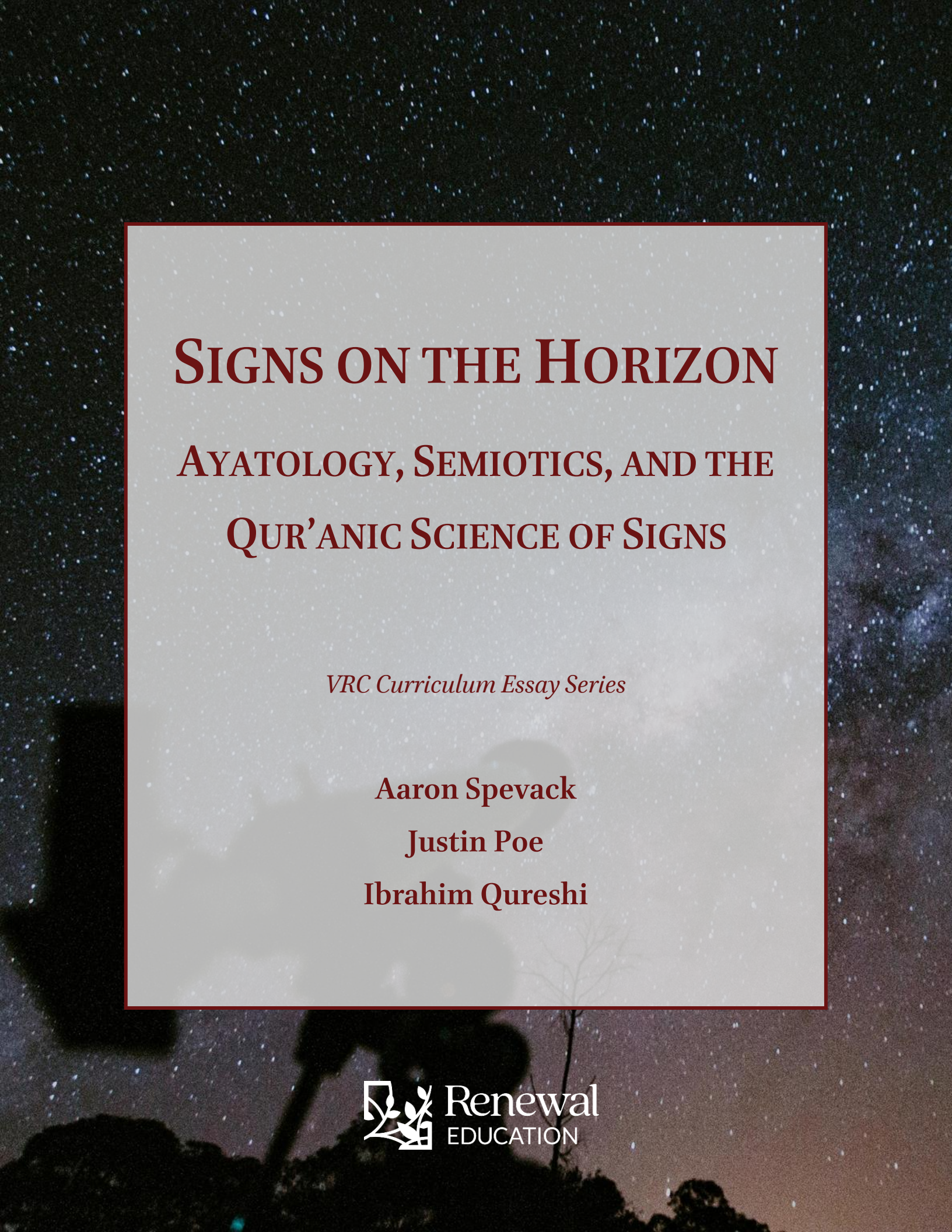

Signs on the Horizon

Ayatology, Semiotics, and the Qur'anic Science of Signs

VRC Curriculum Essay Series

Aaron Spevack

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Renewal EDUCATION

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Verification and Renewal Curriculum Essay Series, *Signs on the Horizon: Ayatology, Semiotics, and the Qur'anic Science of Signs*

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بسم الله الرحمن الرحيم

سَنُرِيهِمْ آيَاتِنَا فِي الْآفَاقِ وَفِي أَنْفُسِهِمْ حَتَّىٰ يَتَبَيَّنَ لَهُمْ أَنَّهُ الْحَقُّ

أَوَلَمْ يَكْفِ بِرَبِّكَ أَنَّهُ عَلَىٰ كُلِّ شَيْءٍ شَهِيدٌ

We will show them Our signs in the horizons and within themselves until it becomes clear to them that it is the truth.
But is it not sufficient concerning your Lord that He is, over all things, a Witness?

(Q. Fuṣṣilat 41:53)

إِنَّ فِي ٱخْتِلَـٰفِ ٱلَّيْلِ وَٱلنَّهَارِ وَمَا خَلَقَ ٱللَّهُ فِي ٱلسَّمَـٰوَٰتِ وَٱلْأَرْضِ لَـَٔايَـٰتٍ لِّقَوْمٍ يَتَّقُونَ

In the alternation of night and day, and in what God created in the heavens and earth, there truly are signs for those who are aware of Him.

(Q. Yūnus 10:6)

إِنَّ فِي خَلْقِ ٱلسَّمَـٰوَٰتِ وَٱلْأَرْضِ وَٱخْتِلَـٰفِ ٱلَّيْلِ وَٱلنَّهَارِ لَـَٔايَـٰتٍ لِّأُو۟لِى ٱلْأَلْبَـٰبِ

There truly are signs in the creation of the heavens and earth, and in the alternation of night and day, for those with understanding.

(Q. Āl ʿImrān 3:190)

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THE UPSHOT

It is Allah who made for you the night that you may rest therein and the day giving sight. Indeed, Allah is full of bounty to the people, but most of the people are not grateful. (Q. Ghāfir 40:61)

Throughout the Qur'an we are reminded that the myriad variety of phenomena that we witness and experience in the natural world around us, and even in our own selves, are signs that point to the Existence of Allah, the Creator who brings all things into this world by His Power, as He Willed and intended them, according to His perfect Knowledge. Furthermore, Allah tells the reader of the Qur'an that these signs are for people of deep understanding whose contemplation and reflection lead them to recognition of truth and a state of profound gratitude and thankfulness. The creation of the heavens and earth and all the benefits therein that Allah created for his creatures—human or otherwise—are placed as signs to be read towards the aim of knowing various different signified realities, from the Existence of the All-Powerful Creator to the time of month signified by the moon's phases, from the entering of the evening prayer signified by the sunset to the realization of humility and human fragility signified by ruins of past civilizations.

We are surrounded by signs pointing to meanings and realities that fill our moments with profound meaning, broaden our knowledge, and bring us closer to Allah through gratitude, remembrance, and worship. This is the case, if we are living in harmony with the Qur'anic worldview. However, there are many forces that attempt to pull us from that path, that keep us from seeing things as they truly are. One such force that blurs our spiritual and rational vision is the popular presentation of the Natural Sciences in many schools, books, and media. However, there is no real conflict between Science, Religion, and Reason in Islam. Our empirical investigations will never contradict definitive Rational and Revealed truths.

Muslim students and practitioners of the Natural Sciences and all of the other sciences that branch off from them need to be oriented towards ways to understand and interact with the various signs in nature in a manner that both produces the awe, gratitude, and faith that Allah calls us to in the Qur'an as well as produces the knowledge necessary for an architect to build a load-bearing arch, a chemist to mix the appropriate quantities of different substances to create a new medicine, or a doctor to properly diagnose illnesses from their symptoms.

This essay is intended to provide that guidance to its readers, orienting them towards the primary mode of interacting with the world around them such that they realize Allah's ever-present care, concern, and sustenance of every particle in the universe while simultaneously allowing them to employ secondary modes of engagement with natural phenomena relevant to one's needs, whether a

scientist in a biology lab, a farmer in a citrus grove, or a carpenter building a house. What makes one mode primary and another secondary will be discussed at length in this essay.

Through an exploration of the Qur'anic theory of signs, which is herein called Ayatology, the reader will gain a theoretical and practical knowledge of the study of signs and symbols—rational, natural, or assigned—and their use or interpretation of meaning and realization of truth.

There are three overarching and foundational principles that should be kept in mind as we delve deeper into the study of Ayatology:

1) Everything always primarily points to Allah, His Attributes, and Perfections: The first principle of Ayatology is that everything in the universe always points first and foremost to Allah and His Attributes, Names, and even Rulings, as we will discuss later. Simultaneously, everything secondarily points to customary and predictable meanings—like dark clouds signifying rain—or meanings assigned by humans, like how a stop sign signifies the command to stop. The goal of Ayatology is that we read all of the differing signs in light of the primary and rational signification as the Qur'an calls us to do, while also reading the secondary kind of signification appropriate to that moment. Some have called the primary kind of signification the inward signs and the secondary kinds of signification the outward signs. The stop sign outwardly points to a coined or assigned meaning intended to signal to the driver that she should stop her car, while inwardly, it points to Allah's Existence by nature of being a contingent and possible thing that had a beginning, will one day come to an end, and is entirely in need of Allah's Will, Power, and Knowledge in order to exist for even a moment.

   Al-Samarqandī says:

   > "…the traces of His perfection and creative act are clear in everything, never absent, since there is nothing except that there exist within it signs of His perfection, indications of His might, because every quality in every contingent thing signifies one of the Attributes of Allah most high. Indeed, the existence of the contingent thing signifies His Existence, its mere contingent nature signifies His Necessary existence, its origination after not having existed signifies His Endless Eternality, its coming to an end signifies His Beginningless Eternality, its utter dependency signifies His total Independence, as you shall come to know."[1]

2) We are always Ayatologists: The second principle to keep in mind is that Ayatology is our world view which we bring with us into the science lab, office, art studio, kitchen, or any other space where we rely on knowing the properties and causes or effects of any given material object. We enter with this world view, and we leave the lab, office, studio, or kitchen with this world view. It always applies, whether studying material causes, effects, and properties or spiritual causes, effects, and properties. That is, before we do science of any kind, whether physics, chemistry, biology, medicine, architecture, mechanics, music, or cooking, we are Ayatologists. We read the signs appropriate to the aims of a given science, we honor the customary causal relations—never replacing load-bearing beams with a prayer—while seeing

[1] See Şemsuddin Es-Semerkandi, *İlmü'l-âfâk ve'l-enfüs* (Istanbul: Turkiye Yazma Eserler Kurumu Başkanliği, 2020), 68.

that everything inwardly points to Allah and affirming Prophetic guidance with regard to unseen impacts of prayer, supplication, and remembrance; saying Bismillah and adding a teaspoon of sugar predictably produces a better and more blessed cup of tea than just the sugar and tealeaves.

3) Science can never actually contradict Reason and Revelation: The third principle and most important for anyone studying science is that our empirical investigation and observation can never contradict rational and revealed truths. The study of the observable, predictable, and apparent cause and effect relationships in the natural world or the qualities of material objects, will never overturn the fundamental truths of logic or religion. Particles do not pop into existence without a cause, nor can they be in two places at once. Protons may behave like waves or particles depending on whether or not a photodetector is interacting with them, but they do not exist in a suspended state of both wave and particle nor neither wave nor particle until perceived. Popular science treatments of complex topics often lead to misleading representations of the behavior and nature of physical phenomena, causing many to believe that science has disproven the fundamentals of human reason. This, however, is not the case and the data bears this out.

   Likewise, our reasoning from the seen to the unseen past—such as archeological sites pointing to the existence of an ancient civilization's use of certain tools—or from the seen to the unseen future—such as the absence of wolves in a land pointing to future increased populations of its prey—will never lead to belief in square circles or denial of prophecy. This is the case so long as one adheres to R.E.D. epistemology,[2] core logical principles such as the Law of Non-Contradiction (a square cannot be a circle), and the various details of Ayatology, discussed below. When a scientist ventures beyond the scope of science into philosophy and metaphysics he has transgressed the bounds of his discipline and is "practicing without a license" so to speak. Sometimes when this occurs, absurdities with no real-world correspondence are put forth as scientific theory or fact, when in reality, they are merely conjecture or delusion and in any case without scientific justification. Students and practitioners of the natural sciences should be aware of the boarders of their discipline, and be on guard against the smuggling of non-scientific claims dressed up as science.

The Problem

The post-Enlightenment clash in the West—between rigid, anti-scientific religious literalism and Scientific Naturalism which often incorporates flawed, unprovable philosophical assumptions—has left many Muslims unknowingly with a bifurcated self. In other words, this state of affairs has led to a kind of split personality: the Muslim when she's a scientist in the lab and a worshipper in the mosque

[2] See Marwan Tayyan, Justin Poe, and Aaron Spevack, *An Applied Epistemology, General and Religious* (Boston: American Society of Islamic Philosophy and Theology, 2024), 66-75. https://asipt.org/wp-content/uploads/2024/09/EpistemologyEssay_Applied.pdf

often operates as though she exists in separate epistemological spheres. For example, a Muslim doctor assessing a patient's ailments may implicitly or explicitly adopt the popular doctrine that only material causes and effects are explanations for how things work in the world, while in the mosque he might accept advice from his imam to recite certain duas and suras from the Qur'an to protect himself from physical and spiritual harms. This is not a failure of Islam but rather a failure to:

a) harmonize the different modes of reading signs—when do we interpret dark clouds as an indication of rain for the farm, turbulence for the plane, low yield for the solar panel, or a sign pointing to Allah?
b) recognize the non-scientific and often sophistic assumptions that some scientific naturalists smuggle into science as 'brute facts'.[3]

The Solution: Ayatology Inside and Outside the Laboratory

The solution is to have a comprehensive Qur'anic worldview wherein everything one witnesses from any particular perspective and towards any particular goal is ultimately viewed through the lens of Ayatology, the science of reading the manifest signs in creation through the lens of the intellect and heart. This is the way of the the people of innermost core (*ūlū al-albāb*) who Allah describes as readers of the manifest signs in creation, whether the heavens, earth, sun, moon, stars, clouds, alternation of the night and day, or ships on the sea. They are those who know—through reflection and spiritual purification—the ultimate truth and realize that truth in all domains of their lives.

This essay aims to survey and explain the scope and application of the various kinds of signification, understand the relationship between signs and their various interpretive contexts (driving, medicine, theology, worship, etc.), and elevate the rational signification of signs for the people of innermost core to its proper place and relationship with the other kinds of signification.

[3] 'Brute facts' refers to things that just are the case and claimed to need no explanation.

Chapter 1
AYATOLOGY: THE SCIENCE OF SIGNS

1.1. Definition, Subject, Vantage, Aim, and Sources of Ayatology:

Ayatology is the Qur'anic science of reading signs (sing. *āyah*/pl. *āyāt*) in the open book of the universe in relation to the verses (*āyāt*) in the Qur'an. The universe has been called the cosmic scripture (*al-kitāb al-takwīnī*) while the Qur'an is referred to as the compiled scripture (*al-kitāb al-tadwīnī*). One reads each āyah of the compiled scripture, seeking to understand the meanings that it signifies, and likewise, one reads each āyah of the cosmic scripture, each phenomenon in the universe perceivable to one's senses, endeavoring to understand the meanings it signifies. Traditionally, scholars have called the core discussions of science "The science of horizons and selves" basing themselves on the *āyah* "We will show them Our signs in the horizons and within themselves until it becomes clear to them that it is the truth. But is it not sufficient concerning your Lord that He is, over all things, a Witness?" The key term in the verse is "Our signs", Our *āyahs*, and it serves as the root of our technical term "Ayatology", that is, the science of signs. In addition to the study of the heavens, earth, and human selves, Ayatology also includes a discussion of *how* the horizons and selves signify meanings that lead to knowledge of Allah and His Attributes and Perfections, as well as how they signify secondary matters that are connected to interpreting the Qur'an, applying the ethical guidelines found in revelation, and other meanings signified by phenomena in the world. This knowledge of signification extends beyond the chapters of the science of horizons and selves and further draws from grammar, logic, legal methodology, epistemology, and other Islamic sciences. In drawing from relevant discussions in multiple sciences, we might say that Ayatology is a study of the semiotics[4] of the natural and spiritual worlds in order to know Allah, His Prophet ﷺ, and all other beneficial knowledge that is obtained through signification.

1.1.1. Definition and Subject Matter

The definition of this science is that it a science wherein one investigates and studies existent things in order to know Allah Most High.[5] In this concise definition we find the subject matter, vantage point, and aim. The subject matter of Ayatology, that is to say the object of our investigation is the universe and all that it contains, including the heavens and earth, luminous celestial bodies (stars, planets, etc.), varieties of vegetation, souls, and exquisite craftsmanship and unique wisdom inherent in their creation, including their eating, drinking, even their digestive systems, as well as the

[4] Semiotics, in contemporary parlance, is a science that studies how various phenomena, including words, signify meaning. It has application in art, design, advertisement, and other practical arts, as well as being an important discipline in philosophy.

[5] Şemsuddin Es-Semerkandi, *İlmü'l-âfâk ve'l-enfüs*, 77.

reproductive processes.[6] Horizons and selves also includes history, what happened in the past, from the successes of Islamic civilization and realizations of prophesies mentioned in the Qur'an, to Prophetic miracles witnessed in his ﷺ time and transmitted to us in ours. It includes the significations and lessons learned from archeology, ruins of past civilizations, and remnants of scriptures or reports of past communities. One can also include our individual habits, daily activities, and spiritual-psychological states which we can observe to identify how Allah honors, humbles, blesses, or shows mercy to us. Whatever is, was, and will be, if we can perceive it or its traces, then it is the subject matter of our studies in Ayatology.

1.1.2. Vantage

That may sound too broad, and that is why each science has a vantage point, a perspective from which all instances of its subject matter are viewed. The vantage of Ayatology is the universe's rational signification of its Creator and His Perfections, as well as its signification of the Truthfulness of His Prophet ﷺ through the miraculous breaks in the links of causality that were witnessed in his ﷺ time—such as the splitting of the moon—and after his ﷺ time when the things he ﷺ prophesized came to pass. It also includes the Qur'an's signification of these truths via its miraculous inimitability (*iʿjāz*). More concisely, the subject matter that is the perceivable universe is investigated from the vantage of its rationally signifying the truth of the two testimonies of faith: There is no god but Allah, and Muhammad is His messenger. The universe's rational signification of the first testimony is outlined in the five Qur'anic arguments for Allah's Existence, Attributes, and Perfections, and the universe's rational signification of the second testimony is outlined in the proofs for the truthfulness of the Prophet ﷺ, as will be discussed later in this essay.

Ayatology also views the perceivable universe as its subject matter in a broader sense, including its natural and assigned signification—explained later in this essay—thereby serving as a meta-science that includes history, natural science, medicine, grammar, logic, and so on.[7] In this way, Ayatology can serve as a "philosophy of science", providing a set of theories and methods for the study of the natural world.

1.1.3. Aim and Sources

The aim of the science of Ayatology is knowledge of Allah SWT. Knowledge of Allah is the first obligation on anyone who is biologically mature, of sound mind and reached by the message of the prophet of their time. The Prophet Muhammad ﷺ was the final prophet until the end of time, so for anyone who is biologically mature, of sound mind, and reached by the accurate portrayal of the

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[6] Şemsuddin Es-Semerkandi, *İlmü'l-âfâk ve'l-enfüs*, 77. See also Jalāl al-Dīn al-Maḥallī and Jalāl al-Dīn al-Suyūṭī, *Tafsīr al-Jalalayn*, 3 vol. (Karachi: Maktabat al-Bushrā, 2010), 3:265-266; and Abū Abdullāh al-Qurṭubī, *al-Jāmiʿ li-aḥkām al-Qurʿān*, ed. ʿAbdullāh al-Turkī, 24 vol. (Beirut: Mu'assassat al-Risāla,), 18:436-438.

[7] al-Samarqandī's text is arranged around the following four topics:

1. First: Concerning the Entity of Allah Most High, His attributes, the immaterial realities [i.e. the soul, the intellect, etc.], and matters related to material bodies. [Ontology]
2. Second: Concerning the form of the world and what is necessitated by the composition of its parts. [Natural Sciences i.e. Astronomy, Geography, Geology, etc.]
3. Third: Concerning the elements and what is generated from them. [The Four Elements: Fire, Air, Water, Earth]
4. Fourth: Concerning the composite of the celestial and elemental, which is the human being. [Anthropology].

See Şemsuddin Es-Semerkandi, *İlmü'l-âfâk ve'l-enfüs*, 7-12.

message of Islam, must know Allah SWT. Knowing Allah SWT means to know Him by His Attributes and Names through the first path which is what one reads in Divine revelation and the Prophetic reports (hadiths) as well as the second path which is reflection on what one witnesses of the created universe, perceiving the wisdom in it, and realizing its utter need for a Wise, Powerful, and Necessarily Existent and Independent Creator . We read in the Qur'an:

> "They are those who remember Allah standing, sitting, and lying on their sides and reflect on the creation of the heavens and the earth. O Lord, you have not created this in vain!"[8]

The third path to this knowledge, after reasoning from sensory perception and contemplation and the truthful reports of the Qur'an and hadith, is the spiritual path of remembrance of Allah, purification of the heart and limbs of base traits and states, and their adornment with meritorious states and traits that the Prophet ﷺ exemplified. Whether through reflection on creation, reading the Qur'an, or through spiritual exercises, one is aiming to know Allah, and ideally, one is traveling each of these three paths simultaneously.[9]

[8] Q. Āl ʿImrān 3:191.

[9] Al-Samarqandi says that the three paths to knowledge of Allah are

1. the truthful reporter (*qawl al-sādiq*),
2. knowledge of things [of this universe], their wisdom, and the knowledge of their need for the Free-of-need (*ghanī*), Powerful (*qādir*), and Wise (*ḥakīm*),
3. purification of the inner self by spiritual exercise (*al-riyāḍa*) and divesting the self of bodily pleasures.

Şemsuddin Es-Semerkandi, *İlmü'l-âfâk ve'l-enfüs*, 67.

Chapter 2
WHY STUDY AYATOLOGY?

2.1. Ayatology and the Foundations of an Islamic Theory of Science

Ayatology provides a solution to the previously mentioned "problem of bifurcation" by harmonizing the different modes of reading signs—when do we interpret dark clouds as an indication of rain for the farm, turbulence for the plane, low yield for the solar panel, or a sign pointing to Allah?—and rejecting the non-scientific and unsupported assumptions that are often smuggled into the natural sciences and presented as "brute facts." It serves as a philosophy of science that offers a holistic approach to science, religion, and other disciplines without compromise or bifurcation.

In addition to the study of causal and correlative relationships between material objects observable to the senses, contemporary Natural Sciences often come packaged with additional assumptions about the nature and ontology of the universe—i.e., how it works and what's in it—as well as judgments regarding what forms of reasoning we should use when studying the universe. Is natural causality absolute, or can a man miraculously walk on water, a staff turn into a snake, or the moon split and return to its original form? Is the flu only the result of a virus or can another person's envy bring about physical or spiritual harm? If our senses and scientific instruments cannot detect the presence of angels or jinn, do they really exist? Is an aspirin the only cure to a headache, or does prayer also contribute? Can we only know about the natural world through inductive reasoning, observing particulars, and generalizing our hypotheses to all?

Often these questions and the assumptions they relate to were developed in the historical context of medieval Christianity where excessive skepticism about science and empirical discovery held considerable sway, and as a result, when faced with a false dichotomy of choosing between empirical observation and experimentation on the one hand and dogmatic doctrines that contradict empirical observation on the other, a kind of "Scientistic triumphalism" often resulted. This was exacerbated by Natural Science's move away from Aristotelian notions of nature, and limiting the scope of science to inductive experiments, repeated observation with implicit inference to causal association (*tajriba*), and intuitive inference (*ḥads*) regarding the material world, avoiding metaphysical inquiries into the origins of material phenomena, the possibility of immaterial phenomena, and anything that was outside the (assumed) closed system of material causes, effects, and properties. In an effort to exclude superstition[10] from explanations for material phenomena when simpler material explanations were

[10] Superstitious beliefs are unwarranted appeals to supernatural explanations when there exist no testable nor revelation-based evidence of such claims. Examples of superstitious beliefs that were adopted in Europe in opposition to scientific evidence include attributing the bubonic plague to witchcraft and rabies to demonic possession.

possible, or dogmatic adherence to literalist scriptural readings of the Bible[11] that contradicted empirical evidence, the modern discipline of modern Natural Science, ironically, allowed for dogmatic, non-rational, and unscientific positions without epistemological basis to extend the scope of science beyond the study of material phenomena to inclusion of indefensible denials of rationally necessary truths.[12]

Ayatology avoids both the groundless superstitious and dogmatic views of natural phenomena as well as the indefensible denial of rationally necessary truths about the Necessary Existence of the Creator. Natural Science through the lens of Ayatology provides a philosophical framework in which to study contingent material phenomena—i.e., the observable material things of the universe—without denial of rational and scriptural truths. Contingent effects signify their contingent causes—in that smoke signifies fire—and they also signify their Ultimate cause, namely Allah SWT the Creator and Sustainer of all contingent phenomena, seen and unseen. Accepting both deductive and inductive modes of reasoning as paths to knowledge at different degrees of confidence creates a holistic and honest view of the universe's various kinds and modes of signification of truth and guidance.

2.2. Ayatology's 10 Steps to Holistic Science and Religion Without Compromise or Bifurcation

The core principles of Ayatology in relation to the study of the universe are as follows:

1. Origins and Dependence of the Universe
Ayatology affirms a universe whose origins and continued existence are the result of Allah's creative act. This universe is originated, emergent, contingent, and dependent, requiring a necessarily existent Creator. The rational signification of the universe is that it began to exist (*ḥudūth*) and that its existence is merely possible (*imkān*)—not necessary—and is therefore contingent upon something else for its varying states and existence.[13]

Materialist accounts that deny a beginning or deny a Necessary Being to ground all contingent beings ultimately collapse into the contradictions of either infinite regress, vicious cyclical causality, or the claim that something came from nothing—all of which are rationally absurd. The dogmatic

[11] By way of example, in the sixteenth and seventeenth centuries, the Catholic Church rejected Copernicus' heliocentric model of the universe based on an interpretation of passages from the Bible which describes a miraculous pause to the sun's movement in the sky. The Church, at that time, interpreted this event to mean that the sun stopped orbiting around the earth, which was at the center of the universe according to their view, rather than, say, the earth's orbit around the sun pausing such that the sun would remain visible in the same part of the sky. The verse itself does not directly support heliocentrism or geocentrism and could in fact be reconciled with either view. Yet those who adopted a heliocentric view were deemed heretics.
[12] See the first four chapters of Morris Berman, *The Reenchantment of the World* (Ithaca: Cornell University Press), 1981 for details of the development from an "enchanted world" of supernatural beings to the modern materialist worldview.
[13] This is discussed further in Aaron Spevack et al, *The Origin Story: The Science of Cosmology* (Boston: The American Society of Islamic Philosophy and Theology, 2025), https://asipt.org/curricular-essays/.

adherence to the assumption that all material phenomena must be explained by a prior material cause fails when one considers the origins of matter.[14]

2. Natural Cause and Effect Are Real but Secondary and Occasional

Natural causes are valid and reliable explanations for how things customarily and predictably behave at the level of empirical experience. Medicine, physics, law, ethics, and engineering all depend on these predictable cause-effect relationships. However, these apparent causes are not independent, ultimate, or necessary. Rather, they operate at the level of secondary, empirical, or occasional causality, created and sustained by Allah's Power and Will, while the apparent causal links can be broken if Allah wills (e.g. miracles). Ayatology recognizes the utility and importance of empirical causality[15] while affirming the primacy of Divine Volition and Ultimate Causality.[16]

Standard materialist accounts of natural causality claim that it is a sufficient explanation of how things work, with no need to reason to the level of Ultimate causality. The refusal to accept the logical entailment of rational reflection on the originated and contingent nature of the universe, as mentioned previously, is a byproduct of Europe's conflict between dogmatic, anti-scientific, and literalist scriptural interpretation on the one hand and sound scientific experimentation and explanation on the other. That we should exclude deductive reasoning to an Ultimate cause is not, however, epistemologically grounded and is rather an unprovable dogmatic claim. While observation of cause and effect relations at the level of secondary causality *is* sufficient to explain[17] many if not most observable material phenomena, secondary causality is ultimately merely predictable correlation as all causes and effects resolve into the ultimate causal Power of Allah.

3. Material and Immaterial Contingent Things are Created

Ayatology rejects absolute materialism as a sufficient explanation of reality. What is intended by "absolute materialism" is the claim that all effects must be attributed to a material cause, without any role for the immaterial or spiritual. According to Ayatology, matter—whether subtle and imperceptible (like the soul, or angels and jinn) or concrete and perceptible (like stones, trees, animals, protons, and neutrons)—is contingent and created. If one posits immaterial existent beings

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[14] If the Big Bang marks the beginning of the universe, then there are only a few possible explanations:

1. It was caused by something material before it, which would itself need a cause, leading to an infinite regress;
2. It came from nothing without a cause; or
3. It resulted from a cycle of causes where A caused B and B caused A.

All of these are rationally impossible. Therefore, the only viable explanation is that the Big Bang was either:

- the actual beginning, directly brought into existence by a Necessary Creator; or
- not the actual beginning, preceded by other material events that ultimately trace back to a first creation, that was brought into being by a Necessary Creator.

See Aaron Spevack et al, *The Origin Story: The Science of Cosmology*, https://asipt.org/curricular-essays/.

[15] Empirical causality is secondary, occasional, customary causality.

[16] See Ibrahim Qureshi et al, *When the Ordinary Turns Extraordinary: Occasionalism and the Nature of Scientific Inquiry* (Boston: The American Society of Islamic Philosophy and Theology), 16-17, 21-26. https://asipt.org/curricular-essays/.

[17] While modern science can 'explain' phenomena in the sense of predict their occurrence through models, it does not fully 'explain' the phenomena in the sense of what the phenomena truly is in the external world nor does it explain why the universe does function in this manner as opposed to another equally possible manner.

in the universe, as some theologians and philosophers do, they too are contingent and created. Even if scientific explanation rooted in a materialist worldview provides predictive and causal narratives about the past (e.g. fossils), the present (e.g. gravitational pull), or the future (e.g. climate models), all of it remains under Allah's Will, Knowledge, and Power. Contingent material things inevitably depend on a the Necessarily Existent Creator for their existence. We reason from what is currently seen to what is unseen—past, present, or future—without assuming the material world is independent or self-sustaining.

If the current state of Natural Science is that it offers materialist, observable, and testable explanations for material properties and causal relations without consideration of scriptural stipulations—i.e., absolutely certain revelational propositions that contradict probabilistic empirical propositions—then the knowledge that it provides is limited to empirically predictable secondary causal relationships or descriptions of contingent properties of created things that are entirely under the Will, Power, and Knowledge of Allah. There is no burden of proof for believers to empirically prove the existence of the unseen—angels, jinn, heaven, hell, and so on—nor is there any foundation for a complete denial of things known through purely rational means (i.e., the Necessary Existence of Allah) nor revelational (i.e., the existence of angels).[18]

4. Dual Signification of the Natural World

Ayatology does not reduce the universe to being merely a sign pointing to probabilistic inductive claims (*istiqrā'*) about predictable correlations or propositions based on certainty-producing repeated observation with implicit inference to causal association (*tajriba*). Rather, it also, rightfully, considers the universe's rational signification—via deductive reasoning—of a Necessary Creator of all emergent and contingent things that constitute the universe.

The natural world, therefore, functions as both a deductive *āyah*—a rational sign pointing to a singular, necessary Creator—and an inductive arena or a field of observable patterns from which we infer causal laws. The herbalist can deduce that consuming lavender predictably leads to relaxation through repeated observation (*tajriba*) and also deduce that the lavender, the experience of relaxation, the one experiencing said relaxation, and the entire universe in which she exists are contingent and therefor dependent on the Necessarily Existent Creator. Ayatology preserves both dimensions of the deductive arguments that rationally prove Allah's Existence, Attributes, and Perfections and the inductive and observational reasoning used in sciences to explain predictable patterns in natural phenomena. Each method has its scope of application, as mentioned throughout this essay. To replace a load bearing beam with a prayer is blameworthy as we are commanded to take the means (*khudh al-asbāb*), especially when harm is averted in doing so. To merely install a load

[18] Added to the absurdity of the triumphalist denial of rational deductive truths and religious claims based on rational deduction, is the fact that many contemporary scientists believe in Platonic ideals for numbers, string theory, and other non-scientific claims that are not observable, testable, or, in the case of Platonic numbers, physical things.

bearing beam in a building without doing so in the name of Allah, praising Allah, and sending blessings and peace on the Prophet ﷺ cuts one off from the full blessings and rewards of the action.[19]

The rational signification of the universe leads us to pray to the Necessarily Existent Creator—Allah SWT—to give us success and blessings in our daily endeavors wherein we are engaging with the observable causal and correlative means in the natural world, while the inductive and observational significations of the universe show us the predictable means that will customarily produce the desired effects in the natural world, such as building a sturdy structure in which to live.

5. The Fruits of Signification: Awe, Gratitude, Reliance, God-consciousness, and Love
Ayatology does not limit the significatory power of the universe to pointing to Ultimate and secondary causal connections. It also acknowledges necessarily entailed realizations (*iltizām*) from reflection on the universe, namely the resultant states of awe, gratitude, God-consciousness, love of the Divine, among others. Just as conceiving of 'snow' might rationally entail the conception of 'cold', 'snow', or 'slippery roads', so too does the mind reflecting on the grandeur of the universe move from conception of Allah's Power, Will, and Knowledge to conception of His Wisdom, Mercy, and Generosity resulting in awe and gratitude in the one reflecting (*fikr*) and remembering (*dhikr*).

It also acknowledges that one might already affirm that created and contingent nature of the universe, but need the reminder that the Creator's Power is not just sufficient to create this universe, but also the next life. Likewise, Ayatology includes the realization that the Necessarily Existent Creator is One, Beginninglessly Eternal, Endlessly Eternal, Independent, Dissimilar from Creation, Powerful, Volitional, Knowledgeable, and Living, among other Divine Perfections.

Ayatology also includes the universe's signification of the truthfulness of Prophets (a), through the witnessing of miraculous breaks in the links of customary and predictable secondary causal connections. In other words, engagement with the natural world should evoke awe (*ʿajab*), gratitude (*shukr*), reliance (*tawakkul*), and inspire confidence in the truthfulness of the Prophet ﷺ and the revealed status of the Qur'an, among other realizations. These are not merely emotional responses or sentiments but intellectual responses to the data of sense, reason, and revelation; observing the order and beauty of creation should move the mind to reason about its origin, its Creator and His Attributes, and the truthfulness of His Prophets (a) along with all other bits of wisdom that follow from these.

6. Rational-Empirical-Revealed Epistemology (*RED*)
Ayatology grounds knowledge in three mutually reinforcing avenues of knowledge obtainment: the intellect, senses, and revelation. Knowledge obtainable by the intellect alone is called rational (*ʿaqlī*) knowledge and it includes the deduction of core theological truths such as the existence of Allah and the truthfulness of the Prophet Muhammad (ﷺ) in his claim to prophecy, as well as other purely rational deductions rooted in core principles like the Principle of Non-Contradiction (e.g., a square is

[19]The Companion Anas b. Mālik ﷺ relates that a man came to the Prophet ﷺ with his camel and wanted to leave her somewhere, so he asked him ﷺ, "Shall I tie or trust in God?" The Prophet ﷺ said, "Tie her and trust." (Ṣaḥīḥ Ibn Ḥibbān, 731; al-Tirmidhī, 2517).

not a circle) and the Principle of Sufficient Reason (e.g., something cannot come from nothing). A rational judgment can be made after sensory perception—such as perceiving the universe and reasoning to its contingent nature—or without sensory perception, such as conceiving of 'existence' and 'non-existence' and declaring that no being could be both or neither existent or non-existent. It does not consider observed causal relationships or revealed knowledge.

Empirical knowledge includes that which is obtained through observation with the senses and consideration of the customary and predictable apparent cause and effect relationships between contingent material things.[20] Much of the work of the Natural Sciences as well as Islamic Law and others rely on this sort of knowledge. Knowledge obtained by the senses based on their observation of apparent causal and correlative relationships between material phenomena can be known with certainty or probability.

Revealed knowledge is that which is known from true transmitted reports (*al-khabar al-ṣādiq*) from the Prophet (ﷺ) who was aided by miracles to establish his truthfulness. This includes the Qur'an as well his (ﷺ) explanations and demonstrations of revealed doctrines in his (ﷺ) speech, action, and states. His (ﷺ) demonstrative example (i.e., the Sunna) reaches us through hadiths, and, according to some scholars, the practice of the early learned community.

Any apparent tension between rational, empirical, and revealed knowledge (e.g., human evolution) is resolved by recognizing that empirical possibility does not override definitive revelation, nor does lexical possibility in revelation override definitive rational truth. In other words, it is rationally and empirically possible[21] that humans evolved from other species, but revelation indicates a break in the customary empirical causes with regard to Prophet Adam's (a) creation, and Allah's use of the term "face" in "the face of you Lord" does not carry the lexical meaning 'the front part of an animal's head'.

All three channels—intellect, senses, and revealed reports—and the knowledge they produce—rational, empirical, and Divinely revealed—are means to gaining understanding of the universe and our place in it. It is only when one imposes arbitrary and indefensible restrictions on the application of one kind of knowledge or the other, or ignores one or more sources, that apparent conflicts between reason, science, and revelation occur. However, when used properly, the mind leads to realization of revealed truths, the senses lead to realization of predictable relationships between material phenomena, and revelation informs of that which is not known to the mind or senses alone, as well as confirms or corrects whatever rational or empirical sources speculatively suggest.

Ayatology's integrated application of R.E.D. epistemology prevents the kind of unnecessary conflict between religion and science that occurred in its most extreme form in the Christian West during the

[20] Empirical knowledge can refer to mere sensory experience as well as sensory experience coupled with a judgment based on observed correlation or causation. Unless otherwise noted, our primary concern is the latter. In Arabic this knowledge is called *ʿādī*, referring to the customary observed cause and effect relations.

[21] "Possible" (*imkān*) in this context means 'not necessary and not impossible'. An evolutionist might say that it is empirically highly probable.

16th-18th centuries. It does so through a demonstrated harmony of these three epistemological channels, with defensible techniques for reconciling apparent—but not real—conflicts between conclusions obtained from each channel independently.[22] It also prevents the excesses of unscientific and irrational claims that occasionally are smuggled into the Natural Sciences, such as "spontaneous generation" (i.e., fruit flies, microbes, or subatomic particles popping into existence without a material or Ultimate cause).

7. Deduction, Induction, Probability, and Certainty in Theology

A common supposition in the modern world is that one cannot definitively prove the existence of God. Such a claim is even alleged to be more pious; they say "To believe requires a leap of faith in God. The most that natural evidence leads us to is the probability, not certainty, that God exists, so the existence of a Creator is beyond all reasonable doubt, but not beyond doubt." That is, given the multitude of arguments for God's existence—some inductive or abductive (like design theory) and some deductive but difficult to comprehend (like the ontological argument)—when taken altogether, believing in God's existence is more reasonable than doubting or denying it.

Ayatology, however, does not rely on cumulative probabilistic arguments nor a combination of probabilistic deductive and inductive arguments to establish knowledge of Allah's Existence and Attributes. We do not make the claim that the rational significations of the created and contingent universe point merely probabilistically to a Creator such that we believe based on the principle of "beyond reasonable doubt." Rather, we use cumulative deductive arguments that are individually definitive (*qaṭʿī*), each building on the previous proofs, to establish not just the originated and contingent nature of the universe, nor just the existence of a Necessarily Existent Creator, but also, that the Creator of the universe has all of the Attributes of Perfection (Beginningless Eternality, Endless Eternality, Absolute Independence, Oneness, Power, Will, Knowledge, Life, etc.).[23] So long as one affirms certain foundational rational truths like the Principle of Non-Contradiction, and rejects extreme skepticism that leads to self-refuting absurdities ,[24] then the core theological points of creed in Islam are proven definitively through rational reflection on the significations of the universe, even if psychological acceptance (*idhʿān*) of these claims varies according to one's comprehension or the state of one's innate disposition (i.e., whether or not it is steeped in culturally transmitted false ideas).

This is not to deny that inductive arguments *without* conscious consideration of the universe's contingent and originated nature may resonate sufficiently with some such that they affirm the existence of the Creator based on these arguments alone. For example, one might reason <u>inductively</u> that in every instance in which he encountered complex order and design there was a designer of that thing, so, therefor, the apparent design in the universe is most likely an indication that there is a designer of the entire universe. This is based on a survey of many but not all things and does not include the implicit inference that a constant pairing of events (i.e., design and designer) necessitates

[22] See Marwan Tayyan et al, *An Applied Epistemology, General and Religious*, 66-75.

[23] See Nazif Muhtaroglu, "al-Bāqillānī's Argument for the Existence of God" (American Society of Philosophy and Theology, 2021). https://asipt.org/al-baqillanis-argument-for-the-existence-of-god/

[24] See Marwan Tayyan et al., *An Applied Epistemology, General and Religious*, 8-12.

a causal relation. The difference between an inductive argument and repeated observation with implicit inference to causal association (*tajriba*) is that induction lacks the implicit inference which posits that whenever x and y are both present then they are causally associated in some way.

As such, this version of design theory is an inductive argument—rather than an assent through repeated observation with implicit inference to causal association (*tajriba*)[25]—and, therefore, it only yields probable rather than certain and definitive knowledge. One could combine this inductive version of Design Theory with other non-definitive arguments for God's existence, and judge that it is beyond reasonable doubt that God exists, however, this is not how Ayatology works.

Rather, the Ayatologist views each instance of design through a lens already grounded in definitive and certain propositions. Three possibilities are discussed below, namely that:

- He has already reasoned to the foundations of origination (*ḥudūth*) and contingency (*imkān*) and other standard theological proofs for Allah and His Attributes. Such a person of innermost core who reasons fully through the significations of the natural world will have already affirmed that the universe is contingent and originated and then he experiences another layer of definitive proof of the Wise Creator's Existence through contemplating the universe's signification of His Power, Knowledge, and Mercy, whether through the lens of inductive or abductive design theory or deductive design theory (repeated observation of design and designer and implicit inference to causal association).
- Or, he is experiencing a cluster of realizations without laying them out in an ordered and logical manner. He may be near-simultaneously considering a bundle of propositions and quickly intuiting their conclusions, without spelling them out in an ordered and logical manner, but nonetheless grounding the significations of design in simultaneous realizations of contingency and origination.
- Or, he is reasoning through "Deductive Design Theory" which relies on repeated observation with implicit inference to causal association (*tajriba*) and therefore produces certainty. Through repeated observation of complex design being dependent on a designer accompanied by the implicit inference of the causal association of the pairing of design and designer, he gains certainty that the universe must have designer since this customary principle applies to the entirety of contingent and originated universe.

The above example demonstrates the difference between relying on cumulative probabilistic proofs—inductive or otherwise—and founding one's belief in successive definitive deductive proofs, the latter being the way of Muslim theologians. If someone already believes in the Creator, regardless of that belief being based on merely following whatever they learned from others (*taqlīd*), sequential

[25] Repeated observation that things that exhibit complex interrelationships and dependencies do not come about by mere chance but instead are the result of intentional craftsmanship could produce certainty when coupled with the implicit inference (*qiyās khafī*) that the repeated concurrence of events entails a causal relation.

or clustered reasoned argument, or innate disposition[26], the argument from Design and Providence impacts the heart and often produces faith in a Creator. However, in terms of the ordered logical establishment of belief in Allah and His Attributes, it comes later in the successive sequence of deductive and certain proofs which cumulatively demonstrate the core Islamic beliefs.

8. Proper Place and Scope of Material Sciences

Material sciences—whether carpentry, architecture, biology, chemistry, or otherwise—investigate observable, secondary material causes and qualities from a vantage unique to each discipline. Their domain is not to confirm or deny the supernatural, nor go beyond the study of the contingent material world. No architect replaces a load-bearing beam with a prayer, nor does reliance on God (*tawakkul*) without taking the available means negate engineering norms. However, when there occur predictable spiritual or material results from devotional acts like remembrance of God, recitation of certain passages from the Qur'an, or supplications prescribed by the Prophet ﷺ, then there is no epistemic warrant to declare that these are mere chance occurrences of material phenomena, since the empirical is only one of multiple sound means of obtaining knowledge. Likewise, when the customary, predictable cause and effect relationship between two events appears to have ruptured, then the rational signification of this event points to Allah's intervening Power and Volition. In other words, when any break in the customary, nomic laws of nature occurs, science is silent and reason informed by revelation identifies the Ultimate cause being Allah's volitional breaking of natural laws to affirm a prophet, reward a saintly person (*walī*), or deny and humiliate a liar.[27]

However, the role of investigation and explanation of observable events in the material world by appeals to non-natural explanations is not rejected. Rather, all sciences have a scope of application and relevancy, and sometimes the empirical and the spiritual work together—as in medicine and prayer—while in others they work separately, as when one only wants to discover the properties of a particular mineral or the spiritual impact of the recitation of one of Allah's names.

9. Limits of Scientific Authority and Avoiding Epistemic Trespass

Within its empirical scope, science can and should restrict itself to material, predictable relationships. However, it should not extend its authority to metaphysical or theological claims—such as the impossibility of a created universe or dismissals of divine action. When science transgresses beyond its scope into another domain, the unfortunate and indefensible overreach of non-scientific ventures into metaphysics and theology occurs.

For example, the late Stephen Hawking said:

[26] As discussed elsewhere in this essay, innate disposition (*fiṭra*) is sufficient for oneself but is personal and experiential and therefore not suited for theological discussion or convincing an opponent.

[27] As in the case of Musaylama the Liar, whose claim to restore the sight of a man blinded by one eye resulted in Allah SWT humiliating him by blinding the man in his other eye.

> "Because there is a law such as gravity, the universe can and will create itself from nothing…Spontaneous creation is the reason there is something rather than nothing, why the universe exists, why we exist".[28]

That is, according to him, the laws of physics, including gravity, are the cause of the existence of the universe. Yet, this is not an empirically testable nor empirically falsifiable claim, and as such it is not a scientific one. Furthermore, it is nonsensically contradictory since his definition of "nothing" appears to include laws like gravity. Gravity, energy, and the likes are not nothing. If spontaneous creation is something coming from *next to nothing*—and not something from absolute nothingness—then it fails to address why there was gravity to begin with, and does not offer any alternative to the absolutely certain deductive claim that the universe is contingent and depends for its existence on a Necessarily Existent Creator. When scientists, mathematicians, or any skilled and learned people offer a material explanation for the existence of the universe, those who uncritically follow them due to their fascination with scientific authority often fail to recognize the rational absurdities (i.e., something from nothing, actual infinites, etc.) and unscientific (i.e., untestable, unfalsifiable, etc.) propositions inherent in their claims.

Such "epistemic trespasses" by authorities in other fields lead their followers into the fallacy of the "faulty appeal to authority." The fault lies with the one making authoritative claims based on their expertise in one field—Natural Sciences—while operating in a field in which their expertise does not apply, such as the sciences of philosophy and theology. These lie outside the epistemic jurisdiction of the Natural Sciences or even mathematics. Those who follow such epistemic trespassers are also at fault, as they should look closely from whom they take their knowledge. Given the victory of Natural Science over dogmatic and anti-rational religious rhetoric in the west, scientists came to occupy the sorts of positions in the minds of many of the masses that clergy once did. As a result, their pronouncements in fields outside their expertise often came with an air of factuality despite often being suppositional at best and rationally absurd at worst.[29]

Ayatology defends the Natural Sciences by clearly demarcating its legitimate scope, demonstrating where empirical observation, prediction, and reconstruction ends and to where rational deduction further extends.

10. Shared Subject Matter, Different Vantage, Aim, and Scope: Ayatology and Science

Ayatology and Natural Science share a common subject matter: the observable universe. But they differ in vantage (*ḥaythiyya*), ultimate aim (*ghāya*), and scope. The aim of Natural Science is to seek explanation and prediction of material phenomena within the vantage of the closed system of secondary, contingent, material causes. Ayatology subsumes this vantage and aim and extends to

[28] Gabbatt, Adam. "Stephen Hawking Says Universe Not Created by God." *The Guardian*, September 2, 2010. https://www.theguardian.com/science/2010/sep/02/stephen-hawking-big-bang-creator.

[29] This problem is not new; al-Ghazali lamented people's fascination with the philosophers' ability to predict eclipses, among other mathematical demonstrations, leading to the assumption that their views in metaphysics were equally factual. See Abū Ḥāmid al-Ghazali, *al-Munqidh min al-ḍalāl wa-l-mufṣiḥ bi-l-aḥwāl* (Jeddah: Dār al-Minhāj, 2015), 68.

seeking insight from the significations of the *āyahs* of the natural world that point to spiritual states like gratitude and reliance, and the eternal truths of Allah's Existence, Oneness, Omnipotence, and Wisdom. In other words, Ayatology allows for the study of natural phenomena via the lens of predictable and customary secondary causes with an aim to understand the universe's empirical norms in order to apply that understanding to practical endeavors like medicine, architecture, marine biology conservation, and other disciplines, but it also allows for the study of natural phenomena via the lens of their rational signification of the universe's contingency on a Necessary Creator and His Attributes, as when a supernova signifies power, power signifies the Divine Name the All-Powerful, the Divine Name signifies the attribute of Power, and the Divine Attribute signifies the Entity of Allah. It also allows for viewing natural phenomena from the vantage of their assigned religio-legal (*sharʿī*) significations, such as the glowing orange sunset signifying the time for evening prayers, or the crescent moon just above the horizon signifying the start of Ramadan.

The final benefit in realizing the implications of the study of a shared subject matter from various vantages, towards different aims, with delimited and sometimes differing scopes of application is to realize that one person can simultaneously view the same object from differing vantages with varying aims. For example, the same lab experiment can be similarly interpreted by two scientists—one a believer in the Necessarily Existent Creator, another an atheist materialist—through the lens of Biology and its aims but the Muslim remains both a scientist and an ayatologist, advancing a shared interpretation as a biologist while also witnessing broader signification of Divine Unity, God's Power, Knowledge, and states of awe, humility, and gratitude, thereby refusing the unnecessary limitation of the experiment's signification to the secondary causal domain. Scientific work coupled with reading the signs of the universe's rational signification and the resultant spiritual awe, gratitude, faith, and humility reinforce each other without conflict, as long as the scientist remembers the varying vantages, aims, and scopes of each approach as well as interrelation and lack of real conflict between knowledge obtained via the rational, empirical, and Divinely revealed channels.

With these ten aforementioned steps to holistic engagement with the natural world, one is safe from the irrational propositions that many atheistic scientists treat as self-evident truths, such as:

1. Presenting the universe and its origins as independent of a Necessarily Existent Creator and instead insisting on a material explanation, despite these entailing absurdities such as something from nothing, an actual infinite, or cyclical causality. Instead, reason dictates that the universe's origins and continued existence are the result of a Necessarily Existent Creator's willful act.
2. Claiming material and natural causes as sufficient explanation of how things work, despite their being merely correlated with their apparent effects unless one follows the dictates of reason to their being occasional and secondary causes in relation to their Ultimate cause.
3. Declaring materialism as the simplest explanation and shifting the burden of proof to believers for a "supernatural explanation", despite the proof from contingency being a simpler explanation than a spontaneously self-generating or infinite and eternal material universe.

4. Denying the dual signification of the natural world and refusing to accept the rational signification of the universe through deductive reasoning despite the fact that reading the signs in nature deductively points to something beyond the natural world (i.e., the Necessarily Existent Creator).
5. Redirecting and reducing awe, gratitude, mystery and humility to amazement at random occurrences at the level of secondary causality and recognizing the current limits of scientific knowledge, despite these psychological traits being rooted in recognizing the utter reliance of all contingent things on the Will, Power, and Knowledge of the Necessarily Existent Creator whose Knowledge is infinitely greater than human knowledge
6. Preferring the sensory epistemological channel over the rational channel and reducing the latter's application to deducing contingent secondary causes, despite the demonstrable validity and compatibility of Rational, Empirical, and Divinely revealed knowledge and their mutual reinforcement
7. Dismissing the primacy of deductive reason, and preferring either inductive or repeated observational inference to natural causes in order to avoid affirming the universe's rational signification of a Necessarily Existent Creator, despite the cumulative deductive arguments that definitively prove Allah's Existence and Attributes
8. Raising the empirical sciences over rational and revelational sciences, and artificially limiting the scope of knowledge obtainment to material phenomena, despite the ability to demarcate the boundaries of various sciences
9. Extending beyond the scope and charge of Natural Science into philosophy and theology, despite the resultant absurdities such as affirming something from nothing, infinite regress, or cyclical causality as well as contradicting the dictates of the scientific method that require testability and falsifiability
10. Limiting the vantage and aim of studying the observable material world to those which Natural Science provides, despite the ability to study the universe from other vantages towards different aims simultaneously or separately.

Chapter 3

THE THEORY OF SIGNIFICATION

THE SIGN, THE SIGNIFIED, AND KINDS OF SIGNIFICATION

Having explored the subject, vantage, and aim of the science of Ayatology, and discussed its ten core principles which serve as a corrective to unscientific errors of modern "Scientism", we now turn to the core terms, theories, and methods of Ayatology. In order to properly study and read the signs of universe, we must answer three questions:

1) What is a sign or signifier?
2) What do signs point to? That is, what is the signified thing that the signifier signifies.
3) What is signification and how does it occur? What are the different ways that signs signify their signified meanings?

The following paragraphs answer these three questions and, in doing so, lay out the core concepts of Ayatology.

3.1. What is a Sign? The Signifier

We look to the world around us—the stars, trees, stones, atoms—and within ourselves—hunger, joy, dreams, thoughts, blood vessels, organs—sometimes merely gazing, listening, and sensing, absent-mindedly, sometimes seeking some meaning from the phenomena we perceive. We check our pulse to gauge blood pressure or heart rate. We look to dark clouds and feel the cool breeze coming from their direction and wonder if they signify rain or a drastic change in temperature. We see hoofprints and camel dung in the sand and reason that a caravan likely passed through. When the kettle whistles on the stove, we comprehend from this sound that the water for tea has boiled. A slight flick of the headlights from a passing car signifies a police officer ahead is checking the speed of traffic, or perhaps it reminds us that our high beam headlights are mistakenly left on. A starter pistol fires and signifies to runners that the race to the finish line has begun. A sudden redness in one's cheeks indicates shyness or embarrassment, and a forehead hot to the touch signifies a fever brought on by infection or a virus. We are surrounded by signs throughout our waking moments, and even in our sleep when we dream.

We are surrounded by signs, but what exactly is a sign? Before exploring the different kinds of signs and how they signify or point to various meanings or things, a proper definition of the term 'sign' is in

order.[30] We can give a general definition of sign as "any sensory phenomenon—object, quality, event, gesture, action, symbol, etc.—which conveys a meaning to the one perceiving it." This is a general meaning which is inclusive of the many different ways we use the term "sign", whether a street sign that informs the driver what street she is on, a dark cloud that informs one that rain is likely coming, or a word written on a page which signifies a particular meaning in a given language.

3.1.1. *Āyah*

More specifically, we must define '*āyah*' which is often translated as 'sign' as its meaning as it is found in the Qur'an is central to the subject at hand, namely reading the signs of universe in order to know Allah SWT and the truth He revealed via His SWT messengers (a). The word *āyah* has a number of possible underlying root meanings such as clarifying and distinguishing, seeking refuge in stability and clarity, or persistence and steadiness. From these meanings, the more particular meaning of *āyah* as manifest and apparent sign is derived. A manifest sign is something apparent and perceivable that entails or is linked to something else that is not equally apparent. When one perceives the apparent aspect, one conceives of the other entailed or linked aspect that is not apparent in itself. This principle applies to both sensory and rationally conceived things. For example, imagine someone who is on a street but does not know which one it is. He knows that a street sign signifies that he is on a particular street, so when he sees the sign for Main Street then he knows that the previously undistinguished street that he was on is Main Street and not Center Street. Likewise, imagine someone walking in the desert looking for signs of civilization. She sees a crafted object, like a house or a picnic table, so she deduces that it was crafted by people living there, rather than having been produced by the wind blowing random pieces of wood around. In other words, the crafted object signifies a craftsman.[31]

3.1.2. *Dāll*

In the sciences of logic and linguistics a sign[32] is called a signifier (*dāll*). A signifier can be anything apparent that points to something else, whether a written word that points to a meaning, the sound of knocking that indicates someone is on the other side of the door, or redness in one's cheeks that signifies shyness. Restated, a signifier is: something that, when it is known, then the signified thing to which it points is also known.

This occurs through the phenomenon of signification. The signifier is the sign that points, and the signified thing (*madlūl*)—whether a meaning, person at the door, or the internal experience of

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[30] In this essay, sign and signifier are used interchangeably. In the western discipline of Semiotics, the term "sign" refers to the composite of signifier and signified meaning. So, the word "cat" is the signifier, the meaning 'meowing animal' is the signified, and the combination of the two is called a sign.

[31] Al-Rāghib al-Iṣfahānī, *Mufradāt alfāẓ al-Qur'ān*, ed. Ṣafwān Dāwūdī, 4th ed. (Damascus: Dār al-Qalam, 2009), 97-98; 'Abd al-Ḥamīd al-Farāhī, *Mufradāt al-Qur'ān*, ed. Muḥammad Iṣlāhī (Beirut: Dār al-Gharb al-Islāmī, 2002), 245-247.

[32] The relationship between the term *dāll* and *ayah* is the relationship of the more general to the more specific. That is, an *ayah* is a type of *dāll* if we limit *ayah* to stimulating the thoughts that lead to rationally deducing the cause from its witnessed effect (i.e., the amazing and ever-changing universe being an *ayah* that points to its having been created by Allah). However, we can also use them interchangeably, because every *dāll* can be viewed as ultimately signifying the Necessarily Existent Creator (as will be discussed later) and can also stimulate thought that leads to understanding. Going forward, *dāll* and *ayah* will be used interchangeably.

shyness—is what comes to be known. How the signifier points to the signified thing is called signification (*dalāla*). There are several types of signification which will be discussed later.

3.1.3. *Dalīl*

Connected to the term *dāll* is the *dalīl*, meaning 'proof'. There are several words used for proof in the Qur'an, including *dalīl* which is derived from the same root as signifier (*dāll*), signified thing (*madlūl*), and signification (*dalāla*). Other words include *ḥujja*, *burhān*, and *bayyina,* which are all forms of proof with differing shades of meaning. Allah says in the Qur'an:

> Have you not observed how your Lord extends the shadow? If He so willed, He would have made it still. Then We made the sun an indication (*dalīl*).[33]

The sun is called a *dalīl* because were it not for the sun, the shadow would not be known, were it not for light, darkness would not be known. The sun indicates, points to, clarifies the reality of the shadow, such that when we understand its light we understand, through contrast, the darkness of the shadow.[34]

The theologians define the proof (*dalīl*) in the same way as signifier (*dāll*) was defined above, that is, it is something that when it is known, then the signified thing to which it points is also known. For them, the *dalīl* can be singular—like a single effect signifying its cause or the sun signifying the shadow through contrast—but for logicians the *dalīl* is a formal proof consisting of two propositions and a conclusion. A formal proof is called a sign because its premises—when properly constructed and arranged—point to the validity of its conclusion. This can be called a logical proof, and it is helpful to know the relationship between a manifest sign (*āyah*) and a logical proof.

The *āyah* is the basis of the logical proof; it is the foundation upon which the logical proof is built. One witnesses the ever-changing universe around one, seeing movement turn to stillness and stillness turn to movement, existence change to non-existence and non-existence change to existence, or heat give way to cold and cold give way to heat. These changes in state observed in sensory phenomena are the manifest signs that stimulate thought, raise questions in the heart, remind one of forgotten truths, and awaken innate dispositions such as gratitude and awe. Through this natural disposition (*fiṭra*) to ponder, reflect, and emotionally respond to the manifest signs one witnessed, one realizes that all that undergo change is created.[35]

Whether one consciously and explicitly produces a syllogistic argument in the mind, or after reflection on the signs the two premises and conclusion present themselves simultaneously to the mind, the fact that the universe undergoes change is an *āyah*, a manifest sign that the universe is created. For example, the following syllogistic argument begins with a premise based on observation of the *āyah*, the manifest sign of change witnessed in the natural world:

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[33] Q. al-Furqān 25:45

[34] Abū Layth al-Samarqandī, *Baḥr al-ʿulūm*, ed. ʿAlī Muʿwwaḍ et al., 3 vol. (Beirut: Dār al-Kutub al-ʿIlmiyya, 1993), 2:461-462; al-Ḥusayn al-Baghawī, *Tafsīr al-Baghawī: Maʿālim al-tanzīl*, 30 vol. (Riyadh: Dār al-Tayba, 1988), 19:85-86; Abū al-Suʿūd al-ʿImādī, *Tafsīr Abī al-Suʿūd: Irshād al-ʿaql al-salīm ilā mazāyā al-kitāb al-karīm*, ed. ʿAbd al-Qādir ʿAṭā', 5 vol. (Riyadh: Maktabat al-Riyāḍ al-Ḥadīthiyya, n.d.), 4:185.

[35] Al-Rāghib al-Iṣfahānī, *Mufradāt alfāẓ al-Qurʿān*, ed. Ṣafwān Dāwūdī, 4th ed. (Damascus: Dār al-Qalam, 2009), 97-98; ʿAbd al-Ḥamīd al-Farāhī, *Mufradāt al-Qurʿān*, ed. Muḥammad Iṣlāhī (Beirut: Dār al-Gharb al-Islāmī, 2002), 245-247.

The universe is changing.
Everything that changes comes into existence.
The universe comes into existence.

There are important discussions in logic and neuroscience regarding whether the mind naturally produces such formal arguments, or one must intentionally construct an argument in syllogistic form to aid in sound reasoning much like one might use poetry to help memorize facts. However, for the purpose at hand, the formal syllogism above demonstrates one way in which the manifest sign (*āyah*) of change, when observed, serves as a foundation for the reasoning process that leads to the conclusion that the universe is created.

Allah draws the reader's attention to the manifest sign of change in the Qur'an, saying:

> "In the changing of the day and night and what Allah created in the heavens and the earth are signs for a pious people."[36]

The *āyah* can also serve as an angle of argument (*wajh al-dalāla*), a perspective the informs another argument. For example, in the syllogism below, the first premise is founded on the *āyah* of change:

The universe came into existence
All that comes into existence requires a creator
The universe requires a creator

The first premise is the conclusion of the previously mentioned syllogism, which was founded on the *āyah* of change as mentioned in its first premise. As discussed later, the same signifying object—i.e., the universe—can signify different sorts of knowledge from varying vantages and kinds of signification, and as such, other proofs may be constructed or innately reasoned based on the same manifest proof. Sometimes the universe points to Allah's Existence, sometimes to His Power and Wisdom, sometimes to His Oneness, and sometimes to all these and more. In fact, the word *al-ʿālam*, which we translate into English as "universe", is derived from *al-ʿālam*, which also means sign. The universe itself is the greatest sign, and within it are innumerable manifest signs that clarify, signify, indicate, and point to the eternal verities of religion.

3.2. What does a Sign Signify? The Signified

That to which the sign points is called the signified (*al-madlūl*), or more technically, the significate. Signifiers can signify a variety of significates, including meanings, objects, qualities, directions, and more.

3.2.1. Essential and Definitional Meanings: Complete, Partial, Concomitant

The meaning signified by a signifier can be definitional, signifying the complete essence of something. This definitional meaning applies comprehensively to all individuals sharing in that meaning and excludes all that do not. For example, the word "human" signifies the complete meaning 'rational animal'. In logic, this mode of signification is termed "complete concordance" or "complete

[36] Q. Yūnus 10:6.

signification" as the signifier points to the complete essence consisting of both genus ('animal') and differentia ('rational'). Alternatively, a signifier like "human" may signify only part of its essential meaning such as 'rational' or 'animal'. This is called "partial concordance" or "partial signification" and it occurs when the context dictates that only that part is relevant to the discussion. The word "human" might also signify a concomitant meaning—something rationally entailed by the essential meaning but accidental to it—like 'capable of writing' through the third mode of signification called "necessary implication".[37] The word "human" was not coined explicitly to signify the meaning of 'capable of writing', but in a particular conversational context, such a meaning is implied as only humans are capable of writing. In each of these cases, the meanings signified are concepts, rather than propositions, since they do not involve a true or false judgment. Whenever we use a singular word—one whose parts do not point to part of its meaning—it will signify a concept.

3.2.2. Propositional Meanings

Signifiers can also signify propositions or declarative statements, such as a sign on the door with the word "Open" printed on it signifying 'The store is open for business'. Likewise, smoke on the horizon signifies 'There is a fire'. The contingent things of the universe signify 'There is a Necessarily Existent Creator'.

3.2.3. Commands, Prohibitions, Exclamations, and Wishes

Signifiers are not limited in their signification to definitional and propositional meanings. Rather, they also signify commands, such as stop sign signifying the command 'Stop!' or crossing sign signifying 'Do not cross'. This can occur with these words printed on the signs, or merely through images and shapes, such as a red octagon without the word "Stop" or a blinking orange representation of a hand without the words "Do not cross". Computer emojis have been coined to express exclamations such as "wow!" or expressions of hope, wishes, or prayers for success.

3.2.4. Presence or Absence

Signifiers can signify the presence of something, as stomach pangs signify the presence of hunger or smoke signifies the presence of fire. An overpopulation of deer might signify the absence of predators. The sound of a voice on the other side of the wall signifies the presence of the speaker, and a particular sound produced by tapping an empty coffee container signifies the absence coffee.

3.2.5. Causation and Correlation

Causes are signs for their effects and effects are signs of their causes, and as such they are connected to the discussion of presence and absence, The presence of an effect signifies the past or present existence of its cause. Likewise, the current presence of a cause signifies its imminent or distant future effect. Similarly, sometimes two variables may be predictably present without their relationship being definitively causal, such as the correlation of the presence of redness in one's cheek signifying the presence of embarrassment.

[37] The details of these modes of signification can be found in standard books of logic in the Islamic tradition such as the Isagoge (*Isāghūjī*) of Athīr al-Dīn al-Abharī.

3.2.6. Objects and Directions

Some signifiers signify multiple things, such as a sign consisting of the letter "P" and an arrow pointing in the direction of a parking lot signifies a meaning such as "the parking lot is in that direction" but it also points the attention of the viewer to the actual object itself if the parking lot is within view. Some signifiers signify direction, as a weathervane consists of the letters N, S, E, W, which signify the cardinal directions (North, South, East, and West) and a rotating arrow that indicates the direction of the wind.

The signified (*al-madlūl*) can be meanings, directions, objects, qualities, and a host of other things. The above list is not exhaustive, as other signified things could be added. However, for the purposes of this essay, a partial list suffices.

3.3. How does a Sign Signify? Signification

Signs point to meanings and other things in different ways, from varying perspectives or vantages, and at varying degrees of priority. Scholars have discussed the various kinds of signification in their works, especially in the study of grammar, rhetoric, and logic where understanding how words point in various ways and contexts to different intended meanings. In doing so, they briefly introduce other kinds of signification which are less relevant to the language and logical sciences but of great relevance to other efforts to obtain knowledge, such as medicine, biology, and chemistry on the one hand or theology on the other which is grounded in contemplation of observed sensory phenomena in nature from which one obtains knowledge or increased certainty in rationally deduced truths.

While the division of kinds of significations below is neither exhaustive nor universally agreed upon, it provides a useful starting point from within the Islamic tradition which can be further expanded upon. Understanding the kinds of signification is crucial to understanding how Ayatology—the science of reading the signs in horizons, selves, history, and beyond—is applied in the diverse sciences which we study and practice, whether biology, architecture, literature, history, medicine, or Qur'anic studies. Each of the six main categories of signification are relevant to how we read the signs in the natural world around us—which scholars call "the Book of Creation" (*kitāb al-takwīn*)—as well as the signs (*āyāt*) of the Qur'an (which scholars call the "the Book of Revelation" (*kitāb al-tadwīn*), as well as the other sciences we study through the lens of Ayatology, be it history, hadith, sira, geology, biology, or otherwise.

3.3.1. Kinds of Signification

Often scholars divide signs into two main types, those that signify through verbal signification and those that signify through non-verbal signification.

3.3.1.1. Verbal Signification

Verbal signification occurs via signifiers that are sounds expressed by the mouth that signify meanings in one of three ways: assigned, natural, and rational.

3.3.1.1.1. Assigned Verbal Signification

Assigned verbal signifiers include words which, when spoken or represented in written language, signify meanings that were assigned to them. When someone coins a term for a meaning—like

"smart-phone"—they have assigned that word to a specific meaning. As mentioned previously, words can signify definitional meanings in completely, partially, or implicitly through necessary implication. That is, "human" can signify 'rational animal' in one context, or it can signify either 'rational' or 'animal' in another. The word "human" can also signify a concomitant meaning that is necessarily implied by 'rational animal', such as 'capable of writing'. These are the three modes of signification discussed in logic books called concordance ('rational animal'), partial correspondence ('rational' or 'animal'), and necessary implication ('capable of writing').

We might add to this category those verbal significations produced by animals, such as mating calls, bird songs, alarm calls (when a predator is near), and the likes, with the stipulation that these instinctive utterances have meanings that are assigned by Allah and He creates the instinctive or learned capacity to understand them in the animals who use them.

3.3.1.1.2. Natural Verbal Signification:

A doctor might hear the sound of her patient's cough and, given her expertise, she might diagnose a particular illness like bronchitis. Similarly, someone might cry out "argh!" which signifies to the listener that the one who uttered it is hurting, despite the expression's not having been coined to signify pain. Rather, such expressions occur naturally without intent, and, as such, are called natural verbal signifiers. Whether or not there is a causal connection between the signifier and the signified meaning is not the consideration, rather the concern is more with regard to correlating the presence of the signifier with the presence of the signified meaning in that the signifier is more a symptomatic indication than cause of the signified meaning. This will be discussed further below.

3.3.1.1.3. Rational Verbal Signification

Rational verbal signifiers include sounds articulated with one's mouth—whether they carry an intended meaning (such as "cat") or do not carry an intended meaning, such as "dayz" or some other nonsensical gobbledygook—that when heard from the other side of a wall, for example, will rationally signify to the listener that a person is present and speaking in the other room. Rational signification is concerned with causal inference, where the presence of the effect signifies the cause or the presence of the cause signifies the actual or potential effect. As discussed in our other curricular essays, effects can signify their ultimate cause (i.e., the universe signifies Allah) or their observable occasional or secondary cause (i.e., smoke signifies fire).[38]

From the examples discussed above, the first three *kinds of signification* are clear: assigned (e.g., "smart-phone"), natural (e.g., "argh!"), and rational (e.g., utterances heard spoken on the other side of a wall). Logicians and grammarians are concerned with assigned verbal signification, whereas doctors and natural scientists are generally more concerned with natural and rational signification.

3.3.1.2. Non-Verbal Signification:

The second kind of signification is non-verbal signification, and it too is divided into assigned, natural, and rational. Assigned non-verbal signification pertains to any sensory phenomenon that has been designated to signify an assigned meaning. Natural non-verbal signification concerns natural phenomena whose presence are symptomatic of the presence of another natural phenomenon

[38] Qureshi et al, *When the Ordinary Turns Extraordinary*, 26-28.

through correlation not necessarily causation. Rational non-verbal signification concerns any sensory phenomena's signification of its cause, whether it's ultimate or secondary cause, as discussed below.

3.3.1.2.1. Assigned Non-Verbal Signification:

The lines of a crosswalk have been assigned to signify that a driver must yield to pedestrians crossing the street, while the lines on a soccer field demarcating the goalie box indicate the limits of where the goalie can pick up the ball. Sign-language consists of hand-signals that signify meanings—whether numerical or lexical—for those who are hearing impaired and in American culture the nod of the head signifies affirmation while shaking the head signifies negation. The form and material of a yield sign signifies that a driver must slow down and yield to oncoming traffic. These aforementioned examples are four kinds of assigned non-verbal signifiers discussed in grammar and logic texts: written lines, numerical or linguistic sign language, bodily gestures, and signposts. Other assigned signifiers can be added to these such as brake lights, color coding systems, painted trail markers on hiking paths, street lights, or the "barber pole" outside a barber shop that signifies it is open. Assigned signifiers—whether verbal or non-verbal—are the domain of human communications in its myriad forms, including any form of speech, writing, drawing, signage, gestures, or arrangement of materials to signify meanings (e.g., cairns).

We may add to this category is legal (*shar'ī*) signification, those natural phenomena that when viewed through the lens of the Sharia signify meanings that have been assigned to them by Allah. For example, dawn signifies the time for morning prayers, and the crescent moon signifies the start of Ramadan or the day of Eid. Allah has assigned meanings to ruins of past civilizations from which we are to glean knowledge of our human fragility and resultant humility.

We might also add the kinds of non-verbal instinctive messaging found among some animals, such as changing colors to attract prey, nest building or "dancing" seen in some birds to attract a mate, among other amazing qualities found in the animal kingdom that are assigned by Allah as part of the complex systems found in nature.

3.3.1.2.2. Natural Non-Verbal Signification

As for natural non-verbal signifiers, they include the redness of one's face signifying embarrassment, yellowness of skin signifying jaundice, and furrowed eyebrows signifying anger. Natural non-verbal signifiers, along with natural verbal signifiers, are crucial in the domain of medicine, natural sciences in general, as well as some aspects of Islamic law, among other sciences. Natural signifiers signify a correlative relationship between the presence of one variable and the presence of another. Embarrassment—an emotional and psychological state—may not be the direct cause redness in the cheeks but when redness is present then it signifies the likelihood of the existence of the state of embarrassment, even if heartrate and expanding blood vessels might be the direct cause of blushing. Unlike the causal relationship between smoke and fire—if there is smoke, there must be fire—the relationship between redness in one's cheeks and embarrassment is merely a pairing of variables where the presence of one signifies the presence of the other, but the causal relation is either not considered or not known. In addition to natural signification differing from rational signification through the lack of consideration of direct causal relations, we can add to our description that one variable is seen as symptomatic of another. That is, fever is a symptom of an underlying condition,

such as a bacterial infection, but the infection is not the direct cause of the fever. Context also plays a role in natural signification; there are number of other things that could be correlated with redness in one's cheeks or increased body temperature, such as a fever or having run a marathon.

As a side note, the category of natural non-verbal signification has received some discussion by scholars, some subsuming it entirely under rational signification—assuming that embarrassment is the actual cause of redness, jaundice is the cause of yellowness, etc.—others saying that it could be either rational or natural signification depending on whether one considers the colors redness or yellowness to be causally or correlatively connected to embarrassment or jaundice respectively. For the purposes of this essay, we will adopt the opinion that a single effect could signify rationally or naturally depending on vantage or context. Natural signification, for our purposes, will refer to signifying phenomena that occur in nature whose strong correlations to other natural phenomena are inferred, but a direct causal connection is not certain or not considered in context. Also, natural signification operates only at the level of secondary causality—since Allah creates embarrassment, redness, and the predictable correlation of the two—whereas rational signification operates at both the level of primary causality (i.e., the universe signifies Allah's Existence, Power, etc.) and the level of secondary causality (i.e., smoke signifies fire). This will be further discussed below with regard to signification and the sciences.

3.3.1.2.3. Rational Non-Verbal Signification

As for non-verbal rational signifiers, the observed universe is a rational signifier of the Creator's existence, knowledge, will, and power.. More generally, rational signification occurs whenever the existence of an effect signifies the existence of its effective cause. While this sort of deductive reasoning from effect to cause and similar modes of deduction are found across the sciences, it is the primary mode of signification in Ayatology. Allah repeatedly calls on people to reflect on the many different signs in creation to understand their signified meanings, namely Allah is the Powerful, Volitional, Knowing, Living, Wise Creator and Sustainer of all things.

In general, rational signification is causal signification; the sound of speech signifies the existence of the speaker, and the existence of the contingent things of the universe signify a Necessarily Existent Creator. However, sometimes, the context dictates a more specific signification, as when Allah addresses the polytheists of Mecca in the time of the Prophet ﷺ when they denied the resurrection but not the existence of Allah. From this perspective, the awe-inspiring aspects of the sky, earth, sun, moon, mountains, and so on, are all signifiers of Allah's Power by which He created all things in the universe and by which He can resurrect humans and jinn for their questioning on the Day of Judgment.

The argument of the Qur'an might be presented as follows:

> All contingent things are possible for the All-Powerful Creator to create.
> The events of the Day of Resurrection (including the resurrection of humans and jinn) are contingent things.
> Therefore, the events of the Day of Resurrection are possible for the All-Powerful Creator to create.

One who has seen that all things in the universe are contingent, merely possible, and also originated in that they currently exist but once did not exist, such a person realizes that all things witnessed in the universe around them are the products of Allah's Creative Power, and as such, signify Him SWT and His Power (along with his Will, Knowledge, and Life). One who has understood that the universe's existence signifies the Existence of an All-Powerful Creator in the sense that an effect signifies its cause, also understands that the created things of the universe point to that Creator's Power to do any possible thing. When told that the All-Powerful Creator is going to create again in the next world, one understands from witnessing this world that the next world is equally possible. From other perspectives, these same phenomena in the universe can point to Allah's Oneness or Wisdom or Existence, depending on context.

3.4. How Do We Perceive the Signifier, the Signified, and the Signification? The Epistemology of Signification

3.4.1. Perceiving the Signifier and its Signification Through the Five External Senses and the Internal Senses

The examples given above are primarily divided into those signs that are heard (verbal) and those that are seen (non-verbal signifiers such as lines, redness, or sign language), however, each of the five senses can receive sensory stimuli that signify other meanings. For example, in addition to the verbal signifiers mentioned previously, the sound of long and short tones produced by any given source can communicate meanings through Morse Code. The scent of a particular flower when first in bloom can signify the beginning of spring. The heat of a patient's body temperature when it is above 98.6 Fahrenheit and felt with the doctor's hand on the patient's forehead signifies a fever. Likewise, the arrangement of raised dots on a page whose specific arrangements are assigned to signify the meanings originally signified by coined verbal expressions is a form of tactile sensory signification. The taste of a particular substance might signify the presence or absence of a specific ingredient or quality which yields useful information in multiple contexts from cooking to chemistry.

One can also add internal senses to our list of perceivers of significations. For example, interoceptive senses help us read the signification of hunger pangs or the likes. Our perception of forms and symbols in dreams allows us to read their signification, as representations of past experiences, hopes, fears, and the likes, or as significations of future events, as in the case of true dreams.

3.4.2. Understanding the Signified Meaning via the Intellect

The senses, external and internal, perceive the various signifiers, but it is the intellect which determines whether or not the signification transmits the signified meaning to the knowing self or not. A flashing red light may be perceived by the eyes and its existence and occurrence merely affirmed by the intellect, for example when a driver is tired and distracted. However, when attentive to its intended assigned signification, the intellect interprets the flashing red light to carry the meaning of the command "stop!". The intellect is the main arbiter of signification, determining—correctly or incorrectly—the rational, natural, or assigned signification of a given meaning.,

3.4.3. Understanding the Signified Meaning via the Soul

Signs and their significations are primarily known through the senses and intellect, but we can also add to this the spiritual perception of meanings obtained via the soul rather than the intellect. That is, regardless of whichever kind of sign one witnesses—whether external signs in the world, interoceptive signs in the body, or mental representations in dreams or the likes—one obtains their signified meaning not through rational contemplation but rather through the means of direct spiritual insight. While the focus in this essay is on significations obtained through the external senses and comprehended by the intellect, a few useful words will be said about spiritual signification, as it is closely connected to rational signification and the reflection on the created universe in order to draw nearer to Allah through recognition of ultimate truths.

Spiritual perception of the signification of phenomena in the universe occurs when the heart is polished by the remembrance of Allah, adhering to the commands and prohibitions of the Divine law, and is in such a state that it instantly moves from comprehending rational, natural, and assigned meanings signified by the various phenomena witnessed by the senses to inwardly bearing witness to their Creator. Some have described this as moving from sight (*baṣar*) to insight (*baṣīra*).

One can imagine a scenario wherein a person sees a sunset and recognizes that the setting of the sun has been a specific sign for the entrance of the evening prayer. She has first read the legal (*sharʿī*) signification of the sunset. Her intellect also comprehends that it is a glorious creation of Allah that logically points to His Existence, Power, Will, Knowledge, and Life. She then utters a heart-felt expression of gratitude and awe, saying *alḥamdulillāh* and *subḥānallāh*, and from her heart's receptivity to the remembrance of Allah due to frequent remembrance, worship, and service, she experiences a state of nearness to Allah, worshipping Allah as though she sees Him. This could all be experienced in the order described above, with the intellect comprehending various significations followed by her heart spiritually witnessing the realities signified by those signifiers. Or, the heart's realization may occur immediately, simultaneously with her eye's perception of the sunset. In other words, her sight could move to insight instantly, or after reflecting and remembering (*fikr* and *dhikr*).

3.4.4. Signification Signal Flow

Understanding the epistemological "signal flow" of signification can be helpful in understanding the relationship between different kinds of signification and the various sciences. In its simplest form, the process begins with the existence of the signifier—a sign, a word, a natural process, or any other sensory phenomenon—followed by its kind of signification, determined by context and the intent of the one reading the sign. Then, there is the sensory organ that perceives the signifier, followed by the intellect which interprets—according to the kind of signification and vantage—the meaning at a degree of certainty obtained by the sense perception. Finally, the knowledge obtained by the signification process is perceived in the knowing self (i.e., mind, soul, etc.).

Signifier (object of perception) →	**Sense Perception (epistemic channel) →**	**Kind of Signification →**	**Intellect →**	**Knowledge of Meaning**	**Vantage**
smoke →	sight →	rational →	"If there's smoke, then there's fire." →	"There is a fire." (propositional; nomic judgment of secondary causal necessity from rational signification)	fire fighting
red cheeks →	sight →	natural →	"Redness is symptomatic of shyness." →	"This person is shy." (propositional; nomic judgment of correlative probability from natural signification)	character assessment
the word "cat" →	sight →	assigned →	recognizes word-symbol as signifier of its particular meaning →	"meowing animal" (essential / definitional; conception of meaning from assigned signification)	biology

When one's knowledge of epistemology is combined with one's understanding of the various kinds of signification and the kinds of conceptions or judgments one obtains from them, the role of signification in the various sciences becomes clearer. That is, one knows that there are at least three ways we come to know the truth or falsity of any given proposition:

1. Rational: Some things can be known to the mind alone either through contemplation of essential meanings (e.g., a square is not a circle) or through deductive inference from sensory phenomena to purely rational judgments
2. Empirical: Others are known from deductive or inductive inference from sensory phenomena to nomic or empirical judgments with certainty or probability
3. Reported (also called Assigned): Others are known through communication using language with assigned meanings—verified through either rational contemplation (one above), empirical observation and testing (two above), or Divine Revelation (truthful reports from a truthful reporter aided by miracles).

If one recognizes these three main ways through which we come to know, then one sees that sensory phenomena—whether natural phenomena, internal sensations, or assigned words, signs, etc.—are the signifying objects from which we derive our knowledge. Each science approaches these signifying sensory phenomena through reading different kinds of signification from them depending on their different vantages and aims, as discussed below.

Conclusion

Understanding these kinds of signification demonstrates that we are constantly engaged in the interpretation of signs from varying perspectives and towards different ends. Ultimately, it will become clear that every contingent thing witnessed in the universe points to itself existentially—i.e., the sign exists—and to one or more other meanings beyond itself via differing kinds of signification. That is, in addition to the existence of a thing merely signifying that it exists, it can also signify another meaning or even multiple meanings simultaneously. For example, a pile of stones (i.e., a cairn) signifies by assigned signification that one is on the proper hiking trail and simultaneously the pile of stones—with its contingent nature—signifies by rational signification the existence of a Necessarily Existent Creator of the stones and the universe in which they exist. A multitude of meanings might also be signified via the same kind of signification depending on the intended perspective or vantage point from which one is viewing the sign. That is, one reading the natural signification of the reddening of someone's face might understand shyness as a manifestation of humility and faith when viewing from the vantage of investigating the character of a future spouse, while the same reddening might signify a lack of preparedness for a particular job from the vantage of an employer interviewing a candidate for an advertised position. Differences in vantage points will be discussed in more detail later in the essay.

Chapter 4
SIGNIFICATIONS IN THE SCIENCES

Every mode of sensory knowledge obtainment—whether a formalized science or experiential inquiry in daily life—has a perceived signifying object (physical, spiritual, conceptual, etc.), one or more epistemic channels (the five senses, intellect, soul) through which it is perceived, a primary kind of signification through which it is interpreted (assigned, natural, rational), a vantage or perspective from which it is perceived (health care, mechanics, deductive truths), and an intended kind of signified meaning (definition, proposition, syllogistic argument, exclamations, commands, prohibitions, etc.) that is sought from that observation.

Object of Perception / Subject Matter	Redness in the face
Epistemic Channel of Perception	Sight
Kind of Signification	Natural
Vantage	Character assessment
Kind of Signified Meaning	Propositional
Signified Meaning	"She is shy and humble"

When one realizes this, one realizes that the same signifying object can signify multiple meanings that can be read simultaneously or separately depending on the need in a given moment. A person can be a geologist, hiker, and Ayatologist simultaneously while witnessing a pile of rocks placed to mark a trail—those stones are quartz and granite, I am still on the trail to the parking lot, and these created stones are the creative handiwork of a Wise and Necessarily Existent Creator. Understanding what kind or kinds of signification are common in various sciences is helpful to avoid unnecessarily limiting oneself to a single mode of knowledge or, worse still, not knowing how to integrate knowledge obtained through multiple kinds of signification and thereby having internally inconsistent views (bifurcation).

4.1. Rational Signification and the Sciences

Rational signification is a key method of reasoning in Islamic theology (*Usul al-Din*), legal theory (*Usul al-Fiqh*), applied law (*Fiqh*) and the natural sciences. Theology uses rational signification to move from contingent realities to the Necessary Being, while law and science use it to analyze relationships within the contingent world. This distinction between primary and secondary causality is central to

understanding their different uses. This section explores how rational signification is used in these different domains.

Throughout the Qur'an, Allah calls the readers' attention to the value of rational reflection on the observable universe around one. Whether natural phenomena, such as the heavens, earth, alternation of night and day, or human artifacts such as ships on the sea or the remnants of past civilizations, or even the very languages that we speak, all of these are signs for those Allah describes as the people of innermost core (*ūlū al-albāb*) or those who use their intellects (*alladhīna yaʿqilūn*). The sound of a human voice humming or a baby babbling on the other side of a wall, as an effect, signifies its cause, the existence of the human producing that sound. Dark clouds on the horizon signify, the possibility of rain, while smoke signifies with certainty the existence of fire. Ultimately, the rational signification of the universe—from the horizons to our inner selves, through the telescope or through the microscope—is the Existence, Power, Will, Knowledge, and Life of Allah. It is this final knowledge of Allah rationally signified by the universe which results in the experience of awe, gratitude, love, and affirmation of Allah's being the sole creator and sustainer of all.

4.1.1. Theology (*Uṣul al-Dīn*)

Of the sciences that rely heavily on rational signification, theology (*uṣūl al-dīn*) is paramount. Theology has the unique position of being the foundation of all other religious sciences, due to its subject matter being Allah SWT, His Prophets (a), and the revelation which they were sent. Traditionally scholars divided questions about belief into those that can be known with the mind alone, those which require reference to revelation, and those which could be obtained through either the rational or Divinely revealed channels. They also divided questions about belief according to those that pertained to Allah SWT and His Attributes, those that inquired about the Prophets (a) and their attributes, and those that related to matters of the Afterlife and the unseen. Matters of the Afterlife and the unseen are known only through revelation while inquiries about Allah and His Prophets include points of faith known to the mind alone while others may be known either through the intellect or reference to revelation.[39]

4.1.1.1. Rational Signification of Allah and His Attributes via the 5 Qur'anic Proofs

The Qur'an presents multiple rational arguments for Allah's Existence, Attributes, and perfections based on the rational signification of the universe. As the foundations of faith, they are known by reason alone through observing the universe around one, reading its signs, and contemplating their significations. These purely rational arguments to which Allah calls us to reflect upon can be categorized into five major proofs[40]: design, creation, innate disposition, origination, and contingency. Each one provides a particular vantage from which one's reasoning leads to knowledge of the Creator. Each of these proofs are mentioned or alluded to in the Qur'an, as demonstrated below.

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[39] See Muḥammad Ṣāliḥ al-Ghursī, *al-Taḥrīr al-Ḥamīd li-Masā'il ʿIlm al-Tawḥīd* (Diyarbakir: Maktabat Seydā, 2013), 202.

[40] Previously, the distinction between proof (*dalīl*) in its general sense and its specific logical sense was discussed. A *dalīl* in its general sense, as used by theologians, is a signifier being such that when it is known then the thing signified is known. It is in this sense that the term "proof" should be understood in the following section, despite these proofs being expressible in a formal syllogistic argument as well.

I. The Proof from Design and Providence (*Dalīl al-niẓām wa al-ināya*)*, also known as the Proof from Horizons and Selves* (*Dalīl al-āfāq wa al-anfus*)

Allah says in the Qur'an:

> So let people consider their food
> For that we poured down water in abundance
> Then we cleft the earth with fissures (of sprouting vegetation)
> And caused grains to grow therein
> and grapes and herbage
> and olives and palm trees
> and enclosed groves, dense with lofty entwined trees
> and fruits and grazed pasture.[41]

These *āyahs* cause the reader to reflect on sensory phenomena that are perceived with all five senses of sight, hearing, smell, taste, and touch. Contemplating these many profound yet common blessings bestows intense gratitude toward the Giver of Blessings, as well as realization of Allah's power to re-create us on the Day of Resurrection and to fill heaven with familiar foods, groves, and experiences. Their variety and diversity signify Allah's knowledge and wisdom, that He created the sweetness of grapes, the briny flavor of olives, the aromatic scent of herbs, and so on. Recognizing the complex interrelations of all of the signs in nature around us leads to gratitude and awe, a realization of the Divine providence and care that makes life on earth possible.

The providential order in creation serves as an *āyah*, a sign pointing to numerous points of wisdom for us to reflect upon, leading to contemplation that ultimately leads to knowledge of Allah and His Attributes, that He Exists, is One, is All Knowing and Wise, Volitional, All Powerful, as well as His Names such as the All-Merciful, the Creator, the Sustainer, the Provider, and so on. As mentioned previously, the *āyah* as signifier is broader than a syllogistic argument since an āyah causes one to contemplate many things, many signified meanings and deductions from them, not only one conclusion. With that, the proof from design and providence points to many points of wisdom, but all return to the knowledge of Allah and His Attributes and Perfections that are the ultimate aim of contemplation.

Many theologians prefer to treat the proof from design and providence as part of a linear set of rational proofs that begin by establishing Allah's necessary Existence through the argument from origination and contingency—discussed below—then establish Allah's Beginningless Eternality (*qidam*), Endless Eternality (*baqā'*), Absolute Independence (*ghinā'*), Dissimilarity from creation (*mukhālafa lil-ḥawādith*), Oneness (*waḥdaniyya*), Power (*qudra*), and Volition (*irāda*). After having established these Divine Attributes, they turn to the proof from design and providence to establish that Allah necessarily has knowledge, for a Necessarily Existent Creator with power and volition would not create purposefully designed and complex interrelated varieties of things from a state of ignorance. Others consider the proof from design and providence to establish Allah's Power, in particular, to resurrect humans after they had died and become dust and bones. Others saw in such

[41] Q. 'Abasa 80:24-31.

āyahs signification of Allah's Oneness, for a multitude of creators would entail the universe would be in ruins: *"Had there been gods in them* (*the heavens and the earth*) *other than Allah, they would have both been corrupted."*[42]

Constructing a linear proof for the Existence of Allah based on the proof from design and providence runs into some difficulties if one has not yet treated the contingency and origination of the universe and its necessary dependency on a Necessarily Existent Creator. However, an āyah signifies meanings that stir the sign-reader to contemplate from multiple vantages so design theory has a far more pronounced effectiveness in leading many people to faith in Allah's Existence due to the multi-vantage signification of the universe as āyah. That is, in addition to the specific rational signification of the universe from the perspective of design and providence that leads one to recognize that the wondrous and purposeful order seen in all things points to a Wise Designer, the universe is also simultaneously signifying Allah's Existence, Power, and Mercy through contingent things' signification of a Necessarily Existent Creator, and originated things' signification of the Originator, and so on. Nonetheless, proof from design and providence can be framed as a formal argument that is either mentioned in a series of proofs after the proofs from contingency and origination, or as a stand-alone-proof whose effectiveness experientially is likely due to the impact of simultaneous multi-vantage signification discussed in further detail below. The formal proof is as follows:

The universe exhibits complex interrelationships and dependencies—that is, it shows ordered design.
Everything that exhibits complex interrelationships and dependencies needs a designer.
Therefore, the universe needs a designer.

If the Proof from Design and Providence is not a Strong Proof for the Existence of God, as Some Say, Why Does it Seem to Work?

1. Innate Disposition (*Fiṭra*)

The truth of this formal argument relies on the second premise: that anything that exhibits complex interrelationships and dependencies needs a designer. For many people, affirmation of this premise is grounded in their innate disposition (*fiṭra*). They would not believe that the airplane they are boarding was produced by a tornado passing through a junk yard, or that the elephant in the zoo popped into existence through the random movement and arrangement of particles. Innate disposition is a proof for the individual who possesses that disposition—it is a personal proof not a public proof—however, in the context of theological argument, one cannot expect to prove the validity of their belief to another through reference to an inner experience. Rather, externally verifiable arguments are necessary. This is one reason some scholars say "Design theory is not a good proof," that is, it is not a valid proof in the context of rational argument if it is based on reference to innate disposition.

2. Deductive Design

Others might affirm the second premise with certainty through their repeated observation that things that exhibit complex interrelationships and dependencies—like the gears of an

[42] Q. al-Anbiyā' 21:22.

old wristwatch or the complex systems in an airplane—do not come about by mere chance but instead are the result of intentional craftsmanship. Like the certainty obtained from repeatedly witnessing the calming effects of consuming lavender, so too is certainty obtained by repeatedly witnessing complex, ordered, interdependent systems being the result of a careful and intentional design. That lavender consumption is the cause of relaxation or that fire is the cause of smoke, or that a designer is the cause of a design, are causal relations that are deduced from repeated observation coupled with the subconscious inference that the repeated concurrence of events entails a causal relation. In each of these examples, the effects rationally signify their causes, whether those causes are witnessed simultaneously as in the consumption of lavender accompanying relaxation[43] or the burning of fire accompanying smoke, or are deduced from the presence of the effect signifying the past existence of the cause (as in the case of a painting produced by an artist years ago).

In the case of design in the universe, the subconscious reasoning that accompanies this repeated experience might be formulated as follows:

> The appearance of complex design is consistently paired with the existence of a knowledgeable and volitional designer.
> When two phenomena are repeatedly paired, there is a causal connection between them.
> Therefore, there is a causal connection between the presence of complex design and the existence of a volitional designer.

More precisely, this causal connection must fall into one of three possibilities:

- The designer caused the design (as a painter causes a painting),
- The design caused the designer (the painting causes of the painter, which is logically incoherent),
- Or one doesn't cause the other, instead both were caused by something else (just as daytime and the earth's illumination are both caused by the rising sun).

Since the latter two options are not reasonable, the only sound explanation is the first: the designer caused the design. The comparison of *tajriba* and design is rooted in the shared experience of repeatedly witnessing paired events and the presence of an implicit inference to a causal relationship. Such reasoning occurs when contemplating natural phenomena whose predictable relationships operate at the level of customary or occasional causality (*ʿāda*), while recognizing that Allah as ultimate cause could suspend the customary causal relation.

[43] Previously, lavender consumption and relaxation was given as an example of natural signification and *tajriba* where direct causality was not established. In other words, lavender and relaxation are causally associated, but lavender consumption might be a secondary or tertiary cause in a chain of causes (i.e. the chain of causes and effects that occur within the body before relaxation is experienced.) In the context of its comparison to design theory, we are primarily concerned with the overall causal relationship, not which enzyme in the stomach produces which effect, or which neurotransmitter fires due to which stimulus.

From the perspective of epistemology and psychology, it is valid to obtain certainty through reference to customary causality, whether in arguing that two independent gods could not coexist without the universe being in utter disarray, or that complex design entails a designer. Theologians, however, prefer to argue from fully rational proofs that do not turn to empirically observed customary causality or Divine revelation, and therefor prefer to refer to the proof from design and providence in their discussions of Allah's Knowledge, after having demonstrated the necessity of His having the attributes of Existence, Beginningless Eternality, Endless Eternality, Independence, Oneness, Power, and Will. That design theory is a valid path to certainty in Allah's Existence is different from its being an effective proof in theological debate where the proofs must be laid out linearly.

3. Already Reasoned to the Foundations of Origination (ḥudūth) and Contingency (imkān) and Experiencing a Cluster of Realizations without Laying them out in an Ordered and Logical Manner

In addition to reference to innate disposition and/or repeated observation with implicit inference to causal association (*tajriba*), when further pressed why one believes that every design needs a designer just as every effect needs a cause, one may find within themselves the realization that the affirmation of this premise is also rooted in their affirmation that everything they witness has a beginning, that the universe had a beginning, and that the universe and all that it contains is utterly in need of a Necessary Creator to bring it into existence. Bringing the universe into existence entails that the Necessary Creator has Power, Will, and Knowledge, since without these attributes the universe could not have been created and its particulars specified.[44] With that, the idea that the complex, interdependent, awe-inspiring order and design in the universe could be absent of Divine Power, Knowledge, and Intent is viewed as absurd since everything is connected to Allah's Power, Will, and Knowledge. As such, one's affirmation of the premise "Everything that exhibits complex interrelationships and dependencies needs a designer" is arguably based on viewing the rational signification of the universe simultaneously from all five vantages discussed herein, which can include the proofs for Allah's having Power, Will, and Knowledge. When constructing syllogistic arguments to rationally demonstrate these truths to another person, one teases out each strand or vantage and constructs multiple connected syllogistic arguments, but when viewing the *āyahs* of the universe through the *āyahs* of the Qur'an, often one moves between vantages subconsciously and reaches their conclusions through intuitive and immediate inference after reflection and observation.

Based on the above reasoning processes, one may obtain certainty that the universe with all of its complex interrelated parts—whether the variegated plants and vegetation that grows in different ecosystems or the forces in the universe that are perfectly attuned to allowing life on earth—is the result of intentional design and arrangement.

[44] The details of the proofs for these three attributes are found in standard books of theology such as al-Sanūsī's *Umm al-Barāhīn* and al-Laqqānī's *Jawharat al-Tawḥīd*.

While the conclusion is sound based on the variety of reasoning processes described above, many theologians—who carefully order the proofs for belief in Allah and His Attributes— prefer to state the argument from design and providence from the vantage of demonstrating Allah's Knowledge and Wisdom, or Power, or Oneness, or the combination of Power, Will, Knowledge, Life summed up as Allah's Volitional Agency. That is, *after* having established that that the universe was brought into existence by a Beginningless, Endless, Independent, Dissimilar, and Singular Creator with Power and Will, only then do the theologians point to the argument from design and providence as evidence of the Wise Creator's Volitional Agency.

One can read the significations of the universe's providential design as indicating that Allah, the All-Powerful and Volitional Creator has profound Knowledge. One may also see the design in the universe as an effect that signifies an effective cause, namely the Wise Creator who designed the subtle qualities of the observed universe. However, this latter signification is formally demonstrated through combined reference to the vantages discussed below.

II. The Proof from Creation and Existentiation (*Dalīl al-Khalq wa-l-Inshā'*)

Allah says in the Qur'an:

> Have they not looked at the camel – how it was created?
> and at the sky – how it was raised up?
> and at the mountains – how they were embedded?
> and at the earth – how it was smoothed out?[45]

Upon witnessing the awe-inspiring qualities of everything one interacts with, whether near—like the camel one rides—or distant—like the lofty skies above—one sees these things as signifiers of their Powerful, Volitional, and Knowledgeable Creator. Allah draws the reader's attention to the wonderous nature of the camel, which provides transport for people and goods, milk, meat, and offspring that provide the same in the future. He calls our attention to the cosmos and the earth's terrain. In reflecting on these, learning their subtle and complex natures, we gain deeper appreciation of the reality of their createdness. Among the significations of created things is their signification of their Creator, Producer, Originator:

> All that I witness in the universe is produced—that is, brought into existence after not having existed
> All that is produced needs a producer
> All that I witness in the universe needs a producer

This proof is built on two principles that are rooted in repeated observation and the natural human disposition (*fiṭra*). The first principle is that everything observed in the universe—the ground beneath our feet, the mountains anchored like tent-stakes, the animals that inhabit the earth with their diverse roles and qualities, the plants that grow in various climates, the sun, moon, planets and stars that move in measured orbits above—is clearly originated, brought into being, not self-created.

[45] Q. al-Ghāshiya 88:17-20.

The second principle as stated in the second premise is that everything created and produced must have a creator. This is the Principle of Sufficient Reason which is axiomatic, immediately known without contemplation; every effect has a cause. From these two premises, it logically follows that the universe must have a creator who produced it since the universe is the collective of all produced phenomena, from quasars to supernovas.

The argument from creation and existentiation requires one to read the universe around one as signifying that there exists a Creator of all of these natural phenomena that one witnesses. Though similar to the argument from origination below which rests on the proposition that the universe had a beginning and therefore needs a creator, it instead focuses one's attention on the createdness of each individual thing one witnesses being originated, produced, created. Similar to the process of obtaining certainty mentioned above with regard to the providential design witnessed in all things, one obtains certainty in the createdness of all things based on repeated observation of the properties of things being dependent on a prior cause that gives them those properties coupled with the innate disposition's affirmation that every produced thing requires a producer. When combined together, the universe's signification of the creation and providential design are the two foundational signifiers focused on in revealed guidance.

Like the verses of design and providence, the verses of creation and existentiation in the Qur'an signify the Existence of the Creator as well as His Power to resurrect all of humanity on the Day of Judgment, and also His Oneness, Volition, Knowledge, and Life.[46] The polytheists at the time of the Prophet Muhammad ﷺ believed that Allah was the Creator, but they associated partners with Him SWT and also denied the resurrection. These verses draw the attention of the reader who denies the resurrection to Allah's ability to recreate humanity just as readily as He created the universe the first time. For the atheist, these *āyahs* direct the reader to necessary existence of the Creator. For the polytheist, these verses point to the Oneness of the Creator, especially when coupled with the following *āyah*:

> Why, were there gods in earth and heaven other than God, they would surely go to ruin; so glory be to God, the Lord of the Throne, above that they describe![47]

III. The Proof from Innate Disposition (*Dalīl al-Fiṭra*) *and Psychology*

Allah says in the Qur'an:

> So, turn your face (and whole being)—truly (away from all falsity)—toward true religion, the primoradial nature (to know and worship Allah) upon which He has created humanity. There is no altering Allah's creation (i.e. no altering of this innate primordial religion). That is true and upright religion, but most of humanity know not.[48]

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[46] 'Izz al-Dīn b. 'Abd al-Salām, *Tafsīr al-Qur'ān*, ed. 'Abdullāh al-Wahībī, 3 vol. (al-Ahsā': Fihrist Maktabat al-Malik Fahd al-Waṭaniyya, 1996), 3:447.

[47] Q. al-Anbiyā 21:22. Translated by A.J. Arberry.

[48] Q. al-Rūm 30:30

The argument from innate disposition is experiential and personal yet confirmed by revelation. Many report that they find within themselves an innate disposition to believe in God. Through reflection on the other proofs mentioned above and below, this innate disposition to believe is confirmed and strengthened through rational proofs. In some cases, the rational proofs are less powerful to one whose innate disposition is unclouded by false doctrines and worldly desires, and, as such, the significations of the *āyahs* of the open book of creation are understood clearly without need for detailed proofs. In either case, Allah effectively tells the reader that if they honestly reflect on their innate disposition, what they find within themselves with regard to the universe being the creation of a Divine Creator will be sufficient proof of Allah's Divinity and sole worthiness to be worshipped. In this case, the significations of universe around one rationally signify the existence of its Creator, and the truth of this rational deduction is further verified by innate disposition. In fact, one may not need to formulate a clear expression of how the universe rationally signifies the existence of its Creator, as their innate disposition recognizes this truth directly. Since this natural disposition is often clouded by cultural influences, reflection on the rational proofs below becomes necessary for many. Additionally, reliance on the natural disposition may not extend to knowledge of all the Attributes of Allah that one must know; those may require further rational contemplation on the *āyahs* of creation and the Qur'an.

IV. The Proof from Origination (*Dalīl al-Ḥudūth*)

Allah says in the Qur'an:

> When the night grew dark upon him he beheld a star. He said: This is my Lord. But when it set, he said: I love not things that set.[49]

This *āyah* alludes to the proof from origination because everything that comes to an end necessarily has a beginning. Everything whose states change—at one moment present, at one moment absent, at one moment here, at one moment there—necessarily has a beginning, otherwise an infinite regress is entailed and an infinite regress is rationally absurd and impossible. One also sees allusion to the argument from origination in the following verse: "We will show them our signs in the horizons and in their own selves until it is clarified for them that it is the truth."[50] From the amazing and ever-changing states and systems in our minds and bodies to the wonderous qualities of the cosmos, we see that the universe and all that is within it must have come into existence after not having existed. There are four explanations regarding the origin of the universe:

> Something (e.g., the universe) came from nothing
> An infinite regress of past causes has occurred
> Something (e.g., the universe) was the cause of itself (i.e., vicious cycle of causality)
> A Necessarily Existent Creator brought the contingent universe into existence.

[49] Q. al-Anʿām 6:75.

[50] Q. Fuṣṣilat 41:53.

Since the first three explanations are rationally absurd, then it necessarily follows that the universe was brought into existence by the Beginninglessly eternal Creator. This is further alluded to by the following verse: "Were they created of nothing, or were they themselves the creators?"[51]

The proof from origination can be expressed as follows:

> All that comes into existence after not having existed requires something that brought it into existence
> The universe came into existence after not having existed.
> Therefore, the universe requires something that brought it into existence.

The universe's rational signification of Allah is most profoundly realized in the argument from origination. It is the example given by scholars when they explain the different examples of rational signification, and it is the primary signification considered in Ayatology. Everything we witness points with rational certainty to the Existence, Attributes, and Perfections of Allah. Some scholars have expressed it as follows:

Created phenomena signify the Divine Name, the Name signifies the Attribute, and the Attribute signifies the Entity of Allah Himself (since an attribute does not exist without an entity to which it is attributed.) For example, a supernova signifies the Divine Name the All-Powerful. That name signifies the attribute of Power which signifies the Entity of Allah. Similar examples can be constructed for other Divine Attributes and Names because everything we witness signifies Allah, His Attributes, and Beautiful Names.

V. The Proof from Contingency (*Dalīl al-Imkān*)

When one looks to the universe around and within himself, in addition to recognizing that it once did not exist, one can also see that its essential property is to be in need of something else. The plants are in need of sunlight, soil, water, and other variables. The rain is in need of a number of variables to be present for the water cycle to function such as the right temperature, the right conditions for evaporation, gravity, etc. Everything in the universe is dependent on something else, making its existence contingent upon something else and therefore merely possible, not necessary. The word "*mumkin*" in Arabic means possible, as opposed to necessary or impossible. The word "contingent" in English carries something of this meaning of being neither necessary nor impossible, and also the sense that something is dependent on something else. Things that are merely possible are dependent upon something else to bring them into existence, and as such may be called "contingent things".

If it is the fundamental nature of all things in the universe to be in need of something else for its existence, and given that all things in the universe are contingent, then either there is an infinite regress of contingent things which rely on other contingent things, or there is a vicious cycle of dependency (a needs b, b needs c, c needs a), or there is a single Necessary Being upon which all contingent things ultimately rely. In other words, the chain of dependency must terminate in a Being

[51] Q. al-Ṭūr 52:35.

who is independent, self-sufficient, and necessary. So, the rational signification of the contingent things of the universe is the existence of the Necessary Being who makes their existence possible.

Allah says in the Qur'an, "Allah is the rich and you are the poor."[52] In Arabic, the word "rich" (*ghanī*) means 'free of need' and the word "poor" (*faqīr*) means 'in need'. So, this verse also carries the meaning "Allah is the free-of-need and you are the needy". As such, this verse alludes to the proof from contingency because the essence of contingent beings is to be in need of the one that brings it into existence, while the Necessarily Existent does not need anything for His Existence.

> The universe is contingent (*mumkin*)
> All that is contingent relies on a necessarily existent being (*wājib al-wujūd*) to designate its existence
> The universe relies on a necessarily existent being to designate its existence.

4.1.1.2. Rational Signification of Miracles as Proofs of Prophecy

The rational signification of the universe when witnessed with the senses and contemplated by the intellect also signifies the truthfulness of the Messenger of Allah, resulting in love and willful following of his noble example. That is, when viewed from the vantage of verifying a Prophet's claim to prophecy, the miraculous phenomena that occur in the observable universe which do not adhere to customary causal relations are contingent phenomena that point to their Necessarily Existent Creator and to His confirmation of the truthfulness of the prophet at whose hands these miracles occurred.

When the companions of the Prophet ﷺ witnessed the splitting of the moon as a proof of the Prophet's ﷺ truthfulness, they understood that the moon could only have been split and returned to its regular form by the Power of Allah, by His Will, according to His Knowledge. Furthermore, understanding that a miracle is an act of Allah intended as a confirmation of a Prophet's claim to prophecy, those who witness it understand that the signification of that act that breaks the normal and predictable natural laws of the universe is that Allah has confirmed the truthfulness of His Messenger through exercise of His Power, by His Will, according to His knowledge. Our knowledge of these occurrences reach us through mass-transmitted reports such that we too obtain certainty in the truthfulness of the Messenger through recognition that these miraculous disruptions of the natural order happened before the eyes of large groups of people; the rational signification of miracles witnessed before our time reach us through assigned signification of words spoken by the companions and those who transmitted from them.

Some have also said that since the Prophet Muhammad ﷺ was the final prophet sent by Allah to all humankind, that everything we see in the universe points to the final law and guidance that he ﷺ was sent with. Just as everything points to Allah's Oneness, which is the central message of revelation, it also points to His SWT Divine rulings. When pure rain falls from the sky, if looked at via the vantage of the Muhammadan Sharia (i.e., the final law given to the Prophet Muhammad ﷺ), then one sees water that is pure and purifying, worthy of use in ablutions, cooking, or purifying objects from filth. When one sees the sun casts shadows of objects that are double their height, one sees the signification of the

[52] Q. Muḥammad 47:38.

time of the afternoon prayer. All acts of worship, including obeying the Divine law, have at their heart the remembrance of Allah. This vantage brings us full circle to the knowledge of Allah, which is the ultimate aim of the science of Ayatology.

4.1.2. Islamic Law

Theology relies heavily on rational signification in interpreting signs within creation to establish the two fundamental components of the declaration of faith, namely, the Existence of Allah and the truthfulness of the Messenger ﷺ. Theology also serves as the basis for other Islamic sciences, including legal methodology (*usul al-fiqh*) and applied Islamic law (*fiqh*), where its principles are frequently applied. For example, Islamic law (*fiqh*) uses rational signification to determine cause-and-effect relationships in order to deduce legal rulings.

- Example of causal reasoning from rational signification: "If there is smoke, there must be fire."
- Example in Islamic Law: "If there is intoxication, there must be an intoxicant. Anything which contains an intoxicant is impermissible to consume."

Islamic law uses rational signification whenever a causal connection between two variables is considered. For example, if consuming a substance produces intoxication, the relationship between the two is deemed—by way of rational signification—causal. As such, since the presence of intoxication rationally signifies the consumption of an intoxicant, then its presence after consuming a particular substance entails that such a substance is impermissible to consume.

Just as smoke signifies the presence of fire, intoxication signifies the presence of an intoxicant. If there's smoke, there's fire; if there's intoxication, there's an intoxicant. Then, by analogy, because consuming wine is forbidden because of intoxication, anything that intoxicates is forbidden too. If the rational signification of the state of intoxication experienced after consuming marijuana is causal, then the knowledge obtained through reading the signification of marijuana's intoxicating state can be applied legally:

> All intoxicants are forbidden to consume.
> Marijuana is an intoxicant.
> Therefore, marijuana is forbidden to consume.

4.1.3. Natural Sciences

In the Natural Sciences, rational signification is not used to infer the existence of the Creator but rather to analyze specific cause-and-effect relationships between material objects. Scientists use this form of reasoning to do the following:

1. Past Signification: Reconstruct past causes from present effects, such as inferring that a stone canyon in the desert was carved by water, meaning abundant water once flowed through it.

2. Future Signification: Predict future effects from present causes, such as observing invasive Burmese pythons in the Florida Everglades and predicting that native species populations will decline due to predation.
3. Present Signification: Observe present causes and their effects.

The first two are forms of reasoning from the observed to the unobserved—the former reconstructs an unseen past, while the latter predicts an unseen future. The third is witnessing both cause and effect in real time.

However, what distinguishes rational signification in the Natural Sciences from rational signification in Theology (*Usul al-Din*) is the level of causality being considered. The scientific method looks at cause and effect within the contingent world—how one created thing affects another—which is called secondary or occasional causality. By contrast, theology moves beyond these contingent causes to infer the Necessary and Wise Originator as the ultimate cause (*primary causality*).[53] For example, when looking from the vantage of secondary causality, the presence of smoke rationally signifies the presence of fire, but when viewed from the perspective of ultimate causality, the contingent and originated nature of smoke signifies the Necessarily Existent Creator. In short, rational signification from the vantage of secondary causality leads from one contingent thing to another, while rational signification from the vantage of primary causality leads from contingent things to the Necessarily Existent Creator of contingent things. The natural sciences in the modern context are concerned with the former, while theology is concerned with the latter.

However, some scholars considered the rational signification of primary causality and of secondary causality to be in the domain of Ayatology (which he called "the science of horizons and selves").[54] That is, Ayatology includes both the rational deduction of the Existence of Allah with His Attributes and Perfections from the rational signification of the universe, as well as knowledge of the qualities and secondary causal (rational signification) or correlative (natural signification) relationships between contingent things. When a person understands that the universe rationally signifies both from the level of primary and secondary causality depending on the vantage and aim of the one reading the signs, and also signifies naturally and through assignment in their respective domains, then one is an Ayatologist inside and outside the lab, in the office, at the mosque, or in the classroom. Ayatology as the science of signs or a semiotics of the natural world studies the observable phenomena in the natural world and their signification of meanings through rational, natural, and assigned signification. This myriad of meanings may pertain to contingent realities—stopping at traffic lights, recognizing fire may be present, the time for prayer has come in—or ultimate realties such as the Existence and Generosity of the Necessarily Existent Creator and His having sent prophets.

[53] To say that Allah is the ultimate cause does not entail that He is the last in a chain of causes. See Qureshi et al, *When the Ordinary Turns Extraordinary*, 16-18.

[54] Al-Samarqandi devotes much of his book to a discussion of the scientific worldview of his time which included the theory of elements and humors. See Şemsuddin Es-Semerkandi, *İlmü'l-âfâk ve'l-enfüs*, 7-9.

4.1.4. Rational and Nomic Judgments Deduced from Rational Signification

Elsewhere we have discussed rational judgments, those judgments made by the intellect without reference to empirical observation of predictable causal relationships in the natural world or consulting revealed sources. For example, when we are reading the rational signification of observable phenomena as signifying the ultimate and necessary cause of all contingent things (i.e., Allah SWT), or when we conceive of 'square' and 'circle' and judge that they are mutually exclusive concepts, we are passing rational judgments. We also discussed empirical judgments (also called nomic or customary judgments) as those that are necessary according to the observed patterns and norms of nature. Our judgments are called nomic judgments when we read the observable phenomena of the universe as signifying a predictable cause and effect relationship which might be changed in the event of a miraculous Divine intervention, as when the fire did not burn Prophet Ibrahim (a), Moses' (a) staff turned into a snake, or the Prophet Muhammad ﷺ split the moon. Empirically or nomically necessary relationships are rationally merely possible—not rationally necessary—as Allah could create smoke without fire.

However, when we use the term "rational" in "rational signification" some terminological confusion could arise. So, one should be aware that when we read the meanings of rational signification, we might produce a purely rational judgment (i.e., the universe is contingent, all contingent things need a Necessary Being to create them), or we might produce a nomic or empirical judgment (i.e., where there is smoke, there is fire). Both are reasoning from an effect to a cause, but the purely rational judgment deems that the effect *rationally necessarily* follows from the cause with regard to the universe signifying a creator, whereas with regard to smoke signifying fire, the purely rational judgment is that it is *rationally merely possible* that smoke signifies fire. However, the nomic judgment deems that the contingent effect's following from the contingent cause is *nomically necessary*, and as such, smoke rationally signifies fire necessarily when viewed via the lens of nomic judgments of secondary causality, but merely possibly when viewed through the lens of purely rational judgments, as discussed above.[55] Restated, the nomic judgment is that fire causes burning, but the rational judgment is that fire may or may not cause burning, depending on Allah's Will, because all contingent things point to a Necessary Creator who ultimately creates all apparent causes and effects. This is not a contradiction, because nomic necessity only means that at the secondary causal level fire and burning are predictably correlated and deemed occasionally[56] causally connected, but at the level of Ultimate causality, this correlation or concurrence of fire and burning is merely possible and contingent, not necessary, as Allah can choose not to create burning in the presence of fire. In other words, rational signification of observable phenomena leads to purely rational judgments when

[55] See Marwan Tayyan et al, *An Applied Epistemology, General and Religious*, 30-33 and Qureshi et al, *When the Ordinary Turns Extraordinary*, 16-18.

[56] "Occasionally" is a technical term for describing the view of apparent cause and effect in the philosophy of Occasionalism which, in an Islamic context, refers to the argument that Allah creates the apparent cause and the apparent effect in a predictable manner such that the laws of nature and laws of human actions (i.e. halal and haram) are consistent and, as such, we are accountable in a court of law and on the Day of Judgment for choosing an action with a predictable occasional effect.

viewed from the vantage of primary or Ultimate causality, and it leads to nomic judgments when viewed from the vantage of secondary causality.

4.2. Natural Signification and its Role in the Sciences

As mentioned previously, some scholars considered the purely rational and the nomic judgments deduced from rational signification to entail that natural signification was not a category of signification at all, since both the purely rational and the nomic judgments are the result of deducing cause from effect. To deduce cause from effect is to judge that there is a rational entailment between the presence of the cause and the presence of the effect, and that rational entailment is the essence of rational signification. Others said that if the one observing the presence of redness in one's cheeks did not know that there was a rational entailment between redness and shyness (i.e., a causal connection), then since it was a natural phenomenon and merely a correlation of predictable customarily co-occurring phenomena, it would be counted as an instance of natural signification.[57] From this, it becomes clear that a single phenomenon—such as reddened cheeks—can signify knowledge via rational or natural signification depending on the vantage through which the person is viewing the phenomenon.

For the purposes of this essay, Natural Signification will refer to a correlation between phenomena without consideration or knowledge of the cause. It will refer to the symptomatic or diagnostic signification of an existent symptom which points to a probable diagnosis, like redness signifies shyness, yellowness signifies jaundice, a cough signifies bronchitis, or the exclamation of "ouch!" or "ack!" signifies pain. The term "symptomatic" is applicable to medical contexts, but is not limited to them. One could read some natural significations as being symptomatic of good or bad character rather than a particular medical diagnoses. Reddening cheeks could be a signification of humility, a calm and relaxed demeaner a signification of kindness, and calloused hands a signification of being hardworking. Likewise, a farmer may see the presence of certain birds as signifying an early planting season, or hear the particular sounds of chickens clucking as signifying the presence of a fox, or the presence of worms as signifying the richness of the soil.

Whenever the presence or absence of certain natural phenomena is symptomatic of the presence or absence of other natural phenomena—without requiring knowledge of a direct causal relationship between the two—this may be understood as an example of natural signification. Natural signification plays an important role in the natural sciences and those sciences, crafts, and trades that rely on them. When sciences such as medicine overlap with Islamic Law, then natural signification enters into the discussion. For example, some scholars of Islamic Law considered specific forms of music therapy warranted when prescribed by a medical doctor. In such contexts, even some kinds of musical instruments whose use was considered impermissible by some became permissible as part of a medicinally therapeutic intervention.[58] If certain symptoms signified the presence of a particular

[57] ʿAbd al-Ḥaqq al-Khayrābādī, *Sharḥ al-Mirqāt*, ed. ʿAbd al-Ḥamīd al-Turkmānī (Amman: Dār al-Nūr, 2019), 147-148.
[58] "[The oud instrument is impermissible] although, if two trustworthy medical practitioners attest that nothing can help with a person's illness except the oud instrument, one will act according to their testimony and listening to the oud

ailment through natural signification, then the legal ruling for the use of that particular kind of music was affected.

In theology, one phenomenon's natural signification of another might fall under the observation of the magnificent order and design in creation, and as such, contributes to the proof from design. For example, the presence of wolves passing by your hillside cabin in late winter may signify an early snow melt further up the mountain. This is because wolves are known to track prey species—such as deer or elk—as they move uphill to graze on early blooming grasses and shrubs exposed by melting snow. While the wolves do not cause the snow to melt, and the snow melt does not directly cause the wolves to pass by your cabin as they ascend the hill, the presence of wolves in late winter is a natural signifier of an unobserved environmental shift, namely snow melt at higher altitudes. Such interrelations in ecosystems are part of the finetuned design one witnesses in natural processes, and as such, inform one's scientific understanding and theological reasoning about Allah's Wisdom and Power.

4.2.1. Correlation and (Super)natural Signification:

The natural world consists of material phenomena that can be observed through the five external senses, whether directly or with the aid of scientific instruments. It also consists of those that are rarely witnessed and not easily replicable in a laboratory making them difficult to fit into most current definitions of natural science. Angels and jinn are beings made of created materials. Angels are made of light and jinn are made of smokeless fire, but whether this entails that Angels consist of photons and jinn consist of gases and ions is not known. They are not usually witnessed by most people, and we primarily know about them from the epistemological channel of revelation. Although Prophets see angels in their angelic form, and in some cases other humans will see angels in human form or jinn in their original form, they do not enter into the discourse of Natural Science because of the inability to experiment on them as physical phenomena. However, through repeated observation, if the presence of certain physically sensible phenomena signifies an angelic, jinn-related, or other unseen correlation or cause, such signification cannot be discounted. Each science has its scope, and in the case of Ayatology, the scope can extend beyond the physically sensible world of nomic causality and correlation. We will return to this in chapter three when we discuss the "expanded laboratory" of Muslim scientists.

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becomes permissible for him, like taking impure medicine which has alcohol [out of dire necessity]." Shams al-Dīn al-Ramlī, *Nihāyat al-Muḥtāj ilā Sharḥ al-Minhāj*, 8 vol. (Beirut: Dār Iḥyā' al-Turāth al-'Arabī, 1993), 8:297. This does not mean that any style of music or song can be labeled "therapeutic" and thus deemed permissible because the fatwa only pertains to a particular instrument. Additionally, it does not address impermissible lyric content nor styles of music that are culturally associated with drugs, alcohol, and impermissible actions. The disagreement over which musical instruments are permissible presumes lyrical content is already permissible. Poems and lyrics with impermissible messages are impermissible even if sung without musical instruments. Instrumental music, considered by many scholars to be impermissible due to associations with alcohol consumption and other vices, is considered impermissible regardless of having permissible lyrics or no lyrics at all.

Navigating this *fiqh* issue requires consideration of lyric content, instrumentation, context of performance, and psychological impact. The fatwa cited here demonstrates a particular instance where lyric content and context of performance are not discussed, only instrumentation and psychological impact. In other words, the reader is not advised to make any life choices based on this fatwa other than to consult experts.

4.3. Assigned Signification: Assigners, Parts of Speech, and Interpretation

4.3.1. Created Assigners: Human, Angel, Jinn, and Animal Assigning Signified Meanings

Assigned signifiers are phenomena in the universe that point to a meaning based on someone assigning it to the meaning. To assign meaning to a sensory phenomenon is to first conceive of the meaning and then intentionally assign it to a particular sensory phenomenon—such as a word, symbol, or gesture. Those assigned by created beings includes human's productions of new words in a particular language, street signs, bodily signals, sounds, etc. Angels, jinn, and any other rational being that is unseen to most humans may also assign meanings to phenomena, but those are beyond the scope of the author's knowledge and the intent of this essay. Animals using scent, vocalizations, or constructed structures to signal meanings—such as warnings or mating calls—are analogous to the assigned signification of meanings done by humans except that rational beings assign by choice, mental conception, and reason while that which non-rational beings produce is likely attributable to instinct, genetic inheritance, or some form of mental process that is different from human rationality. However, both are examples of created beings perceiving assigned meanings signified by physical phenomena.

4.3.2. Divine Assigner: Divine Assignment of Meaning:

As for Allah's assignment of meaning to physical phenomena beyond their rational or natural signification, there includes the setting of the sun signifying the time for maghrib prayers, or the crescent moon signifying the start of Ramadan. While these are not rearrangements of natural phenomena into intentional forms (i.e., sounds, signs, structures, symbols, tones, etc.) as we see with significations assigned by humans, they are natural phenomena to which Allah has assigned a particular legal (*sharʿī*) meaning beyond their rational or natural significations. Allah has also assigned meanings to the ruins of bygone human civilizations that, for the perceptive and conscientious believer, are signs pointing to rulings, lessons, and truths about our own human fragility and broader purpose.

Allah also created the human capacity for language, and while human languages develop with the intentional and unintentional input and changes introduced by humans, some scholars argue that Allah is the original assigner of words and meanings (presumably in the original Arabic language).[59] For example, the Prophet Adam (a) was taught the names of all things, and is portrayed in the Qur'an as speaking a fully developed language. Upon Prophet Adam's (a) creation, the Angels used language to ask Allah SWT why He created humanity, and Iblis used language to explain his arrogant and prideful reason for disobeying Allah's command to bow to Adam (a). All of these discussions were carried out using language, which shows us that language pre-existed human existence and was spoken by Angels and Jinn.

Allah also uses language to communicate with His creation, as we see most clearly in the revealed books, such as the Qur'an, Tawrāh, Injīl, and Zabūr. Allah commands His servants to use language in

[59] See Ibrāhīm al-Akīnī, *Matn fī al-waḍʿ* in Ramazan Demir, "Eğinli İbrahim Hakki Efendi ve Mentnun fi'l Vazʿ Adli Risalesi," *Şarkiyat Mecmuası* 0 (December 2011), 47-48.

worship; ours is not a silent and wordless meditation but rather worship filled with expressions of praise, glorification, and supplication, along with recitation of the Qur'an. Verses from the Qur'an are recited for particular occasions, as are specific supplications (*duʿāʾ*) and remembrances (*adhkār*).

4.3.3. Linguistic Signification and Ayatology

Due to the centrality of language's assigned meanings in revelation, worship, and so many other domains of human life, understanding the different ways that words signify meanings is of great importance for the truth-seeker. While Ayatology primarily focuses on rational and natural signification as a means of ultimately achieving knowledge of Allah, His Attributes, and Perfections, it also includes linguistic signification since it is yet another example of how sensory phenomena—spoken, written, and signed words—signify meaning and also because the very ability to signify meaning through the variety of categories of linguistic signification is itself an āyah. Allah says in the Qur'an:

> And of His signs is the creation of the heavens and the earth and the diversity of your languages and your colors. Indeed in that are signs for those who know.[60]

This is another verse that draws the reader's attention to the signs on the horizons—i.e., heavens and earth—and in the selves, that is, diversity of languages and colors. The term often translated as "languages" is literally "tongues", and in this context it refers to the diversity of languages, such as Arabic, Persian, or English as well as the differences in the sounds of our speech, such that we can recognize one person from another.[61] Our testimonies in court and our contractual language in commerce are made possible through language, as are all the distinctions and shades of meaning we aim to understand and express in various contexts. Likewise, a baby distinguishes her mother's voice from all others, and very rarely do two people sound exactly the same. The blessing of language is made clear by these features; its very act of signification and distinguishing is a sign of Allah's Power, Wisdom, and Generosity, and it is by contemplating its varieties of significatory power that we come to know Allah. It is also through the significatory power of language and its varieties of modes of signification that we come to know the meanings of the revealed scriptures. Ayatology is the "science of horizons and selves". Since language is one of the signs within ourselves, as demonstrated by the above-mentioned verse, contemplating it as such leads to a deeper understanding of how it functions, leading to awe similar to the way the deep study of any other natural phenomena of the universe, such as ecosystems, anatomy, or weather produce amazement and increase in faith. Understanding how language signifies meanings, while in and of itself is awe-inspiring, is also central to understanding the *āyahs* of the Qur'an. Language is therefore central to Ayatology due to its dual significatory power as a natural phenomenon that signifies rationally as well as through assignment.

4.3.3.1 Varieties of Linguistic Signification and Avoiding Misinterpretation

One who seeks to know the intended meaning of any assigned verbal signifier (i.e. words) benefits from knowing that words can be categorized according to whether they signify their original literal

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[60] Q. al-Rūm 30:22.

[61] Fakhr al-Dīn al-Rāzī, *al-Tafsīr al-Kabīr: Mafātīḥ al-Ghayb*, 16 vol. (Cairo: Dār al-Ḥadīth, 2012), 13:108-110. See also Abū-l-Ḥasan al-Māwardī, *al-Nukat maʿa-l-ʿuyūn: Tafsīr al-Māwardī*, 6 vol. (Beirut: Dār al-Kutub al-ʿIlmiyya, n.d.), 4:406-407.

assigned meaning or otherwise. Knowing the intended meaning is crucial when reading texts of all kinds, most of all the Qur'an and hadith. It is also important for those studying literature and poetry when the original intent of the author is elusive or disputed. The scholars have usefully divided words according to how they relate to their coined meanings as follows:

4.3.3.1.1. Parts of Speech

Grammarians and logicians divide words as parts of speech according to what role they play in creating propositions, arguments, exclamations, declarations, wishes, supplications, etc. and other expressions of meaning. Arabic grammar has three main parts (nouns, verbs, and particles) along with other categories subsumed under each of the three, such as pronouns and adverbs. English grammar has at least eight parts (nouns, adjectives, pronouns, verbs, adverbs, prepositions, conjunctions, and interjections). An Arabic verb signifies an action, when that action was done, and who did it, while a noun in English signifies a person, place, thing, or idea. The science dedicated to discussing the different kinds of assignments that produce parts of speech is the science of linguistic assignment (*ʿilm al-waḍʿ*).

4.3.3.1.2. One Word with Multiple Meanings (*homonyms*) *or One Word with One Meaning and Multiple Referents* (*Common Nouns*)

Sometimes a word with the same spelling may have been assigned on separate occasions for different meanings. For example, the word *ʿayn* in Arabic means well-spring, eye, and spy. In this case, each expression with the same spelling and pronunciation points to different meanings by design. These are called homonyms or univocal words. In other cases, a single word might have one meaning that signifies multiple possible referents without any restriction. That is to say, the word applies to all for which it is appropriate, as when the word "human" applies to any possible being that is a 'rational animal'. This may be called a "generic noun" or, in English grammar, a "common noun".

4.3.3.1.3. Original and Transferred Meanings: One Word Signifies an Original Meaning as well as Transferred Meanings

Other words have only one original assigned meaning, but sometimes the word signifies that original meaning and other times it signifies a related meaning. Words with original meanings that were then transferred to a related meaning which, over time, come to replace the original meaning are called "transferred words". There are three types of transferred words: transferred by usage in revelation, technical convention, or general cultural convention. Words whose meanings were transferred by their use in Divine revelation include the word "*ṣalāt*" which was originally coined to mean *duʿāʾ* (i.e. supplicating or asking for something) but its usage in the Qur'an and subsequently in religious discourse came to refer to the specific set of movements that include standing, bowing, prostrating, and reciting the Qur'an with certain preliminary conditions (*shurūṭ*) in place.

In other cases, a word may have had an original usage in the language but over time cultures came to use the term in a more specific manner. For example, the term "*dābba*" used to mean any animal that walked or crawled on the ground, but over time, it came to be used to refer to four-legged animals, especially those that were used for transport or other burdens (like camels or mules). In English, the word "subjective" used to mean 'related to the subject (i.e., doer of the verb)' and later, in common

usage, came to mean 'according to mere personal opinion or preference'. This is an example of transferred meaning through cultural convention.

As for transfer through technical convention, this refers to a specific group of specialists taking a word that had a particular original meaning in the language and then applying it as a technical term with a more limited meaning in a craft or science. For example, the word "accident" was assigned to mean an unintentional action in the English language, but for Aristotelian philosophers and scholastic theologians, they use the term to mean a non-essential property that might apply at one moment and not at another, such as a house being red at one time and then later painted white. In the technical philosophical sense, "redness" is an accident, whether the color red was used intentionally by the painter or unintentionally (i.e., accidentally in the non-technical sense).

4.3.3.1.4. One Word with a Root Literal Meaning and a Derived Figurative Meaning

In other cases, a word has a primary meaning in the language, but there are other related meanings that can be intended by that word when it is understood from context that the primary meaning cannot be intended. This is the difference between literal and figurative usages. For example, the word "lion" was originally assigned to the carnivorous feline who is distinguished by its roar. However, it came to be used figuratively as a metaphor for bravery, as when one says "Zayd is a lion".

4.3.3.1.5. Textual Interpretation: Tafsir, Hadith, etc.

Words whose meanings have shifted from their original assigned meanings to other meanings either through Divine revelation, cultural development, or technical usage are called transferred words (*manqūlāt*), and sometimes they never or rarely to return to their original meanings. Words whose original assigned meaning is still in use but in certain contexts a derived figurative meaning is intended include metaphors and metonyms. Understanding when a word is used in its original, transferred, or figurative meaning is crucial, especially in understanding the Qur'an and hadith, and also in understanding literature, cultural dialects, legal cases, or any of the sciences we study.[62]

Grammar, logic, rhetoric, disputation, the science of linguistic assignment, and legal methodology, all treat the subject of the assigned significations of words. This is because they are viewed as instrumental sciences that enable one to study the sacred sciences of Qur'an and hadith interpretation. The most important application of the knowledge of assigned verbal signification, especially in Qur'anic interpretation, is to know when a word is intended in its original literal meaning and when it is intended as figurative, culturally transferred, technically transferred, or transferred by revelation.[63]

[62] If a word is being used for other than its assigned meaning it could be as a transferred usage or as a figurative usage. Determining which is important because the default interpretation in a literal/figurative context is to take the literal meaning until contextual evidence is sufficient to determine that it must be figurative. But in transference, the transferred meaning is the default meaning unless context determines that the transferred meaning is unlikely and the original meaning is intended. This reasoning, just as it is critical for Qur'anic interpretation, is equally important in legal disputes over language in contracts. Many a case in court has turned on whether a word should be taken according to its dictionary definition or if context is sufficient beyond reasonable doubt to rule out that literal meaning.

[63] Words in their technically transferred meanings will not occur in the Qur'an.

For example, in the Qur'an we read "The believers are brothers, so make peace between your brothers and be mindful of Allah so that you may be shown mercy."[64] (Q 49.10). Al-Rāghib al-Iṣfahānī defines "brother" as:

> …one who shares with another a birth connection, either from both parents, one parent, or through nursing. It is also metaphorically extended to anyone who shares with another in tribe, religion, profession, business dealings, affection, and other contexts where connections exist.[65]

While it is unlikely that there was ever a disagreement over whether "brother" should be used literally such that any believer should inherit from another believer just as he would from his blood brother, understanding when Allah uses figurative language is crucial to avoid other theological and legal controversies that have arisen in the past.

The inability to precisely identify the meaning intended from a word with multiple meanings often leads to the pernicious and dangerous logical fallacy of equivocation wherein two univocal terms are used ambiguously to make an invalid and misleading argument. For example:

> Whatever is right [correct] should never be taxed.
> A salary for one's labor is a right [legal entitlement].
> A salary for one's labor should never be taxed.

Regardless of one's opinions on taxes or the truth of either premise, in the first premise "right" signifies the meaning 'correct' and in the second premise "right" signifies the meaning 'legal entitlement'.

In every science, recognizing words with multiple possible signified meanings is crucial to proper understanding, whether in law, history, Qur'anic interpretation, or the natural sciences. Even in everyday life we rely on our knowledge of assigned signification; if one is told that he has bats in his attic, he would probably want to know if he should call wildlife control, the local little league baseball team, or a psychologist.

[64] Q. al-Ḥujurāt 49:10.
[65] Al-Rāghib al-Iṣfahānī, *Mufradāt alfāẓ al-Qurʿān*, ed. Ṣafwān Dāwūdī, 4th ed. (Damascus: Dār al-Qalam, 2009), 68.

Chapter 5

WHAT HAPPENS WHEN DIFFERENT SCIENCES HAVE THE SAME OBJECT OF INVESTIGATION?

SAME SUBJECT MATTER, DIFFERING VANTAGE POINTS

How we look at things changes how we see them. Someone who is looking to organize their books might see a bookshelf and see the signification of its primary purpose of holding books. A carpenter, however, might first see the material from which it was made and then note the particular design used to arrange the various cuts of timber into its specific form. An antiques dealer might see the very same bookshelf and its material, form, and purpose might all point to its being a signature work of a well-known designer. All are looking at the same signifier—a particular bookshelf—but each reads a different signification depending on their perspective or vantage point. In this case, their varying perspectives were defined by need or expertise respectively. In other cases, a single signifier might signify different meanings depending on the perspectives of the one reading those significations, and those perspectives might be informed by culture, the aims of a particular profession—i.e., medicine's aim to prevent or heal illness or injury—or discipline.

Knowing which vantage point or perspective one is looking from and why is important for anyone whose aim is to know things as they truly are. A person who gazes upon the woods before them with the aim of remembering the Power and Wisdom of their Creator views those trees from a particular perspective for a specific goal. A logger, who looks at the very same trees, assesses which are suitable for cutting, how they will be cut and hauled away, and their market value. An arborist hired by the state looks at the same natural setting and determines which trees need pruning in order to stay healthy and remain unlikely to topple. A biologist looks at the ecosystem and its flora and fauna to identify its qualities, predict its future growth and characteristics, or, perhaps, to understand how it relates to soil erosion and the integrity of its foundations.

A single person might also look at the same signifying object towards different aims at different times, or even at the same time. A Muslim scientist looks at bacteria growing in a petri dish to assess evidence of a particular hypothesis while also standing in awe of the complexity and beauty of the created universe, obtaining both useful scientific information as well as an increase in faith and gratitude. A doctor may look at a particular health problem with the aim of healing her patient while also viewing it from the perspective of a researcher who seeks to develop a vaccine that prevents that ailment from occurring. We read in the Qur'an:

> Say: "Travel through the earth and see what was the end of those before (you): Most of them worshipped others besides Allah."[66]

The ruins left by past civilizations remind us of the rise and fall of great nations, the limits of human power, and the outcome of rebellion against Divine guidance. One who reflects on the ruins of past human civilizations, following the commands and guidance of the Qur'an, obtains their signified meanings. Allah has placed wisdom in every created thing whose observation signifies meanings from which we can reach the realization of ultimate truth and Divine guidance. Those same signs, when witnessed through other perspectives might fail to realize those lofty significations, yet still yield useful knowledge, like an archeologist learning something about how previous people lived, built buildings, or grew their food. Ayatologists, however, read the signs both for their ultimate wisdom as well as secondary significations relevant to the various different aims and roles we have in life.

A sign-reader can wear multiple lenses, so to speak, at different times or at the same time. As Muslims, when we are reading signs, our goal is to always be viewing the world through the lens of Ayatology as well as any other vantage point relevant to our situation and aims.

5.1. Priority: Which Signs do we Read and When?

Al-Samarqandī says, "The entirety of the sciences, despite their diverse types and kinds, have as their highest aim and furthest purpose the knowledge of Allah Most High. Knowing Allah is the first obligation on every rational person, the most primary of requirements for every person who has come of age.[67]

When do we read the signs, and when do we ignore them? If we are looking for exit 32 off the freeway and the last sign we saw was for exit 4, we are likely to ignore a number of exit signs until enough have passed that we judge that it behooves us to keep an eye on the signs so as not to miss our exit. If we are looking for a cellphone store in Times Square, we are likely to ignore many of the signs above the storefronts or animated advertisements flashing from billboards that are not tied to our goal, such as a sale at the hardware store, a promotion for a soft drink, or the logo above a shoe store. We rank by priority which signs that our senses process, which significations our intellects assess. Our priorities are determined by our specific aims. If we are looking for a hardware store, we look for the sign above the store that signifies that hardware is sold here. When we look for a barber, we might look for the telltale red white and blue swirl outside the barber shop. A doctor assesses sores in the back of a child's throat that signify stomatitis, while an orthodontist examines the alignment of incisors for indications whether braces are needed. Both are looking at the same landscape, so to speak, and while the orthodontist might notice the signs of stomatitis and a doctor might notice crooked teeth, each 'reads' the signs relevant to their medical specialty and responsibility to the patient.

A biologist noting the subtle details of plant cells under a microscope might not immediately need to contemplate the contingent nature of that plant cell and its ultimate signification of a necessarily

[66] Q. al-Naml 27:69.

[67] Şemsuddin Es-Semerkandi, *İlmü'l-âfâk ve'l-enfüs*, 68.

existent creator in order to record the intended data. A flight traffic controller measuring the direction and speed of the wind blowing across the runway may need to singularly devote her attention to the quantified measurements of the wind that an approaching plane's pilot should be made aware, rather than reason that an infinite chain of causes and effects into the past is an absurd explanation for the existence of that particular gale.

At times, our primary goal is to read the significations of signifiers coined by other people—like street signs or hand signals—and sometimes our aim may be to recognize natural significations such as sores that signify illness or dark clouds on the horizons and the changing weather they signify. Yet, simultaneously, no sign—even a stop sign or word on the page—is ever absent of its ultimate rational signification, namely that the awe-inspiring ordered, created, originated, and contingent nature of every observable phenomenon before us points to the necessarily existent Divine Creator of supernovas, cells, human anatomy, and street signs.

5.1.1. Vantage and Priority in the Sciences:

When we interpret the signification of sensory phenomena around us, we may do so in the context of our daily lives, such as reading street signs or store signs as we drive to the mall. However, most relevant to the aim of this essay is reading signs within the context of different intellectual or scientific endeavors, whether medicine, architecture, urban planning, biology, history, archeology, Qur'anic commentary, hadith studies, grammar, logic, or any other of the multitude of sciences one might study.

Each science looks to a specific subject matter from a particular vantage point for a purpose. For example, the subject matter of medicine is the human body from the vantage or perspective of sickness and health, with the aim to heal and preserve life. A bodybuilding trainer might study the same subject matter—namely the human body—but from the vantage point of strength and muscle growth, with the aim increasing muscle size. The subject matter—the human body—is the same, but the vantage from which it is regarded and the aim which is intended are different.

A meteorologist, on the other hand, does not study the human body. Rather, the subject matter or object of study is the system of weather on planet earth. The vantage from which it is studied is identifying the different kinds of weather patterns, their causes and effects, and the signs that indicate the current and future state of weather patterns in a given area. The aim of meteorology is to be able to predict future weather conditions with high degrees of accuracy for humans to plan their activities. This is a practical aim of meteorology. Another meteorologist, however, might study the same subject matter from the same vantage point, but towards the aim of understanding how weather systems work. This might be called theoretical rather than practical meteorology. Many sciences can be sub-divided into practical and theoretical, though this does not entail that such subdivisions are entirely different sciences.

Multiple sciences can look to the same subject matter from different vantage points and for different aims, while other sciences might study different subject matters towards the same aim. In any case,

sciences are often viewed in hierarchical relationship to each other, one building on the conclusions of another, or one serving to complement the aims of the other.[68]

The ultimate aim of every science returns to the aim of *Uṣūl al-Dīn* and Ayatology (the latter being a sub-set of the former and a means of realizing its truths). The aim of *Uṣūl al-Dīn* as the foundation of all other sciences is to know and affirm the truth in order to obtain salvation. The first truth one must obtain and affirm is knowledge of Allah, His Attributes, and His Perfections, followed by affirmation of the truthfulness of the Messenger ﷺ. Contrary to "scientism"—which wrongly places the study of predictable and/or observable causes and effects in nature as the highest and sole means of obtaining truth—Ayatology begins with contemplating the logical signification of the book of the universe and deducing therefrom the existence of the Necessarily Existent Creator and His Attributes with the aim of affirming Truth and the truthful reporter (i.e. the Prophet ﷺ). That is, first one reads the signs that rationally point to Allah, then secondarily, yet importantly, one reads the empirical/natural/customary signs that point to how things work at the level of occasional and contingent reality.

5.2. Internalization of Signs: Knowledge, Actions, and States

The sign brings to awareness remembrance, thought, and contemplation, as well as the emotions stirred by these three within the soul, such as gratitude, fear, repentance, supplication, determination, steadfastness, and others. Reflect on Allah's statement: "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 - those who remember Allah..."[69]

Sometimes we view signs for an immediate aim, while at others we read significations to obtain a deeper and more enduring goal. Towards the latter, a brief word should be said about how we internalize the signs around us and what effect they should have on our state cognitively, emotionally, and spiritually. Likewise, there are signs whose significations have impacts that we want to avoid, and this is why we lower our gaze or avoid lending an ear to signifiers that are spiritually and psychologically harmful to us.

Knowledge is what is immediately obtained by any given signification. While some knowledge is primarily theoretical and other kinds of knowledge are inherently applicable, all beneficial knowledge is actionable through the heart, tongue, or limbs. A person studying the archeological remnants of a past civilization can recall the Qur'anic framing of ruins: humility in accepting the truth of revelation, the finitude of this life and the impending judgment, and recognition of Allah's Grandeur and Power over all things. This act of contemplation is an act of the heart as it considers the profound lessons that go beyond merely cataloging and analyzing useful historical and archeological information about past civilizations which also serve the aims of the sciences of archeology, history, and other sciences.

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[68] The sciences, though they study different subjects from different vantages, do not exist in isolation. Instead, there is a hierarchy of the sciences since the specific subject matter studied in one science may have a broader category that is studied in a more general science.

[69] Q. Āl ʿImrān 3:190-191

One studying medicine can also contemplate the "signs in their selves" in order to know the truth regarding Allah, His Messenger, and the Qur'anic revelation, while also applying the knowledge obtained in medical school itself through practicing medicine. This has an internal impact and value when done for the sake of Allah by intending to serve humanity through the performance of a communal obligation; when beneficial knowledge is put into practice in the heart and on the limbs with sincerity and devotion to Allah SWT, it impacts the heart, producing spiritual states such as nearness to Allah, contentment, gratitude that Allah commands us to endeavor to obtain.

Allah says in the Qur'an, "Those who have believed and whose hearts have rest in the remembrance of Allah. Verily in the remembrance of Allah do hearts find rest!"[70]

Belief is obtained through affirming what one knows with certainty about Allah SWT. That affirmed knowledge is strengthened through the heart and tongue's act of remembrance, resulting in the heart's experience of rest and peace. All acts of sincerity done in conformity with the Shari'a, great and small, public and private, result in lofty spiritual states, including contentment, nearness to Allah, love of Allah, patience, reliance on Allah, to name but a few.[71]

In closing, knowledge, actions, and states are the fruits of signification. Other than inspired knowledge, instinctive knowledge, and muscle memory or the likes, we obtain our theoretical and actionable knowledge via significations. Whether those significations are from effect to ultimate or contingent cause, or from symptomatic natural qualities signifying illness or emotional states, or words spoken by a teacher, written on a page, embossed in brail, represented with lines, hand-signals, gestures, or signposts, they point to knowledge which, when free of blame or harm, is actionable in heart (through contemplation and remembrance), tongue (through expressions of praise and gratitude, speaking truth to others, etc.), and/or limbs (prostration, charity, service, etc.).As such, is the beginning of a path to sincere remembrance of Allah and obtaining the spiritual states to which all Muslims must aim (gratitude, patience, reliance, etc.).

Hearts are polished by frequent acts of sincerity on the limbs, contemplation in the mind, and remembrance in the heart, and reading the signs in creation all around us can lead to direct realization of these aforementioned spiritual states. Some scholars describe this as the eyesight (*baṣr*) connecting directly to insight (*baṣīra*). It is a lofty goal, but for some, all the signs immediately signify that Allah is Necessarily Existent, All-Powerful, Volitional, Wise, Singular, Creator of the sign and the one reading the sign, producing states of awe, gratitude, nearness, and more.

Whether insight occurs after reflection or immediately, through intellectual or spiritual processes, the Qur'an calls us to a theology of awe, gratitude, and contemplation that leads to true happiness and contentment in this life and the next. Since we are ever surrounded by signs, we carry our theology of awe, gratitude, and contemplation in hearts, whether at home, on the road, or in the mosque, lab,

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[70] Q. al-Raʿd 13:28.

[71] For more information on spiritual states of the heart, see Abū Ḥāmid al-Ghazālī, *The Forty Principles of the Religion: al-Ghazālī's Adapted Summary of Iḥyā' ʿUlūm ad-Dīn*, tr. Nasir Abdussalam (London: Turath Publishing, 2016); Hamza Yusuf, *Purification of the Heart: Signs, Symptoms and Cures of the Spiritual Diseases of the Heart* (United States of America: Sandala, 2012); Abu l-Qasim al-Qushayri, *Epistle on Sufism*, tr. Alexander Knysh (Reading: Garnet Publishing, 2007); Abdullah al-Ansari, *Stations of the Wayfarers*, tr. Hisham Rifai (Albouraq, 2011).

classroom, office, or market. We are ever Ayatologists, if our hearts stay focused on contemplating the signs and remembering Allah.

Chapter 6

AYATOLOGY IN THE LAB: ITS RULES, AIMS, AND LIMITS

6.1. The Ayatologist's Expanded Laboratory

The Ayatologist's Expanded Laboratory provides an integrated framework for studying the universe, encompassing both the material and spiritual dimensions of existence, as well as ultimate deductions from the rational signification of observable phenomena. Unlike the conventional scientific lab, which restricts itself to the study of coarse-material phenomena, the Expanded Laboratory introduces both a horizontal expansion—to spiritual phenomena (subtle-material or immaterial[72])—and a vertical expansion—to deductive reasoning that leads to affirmation of the Necessarily Existent Creator through contemplating the rational significations of observable phenomena.

The Expanded Laboratory's object of study is contingent universe and its relation to the Divine. It therefor investigates, to the extent humanly possible, the universe and all it contains, including:

- Material phenomena in the seen and material world (*'ālam al-shahāda*/*al-mulk*) which are studied via the sciences of (*fiqh*), physics, biology, medicine, archeology, engineering, etc.
- Spiritual phenomena in the *'ālam al-ghayb*/*al-malakūt* (the unseen/spiritual world) which are investigated via Islamic medicine, psychology, *tazkiya* (the science of spiritual purification), etc.

The human being observes the universe with external and internal senses and contemplates its rational signification of and relation to the Divine, observes, hypothesizes, and tests qualities, correlations, and secondary causal relations in line with the vantages and aims of the various sciences, and affirms the unseen interactions between the seen and unseen dimensions[73] as explained in revelation while increasing in humility, awe, gratitude, reliance, and faith.

[72] Some scholars argue that all created things are material, there being course-material things like planets, stars, animals, plants, minerals, etc. and subtle-material things like the human soul, angels, jinn, etc. Other scholars posit that there are created things that are immaterial, including the human soul. In this text, the term spiritual will be used to include unseen phenomena such as souls, angels, jinn, etc. without advancing an opinion about their being subtle-material or immaterial things in existence.

[73] See Mostafa al-Badawi, *Man and the Universe: An Islamic Perspective* (Swansea: Awakening Publications, 2010).

6.1.1. Method of Investigation

The methods of investigation used in the Ayatologist's Expanded Lab include observational experiment-based verification of material and spiritual phenomena, deductive reasoning to Ultimate and contingent realities, and truthfully reported and verified knowledge from the Qur'an and Sunnah of the Prophet ﷺ.

I. Deductive Reasoning to Ultimate Truth (*Rational*)

This method includes the mind's reasoning from the rational signification of *āyāt* (signs) in the contingent and created universe to:

1. The affirmation of Allah as the Necessarily Existent Creator, along with His Attributes and Perfections known through rational reflection alone and affirmed and enhanced by revelation.
2. The affirmation of the truthfulness of the Prophets (upon them be peace), their attributes, also known through rational reflection alone and affirmed and enhanced by revelation.
3. The realization of spiritual states such as patience, reliance, love of God, etc. which are entailed by rational reflection, prescribed by revelation, and enhanced through spiritual devotion and practice.

Including deductive reasoning to ultimate necessary causality rather than contingent causality—once common and uncontroversial in Western thought—allows the laboratory to expand vertically beyond its usual focus on sensory observation, induction, and deduction limited to contingent material causes. This expansion makes room for all knowledge that arises through deductive reasoning based on the rational signification of observable phenomena. In other words, the inclusion of unrestricted deductive reasoning expands the scope of investigation of the universe and its significations to reasoning about contingent beings' signification of necessary being, namely the existence of Allah, the Necessarily Existent Creator.

This method relies primarily on the epistemological channel of reason or rationality, as it refers the data of sense and reason to the intellect alone without need for repeated observational testing (*tajriba*) or consideration of predictable causal relations (*ʿāda*).

II. Observational Experiment-Based Verification (*Empirical*)

This method includes two kinds of inquiry—one for material phenomena and one for spiritual phenomena—both rooted in observation, testing, and causal reasoning. This method relies on the empirical epistemological channel in the sense that empirical knowledge is "that which is gained through experience or repeated trial" and deals with *nomic* or predictable patterns of regularity.

II.I. Material: Data-collection and Inferring Broad Theories

The scientific method is a method rooted in inductive reasoning (*istiqrā'*), repeated observation with implicit causal inference (*tajriba*), and deductive[74] reasoning from material effects to contingent material causes (or vice versa). These three forms of knowledge obtainment—induction, causal inference after observation, and formal deduction—along with quantitative reasoning in some cases produce data points from which broader claims and theories are inferred through sudden-flash realizations. This latter form of intuiting broader conclusions—such as E=MC2—will be referred to as "scientific inference", a kind of reasoning that occurs after considering a collection of sensory data—which in some cases will be further processed through quantified reasoning—and experiencing a sudden realization where premises obtained from that data and their conclusion appear instantaneously and simultaneously in the mind, resulting in either certain or probabilistic confidence in the conclusion. Propositions obtained through scientific inference would be called intuited propositions (*ḥadsiyyāt*) in the Islamic logic tradition, which describes a sudden realization after consideration of multiple data points. Much deliberation on these data points may occur over a long period of time, but when it all comes together and the sudden flash or realization occurs, the premises and conclusion are presented to the mind in an instant. It is, in a sense, the technical description of an "aha! moment".

Originated or popularized by classical Muslim scientists like al-Birūnī, further systematized by European scientists in later centuries, and continuously developed by scientists and philosophers of science around the globe to this day, this approach includes:

- Systematic observation and precise measurement
- Formulation of falsifiable hypotheses
- Controlled, repeatable experimentation
- Objective data collection and analysis
- Implicit causal inference from consistent patterns
- Revision of theories based on evidence
- Scholarly neutrality and cross-cultural validation

Inductive reasoning, statistical analysis, repeated observation with implicit causal inference, and deductive reasoning about contingent causality, are common elements of the scientific method which individually may produce certain or probabilistic data-points. These productions of the scientific method may be all that a scientist works with in their career as they work towards assessing the effectiveness of medicinal treatments, improve upon the design of bridges, or search for cures to diseases. Others, however, will take the further step of developing broader theories or analyses via scientific inference which are then returned to the scientific method for further testing, refining, or application. Just as one person might prefer ibuprofen over aspirin based on experience, so too one might prefer one dua over another. These are simple examples of material and spiritual

[74] What is intended by the term "deductive" is formal reasoning, including syllogisms, where the conclusion is entailed by the form of the reasoning. For example, the conclusion of a syllogism is entailed by the form of its premises, such that if the premises are true, the conclusion will necessarily follow.

experimentation and derivation which serve as examples for more complex, nuanced, and formal forms of experimentation and knowledge obtainment.

II.II. Spiritual: Ijtihād in ʻIbādah and Theories of Spiritual Development

The previous section discussed the application of scientific reasoning—including method and inference—to the physical world, which is called *al-mulk* in the Islamic sciences. In this section, we explore the application of the scientific method and scientific inference to the spiritual world and its phenomena. This domain of the created universe is called *al-malakut* in the Islamic sciences. Its inclusion in the worldview and method of the Ayatologist is herein called the horizontal expansion of the laboratory from the study of contingent material phenomena to the study of contingent spiritual[75] phenomena. It is a method of applying reasoning, experimentation, repeated observation, and inferred theorizing to spiritual phenomena, using:

- Observation of spiritual effects of actions, including acts of worship and remembrance as well as spiritually harmful actions such as committing sins
- Investigation of spiritual, psychological, or material causes behind spiritual outcomes
- Experimentation in acts of worship (e.g., dhikr, fasting, duʻā', behavioral change)
- Validation through Qur'an, Sunnah, and lived spiritual experience
- Diagnosis and healing in body, mind, and soul as used in Islamic medicine and psychology
- Scientific inference from data-points derived from methodologically studying the material and spiritual worlds

Just as there is requisite knowledge that must be obtained to safely and authentically experiment, deduce, and infer in the material lab, so too are there necessary qualifications for deep research in the spiritual lab. While non-specialists can participate in material scientific experimentation at home or in the lab—such as testing whether aspirin or ibuprofen is more effective in getting rid of the occasional headache—non-specialists can also safely "spiritually experiment" in the form of reciting duas or reading *āyahs* recommended by the Prophet (s) or qualified scholars.

III. Truthful Reports (*Akhbār Ṣādiqa*) (*Divinely Revealed*)

This method represents the incorporation of knowledge provided by Divine Revelation, including the Qur'ān and Sunnah, which serve as ultimate sources of guidance on unseen realities, ethics, theology that cannot be deduced by reason alone (such as stories of past prophets and nations), and ritual and social practice. Once established through deductive reasoning from the rational significations of the universe, revealed knowledge provides additional depth, detail, nuance, and guidance in all other fields of knowledge, whether generally or specifically. For example, knowledge of medicine—material and spiritual—is primarily obtained through observation and experimentation; however, the Prophet ﷺ also taught about the medicinal qualities of honey, black seed, and other substances, as well as the healing properties of certain verses of the Qur'an and du'as.

[75] The term "spiritual" is short-hand for matters related to the human soul and realm of the unseen including angels, jinn.

Since our epistemological channels of knowledge obtainment include rational, empirical, and Divinely-revealed (R.E.D.), our methods of investigation respectively correspond to them:

- Rational: Rational investigation is deductive reasoning from the rational significations of the observable world, as well as essential meanings that form the basis of our thought and language.
- Empirical: Empirical investigation is to observe, describe, and predict law-like regularities in the natural world through experimentation, and can also be expanded to observable and replicable regularities in the spiritual world. It is to read the natural (symptomatic) and rational signification of predictable correlations, secondary causes, and properties observed in material and spiritual worlds. As discussed earlier, material and spiritual phenomena can signify naturally when correlations of observed phenomena suggest a predictable causal relationship but the specific cause is not considered.[76] Also, material and spiritual phenomena can signify rationally at the level of secondary causality as when any contingent effect signifies its contingent cause. For example, smoke (the contingent effect) rationally signifies fire (the contingent cause).
- Divine Revelation: Investigation via the epistemological channel of Divine revelation is to seek the understanding of assigned significations of the Qur'an and hadith, in order to mine them for wisdom, guidance, and information.

6.1.2. Harmonizing Channels and Methods

Just as the epistemological channels reinforce each other, with some subordinate to others, so too do the different modes of investigation employed in the Expanded Lab function in cooperation with each other. When empirical observation appears to indicate something in harmony with both rationality and revelation—such as the existence of other solar systems—then the strength of observational empirical knowledge dictates whether or not the hypothesis is accepted. If empirical observation appears to indicate something that is rationally possible and therefore generally in harmony with rationality, but it contradicts a clear and definitive interpretation of the Qur'an, then it is rejected in its current form and revised as additional empirical data emerges. However, if empirical observation indicates something in conflict with a merely possible, rather than definitive, interpretation of revelation, then that interpretation can be revised in light of the stronger indications of empirical observation.

Understanding how the differing points of knowledge obtained through the various epistemological channels and their associated methods of investigation relate to each other is the most important contribution of Ayatology to our quest for knowledge. It serves as a "philosophy of science" that guides us through the complementary, competing and, at times, conflicting world views that inform our academic and professional vocations today.

6.1.3. Application Across Fields

Islamic sciences operate fully within the scope of the Expanded Laboratory, integrating both material and spiritual dimensions of diagnosis and treatment, and what is entailed by deductive reasoning such as reliance on Allah (*tawakkul*) and contentment with Divine destiny. In Islamic medicine, this

[76] We called this "symptomatic", as when fever and cough are viewed by a doctor as a symptom of a particular ailment, but naming the virus, bacteria, or other properties that cause the illness or its symptoms are not considered or known.

means addressing not only physical symptoms through lab tests, imaging, and other physical diagnostics, but also diagnosing and treating physical and spiritual conditions through practices like reciting Qur'anic verses and Prophetic supplications, reciting remembrances of Allah (*dhikr*), and reminding the patient to rely (*tawakkul*) on Allah's Omnipotence and Wisdom. Islamic medical practice acknowledges that illness may arise from physical or psychological causes—like psychosomatic responses or placebo effects—as well as spiritual causes. Diagnosis and treatment thus span the material, spiritual, and rational; medication, physical therapies, and spiritual interventions often work in tandem, along with deductive theological truths.

Similarly, Islamic psychology views mental health through biochemical, spiritual lenses, and reasoned faith-based lenses, tailoring treatment to the nature of each individual issue. For example, obsessive misgivings about ritual purity might stem from biochemical causes and brain function alone, spiritual causes alone (such as ego-driven or demonic suggestions), or a combination of the two wherein the spiritual variables exacerbate the material variables. Treatments might call for cognitive behavioral therapy and SSRIs if biochemical and brain-based, or for spiritual interventions like Qur'anic reflection and acts of worship if deemed purely a spiritual malady—or a combination of both, depending on the case. Even in Islamic architecture, while structural concerns must align with the laws of physics and engineering, spiritual principles like sincere intention (*niyyah*) and recitation of Qur'an, supplications, and remembrances infuse the building with Divine blessing (*barakah*). Additionally, while supplication does not replace the need for installing a load-bearing beam, it can protect one from unforeseen harms if Allah diverts a water leak that would have rotted the beam. Supplications are not relied on as replacements for taking the customary means to lead to predictable physical or spiritual effects, but they are relied on for success in or protection from whatever is beyond one's sphere of control.

6.1.4. When Do We Apply Each Science?

In most contexts, the laboratory is largely confined to material sciences, with notable exceptions when acknowledgment of the unseen or spiritual dimensions of reality are mentioned.[77] Scientists—whether religious or secular—enter the lab and operate according their own worldviews, which shape how they interpret data, engage with colleagues, and approach client or patient needs. Muslim scientists and practitioners functioning within the Expanded Laboratory operate with a broader framework—one that integrates material, spiritual, and rational deductive domains. In secular or interfaith professional settings, a Muslim doctor may, for ethical and social reasons, choose to operate strictly within the shared space of material science—for instance, when treating an atheist patient who would not accept spiritual considerations. Yet even in such cases, the Muslim practitioner does not negate the unseen and Ultimate considerations that his worldview affirms. He continues to understand the case through the lens of the Expanded Lab, acknowledging the possibility of spiritual causes and reality of Ultimate truths internally. In contexts where it is appropriate—such as with Muslim patients or in spiritually-informed environments—they may fully express the Expanded Lab's horizontal and vertical dimensions, offering rational deductive reminders and spiritual diagnosis and treatment alongside the material interpretations and treatments. In all cases, the Expanded Lab

[77] See, for example, Ch. 6-8 in Rupert Sheldrake, *The Science Delusion: Freeing the Spirit of Enquiry* (Coronet, 2012).

remains open and available to the Muslim scientist, even if she limits incorporation of some of its principles, data, analyses, and prescriptions to specific contexts.

6.2. Philosophical Smuggling: Bad Ideas in, Good Ideas Out

Popular science videos and writings often portray the subatomic world as place where logic, reason, and the Principle of Non-Contradiction do not apply. Likewise, popular science writers and philosophers introduce and normalize absurdities to the extent that many often fall prey to errant assumptions that just as scientists have effectively cured diseases, developed wonderous technology, predicted eclipses, and mapped DNA, that they must be equally dependable in their philosophizing about the origins of the universe or interpreting the surprising and challenging world of subatomic particles. All scientists—whether operating only in the realm of secondary material causality or the expanded spiritual lab—must be ever on guard against poor, non-scientific, indefensible ideas, and unethical practices being smuggled into the lab. Likewise, they must be on guard against indefensible omissions of methods of reasoning (i.e., deductive reasoning) or epistemically groundless claims (i.e., everything must have a material explanation).

Examples of faulty ideas smuggled into the material lab include spontaneous generation—the belief that subatomic particles, fruit flies, or the universe pop into existence without a cause—and the steady state theory—a now defunct theory that posited that the universe has no beginning or end and maintains a constant density as it expands by continuously creating new matter.[78] Both of these theories rely on the rationally absurd premise that something can come from nothing, and steady state theory adds the premise that the universe existed eternally. While they could still be considered scientific by including observable data that lead to falsifiable and testable claims, they were founded on rational absurdities that can only be posited by refusing to use deductive reasoning (i.e., the lab's vertical expansion).

Other faulty theories that were smuggled into the material lab include Eugenics, which taught "selective breeding" would bring about genetic improvements in human society based on the idea that Anglo-Saxon white people and other northern Europeans were biologically superior to everyone else. While falsifiable theories based on various observations and experiments gave them an air of factuality such that Eugenics was taught as legitimate science for decades, it too was founded on premises that were not scientifically grounded. All of these ideas have been, at one point, considered scientific despite their failure to meet standards of being properly scientific.

Examples of faulty ideas smuggled into the spiritual lab include superstitious cultural practices and beliefs that have no basis in observational or revelational sources, like belief in bad omens or that walking under a ladder brings bad luck. Sciences smuggled into the spiritual lab that are real and have effect, but are impermissible to practice include sorcery (*siḥr*).

[78] Steady state theory was disproven by observational evidence, namely that cosmic microwave background radiation indicates a finite beginning, lending credence to the Big Bang theory. See The Editors of Encyclopaedia Britannica. "Steady-State Theory." *Encyclopedia Britannica*, March 29, 2022. https://www.britannica.com/science/steady-state-theory.

The exclusion or reduction of deductive reasoning is an artifact of European intellectual history's unique struggles and not a universally defensible method of reasoning about the world. When the lab is vertically expanded to include deductive reasoning and its fullest logical entailments—i.e., the Necessarily Existent Creator—a host of baseless, indefensible, and absurd propositions about the universe are discarded, despite the intellectual rigor and expertise in other fields demonstrated by those who proposed them.

When the lab is horizontally expanded to include contingent things that are imperceptible to the five senses, or, in some cases, rarely and not repeatably and volitionally perceptible—i.e., angels—unnecessary denials of spiritual causes and effects on the material world are discarded, allowing for investigation into the impact of prayer, supplication, remembrance, and other spiritual practices. It also allows for application of knowledge known only through revealed sources that nonetheless has seen and unseen impact.

6.3. Complementary and Competing Explanatory Systems

6.3.1. The Material Laboratory as a Shared Epistemic Space

Scientists from various religious and philosophical backgrounds—Muslim Ayatologist, Catholic Aristotelian, Atheist Materialist, Protestant Creationist, Hindu, Reform Jewish, Theravāda Buddhist, etc.—collaborate within the confines of the "Western science" framework. This framework, arguably shaped by historical tensions between the Church and early modern scientists, emphasizes empirical observation, falsifiability, and material causality. Despite their differing ontologies and epistemologies, these scientists can effectively collaborate by focusing on investigation of empirical phenomena, thereby setting aside philosophical divergences in the laboratory and applied context. As for reasoning from present effects to distant past causes, differences between explanatory systems do create significant conflicts.

There is great tension between creationists—who argue that the universe is 6,000 years old and deny any form of species evolution—and scientists of any other explanatory system who consider the evidence for a much older universe to be decisive or defensible, but to generalize this conflict to all other differences between religious explanatory systems and modern science is prejudicial, falsely dichotomizing, and indefensible. Combatting these prejudices is an important area of work for Ayatologists, as reclaiming the role of deductive reasoning to Ultimate truths and allowing for scripture-based interpretations of probabilistic empirical interpretations is central to creating a holistic non-dualistic experience for Muslims in science. Our worldview is not contradictory to the scientific enterprise, even if some materialist atheistic scientists overstep the boundaries of science into irrational and non-scientific philosophizing thereby producing faulty ideas that are smuggled into scientific discourse.

6.3.2. Differing Views of Causality

While empirical observations may be consistent across these perspectives, interpretations of causality can differ. An Aristotelian might attribute the falling of a stone to its inherent nature or "natural

place," aligning with their concept of final causes. A Newtonian perspective explains a stone's plummeting from a high cliff to the ground below through gravitational force. From the perspective of the Copenhagen interpretation of quantum physics, the stone falls due to predictable yet non-absolute regularities, yet nothing prevents it from floating away, despite the drastic improbability of such an event.[79] An Ayatologist posits that while gravity may accurately describe the regularity of a stone's falling at the level of secondary and occasional causality, it is ultimately God's Will and Power that *explains* why the stone falls. These interpretations, while philosophically distinct, do not impede the collaborative empirical study of the phenomenon; the stone will predictably fall, at predictable speeds, with predictable and testable results.

6.3.3. Mathematical Abstractions: Math versus Reality

Mathematical models often employ concepts like actual infinity to facilitate theoretical frameworks, such as in set theory and cosmology. However, their having certain utility in theoretical contexts and the applications that emerge from them does not entail that an actual infinite number of finite things (particles, moments, events) are ontologically real or possible. While models may assume an infinite universe to obtain something of explanatory value regarding finite things, observable reality is finite since the "count to infinity" stops when the counter stops, having never actually reached infinity. Muslim scholars distinguished between the actual infinite succession (*tasalsul ḥaqīqī*) and the potential infinite succession (*tasalsul iʿtibārī*). The former implies a completed, actually realized infinity—a rational impossibility (*muḥāl ʿaqlan*)—while the latter refers to an endless but never-complete process, such as counting numbers indefinitely.[80] This underscores the distinction between mathematical abstractions and physical reality, allowing for practical application of such concepts without necessitating acceptance their actuality or possibility.[81]

6.3.4. Differing Epistemological Priorities

"Will you not use your intellects?"[82]

Various traditions prioritize different modes of reasoning within and between epistemological sources. In our R.E.D. epistemology, rationality is prioritized since it is the foundation for recognizing Divinely revealed authority and the truthfulness of the prophets (a). It is also the foundation of recognizing empirical correlations and causal connections, since repeated observational knowledge accompanied by an implicit inference to causal association (*tajriba*) as well as inductive reasoning rely on the intellect's act of inference of a causal connection and distinguishing between presence and absence of paired phenomena. The intellect's comprehension of concepts—such as motion and stillness or square and circle—are at the heart of rational thought, namely the Principle of Non-

[79] Karen Harding. "Causality Then and Now: Al Ghazālī and Quantum Theory", *The American Journal of Islamic Social Sciences* 10(2): 165-177.

[80] See Fakhr al-Dīn al-Rāzī, *al-Maṭālib al-ʿĀliya min al-ʿIlm al-Ilāhī*, ed. Aḥmad Ḥijjī al-Saqqā, 15 vols. (Beirut: Dār al-Kitāb al-ʿArabī, 1987), 6:173; and Abū Ḥāmid al-Ghazālī, *Tahāfut al-Falāsifa*, ed. Sulaymān Dunyā (Cairo: Dār al-Maʿārif, 1966), 141–144.

[81] Sabine Hossenfelder, Is Infinity Real? December 5th, 2020, https://www.youtube.com/watch?v=Bq9xR5PUs6s.

[82] Q. al-Baqara 2:44.

Contradiction. It is the mode of reasoning which the Ayatologist uses to read the rational significations of the world around us.

While other systems minimize the role of the intellect and its modes of reasoning, the Islamic system fully embraces the intellect's potential, assessing the strengths and domains of deductive, inductive, and analogous reasoning, as well as knowledge obtained through spiritual intuition and inspiration, producing a harmonious hierarchy of kinds and modes of reasoning in relation to the various epistemological channels through which the data of reason is obtained. While an Ayatologist's priorities differ from that of western scientific discourse, these differing priorities can coexist by understanding the scope of each disciplines' investigation and application, as discussed previously.

6.3.5. Navigating Dual Frameworks

Muslims today often engage with pluralistic theoretical, legal, and cultural systems, where the dominant system is usually not fully grounded in Islamic thought or practice. These systems are not multi-plex environments that allow for fully distinct systems to operate unimpeded by the dominant system. Rather, Muslims often have to adapt their approach aiming to be rooted in Islamic principles without indefensible compromises in faith and practice. One example is the discipline of Islamic Finance which operates in "dual regulatory environments", that is, Islamic financial products—like "halal mortgages"—are designed to adhere to both state and national laws and some conception of Islamic regulations, even if broadly conceived.

Similarly, Muslims working across the S.T.E.M. fields often adjust for competing and conflicting regulatory or explanatory environments. However, while Ayatologists can willfully limit their work to the demands of a given discipline that functions only within the material lab—such as architecture, biology, engineering, chemistry, etc.—they can never affirm nor should they be required to affirm falsehoods, absurdities, or unethical doctrines, even when dominant explanatory systems pressure one to do so. There is no reason a Muslim biologist cannot affirm species evolution when empirical evidence points predominantly towards that thesis, except in matters of human origins wherein scriptural evidence points explicitly towards Divine intervention. Likewise, there is no reason a Muslim scientist cannot work within models of the universe's functions and properties so long as the model does not contain some absurdity such as claims that the universe self-originated or existed eternally. Our horizontal and vertical laboratory expansions do not always need to be explicitly applied to our work as architects, carpenters, doctors, mechanics, dentists, marine biologists, etc. but they should never be denied, ignored, or contradicted. That is, it is enough to deliver architectural plans to a client, prescribe antibiotics to a patient, or change the oil in a customer's car without delivering a sermon on the contingent nature of buildings, bacteria, or engines and their signification of the Necessarily Existent Creator, our goal is, nonetheless, to never lose sight of that signification.

CONCLUSION

Ayatology is the Qur'anic science of reading the signs (*āyāt*) of creation—both in the horizons and within ourselves—that ultimately signify knowledge of Allah, His Names, and Attributes, as well as the truthfulness of His Messenger ﷺ. From these two primary aspects of faith, Divinity and Prophecy, all other knowledge flows, and as such, Ayatology comprehensively includes the study of Divine truth as it manifests in human history, the natural world, the varieties of languages, and the spiritual realm of the unseen. Rooted in an epistemology that harmonizes rational, empirical, and Divinely revealed knowledge, it offers a unified framework for the study of theoretical and practical sciences, from theology and philosophy to biology and physics, from Qur'anic studies and hadith methodology to law and history, among others. It offers a comprehensive theory of and methodology for investigating the observable world that harmonizes reason, science, and religion without compromise or contradiction.

Bringing together theories of signification found in the "science of horizons and selves" as outlined by al-Samarqandī in his book, *ʿIlm al-āfāq wa-l-anfus*, as well as those found in the sciences of linguistic assignment (*ʿilm al-waḍʿ*), grammar, logic, rhetoric, and legal methodology (*uṣūl al-fiqh*), we have gathered together a theory of semiotics or the science of signs as outlined by the great scholars of Islam. This knowledge is usually distributed across the sciences mentioned above among others. However, when presented altogether as we have done in this essay it becomes apparent that Ayatology serves as a semiotics of the natural world and language—the two great signifiers that Allah commands us to reflect upon in the book of creation and the book of revelation respectively. Furthermore, they can serve as a philosophy of science for students and practitioners of the natural sciences, as well as the social and humane sciences along with the vocational crafts through which their practitioners serve humanity and the world.

This approach to recognizing the levels and varieties of signification—rational, natural, and assigned—along with the varieties of vantages determined by the vantages of each science, craft, or any variety of human endeavor, allows one to toggle between the various significations they are receiving in any given moment according to the aims of one reading those signs. Through remembrance and contemplation, one further aims to retain a sustained awareness of the ultimate significations of all observable things—knowledge of Allah and His perfections—as one moves between work, society, education, socialization, and worship.

This continuous Ayatological perspective keeps reason, empirical inquiry, and religious worldview in constant harmony, avoiding the post-Enlightenment bifurcation of religious and secular worlds. Clarifying the foundations and boundaries of the sciences, especially the natural sciences, Ayatology guards against the smuggling of rational absurdities into one's observational investigations of the natural world. Given the multitude of worldviews in any lab, office, or classroom, it also offers a holistic approach to navigating both competing and complementary frameworks with integrity and mutual respect.

Specifically with regard to the natural sciences, Ayatology's "Expanded Laboratory" concept resists the compartmentalizing of secular and religious approaches to health, psychology, biology, or any of the natural sciences by expanding scientific inquiry "vertically" to reinstate the centrality of deductive reasoning about ultimate as well as contingent truths. It also expands horizontally to include the study of spiritual phenomena that are known through revelatory and observational epistemological channels. While working in western and westernized contexts that resist any reference to deductive ultimate truths or spiritual variables a Muslim usually consents to work within the professional parameters of their discipline, establishing the epistemic parameters more accurately and honestly than many staunch defenders of absolute materialist/physicalist epistemologies. However, doing so does not entail denial of the vertical and horizontal expansions to reasoned and observational inquiry, and in many cases, holistic patient or client care is often best achieved through considering both physiological and spiritual dimensions.

We perceive with our senses the grandeur of the universe whose signs in the horizons and ourselves galvanize our minds' contemplation which leads to realization of ultimate truths that resonate with our souls' innate disposition. This grandeur is ever-present and always signifying but it is our responsibility to polish our hearts through remembrance, sharpen our intellects through contemplation, and deepen our comprehension through research and application, until our state is such that we read the universe's signified meanings from the vantage of obtaining knowledge of Allah even when also reading their meanings from the vantage of our particular disciplines, vocations, or daily needs. As readers of *āyāt*, the truth is always manifest in any domain of our lives, from the lab to mosque, from the classroom to the market, from the cradle to the grave.