

As FQxI's mission is to explore the fundamentals of reality, this essay addresses elementary aspects of the questions posed for it with emphasis on the limiting effect that disregard of the unknowable may have on scientific progress. There is no verifiable reason to believe that science could have been fundamentally different from what it was or that it can be fundamentally different from what it is, otherwise. Evidence does suggest that scientific progress might advance sooner if the scientific method is more regarded as only one branch of valid scientific practice without discouraging or prejudicing a more intuitive approach to science, and if science acknowledges that an ultimate unknowable is a factor in reality and the search for ultimate causality. Anticipating the reoccurrence of events likely inspired the earliest consideration of the unknown as an imperative to survival before satisfying mere curiosity. As the genesis of scientific and religious inquiry was the desire to understand existence, there was no fundamental chasm between them. Pure religious theory, as opposed to the theory of religion, still shares science's quest to explore and explain ultimate causality. The two distinguished themselves when propositions of causality were required to be systematically tested for truth, becoming the scientific method, and when comparable propositions were accepted as true based on an unverifiable cause of the observable, becoming religion. Religious practice, the celebration of doctrinal belief in the cause of existence premised on blind faith in the unverifiable as a primary driver in human culture, has variously affected scientific progress and will continue to do so to the extent that it remains a variable driver of human culture. While science could not have been fundamentally different from what it was unless human history had not been what it was, and cannot be fundamentally different from what it will be without changing and controlling human nature, it has steadily progressed somewhere in the world at all times despite various cultures periodically impacting it. Irrespective of disparate cultural influences and impacts, the fundamental question of ultimate causality in both disciplines remained constant and will be spurred on by, and limited by, how the unknowable ultimate causality presented by infinity is factored. The unknowable presented by infinity and omnipotence appear to indicate that matter cannot logically exist and that existence is an abstraction of formless thought, confounding science and religion. Therefrom, inquiry into reality plumbs the processes that formless mind projects as abstract ideations of force and materiality. For science to optimally flourish, it warrants considering that there is an ultimate unknowable bearing upon all that is observable and measurable and pursuing causality free of the constraint that every postulate must ultimately be verified before substantially advancing theory.

Science and religion are manifestations of the enduring inquisitiveness of the human mind questioning the cause of the observable and the effects of the non-observable. If '(s)cience is a systematic endeavor that builds and organizes knowledge in the form of testable explanations and predictions about the universe...,' (<https://en.wikipedia.org/wiki/Science>), then the neolithic

circles of stones tracking the movement of the sun that reliably indicated the change of seasons were scientific endeavors and preceded, or coincided with, questioning the cause of the sun's movement and change of the seasons. Logically, questioning that cause was a secondary concern to ascertaining the correlation between the two that was more crucial to survival, suggesting that the search for causality, and curiosity in general, might be a component of the drive for survival. 'Religion is commonly defined as 'a range of social-cultural systems, including designated ... worldviews ... that generally relate humanity to... transcendental ... elements...'

Transcendentals are the subject of metaphysics which 'is the branch of philosophy that studies the fundamental nature of reality...' (<https://en.wikipedia.org/wiki/Religion>) If curiosity is intimately associated with the drive for survival it should be expected that questions about the fundamental nature of reality and ultimate causality, primary functions of scientific and pre-doctrine religious inquiry, were contemplated and sufficiently settled for practical purpose well before the common era. That inquiry concluded that there is an ultimate power underlying all existence that science now calls energy and that various religions eventually named their cultural equivalents of God, or gods, attempting to reconcile observation with theory for practical purpose in both instances.

While science now explores the constituents of energy and how it becomes existence, it does not dwell on the question of why energy exists, from whence it came, what compels it into endless motion and transformation, and why it is compelled so? Science accepts theories about that which is not directly observable and measurable based on their effect on that which is observable and measurable. Dominant religious theory concluded that existence is the self-expression of ultimate power for its own purpose and various societies embraced that conclusion with religious practices for the benefit of individual and social welfare. For the benefit of social stability derived from common acceptance of the beliefs and values promulgated by religious disciplines, why godly power exists or from whence it came is not openly questioned. Those questions typically terminate with acceptance that there is an unknowable resulting in blind faith in God/s power and purpose to justify existence and to preserve the authority of religious organization that contributes to social order. Yet, fundamental religious thought is effectively predicated on logic, concluding, 'I am, therefore there must be a cause for my being. While the ultimate cause of my being isn't directly observable, the effect of that cause, my being, is observable and verifiable. Therefrom, there must be an elementary source of the cause of my being and all that is observed that is beyond human control. Let's call it God.'

Both science and religion inquire into ultimate causality but remain limited by their inability to ascertain causality beyond their respective postulates that energy and Godly omnipotence are sources of all existence. Questions about fundamental reality, ultimate cause, and attempts to reconcile empirical observation with theory, philosophy, and religious belief coincided with the

ancient recognition of the paradox to the observable and quantifiable, infinity, eternity, and the universality of all existence that is akin to current field theory. Without science reconciling practical inquiry with the unknowable of infinity, eternity, and universality, as contemplated by the ancients and modern science, science remains stymied by the fundamental questions of what the original source of energy is, why energy exists, what initially compelled energy into observable motion and form, and why energy appears to be in the perpetual flux that the ancients viewed as the eternal recycling of all existence, and that astro physicists view in the continual birth, death, and rebirth of stars, effectively representing the conservation or immortality of energy and divine spirit.

Physics defines energy as ‘the quantitative property that is transferred to a body or to a physical system, recognizable in the performance of work and in the form of heat and light.’ (<https://en.wikipedia.org/wiki/Energy>) Therefrom, science considers energy’s quantifiable characteristics and effects and analyzes its quantum mechanics but does not dwell on the reason that energy should exist in the first instance. Why energy exists and transforms parallels the enduring question of why life and the universe should occur, irrespective of how they occur. Both questions anticipate a fundamental force beyond the observable with sufficient independent capacity and determination to will itself into the action observed by humans as form and effect. If science claimed to know the source and cause of formless energy, it would still face the question of why that source exists and why it compels itself into the observable and quantifiable motion, form, and effect of its creation, energy. If science concluded that formless energy was not created and always existed, the question of what sustains energy’s power and why that power source exists and transforms would remain. Those same questions would subsequently apply to every layer of elementary source and force of causation uncovered, ad infinitum, and ultimate causality would remain elusive.

These questions about the fundamental constituents of reality contributed to the conundrum of existence that infinity is. Historians and philosophers tell us that the Vedic Aryans were among the first to conceive of the infinite which excludes nothing, and that some ancients concluded that matter could not be created and that the universe created itself. ([Dick Teresi](#), *Lost Discoveries: The Ancient Roots of Modern Science*.) Because the inquisitive human mind asks why the earliest source of all that can be contemplated should exist, and then again questions the cause of that earliest source, the question of original causation self-perpetuates ad infinitum without a possible conclusion. While those same ancients contemplated the equivalent of molecular structure, limited by available technology but not by thought, they necessarily concluded their analysis of being in time with the acceptance of infinity and its counterpart, eternity. The current scientific equivalent of these underlying arguments is that energy cannot be created or destroyed and that the universe is merely energy acting in a manner observable by

humans. Essentially, this is an argument for a primordial force variably named energy or God and that existence is a manifestation of the intent of that primordial force. Thereby, God is arguably pure energy with a capacity to will itself into motion and form and there is no fundamental separation between theoretical science and doctrine-free religious theory on that point other than semantics and terminology.

Under the scientific criterion that all existence must be directly, or by inference, measurable, neither the infinite multiverse nor infinite energy can logically exist because their respective totalities cannot be measured, quantified, verified, or repeated. Eternity precludes an objective standard by which to measure time and thinkers of all ages acknowledge that time is merely a subjective contrivance for the convenience of human function. If “(t)ime is the continued sequence of existence and events that occur in an apparently irreversible succession... (and), it is a component quantity of various measurements used to sequence events...” by definition, (<https://en.wikipedia.org/wiki/Time>), but events and formations dependent upon nonexistent energy do not actually occur because the totality of their cause and source cannot be objectively quantified, logically, there can be no sequence of events to measure and time cannot logically exist. As infinite form, space, and time can never be completely quantified, infinity implicitly argues that energy, matter, and time only exist as abstract thoughts and contemplations of a formless mega mind or intelligence. Hence, thought, the expression of formless and timeless mind is all that can actually occur because it is not material and is not subject to measure or quantification, and therefore cannot be negated by infinity. This vaguely corresponds with the ancient conclusion that life is an illusion and the assertion that reality must only exist in another plane or dimension where answers to the insoluble of this life might also exist. Some suggest that thought is a form of measurable energy generated by the brain. Others suggest that only the effects of formless thought on the human brain can be observed and measured, and that thought is like DNA code instructing how energy should transform without its own power to fuel that action. While some assert that universal mind equals universal energy, why either or their sameness exists remains in question. Irrespective of these suggestions, since there are no definable limits to energy or thought neither of them can scientifically exist and thought is arguably an illusion as well. Asking what begets and sustains illusion cycles back to the question of ultimate causality and the inability to answer it.

These fundamental questions currently lead science to the same conclusions of the ancients, that the origin of energy and the cause of, or reason for, its initial transformation into observable effect and matter are beyond the ability of the human condition to ascertain, and beyond any instrument's ability to do so that humans have so far invented. Now, as then, we humans can only reconcile ourselves to the apparent fact that there is a power underlying that which we perceive with enough independent will to compel itself into observable form and effect, or a universal

mind willing itself into various ideations representing form and effect, if that underlying power and universal mind are not the same. The ancients contemplated what we now consider to be the unknown source of formless energy and the reason for its initial transformation into the observable in terms of their culture resulting in their creation myths. Early religion was arguably an extension of early science and the two are not mutually exclusive in every instance today. “Religious faith in the case of the Hindus has never been allowed to run counter to scientific laws, moreover the former is never made a condition for the knowledge they teach, but they are always scrupulously careful to take into consideration the possibility that by reason both the agnostic and atheist may attain truth in their own way. Such tolerance, . . . , is an integral part of Vedantic belief.” (Romain Rolland, *The life of Vivekananda and the universal gospel*. 5th ed, page 229 / https://en.wikiquote.org/wiki/Vedic_science).

Yet, the fundamentals of science are stubbornly consistent despite varying interpretations of the observable based on cultural differences or individual idiosyncrasies. While the progress and results of scientific inquiry varied amongst human societies due to their prejudices, bigotry, confirmation biases, and available technology, the fundamental quest for ultimate causality remained constant somewhere in the world at all times. As that quest is relentlessly driven by the inquisitive nature of humans, science will always progress commensurate with the prowess and liberty of the human mind first, advancement in technology second, and social influences last, all other things being equal. If we accept that the advancement of technology is self-accelerating, then scientific progress will accelerate with it. However, as the cerebral cortex has never been entirely free from the effects of the primitive brain, human actions will likely precipitate social conditions that retard, regress, or complicate scientific progress and practice in isolated instances, as they recently did in stem cell research and human gene engineering. Yet, research in those subjects still move forward in various places.

Without discrediting infinity, life may be an illusion of a universal intelligence powered by an unknowable and reality may be our individual or collective recognition and interpretation of that illusion. If so, each individual and society fills a role cast within the illusion compelling us to fulfill the intent of the illusion with the, as yet unverifiable, possibility that the individual actor may psychically affect that illusion or alter it with prayer, possibly contributing to the ancient suggestion that, “All the world's a stage, And all the men and women merely Players.” (Shakespeare, after Pythagoras and Petronius / https://en.wikipedia.org/wiki/All_the_world's_a_stage) Until, and unless, science terminates infinity and eternity and ascertains ultimate causality it might progress more readily if it accepts that there might be an unknowable with bearing upon the observable and measurable and factor that into scientific inquiry. Recent significant advancements in science occurred by more freely extrapolating from the unverified that was inferred by the observable and measurable. Some practitioners of the

scientific method still challenge the validity of quantum physics research despite remarkable technology and results based upon quantum mechanics having indisputably advanced and occurred before all operative postulates of quantum mechanics were evidenced. Such scientists now deride the ideas of quantum entanglement and the multiverse that infinity implicitly argues for. Thus, employing the presumed answers to how action and substance might occur if not limited by that which is not yet known and might never be verified into experiment may yet yield practical and significant scientific achievement. Indeed, all scientific advancement has occurred under a penumbra of a yet unverified ultimate cause, and there is no valid reason to restrict further exploration of the unknown due simply to the tenets of that inquiry not being readily verifiable.