islamic theology, enhancing both fields.

The conversation between quantum physics and Islamic theology could be further enriched by interdisciplinary research that embraces empirical studies and theological scholarship. Such research might explore how Islamic concepts of knowledge and existence can align with or provide fresh perspectives on quantum theories. Conversely, the principles of quantum mechanics may offer new metaphysical insights that can be integrated into Islamic discourse. Furthermore, this dialogue's ethical and practical implications should not be overlooked. Suppose reality is indeed a participative process influenced by human consciousness. What does this imply for how we live our lives, our decisions, and our reverence for the natural world? These questions underscore the potential of this analysis to inspire a responsible and reflective approach to both the pursuit of scientific knowledge and the practice of religious faith.

In conclusion, the analysis of the interplay between quantum physics and Islamic theology contributes a rich and promising avenue for further scholarly exploration, with the potential to illuminate both the scientific mysteries of the quantum world and the theological mysteries of the Divine.

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